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Protecting People and the Environment

NUREG-1437
Supplement 49
Volume 2

Generic Environmental Impact Statement for License Renewal of Nuclear Plants

Supplement 49

Regarding Limerick Generating Station, Units 1 and 2

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Final Report

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Cover Sheet

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ABSTRACT

This final supplemental environmental impact statement has been prepared in response to an application submitted by Exelon Generation Company, LLC (Exelon) to renew the operating license for Limerick Generating Station, Units 1 and 2 (LGS) for an additional 20 years.

This final supplemental environmental impact statement includes the preliminary analysis that evaluates the environmental impacts of the proposed action and alternatives to the proposed action. Alternatives considered include natural gas combined-cycle (NGCC), supercritical pulverized coal, new nuclear, wind power, purchased power, and not renewing the license (the no action alternative).

The U.S. Nuclear Regulatory Commission's preliminary recommendation is that the adverse environmental impacts of license renewal for LGS are not great enough to deny the option of license renewal for energy planning decisionmakers. This recommendation is based on the following:

- the analysis and findings in the *Generic Environmental Impact Statement for License Renewal of Nuclear Plants*;
- the environmental report submitted by Exelon;
- consultation with Federal, state, and local agencies;
- the NRC's environmental review;
- consideration of public comments received during the scoping process;
- consideration of public comments received on the draft supplemental environmental impact statement; and
- consideration of the information presented in the Natural Resources Defense Council's severe accident mitigation alternatives-related waiver petition.

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ABBREVIATIONS AND ACRONYMS

°C	degree(s) Celsius
°F	degree(s) Fahrenheit
AADT	average annual daily traffic
ac	acre(s)
AC	alternating current
ACHP	Advisory Council on Historic Preservation
ADAMS	Agencywide Documents Access and Management System
AEA	Atomic Energy Act of 1954
AEC	U.S. Atomic Energy Commission
AEPS	alternative energy portfolio standard
ALARA	as low as is reasonably achievable
ANSI	American National Standards Institute
APE	area of potential effect
AQCR	air quality control region
ATWS	anticipated transient without scram
BHP	Bureau of Historic Preservation
BMP	best management practice
BOL	Bureau of Laboratories
BTU	British thermal unit(s)
BTU/kWh	British thermal unit(s) per kilowatt-hour
BTU/lb	British thermal unit(s) per pound
BWR	boiling water reactor
BWROG	BWR Owners' Group
CAA	Clean Air Act, as amended through 1990
CAES	compressed air energy storage
CCS	carbon capture and storage
CDF	core damage frequency
C_{eq}/kWh	carbon equivalent per kilowatt-hour
CEQ	Council on Environmental Quality
CEUS	central and eastern United States
CFR	*Code of Federal Regulations*
cfs	cubic feet per second
cm	centimeter(s)

cm/s	centimeter(s) per second
CO	carbon monoxide
CO_2	carbon dioxide
CPI	Containment Performance Improvement
CRGIS	Cultural Resources Geographic Information System
CS	candidate species
CSAPR	Cross-State Air Pollution Rule
CSP	concentrated solar power
CT	combustion turbine
CWA	Clean Water Act of 1972
dB	decibels
dBA	decibels adjusted
DBA	design-basis accident
DC	direct current
DMR	Discharge Monitoring Report
DOE	U.S. Department of Energy
DRBC	Delaware River Basin Commission
DSEIS	draft supplemental environmental impact statement
DSM	demand-side management
DVRPC	Delaware Valley Regional Planning Commission
DWS	drinking water standard
E.O.	Executive Order
EFH	essential fish habitat
EI	exposure index
EIA	Energy Information Administration (of DOE)
EIS	environmental impact statement
ELF EMF	extremely low-frequency electromagnetic field
EMS	environmental management system
EP	emergency preparedness
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act of 1986
EPG	Emergency Procedure Guidelines
EPRI	Electric Power Research Institute
EPT	Ephemeroptera, Plecoptera, and Trichoptera
ER	Environmental Report

ESA	Endangered Species Act of 1973, as amended
ESEP	Expedited Seismic Evaluation Process
Exelon	Exelon Generation Company, LLC
FE	Federally endangered
FENOC	First Energy Nuclear Operating Company
FES	final environmental statement
fps	feet per second
FR	*Federal Register*
FSAR	final safety analysis report
ft	foot (feet)
FT	Federally threatened
ft^3	cubic foot (feet)
FW	feedwater
FWCA	Fish and Wildlife Coordination Act
FWS	U.S. Fish and Wildlife Service
g	gram(s)
gal	gallon(s)
GDC	general design criterion/criteria
GE	General Electric
GEIS	*Generic Environmental Impact Statement for License Renewal of Nuclear Plants*, NUREG–1437
GHG	greenhouse gas
GIC	Green-is-Clean
GMRS	ground motion response spectrum/spectra
gpd	gallons per day
gpm	gallons per minute
GW	groundwater
ha	hectare(s)
Hg	mercury
HLSA	high-level storage area
Hz	hertz
IAEA	International Atomic Energy Agency
IEEE	Institute of Electrical and Electronics Engineers, Inc.
IGCC	integrated gasification combined-cycle
IHS	IPEEE HCLPF spectrum/spectra

IN	information notice
in.	inch(es)
IPE	Individual Plant Examination
IPEEE	Individual Plant Examination of External Events
ISFSI	Independent Spent Fuel Storage Installation
ISO	International Organization for Standardization
kg	kilogram(s)
km	kilometer(s)
km^2	square kilometer(s)
kV	kilovolt(s)
kW	kilowatt(s)
kWh	kilowatt-hour(s)
L/min	liter(s) per minute
lb	pound(s)
LEFM	Leading Edge Flow Meter
LGS	Limerick Generating Station, Units 1 and 2
Limerick	Limerick Generating Station, Units 1 and 2
LLMW	low-level mixed waste
LLRW	low-level radioactive waste
m	meter(s)
m/s	meter(s) per second
m^2	square meter(s)
m^3	cubic meter(s)
m^3/s	cubic meters per second
mA	milliampere(s)
MACCS2	MELCOR Accident Consequence Code System 2
MAIS	macroinvertebrate aggregated index for streams
MassDEP	Massachusetts Department of Environmental Protection
MATS	Mercury and Air Toxics Standards
MBTA	Migratory Bird Treaty Act of 1918
MCPC	Montgomery County Planning Commission
MDPH	Massachusetts Department of Public Health
MF	migratory fishes
mg/L	milligrams per liter
mgd	million gallons per day

mGy	million gallons per year
mi	mile(s)
mi^2	square mile(s)
min	minute(s)
mm	millimeter(s)
MMI	Modified Mercalli Intensity
MMPA	Marine Mammal Protection Act of 1972
mph	mile(s) per hour
mrad	milliradiation absorbed dose
mrem	milliroentgen equivalent man
MSA	Magnuson–Stevens Fishery Conservation and Management Act, as amended through 2006
MSL	mean sea level
mSv	millisievert
MSW	municipal solid waste
MT	metric ton(s)
MUR	measurement uncertainty recapture
MW	megawatt(s)
MWd	megawatt-day(s)
MWd/MTU	megawatt-day(s) per metric ton of uranium
MWe	megawatt(s) electrical
MWt	megawatt(s) thermal
NA	not applicable
NAAQS	National Ambient Air Quality Standards
NAS	National Academy of Sciences
NASS	National Agricultural Statistics Service
NCI	National Cancer Institute
NCRP	National Council on Radiation Protection and Measurements
NEI	Nuclear Energy Institute
NEPA	National Environmental Policy Act of 1969
NERC	North American Electric Reliability Corporation
NESC	National Electrical Safety Code
NETL	National Energy Technology Laboratory
NGCC	natural-gas-fired combined-cycle
NHPA	National Historic Preservation Act of 1966, as amended

NIEHS	National Institute of Environmental Health Sciences
NMFS	National Marine Fisheries Service (of NOAA)
NOAA	National Oceanic and Atmospheric Administration
NO_x	nitrogen oxide(s)
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRC	U.S. Nuclear Regulatory Commission
NRCS	National Resources Conservation Service
NRHP	National Register of Historic Places
NRR	Office of Nuclear Reactor Regulation
NTTF	Near-Term Task Force
NUREG	NRC technical report designation (Nuclear Regulatory Commission)
NWS	National Weather Service
O_3	ozone
OCA	Owner-Controlled Area
ODCM	Offsite Dose Calculation Manual
OPA	Office of Public Affairs
PADEP	Pennsylvania Department of Environmental Protection
PAH	polycyclic aromatic hydrocarbon
Pb	lead
PBAPS	Peach Bottom Atomic Power Station
PCBs	polychlorinated biphenyl
pCi/L	picocuries per liter
PDCNR	Pennsylvania Department of Conservation and Natural Resources
PDEP	Pennsylvania Department of Environmental Protection
PE	Pennsylvania endangered
PECO	PECO Energy Company, the energy delivery subsidiary of Exelon Corporation serving retail customers in southeastern Pennsylvania (also used as an acronym for Philadelphia Electric Company, a predecessor of PECO Energy Company and Exelon Generation)
PFBC	Pennsylvania Fish and Boat Commission
PGA	peak ground acceleration
PGC	Pennsylvania Game Commission
PJM	PJM Interconnection, LLC
PM	particulate matter

PM_{10}	particulate matter >2.5 microns and ≤10 microns in diameter
$PM_{2.5}$	particulate matter ≤2.5 microns in diameter
PNDI	Pennsylvania Natural Diversity Inventory
PNHP	Pennsylvania Natural Heritage Program
PNNL	Pacific Northwest National Laboratory
POST	Parliamentary Office of Science and Technology
PPC	Preparedness, Prevention, and Contingency
PR	Pennsylvania rare
PSD	Prevention of Significant Deterioration
psia	pounds per square inch absolute
PT	Pennsylvania threatened
PV	photovoltaic
PWR	pressurized water reactor
RAI	request for additional information
RCA	radiological control area
RCRA	Resource Conservation and Recovery Act of 1976, as amended
REMP	radiological environmental monitoring program
REOP	Radiological Environmental Operation
RERS	reactor enclosure recirculation system
RGPP	Radiological Groundwater Protection Program
RKm	river kilometer
RM	river mile
RMC	RMC-Environmental Services
ROI	region of influence
ROP	Reactor Oversight Process
ROW(s)	right(s)-of-way
RPS	renewable portfolio standard
RSP	radwaste storage pad
RWCU	reactor water cleanup
SAMA	Severe Accident Mitigation Alternative
SAMDA	Severe Accident Mitigation Design Alternative
SAMGs	Severe Accident Mitigation Guidelines
SAR	safety analysis report
SCPC	supercritical pulverized coal
SCR	selective catalytic reduction

SE	state endangered
SEIS	supplemental environmental impact statement
SER	safety evaluation report
SGTS	standby gas treatment system
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SMA	Seismic Margin Assessment
SNF	spent nuclear fuel
SO_2	sulfur dioxide
SO_x	sulfur oxide(s)
SPCC	Spill Prevention Control and Countermeasure
SPID	Screening, Prioritization and Implementation Details
SPRA	Seismic Probabilistic Risk Assessment
SR	state rare
SSC	species of special concern
SSCs	structures, systems, and components
SSE	safe-shutdown earthquake
ST	state threatened
State	Commonwealth of Pennsylvania (or other state if specified)
STG	steam turbine generator
Stroud	Stroud Water Research Center
Sv	sievert
SW	surface water
SWPPP	Stormwater Pollution Prevention Plan
TDS	total dissolved solids
TLD	thermoluminescent dosimeters
TMDL	total maximum daily upload
TMI	Three Mile Island
tpy	ton(s) per year
TSP	total suspended particles
TWh	terawatt-hour(s)
U	uranium
U.S.	United States
U.S.C.	United States Code
UCB	upper confidence bound

UFSAR	updated final safety analysis report
USACE	U.S. Army Corps of Engineers
USCB	U.S. Census Bureau
USDA	U.S. Department of Agriculture
USGCRP	United States Global Change Research Program [or GCRP]
USGS	U.S. Geological Survey
VOC	volatile organic compound
WEC	wave energy conversion
WHC	Wildlife Habitat Council
WWF	warm water fishes

APPENDIX A
COMMENTS RECEIVED ON THE LIMERICK GENERATING STATION, UNITS 1 AND 2, ENVIRONMENTAL REVIEW

COMMENTS RECEIVED ON THE LIMERICK GENERATING STATION, UNITS 1 AND 2, ENVIRONMENTAL REVIEW

A.1 Comments Received During Scoping

The scoping process began on August 26, 2011, with the publication of the U.S. Nuclear Regulatory Commission's (NRC's) notice of intent to conduct scoping in the *Federal Register* (FR) (75 FR 53498). As part of the scoping process, the NRC held two public meetings at the Sunnybrook Ballroom in Pottstown, PA, September 22, 2011. Approximately 100 members of the public attended the meetings. After the NRC staff presented prepared statements pertaining to the license renewal and the scoping processes, the meetings were opened to members of the public for their comments. Attendees provided oral statements that were recorded and transcribed by a certified court reporter. Transcripts of the entire meeting are available using the NRC's Agencywide Documents Access and Management System (ADAMS). ADAMS Public Electronic Reading Room is accessible at http://www.nrc.gov/reading-rm/adams.html. Transcripts for the afternoon and evening meetings are available in ADAMS under Accession Nos. ML11287A207 and ML11287A211, respectively (NRC 2011a, 2011b). In addition to the comments received during the public meetings, comments were received through the mail and e-mail.

Each commenter was given a unique identifier so that every comment could be traced back to its author. Table A-1 identifies the individuals who provided comments applicable to the environmental review and the commenter ID associated with each person's set of comments. The individuals are listed in the order in which they spoke at the public meeting and in random order for the comments received by letter or e--mail. To maintain consistency with the scoping summary report, the unique identifier used in that report for each set of comments is retained in this appendix.

Specific comments were categorized and consolidated by topic. Comments with similar specific objectives were combined to capture the common essential issues raised by participants. Comments fall into one of the following general groups:

- Specific comments that address environmental issues within the purview of the NRC environmental regulations related to license renewal. These comments address the Category 1 (generic) or Category 2 (site-specific) issues identified in NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants" (GEIS), or issues not addressed in the GEIS. The comments also address alternatives to license renewal and related Federal actions. There are also comments that do not identify new information for the NRC to analyze as part of its environmental review.
- There are comments that address issues that do not to fall within or are specifically excluded from the purview of NRC environmental regulations related to license renewal. These comments typically address issues such as the need for power, emergency preparedness, security, current operational safety issues, and safety issues related to operation during the renewal period.

Table A–1. Individuals Providing Comments during the Scoping Comment Period

Commenters are identified below, along with their affiliations and how their comments were submitted.

Commenter	Affiliation (if stated)	ID	Comment source	ADAMS Accession Number
Dr. Lewis Cuthbert	Alliance for a Clean Environment	1	Afternoon scoping meeting	ML11287A207
			Evening scoping meeting	ML11287A211
			Written Comments	ML11354A392 ML11036A244 ML11036A245
Bill Maguire	Limerick Site Vice President, Exelon	2	Afternoon scoping meeting	Ml11287A207
			Evening scoping meeting	ML11287A211
Representative Tom Quigley	State Representative	3	Afternoon scoping meeting	ML11287A207
Lorraine Ruppe	Resident	4	Afternoon scoping meeting	ML11287A207
			Evening scoping meeting	ML11287A211
			Written Comments	ML11308B354
Mike Gallagher	Vice President for License Renewal, Exelon	5	Afternoon scoping meeting	ML11287A207
			Evening scoping meeting	ML11287A211
Dr. Fred Winter	Resident	6	Afternoon scoping meeting	ML11287A207
			Evening scoping meeting	ML11287A211
			Written Comments	ML11305A016
Thomas Neafcy	Resident	7	Afternoon scoping meeting	ML11287A207
Dr. Anita Baly	Resident	8	Afternoon scoping meeting	ML11287A207
			Written Comments	ML11035A010
Tim Fenchel	Schuylkill River Heritage Area	9	Afternoon scoping meeting	ML11287A207
Bill Vogel	Resident	10	Afternoon scoping meeting	ML11287A207

Commenter	Affiliation (if stated)	ID	Comment source	ADAMS Accession Number
Eileen Dautrich	Tri-County Area Chamber of Commerce	11	Afternoon scoping meeting	ML11287A207
Billy Albany	Resident	12	Afternoon scoping meeting	ML11287A207
John McGowen	Jaeco/Gas Breaker/UMAC, Inc.	13	Afternoon scoping meeting	ML11287A207
Ted Del Gaizo	Resident	14	Afternoon scoping meeting	ML11287A207
Tim Phelps	Resident	15	Afternoon scoping meeting	ML11287A207
Thomas Saporito	Saporito-Associates	16	Evening scoping meeting	ML11287A207
Jeff Chomnuk	Resident	17	Evening scoping meeting	ML11287A207
Daniel Ludwig	Resident	18	Evening scoping meeting	ML11287A207
Catherine Allison	Resident	19	Evening scoping meeting	ML11287A207
Jeffrey Norton	Pennsylvania Energy Alliance	20	Evening scoping meeting	ML11287A207
Dan Ely	Resident	21	Evening scoping meeting	ML11287A207
Jay Beckermen	Resident	22	Evening scoping meeting	ML11287A207
Jim Der	Pottstown Energy Advisory Committee	23	Evening scoping meeting	ML11287A207
Traci Confer	Energy Justice Network	24	Evening scoping meeting	ML11287A207
Camilla Lange	Resident	25	Written Comments	ML11279A107
Eric Hamell	Resident	26	Written Comments	ML11279A108
Steven Furber	Resident	27	Written Comments	ML11279A109
Charlene Padworny	Resident	28	Written Comments	ML11279A110
Sylvia Polluck	Resident	29	Written Comments	ML11279A111
Joe Roberto	Resident	30	Written Comments	ML11290A106
			Written Comments	ML11279A112
Brice Obermeyer	Delaware Tribe Historic Preservation Office	31	Written Comments	ML11279A113
Sherry White	Stockbridge-Munsee Tribal Historic Preservation Office	32	Written Comments	ML11279A114

Commenter	Affiliation (if stated)	ID	Comment source	ADAMS Accession Number
Unknown	Unknown	33	Written Comments	ML11286A298
Richard Kolsch	Resident	34	Written Comments	ML11286A299
Charles and Elizabeth Shank	Resident	35	Written Comments	ML11286A300
Nancy Leaming	Resident	36	Written Comments	ML11290A102
Cynthia Gale	Resident	37	Written Comments	ML11290A103
Jude Schwegel	Resident	38	Written Comments	ML11290A104
Michael Gale	Resident	39	Written Comments	ML11290A105
Melissa Antrim	Resident	40	Written Comments	ML11291A155
Michael Antrim	Resident	41	Written Comments	ML11291A156
Joan McGone	Resident	42	Written Comments	ML11292A011
Mary Lou and Harold Smith	Resident	43	Written Comments	ML11294A208
Lisa Smoyer	Resident	44	Written Comments	ML11300A011
Unknown	Resident	45	Written Comments	ML11300A012
Lori Molinari	Resident	46	Written Comments	ML11305A072
Doris Meyers	Resident	47	Written Comments	ML11305A014
Ken Sekellick	Resident	48	Written Comments	ML11305A015
Anthony Gonyea	Onondaga Nation	49	Written Comments	ML11305A006
Debby Penrod	Resident	50	Written Comments	ML11305A007
Charlie Koeing	Resident	51	Written Comments	ML11305A008
Joyce Webber	Resident	52	Written Comments	ML11305A009
Charlotte Derr	Resident	53	Written Comments	ML11307A388
Michael Stokes	Montgomery County Planning Commission	54	Written Comments	ML11307A387
Thomas Sullivan	Montgomery County Department of Public Safety	55	Written Comments	ML11307A386
Natural Resources Defense Council		56	Written Comments	ML11307A456
Sharon Yohn	Resident	57	Written Comments	ML11307A455
Michael Smokowicz	Resident	58	Written Comments	ML11307A454
Barbara Miller	Resident	59	Written Comments	ML11311A063
Debra Schneider	Resident	60	Written Comments	ML11313A013

To evaluate the comments, the NRC staff gave each comment a unique identification code that categorizes the comment by technical issue and allows each comment or set of comments to be traced back to the commenter and original source (transcript, letter, or e-mail) from which the comments were submitted.

Comments were placed into one of the technical issue categories, which are based on the topics that will be contained within the staff's supplemental environmental impact statement (SEIS) for Limerick Generating Station (LGS), as outlined by the GEIS. These technical issue categories and their abbreviation codes are presented in Table A-2.

Table A–2. Technical Issue Categories

Comments were divided into 1 of the 16 categories below, each of which has a unique abbreviation code.

Code	Technical issue
AL	Alternatives Energy Sources
AM	Air & Meteorology
DC	Decommissioning
GE	Geology
GW	Ground water
HA	Historical and Archeological
HH	Human Health
LU	Land Use
LR	License Renewal and its Process
OL	Opposition to License Renewal
OS	Outside of Scope[(a)]
PA	Postulated Accidents and Severe Accident Mitigation Alternatives (SAMA)
RW	Radioactive & Non-Radioactive Waste
SE	Socioeconomics
SR	Support of License Renewal
SW	Surface Water

[(a)] Outside of scope are those comments that pertain to issues that are not evaluated during the environmental review of license renewal and include, but are not limited to, issues such as need for power, emergency preparedness, safety, security, terrorism, and spent nuclear fuel storage and disposal.

Comments received during scoping applicable to this environmental review are presented in this section, along with the NRC response. They are presented in the order shown in Table A-3. The comments that are outside the scope of the environmental review for LGS are not included here but can be found in the scoping summary report, which can be accessed through ADAMS Accession No. ML12131A499.

Table A–3. Comment Response Location in Order of Resource Area

A.1.1 Alternative Energy Sources (AL)

Comment: 1-44-AL; We have had 26 years of insults to our environment, and I choose that word purposely, insults to our environment and costly nuclear power. We can replace it with safe, clean, renewable energy before 2029. That is a matter of scientific fact.

Comment: 4-8-AL; Solar wind, geothermal, ocean thermal, energy conservation and efficiency are now cheaper than nuclear power, along with being truly clean and safe. The Department of Energy 2006 report stated solar alone could provide 55 times our entire nation's energy needs which leads me to a point, there have been numerous studies proving the many dangerous and deadly consequences of nuclear power.

Comment: 5-3-AL; We also reviewed the alternatives if Limerick would not have its license renewed and another source of electric generation would need to be installed either here on site or someplace else to generate the replacement electricity. We concluded that any other means of generating the replacement electricity would have more of an impact on the environment than continued operation of Limerick. For instance, if Limerick could be replaced by a wind generation facility, the wind from [it] would have to occupy between 10 and 40 percent of all the land in the state of Delaware and that would have a huge impact on the land. If a solar facility could replace Limerick, it would need to cover 32 to 50 percent the entire land area of Montgomery County.

Comment: 6-10-AL; Please listen to this advice after years of doing my best for America. Rely on more and truly safe and renewable sources like solar, wind, and geothermal power.
A patriotic duty to protect our kids.

Comment: 16-7-AL; The NRC is required under the law in this review, the environmental review to consider renewable energy sources, alternatives. And that means need. Is there really a need for these two nuclear plants to operate and the answer is no. Simply stated if all the customers who receive power from these nuclear plants were to simply remove their hot water heaters and replace them with on-demand electric water heaters you would reduce the electric base load demand by 50 to 70 percent. You wouldn't need either one of those nuclear power plants to operate. If you take that further and introduce other energy conservation you would actually have the licensee shut down more of their other power plants because of you would need a demand. If you take wind energy which is plentiful up there in Pennsylvania and even the new solar panel which can operate when the sun isn't shining on a cloudy day you could replace even more operating power plants. So these renewable energy sources even with respect to wind energy since you have a common grid throughout the United States you can have wind farms generate power to a common grid point and supplying the power that these nuclear plants are now providing. The NRC's required under the law to consider these alternatives to extending this license. And I would hope that the NRC's final evaluation and review shows a complete and thorough analysis of all these renewable energy sources including installing on demand hot water electric heater and doing an analysis of how many megawatts you're going to take off the grid and based on those evaluations make a licensing determination whether or not this license should be extended. Because 20 years from now all these renewable resources are going to be all that much more advanced and capable of supplying all that much more power than they're currently supplying.

Comment: 25-5-AL; Other forms of energy can and must be utilized to meet consumption demands.

Comment: 27-1-AL; I am under the belief that the natural disaster in Japan is enough for Pennsylvania to make a move toward clean energy.

Comment: 28-2-AL; I support more healthy and efficient sources of energy such as Solar and Wind Power. Please stop ignoring the detrimental effects that this power plant is having on our environment, health, and children's health…it's time to move on to betters things for all involved.

Comment: 29-1-AL; I hope Exelon Energy does not get Renewed. I am sure we could find alternative energy that would not be contaminating the whole area.

Comment: 35-6-AL; The nuclear process is not an enlightened way to generate electrical energy. This plant needs to transition itself into a more intelligent way of generating energy by actually phasing out and safely shutting down the nuclear plant. By retraining its workers and adopting the safer green technologies, it could truly partner with the local community without putting its workers out of jobs.

Comment: 37-15-A, 39-16-AL; Dangerous, Dirty, Harmful, and Costly Nuclear Power Is Not Needed. It Can And Should Be Replaced With Safe, Clean, Renewable Energy.

Comment: 44-5-AL; We as a society need to wake up and start paying attention to the massive harm power plants can cause to the people, animals, water, air, etc. Why does everyone want to pay attention when it is way too late?? There are safer alternative forms of energy available to our country/communities. We should be working on them and training employees, who currently work for the nuclear power plants, how to work with safer forms of energy to help our country move forward in today's society.

Comment: 44-10-AL; We deserve to live in a community where our air and water isn't being contaminated constantly with hazardous chemicals, radiation, etc., when there are other energy alternatives out there that are being used that are safer for the community.

Comment: 44-12-AL; Do your job knowing that you are doing what is morally right and safe for humanity and for my children and for the future of generations to come. Please help women have a chance to carry a baby full term without complications due to any possible air and water pollution that may have been caused by allowing more radiation into the environment when there are safer alternatives for energy.

Comment: 53-2-AL; We need cleaner air and water. We need to decrease radiation. We need clean, safe, renewable energy.

Comment: 60-3-AL; Do not extend—Plenty of safe alternatives—water—solar—wind—geothermal.

Comment: 60-19-AL; Can replace with clean renewable energy before current license expires.

Response: *In evaluating alternatives to license renewal, the NRC staff first selects energy technologies or options currently in commercial operation, as well as some technologies not currently in commercial operation but likely to be commercially available by the time the current LGS's operating licenses expire, in 2024 and 2029.*

Second, the NRC staff screens the alternatives to remove those that cannot meet future system needs. Then, the remaining options are screened to remove those whose costs or benefits do not justify inclusion in the range of reasonable alternatives. Any alternatives remaining, then, constitute alternatives to the proposed action that the NRC staff evaluates in depth throughout Chapter 8.

The staff will evaluate all reasonable alternatives in Chapter 8 of the SEIS. In this chapter, the NRC staff examines the potential environmental impacts of alternatives to license renewal for LGS, as well as alternatives that may reduce or avoid adverse environmental impacts from license renewal, when and where these alternatives are applicable.

In addition to evaluating alternatives to the proposed action, the NRC staff also—when appropriate—examines alternatives that may reduce or avoid environmental impacts of the proposed action; the NRC staff does so to illustrate how such alternatives may mitigate potential impacts of license renewal.

The NRC staff considered 18 alternatives to the proposed action and then narrowed to the five alternatives considered. In addition to the five alternatives, the staff considered the no-action alternative (not renewing the operating license).

The alternatives evaluated in depth included the following:

- *natural-gas-fired combined-cycle (NGCC)*
- *supercritical pulverized coal*
- *new nuclear*
- *wind power*
- *purchased power*
- *no action*

Other alternatives considered, but dismissed, are listed below:

- *solar power*
- *combination alternative of wind, solar, and NGCC*
- *combination alternative of wind and compressed-air energy storage*
- *wood waste*
- *conventional hydroelectric power*
- *ocean wave and current energy*

- *municipal solid waste*
- *biofuels*
- *oiled-fired power*
- *delayed retirement*
- *coal-fired integrated gasification combined-cycle*
- *demand-side management (DSM)*

A.1.2 Air & Meteorology (AM)

Comment: 1 -16-AM; Major air pollution issues under health-based standards of the Clean Air Act, 32 individual sources listed. Drastic, harmful increases permitted in particulate matter known also as PM-10 from the cooling towers, other air pollution increases also permitted.

Comment: 1-22-AM; They are a major air polluter under the Clean Air Act and to say they're not doing it anymore, they just asked for the conditions that would allow an eightfold increase in dangerous air pollution that actually is claimed to kill people, thousands of deaths per year. And they asked for an eightfold increase. As a matter of fact, these are all the air pollution sources and the pollutants they list in their own permit. If you add that to all the radiation emissions there's a broad range of radionuclides.

Comment: 1-32-AM; [M]ajor air pollution under health-based standards of the Clean Air Act. A Title 5 permit being issued to this facility means by definition that they are a major air polluter under the federal Clean Air Act.

Comment: 37-2-AM, 39-3-AM; Major Air Pollution Under Health Based Standards of the Clean Air Act

Comment: 60-8-AM; They want increase emissions—Pollutants

Response: *Air pollutant emissions associated with LGS operations are presented in Sections 2.2.2.1 of the SEIS. The NRC's evaluation of LGS's air emissions is presented in Section 4.2 of this SEIS.*

Comment: 35-3-AM; Limerick Nuclear's request for re-licensing is ludicrous, considering its aging and inadequate equipment, its increased air pollution by particulate matter, its horrific destruction of Schuylkill river.

Response: *Aging management of plant systems is evaluated as part of the LRA safety review. The results of the staff's safety review of the LRA for LGS will be documented in the staff's safety evaluation report (SER).*

Air pollutant emissions associated with LGS operations are presented in Sections 2.2.2.1 of the SEIS. The NRC's evaluation of LGS's air emissions is presented in Section 4.2 of this SEIS.

Surface water resources at LGS, including the Schuylkill River, and the effects of plant operations on surface water hydrology and quality are presented in Sections 2.2.4 and 4.3 of the SEIS. In addition, Section 2.1.6 of the SEIS details the surface water sources relied upon by LGS and including the sources of water used to augment low flows in the Schuylkill River.

A.1.3 Decommissioning (DC)

Comment: 34-2-DC; A firm closure plan should be approved before license renewal is accepted. This must include what is to be done with the site, where the nuclear waste will be disposed of etc.

Response: *Decommissioning would occur whether LGS were shut down at the end of its current operating license or at the end of the period of extended operation. Environmental impacts from the activities associated with the decommissioning of any reactor before or at the end of an initial or renewed license are evaluated in the GEIS (NUREG-1437) and in NUREG-0586 Generic Environmental Impact Statement for Decommissioning Nuclear Facilities, Supplement 1, "Regarding the Decommissioning of Nuclear Power Reactors," published in 2002. The findings from these two documents are used to support the findings in the SEIS by the use of tiering. Tiering is a process by which agencies eliminate repetitive discussions. The effects of license renewal on the impacts of decommissioning are stated in Chapter 7 of this SEIS.*

A.1.4 Geology (GE)

Comment: 1-12- GE; Limerick, in addition, is now third on the earthquake risk list for nuclear plants in the United States.

Comment: 4-2-GE; [F]our months have passed since the NRC failed to get back to me when I asked how close the R[a]mapo fault line is to the Limerick nuclear reactors?

Comment: 4-14-GE; It took five months for the Nuclear Regulatory Commission to answer my question concerning how close the nearest fault line is to Limerick Nuclear Plant. No wonder! Two faults are dangerously close. Chalfont Fault is only 9 miles East. Ramapo Fault is 17 miles Northwest. This is alarming!

Comment: 30-2-GE; Limerick should NOT be approved for an extension with their permit for the following reasons:

- Limerick is designated as one of the TOP THREE nuclear plants in the country based on it's construction (which is similar to the ones in Japan—and we see how they failed) and the fact that it sits on an earthquake fault line.
- The NRC JUST a few weeks ago stated that "more information needs to be done and studied" regarding further fortifying nuclear plants regarding earthquakes. Thus, until you folks know exactly what needs to be done, etc.THERE IS NOTHING TO APPROVE as long as Limerick sits in it's current position.
- Do NOT think that earthquakes only happen on the West Coast—as we JUST had a 6+ earthquake less than a month ago. BY ONLY luck was there no damage to the plant, environment or community.

Comment: 51-4-GE; Limerick is built on a fault

Comment: 52-5-GE; It is one of the six most dangerous plants in the country because [of] its proximity to an earthquake fault.

Comment: 60-2-GE; Earthquake Fault

Response: *Geologic and seismic conditions were considered in the original design of nuclear power plants and are part of the license bases for operating plants. Seismic conditions are attributes of the geologic environment that are not affected by continued plant operations and refurbishment and are not expected to change appreciably during the license renewal term for all nuclear power plants. Nevertheless, as part of characterizing the environmental baseline (affected environment) and associated resource conditions of LGS and the vicinity, Section 2.2.3 of the SEIS includes a discussion of the current geologic environment, including its seismic setting. Specifically, the section includes a discussion of the Ramapo fault system.*

This fault system encompasses the Chalfont fault and other named geologic faults. In addition, the NRC and Exelon considered in Chapter 5 of this SEIS whether increased seismic risk could provide a seriously different picture of severe accidents mitigation at Limerick.

As noted in the section, the nearest mapped faults to LGS have not been geologically active for more than 140 million years.

To the extent that the comments express concern for the seismic design of LGS, the seismic design of structures are beyond the scope of the environmental review. *NRC's assessment of seismic hazards for existing nuclear power plants is a separate and distinct process from license renewal reviews. Seismic hazard issues are being addressed by the NRC on an ongoing basis at all licensed nuclear facilities. The NRC requires all licensees to take seismic activity into account to maintain safe operating conditions at all nuclear power plants. When new seismic hazard information becomes available, the NRC evaluates the new data and models to determine if any changes are needed at existing plants, regardless of whether or not a plant has renewed its license or is applying for license renewal. This reactor oversight process, which includes seismic safety, remains separate from license renewal.*

Unrelated to license renewal, the NRC completed the Generic Issues Program Safety/Risk Assessment Stage for Generic Issue (GI) 199 in August 2010, "Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States on Existing Plants," which evaluated recent updates to estimates of the seismic hazard in the central and eastern United States. The results of the GI-199 Safety/Risk Assessment indicated that the currently operating nuclear power plants have adequate safety margin for seismic issues. The NRC's assessment indicated that overall seismic risk estimates remain SMALL, and adequate protection is maintained. NRC Information Notice 2010–18 (ADAMS Accession No. ML101970221) was then issued to nuclear power plants and independent spent fuel storage installations (ISFSIs). It provided notice of the NRC's intent to follow the appropriate regulatory process to request that operating plants and ISFSIs provide specific information relating to their facilities to enable the NRC staff to complete the Regulatory Assessment, in which candidate backfits would be identified and evaluated. The NRC then developed a draft Generic Letter to request needed data from power reactor licensees.

Further, following the accident at the Fukushima Dai-ichi nuclear power plant resulting from the March 11, 2011, Great Tohoku Earthquake and subsequent tsunami, the NRC established the Near-Term Task Force, as directed by the Commission. The Japan Near-Term Task Force assessment resulted in the issuance of letters requesting information per Title 10 of the Code of Federal Regulations (10 CFR) 50.54(f) letter on March 12, 2012. These letters were issued to all power reactor licensees and holders of construction permits and address GI-199 in its entirety in recommendation 2.1 regarding seismic reevaluations, (ADAMS Accession No ML12056A046). The NRC staff will use this information, as well as information requested in the 10 CFR 50.54(f) letter, to determine if further regulatory action is needed, including issuing orders to modify, suspend, or revoke a license.

A.1.5 Groundwater (GW)

Comment: 1-34-GW, 37-5-GW, 39-6-GW; Radioactive Groundwater Contamination.

Comment: 37-4-GW, 39-5-GW; Schuylkill River Depletion and Major Drink Water Contamination

Comment: 45-10-GW; Limerick contaminated groundwater. Radioactive leaks and spills over the years were never cleaned up. More radioactive leaks can be expected in the future through earthquakes, deterioration, and corrosion. Many residential well are very close to Limerick.

Response: *This comment deals with groundwater quality issues related to the operation of LGS. Groundwater resources at LGS, and the effects of plant operations on groundwater hydrology and quality, are presented in Sections 2.2.5 and 4.4 of the SEIS. Specifically, Section 2.2.5.1 discusses groundwater users at and in the vicinity of the plant, and Section 2.2.5.2 summarizes the results of the NRC's review of Exelon's Radiological Groundwater Protection Program (RGPP) for LGS, including the placement of site groundwater monitoring wells. As part of this evaluation, the NRC staff specifically reviewed the hydrogeologic investigation prepared for LGS in 2006 and the results of ongoing groundwater quality monitoring.* Chapter 2 of this SEIS cites all studies reviewed by the NRC staff.

Based on the staff's review, and as presented in Section 4.4.3 of this SEIS, no strontium-90 or gamma-emitting radionuclides have been detected in groundwater or surface water associated with LGS operations or at levels above natural background. While inadvertent releases of liquids containing tritium (a radioactive isotope of hydrogen) have occurred to the ground and subsurface at LGS, levels in groundwater have been less than one-tenth of the U.S. Environmental Protection Agency (EPA) established drinking water standard of 20,000 picocuries per liter. No upward trend in tritium levels has been observed, and Exelon's ongoing RGPP functions to detect and address potential new sources of groundwater contamination. Further, there are no offsite drinking water wells downgradient of LGS that could be affected by inadvertent releases of radionuclides to groundwater.

A.1.6 Historical and Archaeological (HA)

Comment: 31-1-HA; Thank you for informing the Delaware Tribe on the proposed construction associated with the above referenced project. Our review indicates that there are no religious or culturally significant sites in the project area. As such, we defer comment to your office as well as to the State Historic Preservation Office and/or the State Archaeologist.

We wish to continue as a consulting party on this project and look forward to receiving a copy of the cultural resources survey report if one is performed. We also ask that if any human remains are accidentally unearthed during the course of the survey and/or the construction project that you cease development immediately and inform the Delaware Tribe of Indians of the inadvertent discovery.

Comment: 49-1-HA; Thank you for providing the Onondaga Nation with information about this project. If any changes are made, I would like to be consulted. I realize that Unit 1 and Unit 2 have licenses that may be renewed in 2024 and 2029 respectively, therefore you may send updates and information until then.

In the event that during project construction, any archeological resources or remains, including, without limitation, human remains, funerary objects, sacred objects, or objects of cultural patrimony are uncovered, please immediately stop construction and contact me at (315) 952-3109, or the Onondaga Nation's General Counsel Mr. Joseph Heath at (315) 475-2559.

Response: *In accordance with 36 CFR 800.8(c), the NRC has elected to coordinate compliance with section 106 of the National Historical Preservation Act with steps it has taken to meet its requirements under the National Environmental Policy Act (NEPA). An overview of consultation activities that occurred during the preparation of this SEIS is given in Section 4.10.6. All consultation parties will receive a copy of the draft SEIS to review and provide comments to the NRC.*

A.1.7 Human Health (HH)

Comment: 1-15-HH; Research has confirmed radiation in our children's baby teeth in this community.

Comment: 1-18-HH; Alarming cancer increases that have been well documented in this community repeatedly far higher than national and state averages after Limerick started operating until the late 1990s.

Comment: 1-25-HH; The sooner this place closes the better off we'll all be. Even if you look at infant mortality rates we have higher infant mortality rates and neonatal mortality rates far above state averages and even above Philadelphia and Reading, and we've had these for quite awhile. The fact is when babies are the most vulnerable in the womb what else would we expect? And by the way, for those of you who have been saying that ACE data is anecdotal today I have news for you. This infant mortality report for example is state data reported by EPA in 2003. Every cancer statistic that you see back there is based on Pennsylvania Cancer Registry statistics or CDC statistics. So it is not anecdotal, those are the cancer increases, those are the cancer above the national average that have happened here since Limerick started operating.

Comment: 1-26-HH; We have so many cancers above the national average. Childhood cancer, 92.5 percent higher than the national average. Think about that. We track the cost of one child with cancer diagnosed at six months to two years and up until that time it was $2.2 million. How many more kids have that above the national average? Cost that out and how many other cancers are above the national average?

Comment: 1-36-H; [D]ocumented alarming cancer increases especially in our children since Limerick started operating

Comment: 4-6-HH; There has been increased particulate matter in the air and other toxics from Limerick causing increased asthma, heart attacks, and strokes. And to add insult to injury, Limerick was granted a permit to allow an eight-fold increase in air pollution since 2009. Cancer rates in our area have skyrocketed since Limerick has been up and running in the '80s and rates have steadily increased.

Comment: 4-7-HH; The Toothfairy Project showed high levels of strontium 90, a radionuclide in baby teeth of children nearest to nuke plants. Baby teeth near Limerick plant had the highest levels in the whole United States. This stuff and God knows what else is in our bodies now thanks to a Nuclear Regulatory Commission that to put it nicely is less than enthusiastic about protecting us.

Comment: 6-1-HH; As a physician practicing radiology for over 50 years, I still have strong concern about cancer sensitivities from harmful radiation exposures, naturally. My medical colleagues share the same concerns because we have seen our cancer rates increase since the Limerick power plant started, especially thyroid cancer. It jumped to 78 percent higher here than the national average. And some of the people I talked to, this is because people are aging more now, getting older, so there are more cancers. But that's not true because in other areas similar to our area in Pottstown, they're not nearly getting the thyroid cancers that we are. This has been well established by the state.

Comment: 6-2-HH; Having attended a Hiroshima, Japan atom bomb clinic right after World War II, naturally I had a chance to see the worst results of harmful radiation. All those little kids I saw who only lived for a few days, it left me with a very sad memory. Of course, what is happening here will be taking much longer, but it sure is not good. I don't know whether you've heard that some scientists are already predicting that -- I'm sorry to tell you this, but nuclear

energy has the capacity of destroying mankind. It may take about 100 years, but our whole world is exposed to the harmful effects, maybe not so much here in the United States, but the whole world can be affected.

Comment: 6-6-HH; According to the National Center of Disease Control, Pennsylvania ranks No. 1 for the highest incidence of Thyroid cancer. This occurred after installation of nuclear power plants in our area as well as in the rest of the State. Medical journals are reporting high rates of cancer near nuclear plants.

Comment: 6-8-HH; Incidentally, baby teeth studies have revealed Strontium 90 radioactive particles which can affect the child's immune system for more illness.

Comment: 19-6-HH; but I hate to tell you I have so many friends and coworkers and people that are only 35, 40, 50 years old, cancer. And why? We have to stop and think. Go home, don't just always, you know, just go watch TV and get on your computer. Stop and think what we're doing to ourselves, our bodies, our children, our grandchildren.

This is again, this licensing renewal is coming down to human lives, the quality of our lives. Again, why all this cancer? Microwaves and electricity. So I won't go on and on, but I just think us as a group can't just all be just complaining about the power companies, we are the ones using the electricity. That's all I'm saying. Maybe we should cut back and we won't need power plants.

Comment: 21-2-HH; Some people don't understand about radiation and I read when the Japanese thing occurred and I heard on the news a radiologist talking about oh, the radiation is such a low amount. It really isn't the low amount of radiation exposure that we get incidentally in standing next to a nuclear power plant. It's three ten-thousandths of a gram of plutonium that is death for you if you breathe that dust particle. It's almost certain death. And the problem becomes you can't have -- and it's not going to be a nuclear bomb. It's going to catch on fire if the fuel pool girders were to fail and you'll have a cloud of a material that in and of itself you might not have radiation exposure to it but that particle when it deposits itself can be an issue much the same as fluoride is what causes thyroid cancer when it's a radioactive fluoride. That's why we're very careful in building a plant with no Teflon and no fluoride components

Comment: 36-1-HH; I am concerned about the effects of our surrounding air and water supply of my children and grandchildren, some of whom are already inflicted with cancer and other diseases.

Comment: 37-1-HH, 39-2-HH; Radiation into Air and Water From Routine and Accidental Emissions

Comment: 37-7-HH, 39-8-HH; Alarming cancer increases, especially in children, since Limerick started operating

Comment: 37-14-HH, 39-15-HH; Increased Costs to the Public—More cancers and other costly illnesses, more emergency room visits and hospitalization from massive increases in PM-10 and TDS, treatment of public drinking water, environmental clean-up

Comment: 25-2-HH; The scientific statistics citing dramatic increase in cancer rates, infant mortality, and Schuylkill River water pollution is disturbing.

Comment: 36-3-HH; I am more concerned about the effects of surrounding air and water supply and the future of my children and grandchildren, some of whom are already inflicted with cancer and other diseases.

Comment: 40-4-HH; it doesn't take an accident or disaster for Limerick to poison the region's residents with radiation. Radiation from Limerick's routine and accidental emissions alone for

the past 26 years is reason enough to deny Exelon's request. It's not credible for NRC to claim continuous radiation levels are safe for me and my family when there is no safe level of exposure according to the National Academy of Sciences and Physicians for Social Responsibility.

NRC never did any radiation monitoring or testing at Limerick. Evidence shows testing done by Exelon and DEP cannot be trusted. Exposure to radiation [is] known to cause cancer. It should be obvious to NRC that Limerick played a major role in our tragic, well documented cancer crisis after Limerick started operating in the mid 1980s to late 1990s. Four cancer studies based on PA Cancer Registry and CDC data showed skyrocketing rates for several cancers far higher than national and state averages, especially in children. Our children had the highest levels of Strontium-90 radiation in their baby teeth of any group near any nuclear plant studied. Limerick Nuclear Plant released SR-90 into our air and water that got into the milk, vegetation, and food since Limerick started operating.

Comment: 40-5-HH; Thyroid cancer increased by 128% from 1985 to 1997—was as side note, with no family history or other obvious risk factors in my life, I was recently treated for thyroid cancer. Since my diagnosis, I have learned of many other locals like me. It's scary to think the choice of where we lived could kill us.

Comment: 41-3-HH; Exposure to radiation is known to cause cancer. NRC has not done any radiation monitoring or testing at Limerick. Evidence shows testing done by Exelon and DEP cannot be trusted—it's ridiculous to think they could monitor themselves. It should be obvious to NRC that Limerick played a major role in our cancer crisis after Limerick started operating mid 1980s to 2000. Four cancer studies based on Pennsylvania Cancer Registry and the CDC showed skyrocketing rates for several cancers much higher than national and state averages, especially children—innocent children. Thyroid cancer increased 128% from 1985 to 1997. I have local friends and family with thyroid cancer and brain cancer—not one, but several. Sadly it is uncommon in other areas of the country. It used to be uncommon here too—prior to Limerick. Would you want to live here? Would you approve a license renewal so close to home? Your job is to safely review the facts.

Comment: 42-2-HH; The increased risk of cancer is well founded in the literature also.

Comment: 44-8-HH; The most alarming and compelling thing to me as a taxpayer, homeowner, and mother is the overwhelming and alarming cancer increases to the public after Limerick had started operating. The CDC website showed 92.5% higher than the national average for childhood cancer in six communities close to the Limerick Nuclear Plant which included, Pottstown, West Pottsgrove, Lower Pottsgrove, North Conventry, and Douglas Berks Township from cancers diagnosed from 1995-1999. The Pennsylvannia State Cancer Registry For Montgomery County from 1985-86 to 1996-97 also shows cancer rates skyrocketed in Montgomery County where the Limerick Nuclear Plant is located during the Mid 80's and 90's after they opened. Prostate Cancer increased 132%, Thyroid Cancer increased 128%, Kidney cancer increased 96%, Multiple Myeloma increased 91%, Hodgkin's Disease increase 67%, Non-Hogdin's Lymphoma increased 61%, Breast cancer increased 61%, Pancreas cancer increased 54%, and Leukemia increased 48%.

Radiation exposure can cause cancer and other serious disease and disability, at any level of exposure according the National Academy of Sciences and Physicians Responsibility. Permissible radiation levels does not mean that they are safe levels for everyone in the community. Most permissible levels based on the average healthy adult. They are not levels that were based or researched for fetuses, infants, toddlers, and children or pets. Fetuses, infants, children, pets, and the elderly and immuned compromised individuals are at most risk of health problems. There is a broad range of dangerous randionulcides routinely released into air

and water from the Limerick Nuclear Plant as well as any accidental releases. Permissible radiation levels does not mean that they are safe radiation levels, it only means that they are allowed.

Comment: 44-9-HH; I have children as well as other loved ones that have or have had allergies, asthma, learning disabilities, speech disabilities, behavioral disabilities, thyroid conditions, cancers, skin disorders and irritation, etc. I know neighbors and other community members that have suffered from the same and more.

Comment: 45-6-HH; But, it doesn't take an accident or disaster for Limerick to poison the region's residents with radiation. Radiation from Limerick routine and accidental emissions alone for the past 26 years is reason enough to deny Exelon's request. It's not credible for NRC to claim continuous radiation levels are safe for me and my family when there is no safe level of exposure according to the National Academy of Sciences and Physicians for Social Responsibility.

Comment: 45-7-HH; NRC is failing to acknowledge obvious health harms from Limerick's continuous additive, cumulative, and synergistic radiation releases which get into water, food, soil, vegetation, milk, and our bodies. NRC has no idea what health harms some of the region's residents experienced from Limerick Nuclear Plant. NRC never did any radiation monitoring or testing at Limerick. Evidence shows testing done by Exelon and DEP cannot by trusted.

Comment: 45-8-HH; Exposure to radiation is known to cause cancer. It should be obvious to the NRC that Limerick played a major role in our tragic, well documented cancer crisis after Limerick started operating in the mid 1980s to the late 1990s. Four cancer studies based on PA Cancer Registry and CDC data showed skyrocketing rate for several cancers for higher than the national and state averages, especially children. Our children had the highest levels of Strontium-90 radiation in their baby teeth of any group near any nuclear plant studied. Limerick Nuclear Plant release SR-90 into our air and water that got into the milk, vegetation, and food since Limerick started operating. Thyroid cancer increased by 128% from 1985 to 1997. Other cancers rose dramatically as well.

Comment: 46-6-HH; Finally, my concerns regarding the impact of this nuclear power plant on my community are not limited to catastrophic scenarios that might potentially occur. There have been studies published in health journals that show a higher incidence of certain illness—particular among children—in communities surrounding nuclear plants. While these studies were conducted in a variety of locations, they seem to be consistent with some of the data that Pottstown's local Alliance for a Clean Environment presents on its website regarding increased cancer and leukemia rates–also especially among children–in the greater Pottstown area.

Comment: 47-2-HH; I am fully aware of the amount of cancer that is prevalent in this area.

Comment: 48-2-HH; I moved to Pottstown, Pa., some time ago in perfect health. In 2006, I was diagnosed with prostate cancer. Although, I cannot prove it was a direct cause of the nuclear power plant, I feel that much further, unbiased studies and tests need to be done prior to the relicensing of the Limerick plant by reputable sources not by corporate interests groups that can manipulate the statistics in Exelon's favor.

Wouldn't it be in the best interest of our community and surrounding communities if the higher cancer rate was due the Limerick power plant? This question is a "no brainer." There is plenty of time for testing to be done prior to relicensing.

Comment: 51-3-HH; Cancer rates are higher than the national average and NRC is going with the status quo.

Comment: 52-6-HH; The surrounding area has abnormally high cancer rates among adults and children.

Comment: 57-3-HH; I also feel its presence has led to [an] increase of cancer in our area.

Comment: 58-1-HH; I feel that there is a lot of people that had not known to report anything because of not knowing who to go to. I don't understand why the hospitals don't give statistical information based on areas?

Anyway my daughter Tracey had Leukemia at the age of 2 1/2. Was a patient at Children's Hospital until she was 5. With several years of chemotherapy she is now 18 and in remission. We had lived on Limerick Center Road for most of our young lives and now with our kids. I don't know what other information you would need but I would be happy to get you whatever you might need.

Comment: 60-10-HH; High infant mortality rates and neo natal, cancer increase, thyroid cancer rates 70% higher

Comment: 60-14-HH; cancer increases, especially children

Response: *The NRC's mission is to protect the public health and safety and the environment from the effects of radiation from nuclear reactors, materials, and waste facilities. The NRC's regulatory limits for radiological protection are set to protect workers and the public from the harmful health effects (i.e., cancer and other biological impacts) of radiation on humans. Radiation standards reflect extensive scientific study by national and international organizations. The NRC actively participates and monitors the work of these organizations to keep current on the latest trends in radiation protection.*

Recently, the NRC asked the National Academy of Sciences (NAS) to perform a state-of-the-art study on cancer risk for populations surrounding nuclear power facilities. The NAS study will update the 1990 U.S. National Institutes of Health—NCI report, "Cancer in Populations Living near Nuclear Facilities."

The study will be carried out in two consecutive phases. A Phase 1 scoping study will identify scientifically sound approaches for carrying out an epidemiological study of cancer risks. This scoping study began on September 1, 2010, and will last for 15 months. The result of this Phase 1 study will be used to inform the design of the cancer risk assessment, which will be carried out in a future Phase 2 study.

Although radiation can cause cancers at high doses, currently there are no data to unequivocally establish the occurrence of cancer following exposures to low doses, below about 10 rem (0.1 Sv). Radiation protection experts conservatively assume that any amount of radiation may pose some risk of causing cancer or a severe hereditary effect and that the risk is higher for larger radiation exposures. Therefore, a linear, no-threshold dose response relationship is used to describe the relationship between radiation dose and detriments such as cancer induction. Simply stated, any increase in dose, no matter how small, is assumed to result in an incremental increase in health risk. This theory is accepted by the NRC as a conservative model for estimating health risks from radiation exposure, recognizing that the model probably over-estimates those risks. Based on this theory, the NRC conservatively establishes limits for radioactive effluents and radiation exposures for workers and members of the public. While the public dose limit is 100 mrem (1 mSv) for all facilities licensed by the NRC (10 CFR Part 20, "Standards for Protection Against Radiation"), the NRC has imposed additional constraints on nuclear power reactors. Each nuclear power reactor, including LGS, has license conditions that limit the total annual whole body dose to a member of the public outside the facility to 25 mrem (0.25 mSv). In addition, there are license conditions to limit the

dose to a member of the public from radioactive material in gaseous effluents to an annual dose of 15 mrem (0.15 mSv) to any organ; for radioactive liquid effluents, a dose limit of 3 mrem (0.03 mSv) to the whole body, and 10 mrem (0.1 mSv) to any organ.

Chapter 4 of this SEIS discusses the radiological environmental monitoring program (REMP) that LGS uses for environmental monitoring. The purpose of the LGS Radiological REMP is to evaluate the radiological impact that operation may have on the environment. The program is designed to highlight and look at specific consumption pathways for local inhabitants and special interest groups. The LGS REMP is made up of three categories based on the exposure pathways to the public. They are as follows: atmospheric, aquatic, and ambient gamma radiation. The atmospheric samples taken around LGS are airborne particulate, airborne iodine, milk, and broad leaf vegetation. Sampling for the LGS REMP program is performed as specified in Appendix I to 10 CFR Part 50, "Domestic licensing of production and utilization facilities," as well as agreements made with the State of Pennsylvania Department of Environmental Protection (PDEP), Bureau of Radiation Protection.

The amount of radioactive material released from nuclear power facilities is well measured, well monitored, and known to be very small. The doses of radiation that are received by members of the public as a result of exposure to nuclear power facilities are so low (i.e., less than a few millirem) that resulting cancers attributed to the radiation have not been observed and would not be expected. To put this in perspective, each person in this country receives a total annual dose of about 300 mrems (3 mSv) from natural sources of radiation (i.e., radon, 200 mrem; cosmic rays, 2 mrem; terrestrial (soil and rocks), 28 mrem; and radiation within our body, 39 mrem) and about 63 mrem (0.63 mSv) from man-made sources (i.e., medical x-rays, 39 mrem; nuclear medicine, 14 mrem; consumer products, 10 mrem; occupational, 0.9 mrem; nuclear fuel cycle, <1 mrem; and fallout, <1 mrem).

A number of studies have been performed to examine the health effects around nuclear power facilities. The following is a list of some of the studies that have been conducted:

- *In 1990, at the request of Congress, the National Cancer Institute (NCI) conducted a study of cancer mortality rates around 52 nuclear power plants and 10 other nuclear facilities. The study covered the period from 1950 to 1984 and evaluated the change in mortality rates before and during facility operations. The study concluded there was no evidence that nuclear facilities may be causally linked to excess deaths from leukemia or from other cancers in populations living nearby.*
- *Investigators from the University of Pittsburgh found no link between radiation released during the 1979 accident at the Three Mile Island Nuclear Station and cancer deaths among nearby residents. This study followed more than 32,000 people who lived within 5 mi (8 km) of the facility at the time of the accident.*
- *In January 2001, the Connecticut Academy of Sciences and Engineering issued a report on a study around the Haddam Neck Nuclear Power Plant, in Connecticut, and concluded that exposures to radionuclides were so low as to be negligible and found no meaningful associations to the cancers studied.*
- *In 2001, the American Cancer Society concluded that, although reports about cancer clusters in some communities have raised public concern, studies show that clusters do not occur more often near nuclear plants than they do by chance elsewhere in the population. Likewise, there is no evidence linking*

the isotope strontium-90 with increases in breast cancer, prostate cancer, or childhood cancer rates.

- *In 2001, the Florida Bureau of Environmental Epidemiology reviewed claims that there are striking increases in cancer rates in southeastern Florida counties caused by increased radiation exposures from nuclear power plants. However, using the same data to reconstruct the calculations on which the claims were based, Florida officials did not identify unusually high rates of cancers in these counties compared with the rest of the state of Florida and the nation.*
- *In 2000, the Illinois Public Health Department compared childhood cancer statistics for counties with nuclear power plants to similar counties without nuclear plants and found no statistically significant difference.*

In summary, there are no studies to date that are accepted by the nation's leading scientific authorities that indicate a causative relationship between radiation dose from nuclear power facilities and cancer in the general public. The amount of radioactive material released from nuclear power facilities is well measured, well monitored, and known to be very small.

The staff addresses human health impacts of renewing the LGS operating licenses in Chapters 2 and 4 of the draft SEIS.

A.1.8 Land Use (LU)

Comment: 54-5-LU; The county has been working hard to develop an interconnected system of open space and trails along the Schuylkill River and within other natural resource areas of the county. In doing this, the county has provided funding to local municipalities and nonprofit conservation organizations to purchase open space and park land; acquired county land and agriculture easements; and developed trails. The Limerick Generating Station site contains significant land along the Schuylkill River that has been identified as part of the Schuylkill River Greenway in the county plan. The use and management of these lands relative to the county open space and natural areas inventory plans should be evaluated in the relicensing process.

Response: *Current onsite and offsite land use conditions in the vicinity of LGS are described in Sections 2.2.1 and 2.2.9.3 of this SEIS. The NRC's evaluation of LGS's impacts on onsite and offsite land use during the license renewal term is presented Section 4.1 of this SEIS. While license renewal is not expected to affect the use and management of LGS lands identified as part of the Schuylkill River Greenway, this information will be evaluated with other potential cumulative effects in Section 4.12.6.*

A.1.9 License Renewal and its Process (LR)

Comment: 1-4-LR; Current 40-year operating licenses expire in 2024 and 2029. Why the rush to renew these licenses now?

Comment: 1-19-LR; While NRC is required to prepare a supplement to the Limerick Environmental Impact Statement for license renewal, we have little confidence in the process based on NRC's regulatory history. It would be difficult to enumerate a short list, so I'm going to rely on written documents.

Comment: 4-9-LR; But my big question of the day is why is Exelon applying for an extension 18 years ahead of time?

Comment: 4-13-LR; Exelon is rushing the timeline to reissue a license (18 years ahead of time) to run Limerick Nuclear Plant into the unknown, yet it took more than 5 months for the NRC to get back me concerning an already known survey of fault lines.

Comment: 8-1-LR; I'm a retired Lutheran pastor and my concern today is with the speed at which this application process is going. I mean it seems to me that to predict what environmental factors will be in place 13 years hence and 18 years hence, posits a kind of omniscience and prescience that we should attribute to Almighty God, but certainly not to any of us human beings. I would favor a slower process.

Comment: 8-5-LR; As I stated then, I continue to be concerned and puzzled about the very early and pre-mature application of Exelon to extend the licenses of the towers. One [of] those does not come up for renewal until 2024 and the other 2029. I ask the NRC not work on the relicensing for this facility for at least ten years. The wait could only ensure better information. The public can not possibly benefit from a decision to renew the licenses at this time. The best decision will be made based on the best possible information. The NRC does not have the best information this early. Much will happen in the next ten years. I urge NRC to wait and see how any of it affects the prospect of continuing these plants at that later date.

What can happen in the next ten years that we can all learn from the relevantly could be anything. It may be better information about how natural disasters are affecting nuclear facilities; we may know more about weather patterns that could cause damage. We will certainly know more about the world situation in terms of advances in terrorist technological capabilities and goals. We will know more about how well nuclear plants in general and the Limerick facility are faring as they continue age. If someone steps forward to fund studies, we will know yet more about cancer rates in the nuclear zones

Comment: 16-4-LR; This particular nuclear plant, these plants, you know, their license is already good till 2024. Why are we here now 12 years ahead of time trying to extend this license? And the only reason is because it's a foot race the NRC's in with Congress and nothing more. This has nothing to do with protecting public health and safety, it's the NRC's zeal to continue to rubber-stamp these license extensions without allowing citizens due process like I already talked about and without doing a cost intense and thorough review.

Comment: 19-4-LR; He was stating the fact why are we re-licensing them, what, 12 years ahead of time. To me that is absurd. Like maybe a year before or they have to do some studies, two years before. Why do they want us, and I love Thomas's words, rubber-stamp something? Twelve years beforehand to go into what, 2024 for Unit 1 was it and 2029 for Unit 2? Why do they need to push this licensing renewal? You've got to stop and think.

Comment: 25-1-LR; First of all, considering the impact of the outcome to many area residents, this forum was not widely publicized for local citizens to be aware of this important matter and offer feedback. Secondly, it does not make sense that Exelon is pursuing renewal for a license that does not expire until 2024.

Comment: 30-1-LR; It is NOT due to expire until 2024—thus, Exelon has nothing to [lose] but getting an extension sooner than later so they can sit back and relax operating for the next 20+ years.

Comment: 30-13-LR; Since the reactor has until 2024—why the rush, and only one public meeting. I if you have not heard it, you will. There is a major public outrage over this one meeting and not know about it until too late. People want public meetings so that people hear that many are against this plant rather than just submitting comments to the NRC which appears to be rubber stamping license requests—which is not comforting to me and many.

Comment: 3-1-LR; Why is the request so early—The NRC should get a request closer to [the] expiration date. Also, the inspection should [be] done closer to the expiration date. In 2023, not 2013.

Comment: 34-1-LR; Why is there rush to renew the license? It is not due until 2024, approval at the earliest should be 2019. This would allow 5 years for the business plan of PECO to either continue or close the plant and make arrangements for additional power to replace the closed plant.

Comment: 41-1-LR; The possible renewal of Limerick Nuclear Plant's license for 20 years past its current 2024 and 2029 expiration dates more than 12 years ahead of time, worries me a great deal. It's hard to understand why something this major would be done so far in advance. It's IMPOSSIBLE to know the condition of Limerick 12-19 years ahead of time. Why on earth would this be renewed early? It's lengthy process that could begin earlier, but in no way should something this important be rushed through now. Why not wait until closer to the expiration dates, and then seek approval? I understand this how the original guidelines were set up—but those are long outdated. Approving Limerick Nuclear Plant to be relicensed until 2049 would be jeopardizing the health of millions. Renewing this license could be catastrophic to millions.

Comment: 48-3-LR; Also, why the hurry? Common sense would indicate that Exelon knows something which we are not aware. Why must the license be renewed at this time when they are licensed through 2024 and 2029?

Again, Why The Hurry? To relicense now is not the best interest of everyone in our area.

Comment: 56-2-LR; Finally, we have grave misgivings regarding the future time-dependence, accuracy, and relevance of the licensee's current ER, as presumptively incorporated in the NRC's planned SEIS for LGS license extension, given that such license extension will not become effective until the current unit operating licenses expire in 2024 (for Unit 1) and 2029 for Unit 2. We submit that any decision to relicense these units must be supported by the most timely NEPA and SAMA analysis obtainable within a reasonable interval (e.g.[,] five years) prior to actual expiration of the existing licenses.

Intervals of 12 and 17 years are not required for corporate planning purposes and are far too long to credibly sustain the accuracy and relevance of NEPA analyses, or for the NRC to accurately project both the future condition of the plant, the future state of nuclear safety knowledge, trends in local resource use, population, and the affected environment, and the future range of reasonable electricity supply alternatives to LGS license extension. By comparison, major government owned nuclear installations, such as nuclear laboratories and weapon production sites, are required to conduct site-wide NEPA reviews of their operations and facility plans every\five years. Using this federal standard for timeliness, the NRC's NEPA analysis for LGS relicensing should not commence before 2019, for Unit 1, and before 2024 for Unit 2, or should be subjected to mandatory reassessment and supplementation after those dates.

Comment: 60-5-LR; 12 years ahead of time—no way to guarantee safety

Comment: 60-13-LR; NRC should not be considering this so far in advance—no way to assure safety—shut it down

Response: *According to NRC regulations, 10 CFR Part 54, "Requirements for renewal of operating licenses for nuclear power plants," a nuclear power plant licensee may apply to the NRC to renew a license as early as 20 years before expiration of the current license. The NRC determined that 20 years of operating experience is sufficient to assess aging and environmental issues at the site. Additionally, 20 years is a reasonable lead period because if*

the NRC denies the license renewal application, it takes about 10 years to design and construct major new generating facilities, and long lead time times are required by energy-planning decisionmakers.

Comment: 54-7-LR; As part of the environmental assessment process and the evaluation of the plant safety and long term operational capacity, we think that it is important for the NRC to maintain close communication with the community surrounding the plant. Overall education about the plant and the associated risks presented by its operation should be provided in a variety of ways so that the public is better informed about the plant and the overall evaluation taking place as part of the relicensing.

Response: *The NRC's Office of Public Affairs (OPA) is available to address the public's concerns and questions regarding nuclear safety and information regarding about LGS. The office follows news coverage of the agency and responds to media and public inquiries. If members of the public have questions or comments about the NRC, nuclear safety, or related topics, they can contact OPA at OPA.Resource@nrc.gov. For specific questions and concerns regarding Limerick, the public can contact the Region I OPA at OPA1.Resource.@nrc.gov. Additional contact information for OPA can be accessed at* http://www.nrc.gov/about-nrc/organization/opafuncdesc.html

Comment: 1-6-LR; The public was led to believe that Limerick's generators, fuel pools, and miles of underground pipes and cables could operate safely for 40 years and then the facility would close. Is Exelon fearful that the longer they wait the more serious problems may arise?

Response: *The original licenses for commercial nuclear power plants were granted for 40 year period, which was set by the Atomic Energy Act 1954 and the NRC's regulations. It was imposed for economic and antitrust reasons rather than technical limitations of the plant. According NRC regulations, 10 CFR Part 54, a nuclear power plant licensee may apply to the NRC to renew a license as early as 20 years before expiration of the current license. Part 54 requires the applicant to demonstrate that it can successfully manage aging at the facility during the period of extended operation.*

Comment: 22-1-LR; I'm a resident of Phoenixville. I found out about this meeting because I scan a lot of newspaper websites. I found the notice of the meeting on the West Chester Daily Local website. Didn't find it in the Phoenixville paper, didn't see it in the Philadelphia newspaper, didn't hear about it on any of the local radio stations, didn't hear about it on cable, didn't hear about it on any of the television.

Comment: 60-20-LR; Should have been more public notice for hearing—Mail notices so people have an opportunity to attend.

Response: *The NRC provides notice of the environmental public meetings through the Federal Register, press releases, and local advertisements. The public also can get information about all NRC public meetings at the NRC public Web site,* http://www.nrc.gov/public-involve/public-meetings/index.cfm. *The public also can receive public meeting notices and press releases by subscribing to e-mail notices for reactor correspondence for Limerick at* http://www.nrc.gov/public-involve/listserver/plants-by-region.html.

Comment: 22-3-LR: The slide behind me documents exactly two libraries that the documents are going to go in. Why not in my library in Phoenixville? Why not in Montgomery County and Norristown and all of the other public libraries that are in areas that can be affected by the plume should something happen here? Why are the documents in such a restricted area?

Response: *The NRC contacts the local libraries in the communities surrounding the plant to ask if the agency could send them copies of license renewal applications and other documents*

related to the license renewal review so that they could be accessed by members of the public. However, some libraries have limited shelf space and may not be able to accommodate the NRC. Members of the public also can access the license renewal application and SEIS on the Limerick license renewal Web page on the NRC public Web site. The public can access the site at http://www.nrc.gov/reactors/operating/licensing/renewal/applications/limerick.html.

Additionally, the NRC will have hard copies and CDs of the draft SEIS available for the public during the public meeting on the draft SEIS. Members of the public also can contact the NRC to request a hard copy or CD of the SEIS.

Comment: 16-2-LR; And I'd like to correct that statement. He stated that the NRC is extending the original operating license which was granted by the NRC for a 40-year period of time that that initial 40- year license was not based on safety considerations or technical considerations. But that's absolutely not true and there was recently a year-long investigative report done by the Associated Press who interviewed expert nuclear personnel, engineers, safety engineers in the nuclear industry who told them that the 40-year licenses issued by the NRC for 104 nuclear plants in the United States was based on safety and technical—safety technical analysis. So these proceedings, these license extension proceedings like the one we're currently at are a rubber-stamping of these 20-year license extensions.

Comment: 16-3-LR; This is in fact a foot race between the Nuclear Regulatory Commission and the United States Congress where Congress wants to stop this process, put a moratorium on the re-licensing until the Fukushima disasters can be fully understood and the enhancement enacted in August for our power plants here.

Response: *As a result of Fukushima, the NRC issued three orders requiring safety enhancements of operating reactors, construction permit holders, and combined license holders. These orders require nuclear power plants to implement safety enhancements related to (1) mitigation strategies to respond to extreme natural events resulting in the loss of power at plants, (2) ways to ensure reliable hardened containment vents, and (3) ways to enhance spent fuel pool instrumentation. The plants are required to promptly begin implementation of the safety enhancements and complete implementation within two refueling outages or by December 31, 2016, whichever comes first. In addition, the NRC issued a request for information asking each licensee to reevaluate the seismic and flooding hazards at the site using present-day methods and information, conduct walkdowns of its facilities to ensure protection against the hazards in its current design basis, and reevaluate emergency communications systems and staffing levels. LGS is required to comply with the NRC orders or revised regulations whether or not the operating licenses are renewed.*

A.1.10 Opposition to License Renewal (OR)

Comment: 1-5-OR; We urge the NRC to say no to Exelon's requested license renewals.

Comment: 1-20-LR; It’s long past time for the NRC to summon the courage to do the right thing in our judgment and actually protect the environment and the public, rather than the industry.

Comment: 1-21-OR; Based on the compelling body of evidence of environmental harms to date and the enormous increased population in proximity to this facility, Limerick Nuclear Plant must be closed by 2029. There is no amount of energy production that is worth risking the lives of so many people.

Comment: 1-29-OR; Nuclear Regulatory Commission today and that is very simply that Limerick nuclear power plant must be closed by the NRC, not re-licensed until 2049.

Comment: 6-5-OR; So please, ask your politicians, reliable politicians to close the Limerick power plant. Let's save America for our kids and descendants

Comment: 6-9-OR; We can't control the use of nuclear in the rest of the world, but we can keep the U.S. safer by eliminating nuclear energies. Fortunately, many European allies including Australia have decided to phase out reactors. We should join them [to] reduce human suffering. Also this can reduce our increasing costs of health care.

Comment: 6-11-OR; Limerick Power Plant is ranked in the top 3 riskiest nuclear power plants in the U.S.A. Limerick Power Plant must be closed not relicensed.

Comment: 10-1-OR; If Limerick Unit 1 or 2 fails, all hell breaks loose, no disrespect. That's what a nuclear failure is, hell. It affects everybody in this room, everybody in the community, everybody in the tri-state area, not for a week, but for decades. It's very, very last thing we want to happen.

And I think we're putting ourselves in harm's way by taking something that had a lifespan of 40 years and adding another 20 to it. It doesn't make sense. The only way to rationalize it is through our personal fear of being inconvenienced because we lose a very, very good source of power. It's done a great job for us. But like me, you get to a point where your ability to provide a great job is at an end and things start deteriorating. Let's not put ourselves in that position. Let's make an intelligent decision now and allow these two units to expire at their nameplate time.

Comment: 19-3-OR; So from day one I think power plants never should have been built but now that they are here why would we ever want to re-license.

Comment: 25-4-OR; I attend to agree with the fourteen reasons provided by the Alliance For A Clean Environment why Exelon should be denied the renewal license. In my opinion, the long-term negative consequences caused by the Limerick Generating Station far outweigh any possible benefits it may contribute.

Comment: 26-1-OR; Please do NOT extend the Limerick licenses!

Comment: 27-2-OR; Renewing Limerick's license just as controversies are arising with pushes to move from dependence on Nuclear energy is a bold business strategy by them. I don't think this the right move to make. A long term contract will limit any sort of wiggle room to address future issues that may arise.

I ask that you please consider the future of our great state. I don't think oil or nuclear energy is the way. I truly believe in heart, that in order to protect the health of our population for the future, we must change our ways today.

Comment: 28-1-OR; I object being continuously poisoned by the Limerick Nuclear Plant's radiation and other dangerous toxins. Please do not allow for an extension of the Limerick Nuclear Power Plant's operation license.

Comment: 29-2-OR; The Reactor time has served its years and should not be renewed.

Comment: 30-10-OR; I feel firmly and many in the community feel the exact same way, that there is no reason to approve NOW (especially so far in advance, with no answer on usage on rods nor what needs to be done to prevent a meltdown due to an earthquake, etc.) or Ever since the population will only increase and the facility age further. It is the wrong timing, wrong plant, wrong place, etc. for Limerick. Maybe Exelon can put in as much effort and "energy" to develop solar fields, etc… They would rather beat the hell out of a high efficiency plan at any and all cost to the environment and community. This where the NRC does the right thing and says NO until a year before it expires.

Comment: 35-1-OR; Limerick Nuclear's influence is vast and horrific. This industry is a behemoth that has not been honest with the public about its true impact, forming its own "environmental" partnerships that are pure pronuclear propaganda tools. It's economic contributions are miniscule when compared to its enormous profits, while destroying our quality of life. The nuclear process's devastating environmental effect on our community cannot be understated.

Comment: 35-7-OR; Ordinary daily nuclear generation has had devastating community-wide consequences that need to be addressed. Re-licensing should not even be a consideration! The NRC must fully investigate the environmental concerns presented Dr. Lewis and Donna Cuthbert (ACE), Dr. Winter, and each resident who so civilly represented this community's concerns at the September 22, 2011 hearings. The Limerick Nuclear Power Plant should NOT be re-licensed and should, instead, begin to address the pollution issues it has already created as it seriously and carefully shuts down its reactors.

Comment: 38-1-OR; I'm writing to you to state my opposition to the relicensing of Limerick Generating Station in Limerick Township, Pennsylvania.

Comment: 40-1-OR; I attended the recent meeting on the possible renewal of Limerick Nuclear Plant's license for 20 years past its current 2024 and 2029 expiration dates. I strongly believe, as do many of my local friends and family that the Limerick Nuclear Plant must be closed, not relicensed. Approving Limerick Nuclear Plant to be relicensed until 2049 would be jeopardizing the health of thousands and thousands of people in neighboring communities. There is substantial evidence readily available which justifies closing Limerick. Renewing this license could lead to a catastrophic meltdown.

Comment: 40-6-OR; It would be careless, unethical and immoral for NRC to approve Exelon's requested license extensions Limerick Nuclear Power Plant. Limerick Nuclear Power Plant must be closed by 2029.

Comment: 41-4-OR; Just remember, it would be careless, unethical and immoral for NRC to approve Exelon's requested license extensions for Limerick Nuclear Power Plant. Limerick Nuclear Plant must be closed by 2029.

Comment: 42-3-OR; Why does the NRC think they can play God with people lives? It is no longer debatable, shut it down before our very lives are jeopardized.

So-called quality life issues addressed as part of public debate, e.g.[,] "the power is always on" seems irrelevant to us when our families are required to evacuate during disaster. Limerick must be closed and NOT relicensed at any cost, specifically the cost of life itself!

Comment: 43-1-OR; Do NOT renew Limerick licenses. It's too dangerous and too old. Please listen to their neighbors like us.

Comment: 44-1-OR; There are so many reasons why you as a group should already know that it would be in the best interest of the men, women, children, babies, fetuses, animals, fish, wildlife in general and the environment for you to refuse/oppose Limerick Power Plant from re-licensing. The problem that always seems to come up at some of the public hearings and sessions where businesses/corporations want to expand and become bigger and run their businesses long past the time that they should truly be allowed in order keep safe, always comes back to the issue of money, offerings, bribes, donations, etc. in the end. When these things occur, people and businesses turn a "blind eye" so to speak to the dangers of allowing a business like the Limerick Power Plant to renew its license again. That is unacceptable. I expect and demand better service from you to help protect myself and my family from harm!

Comment: 44-4-OR; It is disgusting and heart wrenching to know that officials and organizations are not paying attention to what can happen to the public if Limerick Power Plant continues to operate longer than expected. Ignoring the obvious problems our community is facing and hoping that after they serve their term, it will be someone else problem to deal with is unacceptable. Now is the time. Step up and [do] what is morally right for humanity

Comment: 44-11-OR; I expect you to what is morally right now for me, my family, my neighbors, my community, and the pets, wildlife, air, water, and environmental in whole by rejecting, refusing, and opposing Limerick Power Plant from relicensing to run their business longer than originally planned for 2029.

Comment: 45-1-OR; I urge NRC to deny Exelon's request to renew Limerick Nuclear Plant's license for 20 years past its current 2024 and 2029 expiration dates. Limerick Nuclear Plant must be closed, not relicensed, for many valid reasons. Approval of Limerick Nuclear Plant to be relicensed until 2049 would be reckless and would show blatant disregard for the health and safety of the public. There is more than sufficient evidence of harms and threats to justify closing Limerick. There are too many things beyond NRC's control that could lead to a catastrophic meltdown.

Comment: 45-11-OR; It would be both unethical and immoral for NRC to approve Exelon's requested license extensions for Limerick Nuclear Power Plant. All of the unprecedented harms, threats, risks from Limerick Nuclear Plant will increase if NRC approves and additional 20 year Limerick license extension, until 2049. Limerick Nuclear Plant must be closed by 2029.

Comment: 46-1-OR; I am writing to express my opposition to the re-licensing of Limerick nuclear power generating station, which is located about 20 miles from my home. There are several reasons why this relicensing in not in the best interests of people living in the surrounding community

Comment: 48-1-OR; Just a quick note requesting the NRC to NOT allow the relicensing of the Limerick, PA, nuclear plant at this time.

Comment: 51-1-OR; Please protect our citizens from possible disaster and do not relicense Limerick

Comment: 52-1-OR; As a resident of New Hanover Twp., Montgomery County, PA (less than 5 miles from Exelon's Limerick Nuclear Power Plant), I urge you to vote AGAINST the premature relicensing of that facility.

Comment: 53-1-OR; I implore you to not relicense the Nuclear Power Plant of Limerick when its licenses expires in 2029. If I had my wish, the power plant would be closed years before 2029.

Comment: 57-1-OR; Just wanted to voice my opinion for a no vote to renew the license for the Limerick power plant.

Response: *These comments are general in nature and express opposition to Exelon, nuclear power, and license renewal of LGS. The* portions of these comments that express general opposition to renewing the licenses for LGS provide no new and significant information and have not resulted in any changes to this SEIS. tThe technical aspects of these comments are addressed in the respective technical sections of this appendix.

A.1.11 Postulated Accidents & SAMA (PA)

Comment: 1-1-PA; Whether a natural disaster or terrorist attack occurs, by relicensing Limerick, NRC would in effect be playing Russian roulette with the lives of more than eight million people. NRC must close Limerick Nuclear Plant by 2029.

Comment: 1-13-PA; With loss of cooling water, Limerick's fuel rods could heat up, self ignite, and burn in an unstoppable fire with catastrophic results. Exelon has not been required to spend the money to guard limerick against terrorists, missiles, or air strike despite repeated requests to do so.

Comment: 1-24-PA; It's not safe, it's a ticking time bomb. And nuclear power, they say it's always on. That's not true either as evidence by shutdowns, some for long periods caused by earthquakes, tornadoes, hurricanes, fires, heat, and drought and more.

Comment: 4-1-PA; Increasing floods, droughts, earthquakes, tornados have made us all feel insecure, making nuclear power increasingly risky, especially with the Limerick plant basically in our backyards. Any earthquake that comes through this area could be a possible Fukushima, Chernobyl or Three Mile Island…

Comment: 4-15-PA; The 9-21-11 Mercury article said "whether or not earthquake risk is a factor in the current relicensing request for Limerick remains to be seen". It would be grossly unacceptable for the NRC to ignore Limerick's extreme vulnerability to earthquake damage.

Earthquake risk should be on the top of NRC's relicensing concerns for Limerick. Earthquake risks are far greater for Limerick than previously realized—increased by 141%. We now know Limerick is 3rd on nation's earthquake risk list Plus evidence shows earthquakes in the East can be far stronger than Limerick's "design basis" can withstand.

There's a good chance that an earthquake can exceed Limerick's design basis, causing a severe nuclear accident, jeopardizing the health, safety and financial well being of our entire region.

The Virginia 8-24-11 earthquake caused shaking in PA at Limerick Nuclear Plant. Since January there have been 2 small earthquakes in Philadelphia, only 21 miles from Limerick.

Shaking and breaking in miles of Limerick's buried underground pipes and cables can lead to nuclear disaster. It's disquieting that NRC uses a "visual inspection" to determine damage on buried pipes. Problems may not be identified until it's too late.

For years the NRC allowed Exelon to do its own studies, to stall and avoid responsible action on fires and earthquakes. To save money, Exelon typically concludes Limerick is "safe enough". This is unacceptable!

10-5-11, the Mercury reported a flaw was found in the mechanism to shut down the nuclear plant. The warning was tied to renewed focus on earthquake risk. It's difficult to see how Limerick's design flaws can be fixed, even if Exelon WOULD spend the money.

There is no proof whatsoever Limerick's design can withstand other threats ranging from hurricanes, tornadoes, floods, or terrorist attacks to an impact from a jet airliner.

We need precaution before there is a catastrophe. NRC should close Limerick as soon as possible.

Comment: 6-3-PA; Of course, what is happening here will be taking much longer, but it is sure not good news. Besides harmful power plant exposures, we have environmental disasters and a concern about our nearby earthquake fault and others in the eastern U.S., especially one near

New York City. And then there are the radioactive spent fuel deadly waste material sitting around, supposedly protected.

Comment: 6-7-A; An earthquake in our area is not too far fetched. And of course, threat of terrorism with vulnerable spent fuel are always a concern.

Comment: 8-6-PA; One big concern—because of Japan's recent experience and the fact that we had an earthquake in the Limerick plant's territory—is refurbishing the plants so they can withstand earthquakes. It has been widely reported by MSNBC and the AP, using NRC data—that the Limerick plant has the nation's third highest risk of being damage by an earthquake. When the plant was built, no one thought this area would get earthquakes. Now we do. I understand Congress is now or soon will be considering increasing earthquake preparedness capabilities at the plants. I fear that if you grant Exelon carte blanche now, the NRC would encourage them to do less than they should to make the plant safer.

Comment: 19-1-A; Now lately with the -- unfortunately it's a reality now that we have hurricanes, more tornadoes, tsunamis throughout the world. And I hate to say it but it is a reality now that we have terrorist attacks and Limerick is definitely one. I don't want to be blowing this out of proportion but it's just something that I know that we've all been concerned about, not wanting to say yes, Limerick, and all the people that built the power plant and the company say oh, there's no impact to the air and the water pollution and so forth. So we've kind of just blinded our, you know, selves to that and let's believe then, okay, let's take a minute. Let's really believe that there is no impact in our clean air, clean water and those type of things and cancer, et cetera. Let's just go into the new reality which is terrorist attacks which would happen. Let's just say for example there was human error there with the spent fuel rods and something happened, or a radiation leak.

Comment: 30-10-PA; Let's also mention a fact that Category I Hurricane Irene, which could have been Category 3, just zipped less than 100 miles away from the site a few weeks ago and then Hurricane Lee which decided to travel further east case close to also causing chaos. Limerick is still TOO close to the disaster of Hurricanes as well.

Comment: 37-11-PA, 39-12-PA; Increased Risked of Meltdown From More Frequent and Stronger Earthquakes and Other Natural Disasters

Comment: 45-2-PA; Limerick is 3rd on the earthquake risk list. It is too dangerous to keep Limerick operating. Earthquakes and other natural disasters are more frequent and stronger. Underground pipes and cables can shake and break, then lead to loss of power, loss of cooling water, and meltdown. Limerick's substandard containment flaw means more radiation would be released.

Comment: 47-1-PA; Limerick Generating Station is old and I don't think it is strong enough to with stand plane impacts, earthquakes, or tornadoes that occur here.

Response: *The comments express concern for the potential adverse environmental impacts associated with postulated accidents. The impacts of design basis accidents were evaluated in the GEIS and determined to be small for all plants; therefore, it is a Category 1 issue. The GEIS evaluated severe accidents for all plants including LGS, and it concluded that the impact was small under Part 51, "Environmental protection regulations for domestic licensing and related regulatory functions." In accordance with 10 CFR 51.53(c)(3)(ii)(L), the license renewal Environmental Reports must provide consideration of alternatives to mitigate severe accidents if the staff has not previous evaluated SAMAs for the applicant's plants in an environmental impact statement or related supplement or in an environmental assessment. The staff has previously performed a site-specific analysis of severe accidents mitigation in the NEPA*

document for LGS. For the license renewal review, the staff must consider whether new and significant information affects the environmental determination in the NRC regulations.

A detailed discussion of postulated accidents, and the staff's considerations of new and significant information related to SAMA, including seismic risk, can be found in Chapter 5 of this SEIS.

Comment: 56-1-PA; The original SAMA analysis for the Limerick Generating Station (LGS) is a 1989 report that was issued as the result of a ruling by the U.S. Court of Appeals for the Third Circuit, which concluded that the NRC had failed to consider a "reasonable set" of Severe Accident Mitigation Design Alternatives ("SAMDAs"). In 1989, the NRC subsequently adopted this SAMDA analysis and agency staff concluded they had "discovered no substantial changes in the proposed action as previously evaluated in the FES [Final Environmental Statement] that are relevant to environmental concerns nor significant new circumstances or information relevant to environmental concerns and bearing on the licensing of [LGS]".

As the original LGS SAMDA effort in 1989 was the first mandated effort to focus on SAMAs, the notion that an updated SAMA analysis need not be completed at the license renewal stage (for the exact reactor site that gave birth to the regulatory requirement) we find highly objectionable, particularly in light of the catastrophic nuclear accident that befell similar Boiling Water Reactor (BWR) units in Japan in March, 2011. It has become clear in the 770 years of combined U.S. BWR operational experience since 1989 that domestic and international events provide numerous examples of "new information" and make a strong case for the need to reconsider all that has been learned about newly discovered risks and vulnerabilities of nuclear power plants.

It has been noted that global core damage events happen at a rate that exceeds NRC's presumptions of what should be considered safe at plants within the U.S., which implies that either the NRC estimates for domestic plants are wrong or that international nuclear plants have a core damage frequency much higher than what the NRC deems safe. Either scenario is troubling and deserves the industry's full attention and effort. Exelon's 1989 effort in response to the Court was, respectfully, less than one would have hoped for in light of the seriousness of the issue. The LGS 1989 SAMDA can in no way claim necessary conservatism with regard to public safety over the total timeframe of a possible sixty year reactor lifetime.

In contrast to the 1989 SAMDA, relatively recent SAMA analyses conducted in other license renewal applications, such as those for sites at Nine Mile Point, Three Mile Island, and the Joseph M. Farley Nuclear Plant, to name a few, were considerably more thorough and addressed a range of detailed alternatives. Pursuant to regulatory analysis techniques supplied by NRC and aided by an industry-supplied guidance document most modern-day SAMA analyses are designed using a fairly prescriptive set of initial assumptions, baseline calculations, and cost benefit arithmetic recipes that employ the use of sophisticated codes in their evaluation of potential risk and the benefit of removing this risk.

The most common code used is the MELCOR accident consequence code system (MACCS2), which provides a modeling framework for calculating the off-site consequences of a severe accident. This code accepts an advanced set of input parameters, including population density distributions within 50 miles, detailed regional economic data obtained from multiple sources, nuclide release scenarios accounting for reactor core inventory, emergency response and exposure variables, and meteorological data for plume migration pathways. The current state of knowledge regarding the assumptions and understanding of severe accident events has expanded and improved in the intervening twenty-two years since the initial SAMDA analysis for LGS.

While we acknowledge that this analysis was limited by the knowledge available at the time, the limitations and shortcomings of a previous era in no way disqualify the claim that, in light of numerous advances in modeling capabilities, a library of discovered cost-beneficial SAMAs, and the saliency of severe accident risks following the disaster at Fukushima Daiichi, not only is there new and significant information, there are significant volumes of this information acquired since 1989.

In the licensee's current environmental report, the identification and treatment of new and significant information (four items in total) were developed only in the narrow context of how they may affect the dated SAMDA analysis. It should go without saying that this approach does not comprise all of the applicable new and noteworthy severe accident mitigation strategies bearing on the site in question, or serve to remedy gaps and omissions in the original SAMDA analysis.

The entire set of first-stage envisioned alternatives in the initial SAMDA analysis was no more than fifteen options. The "analysis" in the current environmental report consists of perfunctory, "back-of-the-envelope" calculations in lieu of a proper SAMA analysis. The current operator Exelon referred to these considerations as representing an "abundance of caution." We disagree.

One of the largest problems with the calculations offered, aside from only focusing on an arbitrarily limited number of alternatives, is that licensee evaluated each item of new information in isolation of the other factors that would also change the cost-benefit conclusion for a particular alternative. The effects of each changed parameter (e.g., population, offsite economic risk, cost per person-rem averted, and seismic hazards) should be evaluated in a comprehensive model that shows the aggregate benefit, as performed in all current day SAMA analyses. Unfortunately, their analysis barely scraped the surface of how this new information should actually be considered in the context of environmental impacts.

In comparison, a "reasonable set" of alternatives for another recently relicensed plant included an initial consideration of 128 SAMA candidates developed from previous lists at other plants, NRC documents, and documents related to advanced power reactor designs. After screening this initial set for non-applicable or previously implemented designs as well as combining/dropping common-benefit options, the applicant was still left with a set of forty unique SAMA candidates, for which it was required to enter preliminary cost estimates in a so-called "Phase I Analysis." A total of fifteen SAMA candidates survived this screening to enter more detailed cost consideration in the Phase II analysis, of which none were deemed cost-beneficial. However, in another renewal application, the SAMA analysis found eleven potentially cost-beneficial options from an initial set of thirty-three.

In an NRC report discussing insights on SAMAs in connection with plant license renewals, the agency authors list numerous potentially cost-beneficial SAMAs relating to station blackouts, protection and support systems, procedures and training, and external events such as flood, fire, and seismic hazards. The authors note that "averted onsite costs (AOSC) is a critical factor in cost-benefit analyses and tends to make preventative SAMAs more attractive than mitigative SAMAs." This AOSC factor was not considered in either the original SAMDA or the recently submitted environmental report.

Finally, NRDC believes that in addition to a comprehensively updated SAMA analysis, the licensee or agency must conduct a study that, as part of the SEIS, presents postulated accident scenarios showing the full range and weight of environmental, economic, and health risks posed by these accidents. This type of study should model site-specific severe accidents and illustrate the full consequences of a range of severe accident scenarios so that the public and their policy makers can make informed decisions whether to continue plant operations after the existing

licenses expire, thereby continuing to run the risk of a severe nuclear accident, invest in additional accident mitigation capabilities, or alternatively, avoid these risks altogether by relying on a portfolio of low carbon electricity generation alternatives that could meet future electricity service needs over the license extension period.

The SAMA analyses are inadequate in this regard because they only address isolated issues in a cost-benefit analysis that discounts the cumulative impacts on displaced populations, regional economic losses, and environmental cleanup. These types of calculations do not present a clear picture of the potential hazards or costs experienced in the event of a severe accident. Instead they tend to mask the full range of accident consequences that policy makers may wish to avoid. Recently, NRDC produced an analysis, of the type we believe should be included in the Limerick NEPA analysis, to inform ongoing relicensing efforts at the Indian Point nuclear plant site.

In order to illustrate the full extent of a major accident, the NRDC study used the U.S. Department of Defense computer model HPAC (Hazard Prediction and Assessment Capability) to calculate site-specific release radiological source-terms, resulting fallout plumes, and data on the effects on nearby populations. The results were compared to similar modeling of the Fukushima disaster to provide a sense of scale, and to estimate the rough magnitude of financial and economic damages that would be incurred if a severe accident were to occur at Indian Point. This is not a hypothetical issue. Policy makers in several countries, including Germany and Switzerland, have made decisions not to grant nuclear plant license extensions to avoid having to endure the continuing risk of severe nuclear plant accidents.

Regardless of Exelon's own corporate understanding of its legal obligations, NEPA is clear in its well-established mandates and what it requires of the NRC. NEPA requires that federal agencies characterize environmental impacts broadly to include not only ecological effects, such as physical, chemical, radiological and biological effects, but also aesthetic, historic, cultural, economic, and social effects. NEPA requires an agency to consider both the direct effects caused by an action and any indirect effects that are reasonably foreseeable. Effects include direct effects caused by the action and occurring at the same time and place and indirect effects caused by the action, but later in time or farther removed in distance, but still reasonably foreseeable.

Most specifically, NEPA directs that NRC take a "hard look" at the environmental impacts of its proposed action, in this instance the relicensing of two BWR Mark 2 units for an additional 20 years, and compare them to a full range of reasonable alternatives. "What constitutes a 'hard look' cannot be outlined with rule-like precision, but it at least encompasses a thorough investigation into the environmental impacts of an agency's action and a *candid acknowledgement of the risks that those impacts entail." Nat'l Audubon Soc. v. Dept of the Navy, 422 F.3d 174, 185* (4th Cir. 2005) (emphasis added). As a stalking horse for the NRC's draft EIS, the applicant's ER does not meet this standard. In taking the "hard look" required by law, the NRC must therefore address the potential environmental impacts of a range of severe accidents—and accident mitigation strategies—especially in light of the new information provided by the Fukushima nuclear disaster on the performance of BWR radiological containment in a prolonged loss-of-coolant, core-damage scenario.

For the reasons stated above, NRDC urges that NRC direct that a thorough and lawful SAMA analysis be conducted as part of (or supplement to) the required SEIS, the draft of which is currently scheduled for August 2012 and the final SEIS currently scheduled for February 2013. Additionally, the full cumulative effect of severe accidents must be studied and presented as part of these documents. These analyses must make every effort to meet the current expectations of what these studies should encompass and use the necessary guidance and

tools commonly utilized by the industry and NRC. The NRC's legal obligation to consider new information and determine its nuclear safety significance exists independently of whether a SAMA has or has not been prepared previously: in the event a SAMA has not been prepared, then new and potentially significant nuclear safety information must be included in the initial SAMA; if a previous SAMA exists, then it must be updated to reflect this new information, and the resulting costs and benefits of the full spectrum of reasonable accident mitigation alternatives must be considered as part of the Draft Supplemental Environmental Impact Statement, and issued for public comment.

Response: *For license renewal, the NRC discharges its NEPA obligation to consider severe accident mitigation through 10 CFR 51.53(c)(3)(ii)(L) and Table B–1. In accordance with 10 CFR 51.53(c)(3)(ii)(L), the license renewal ERs must provide a consideration of alternatives to mitigate severe accidents if the staff has not previous considered SAMAs for the applicant's plant in an environmental impact statement or related supplement or in an environmental assessment. LGS is a plant that had a previous SAMA documented in a NEPA document.*

Under NEPA, the NRC must consider whether new and significant information affects environmental determinations in the NRC's regulations, including the determination in 10 CFR 51.53(c)(3)(ii)(L) and Table B–1, that the agency need not reconsider SAMAs at license renewal if it has already done so in a NEPA document for the plant. New information is significant if it provides a seriously different picture of the impacts of the Federal action under consideration. For SAMAs, new information may be significant if it indicated a given cost-beneficial SAMA would substantially reduce the risk of a severe accident, by reducing the probability, or the consequences of a severe accident.

The staff's evaluation of new and significant information for SAMAs is addressed in Section 5.3 of this SEIS.

A.1.12 Radioactive & Non-Radioactive Waste (RW)

Comment: 1-10-RW; This aging plant is an accident waiting to happen. Large volumes, more than 6,000 assemblies weighing more than a thousand tons of highly radioactive waste in the form of spent fuel rods are stored in densely-packed pools, elevated five stories above and outside the reinforced containment structure.

Comment: 1-11-RW; This plant will produce about two more tons of dangerous spent fuel rods every year that it operates.

Comment: 1-14-RW; Dry cask storage and transport are also very dangerous alternatives. It's time to close Limerick and stop producing such deadly waste for which there is no safe solution. As long as Limerick operates harms to us and our environment will increase.

Comment: 1-30-RW; [R]adiation into air and water from routine and accidental emissions

Comment: 1-36-RW; [D]eadly high-level radioactive wastes that are packed in vulnerable fuel pools on this site and they are in fact unprotected. They are above ground and unprotected

Comment: 6-4-RW; [T]he radioactive spent fuel deadly waste material sitting around, supposedly protected

Comment: 18-1-RW; One would be what are we going to do with the 20 years of spent rods and how are you going to take care of those.

Comment: 23-3-RW; And then to—I'm sure that the generic plan includes a pretty good discussion of fuel storage long-term and short-term onsite but certainly the site-specific fuel storage considerations.

Comment: 30-7-RW; The NRC and USA Government still have not decided where to store spent nuclear rods and as we speak each spent rod is sitting in baths on the Limerick site, stacking up—expanding even a greater hazard to the community, environment, etc. So put simply, there [is] absolutely no reason to approve this request for years until the US Government decides how they will handle such rod and such rods and properly stored.

Comment: 34-3-RW; The disposal area must be in operation not some theoretical site like the now defunct Yucca site. The public and our future generation deserves to know what is expected to be done at the site. Radioactive material must not be allowed to remain on the site.

Comment: 35-5-RW; Limerick Nuclear's request for re-licensing is ludicrous, considering its aging and inadequate equipment, its increased air pollution by particular matter, its horrific destruction of the Schuylkill River and dangerous above-ground spent fuel rod storage.

Comment: 37-8-RW, 39-9-RW; Deadly high level radioactive wastes packed in vulnerable fuel pools on site

Comment: 52-5-RW; The plant can no longer store its used fuel rods and has asked permission to begin transporting them to another facility.

Comment: 60-4-RW; Spent fuel—Storage—Uranium mining—Dirty

Comment: 60-11-RW; Nuclear waste—nothing clean

Comment: 60-14-RW; Radiation in air and water—Radioactive ground water

Response: *Radioactive and non-radioactive waste management is discussed in Section 2.1.2 in this SEIS. The NRC's evaluation of impacts of the uranium fuel cycle and waste management are addressed in Chapter 6 of this SEIS.*

A.1.13 Socioeconomics (SE)

Comment: 1-28-SE; Then you take the property taxes. They tried to get zero for their property taxe[s] by the end of the 90s and didn't pay any property taxes until the early 2000s at which time they paid $3 million instead of $17 million they were suppose to pay. So when you think about that no wonder Exelon's willing throw around a couple million in the community. They owe this community a lot more than what they're giving.

Comment: 52-3-SE; The area around the facility has exploded with homes and businesses

Response: *The property taxes paid by Exelon are presented in Section 2.2.9.2 in this SEIS. Section 2.2.9.1 discusses the total number of vacant and occupied housing units in Berks, Chester, and Montgomery counties. Section 2.2.9.6 presents information on the number of businesses in the area. Section 4.9 presents the NRC's evaluation of socioeconomic impacts of continued operation of LGS. In addition, the socioeconomic impacts of not renewing the operating license are discussed in Chapter 8.*

A.1.14 Support of License Renewal (SR)

Comment: 2-1-SR; Operating Limerick Generating Station safely and reliably is a responsibility that everyone at the power station takes very seriously. We understand our obligation to the community, to the environment, and to each other to operate the plant safely.

A key component of a thriving community like ours is the availability of safe, clean, and reliable electricity. And as we look into the future for the power needs of Pennsylvania and the United States as a whole, we can see the increasing demand for this very important resource.

At the same time, there's a growing concern about greenhouse gases and climate change that is a result of burning fossil fuels. To help meet that growing power demand and to help keep our environment clean, Exelon has applied to the U.S. Nuclear Regulatory Commission for a 20-year extension to the plant's operating license. Limerick's current license for Unit 1 will expire in 2024 and Unit 2 in 2029. With license renewal, Limerick can provide our region with clean power through 2049.

We understand our special obligation to operate the plant safely and reliably and to maintain a close relationship with our neighbors. We pledge to continue that special trust as we operate the plant well into the future.

Comment: 3-1-SR; I'm here today to voice my strong support for the relicensing of the Limerick Generating Station. I wanted to touch on a couple points of why I feel it is important for this facility to be relicensed.

First is the amount of electricity that is produced by this facility. One of the things that myself and my colleagues in Harrisburg hear consistently from businesses and the Commonwealth and our citizens is the demand for energy and electricity now and more importantly what that demand is going to be in the future.

Right now this facility generates enough electricity for two millions homes and without producing some of the greenhouse gases that we hear so much about that could be produced by coal, natural gas, or oil. And I'm going to put a caveat in there for my good friends out in the western part of the state where coal is a big part of the Pennsylvania economy and I'm suggesting that this be done to the exclusion of coal and nevertheless, some of the technologies that they're developing out there are also important for that industry and important for the Commonwealth of Pennsylvania.

Again, one of the concerns we hear consistently from businesses is how can we come here into Pennsylvania with the infrastructure being what it is which needs to be improved for the transmission of the electricity, but more importantly the generation of that electricity?

Number two, I think is important is the jobs and overall economy. Again, in these tough economic times that we're facing here in the Commonwealth of Pennsylvania and also in this nation, one of the top issues that we hear consistently about is jobs.

And as was mentioned by the site vice president, over 860 people are employed here with an annual payroll of $75 million. The direct impact that is to the Commonwealth of Pennsylvania, of course, is realized through the state income tax and also all of these local municipalities most of them enact an earned income tax which again sustains their townships as well as their respective school districts. To have that taken away I think would have an even more dramatic impact on our local economy.

As was mentioned the impact for the local area here, the temporary workers who show up here during the outages and the refueling, there's already been two hotels that have sprung up along the 422 corridor with another one planned right up here at the Sanatoga area. Again, more jobs and more economic growth here for our communities.

Thirdly, I want to talk about the communication that I've experienced in the seven years that I've been in office with Exelon and with their Government Affairs people as well as with their site people. I've been on the site three times, twice for a tour and one to make a presentation during an anniversary of the facility. And I have to say that it is a very secure area. I know a lot of people are concerned about terrorism attacks or people being on the property. But unless you've actually gone over there and gone through a tour, seeing how things are set up, seeing the armed guards there, seeing the security measures that are in place, I think you come away

much more relieved with that. And I'm able to speak to my constituents more affirmatively about the safety and security of the facility.

Any time that there's been the slightest occurrence there, whether it will be a couple times a hunter has wandered onto the property where the authorities were called, the Government Affairs people at Exelon are on the phone to me or with an email right away to let me know what's happening before the word gets out to the media or to the press. So they're always very well prepared in their explanations, not only of things that happen at the plant itself, but also incidents and issues that occur around the country and around the world.

Obviously, what took place in Japan with the incident over there, they were on the phone with me and met with me a few times to explain what took place over there and how the safeguards are being put in place here so that doesn't happen at this facility.

Comment: 5-1-SR; Because the license Generating Station can be operated safely and reliably, Exelon decided to pursue license renewal for Limerick. Limerick is a very clean energy source which produces no greenhouse gas emissions. Limerick is also good for the economy in that it lowers market prices on electricity for the citizens of Pennsylvania to the tune of $880 million per year.

Comment: 5-4-SR; [W]e operate Limerick safely and we can continue to operate it safely for an additional 20 years. Limerick will provide approximately 2340 megawatts of base-load generation that's not only safe, but it's clean, reliable and economical.

Continued operation of Limerick will benefit this community, the Commonwealth of Pennsylvania and our nation.

Comment: 7-1-SR; As the largest private employer in the region, the Board is thankful for the 860 jobs that Exelon provides, the positive impact of their operation, the vitality of our local community. The community and local economy are enhanced by the needed services provided by the township, which includes the roadway network maintained by our Limerick Township Public Works, public safety provided by the Limerick and Linfield Fire Companies, and our local emergency medical response, our public parks, our recreation facilities and also the police protection that's provided by Limerick's 21 sworn officers.

Because of Limerick Generating Station's location within our borders, the Limerick Township Police Department is the only municipal police department in Pennsylvania with the primary jurisdiction over Tier 1 critical infrastructure. This Board prides itself on the services provided directly both to the residents and the businesses of this community and the township's ability to maintain those current levels of service during these difficult economic downturns. We are thankful for the generosity of the Limerick generating plant and Exelon for being good corporate neighbors and the assistance they provide to the community. Without their financial assistance that impact to provide those services to the community would fall squarely on the backs of the taxpayers. They assist in our fire companies. They have been corporate sponsors of our Limerick Community Days. And we are confident that Limerick generating facility and Exelon will continue that support in the future and be our good corporate neighbor. We also are in support of the relicensing of the Limerick nuclear plant.

Comment: 11-1-SR; I'm president of the Tri-County Area Chamber of Commerce. I'm happy to be here today to provide examples of how Limerick Generating Station is a valued community and business partner and echo the statements already shared by several others. They're one of the tri-county area's largest employer, providing professional employment opportunities for local residents. Those local residents employed by Limerick Generating Station are supporting the entire tri-county business community. They're purchasing personal goods and services from local small businesses. The annual outage is a tremendous benefit to the local economy and

our local businesses. Limerick encourages their outage employees to visit and purchase from tri-county area, local businesses, and small businesses.

In addition to the jobs they provide local residents, they're making a significant investment in our local communities. Municipalities and residents benefit from assistance received from Limerick to start, maintain, expand parks, recreation, and quality of life opportunities.

Their corporate culture of giving back to the community is practiced by their hundreds of employees. Nonprofit organizations are supported by Limerick Generating Station and the efforts of their employees. Financial donations, as well as volunteer hours and time are donated, enabling our local nonprofits to provide the much needed services that impact those in need throughout the tri-county area.

The Limerick Generating Station is confident in the clean and safe environment they maintain in our community. The community has been invited to experience the generating station firsthand. The chamber hosted a membership breakfast and the site vice president, Bill Maguire provided the keynote presentation. He summarized safety measures and advancements at Limerick and answered questions pertaining to the Limerick plant and its safety in the wake of the tsunami in Japan.

Comment: 12-1-SR; I don't believe that continued operations of the power plant would have any detrimental effect on public safety in the southeast region.

Comment: 13-1-SR; Today, I would like to say that in all of the years that I've lived in this area, I've never worried at all about the safety of the nuclear power plant. I see it every day. And it bothers me not in the least. I have never seen any credible evidence to suggest that there are safety problems with this plant. In terms of reliability, it is the same. It is running 24/7, 365 days a year and it has been doing so for a quarter of a century and I hope it continues to do so for many more years to come.

As far as its environmental impact, I think it's pretty widely known that nuclear power is one of the cleanest environmental energies that we possess today throughout the world and to dismiss it is I think a foolish notion.

The impact of the Limerick plant in our region has been extraordinarily positive. It provides, as we all know and have heard today, lots of jobs, lots of good jobs, tax revenues for schools, local governments and for those who live in the area to enjoy the fruits of public services and it also provides a lot of charitable donations to the community which is very important.

I think that to not keep this plant running and not consider a renewal of its license for an extended period would be a tragic mistake for all of us and I would like to end this by saying that the only meltdown that would concern me is the economic one that certainly would happen to this area should this plant not continue to operate.

Comment: 14-1-SR; But I'm here today as a private citizen, as a resident of the area and as a member of the Pennsylvania Energy Alliance to go on record and say I strongly favor license renewal for the Limerick Generating Station. I say that because in my personal experience I know in spite of some of the things you've probably heard here today, nuclear power is safe, reliable, secure and clean. But in addition to that, I would like to go on record, I would like my neighbors to know we are lucky to have the Limerick Generating Station in this area. In the industry, it has a top reputation. It is one of the finest nuclear power plants in America. And Exelon, if not the best, is certainly one of the finest nuclear operators in the world.

I have nothing but confidence that Exelon will work together with the NRC, will run through the process and we will come up with the right conclusion here which is license renewal should be

granted to the Limerick Generating Station. I think we need to keep Limerick operating as long as we can.

Comment: 14-2-SR; And so from my perspective as a citizen, as a business person who worked in this community, I understand the value this is to the region. And for me, I applaud the NRC for what they're doing here. I applaud Exelon for the great work that they're doing there and I encourage the renewal process to take place.

Comment: 17-1-SR; And my comments tonight are more I guess from my perspective as a newly elected official with the generating station. About a year ago I had the opportunity to go down to the generating station and meet with Joe Saffron and the first part of my meeting had to do with looking for some support for the Pottstown Soapbox Derby. Through some conversation while we were standing outside you know Joe [told] me a little bit on what Exelon and the generating station do for the surrounding communities, whether it's supporting our firefighters, police departments and other civic organizations. You know, from a Pottstown perspective they help us with our yearly borough cleanup, our Salvation Army and now the Soapbox Derby. Thank you.

And we were standing outside that day, it was pretty nice out, and our conversation led to the power plant itself. We were standing there looking around it's a pretty impressive sight. So I asked him about, you know, possibly having a tour for municipal officials. He said he would look into it and see what he could do. A couple of months later he got a group of about 20 of us and gave us a tour of the plant one evening. And I have to say that from the time we walked through the front gates and past the security as our tour progressed, you know, throughout the plant safety was paramount. Whether you were having explained what the different colors are on the different panels and what they mean to different fail safes, why you walk certain areas certain ways and what lines you had to stand behind, you know, safety was paramount with them. You know, from the environment, I'm looking around and this place is spotless. And I asked why and it's because they can't afford to have dirt or lint or fuzz balls around because of static electricity because it could create issues. So from that aspect I thought it was a good tour and it made me feel good about the safety aspects there.

To finish our tour we ended up in the control room upstairs. And I'd say maybe a dozen or so individuals up there monitoring you know everything going on within the plant and around the plant. And again, explaining the failsafes and why they're double-, triple-checked to eliminate human error. It was just very impressive and as an elected official to go down and take a tour of the plant and understand how it operates. I know when I left I personally know how to issue a concern with the generating station. I know I felt a lot better and a lot safer going home that night. And it was also good to realize, you know, as one of our region's largest employers now that they are willing to give back to the community and keep safety first. So thank you, I just wanted to make those comments.

Comment: 20-1-SR; I'm going to be making essentially five points in support of license renewal for Limerick Generating Stations and they are that, number one, nuclear energy lowers electricity prices, it protects our environment against greenhouse gases, it strengthens our local economies and it is safe.

With regard to my first point in lowering electricity prices the Limerick Generating Station has reduced wholesale energy costs in Pennsylvania by $880 million in 2010 thus lowering electricity prices for all consumers. It operates around the clock thereby stabilizing the nation's electricity distribution system and the electricity marketplace. The average electricity production costs at nuclear plants have actually declined more than 30 percent in the past 10 years due to various efficiencies. Nuclear power is cheaper to produce than other forms of electricity

generation such as coal and natural gas, and helps moderate the price of electricity for consumers.

My next point is that Limerick Generating Station and nuclear plants strengthen our local economies and it is a valuable economic driver for the Commonwealth of Pennsylvania. Limerick Generating Station contributes $113 million annually in direct economic contributions to the Pennsylvania economy through various employee wages and salaries, purchase of goods and services from other Pennsylvania businesses and in property tax payments to the local governments. Limerick Generating Station also contributes generously as we've also heard and in fact in 2010 contributed $600,000 to various community organizations. Limerick has over 800 full-time employees and employs more than 1,000 skilled temporary contract employees during annual refueling outages. A significant percentage of the current nuclear plant workforce will reach retirement age in the next 10 years creating a demand for high-paying jobs in the nuclear industry. Yes, Limerick Generating Station is one of Pennsylvania's most valuable economic and energy assets and the commonwealth should embrace it.

My third point is that nuclear energy protects our environment from greenhouse gases and reduces the need to generate electricity from fossil fuels. If Limerick Generating Station were retired from service replacing the electricity would require increased natural gas-fired or coal-fired generation. Nuclear energy is the nation's largest source of carbon-free electricity and is critical to our nation's environmental, security and energy goals.

My next point is that nuclear energy is safe. It's always on, it's stable, it's a reliable source of electricity and the station here at Limerick has been built with multiple redundant safety layers.

And the workforce is committed to best practices and continuous improvement. It is also important for our nation's quest to be energy-independent. According to the Bureau of Labor Statistics it's safer to work at a nuclear plant than in industries such as manufacturing, real estate and finance. And according to the Department of Energy a person receives more radiation exposure flying from Baltimore to Los Angeles than by standing near a nuclear plant 24 hours for a year.

On a personal note I've been inside Limerick Generating Station several times. I've also lived within 30 miles with my four boys and wife next to the Limerick Generating Station and also Three Mile Island. I feel safe, secure and comfortable. That is why I'm in support of the re-licensing of the Limerick Generating Station.

Comment: 50-1-SR; I wanted to let you know that I am complete and full supporter of the Limerick Nuclear plant. I am also supportive of the scientific [judgment] and expertise of those such as yourself who have the job of making the decisions.

Response: *These comments express support for nuclear power or the license renewal of LGS or both. The comments provide no new and significant information and will not be evaluated further.*

A.1.15 Surface Water (SW)

Comment: 1-17-SW; Dangerous depletion of the Schuylkill River, in and by itself, a singular reason to deny this permit. The Schuylkill is a vital drinking water source for nearly two million people from Pottstown to Philadelphia. It is being depleted and contaminated every day that this plant operates.

Comment: 1-23-SW; They are destroying the Schuylkill River. There was enough water in the Schuylkill River to sustain this nuclear plant from the very beginning and now we're seeing the consequences of that and they more and more pollution in it. They want to pump mine water in

to supplement the flow for Limerick. It's contaminated and they don't filter it. And they're actually asking for huge, four times Safe Drinking Water standard increase in total dissolved solids which carry a lot of toxic pollutants. So they put radiation into the river 24 hours a day, 365 days a year, and now they're asking for these huge increases and people have the nerve to get up here and say that they have no environmental impacts.

Comment: 1-32 SW; Schuylkill River depletion and major drinking water contamination. Keep in this is vital drinking water source for nearly 2 million people from here to Philadelphia.

Comment: 4-5-SW; Our drinking and bathing water here is being continuously polluted by Limerick every day, 24/7 for years with radiation and unfiltered toxic contaminated mine water, thanks to the NRC and Exelon. This is disgusting. Most of us have to depend on the water, especially for bathing. Some of us pay extra for water filtration or drink bottled water because we are afraid to drink from the Schuylkill and because it tastes really bad now. Imagine how toxic it would be 18 plus years from now if there was even any wate[r] left.

Comment: 4-10-SW; So then there's the cost for the pollution they're putting in the river. They're asking for increases in pollution. They want to put more mine water in. They want to increase the total dissolved salts. That's going to cost water treatment systems a lot of money to try to—for extra treatment for that. It can even break down their equipment, some of the stuff that's coming out of the mines. And when you think about it who actually ultimately pays that cost? We do. We pay for increased costs for our water because they're having to do that at the water treatment systems. And it seems to me that if you really take a good look at things Limerick has got to be the major cause for the radiation in Philadelphia's water.

Comment: 23-1-SW; Mine water issue, better defining that quality and flow particularly in light of the likely pending changes in stormwater concerns and regulations in the area. Adding that flow to the Schuylkill is going to affect all the municipalities around here who have to deal with stormwater.

Comment: 44-3-SW; There is concern that should be faced regarding the Schuylkill River and the affects it is going to have on the public if it becomes depleted, and/or toxic due to the contaminates going in it.

Comment: 36-2-SW; I am more concerned about the effects of surrounding air and water supply and the future of my children and grandchildren, some of whom are already inflicted with cancer and other diseases.

Comment: 45-9-SW; Limerick Nuclear Plant is slowly destroying the vital public drinking water source for almost two million people from Pottstown to Philadelphia. Radioactive and heated wastewater is discharged by Limerick Nuclear Plant into the Schuylkill River 24/7. Limerick's cooling towers are causing significant depletion. To supplement the flow to operate Limerick, Exelon wants to pump more contaminated mine water into the river. No one can credibly assure if drinking water will remain safe even until 2029 when Limerick's original license expires.

Comment: 54-4-SW; Since the last impact statement was prepared in 1973, the Schuylkill River has been designated as a state scenic river and as a heritage area for both the state and federal government. Due to these designations and the efforts of non-profit organizations and local government, access to the river has been expanded so that the river has become a recreation and heritage tourism destination. Use of the river in the vicinity of the plant will continue to grow. With the return of American Shad made possible through down stream fish ladders, interest in the river could even grow further in the future.

The Limerick Plant withdraws sizeable portions of river water. During low flow periods, additional quantities of water are released into the river from the Wadesville Mine, and Still Creek Reservoir in Schuylkill County to compensate for the water withdrawn at the plant. This process was initially approved by the Delaware River Basin Commission (DRBC), in 2003 and kept active through a series of docket amendments. Future river water use is, dependent upon the ability of this water make up system to operate within various water quality and flow parameters set by DRBC. It is important to evaluate the viability of the use of the river water and water make up system to provide needed water through the expanded plant lifetime. Analysis of this aspect of plant operation needs to account for the water quality impact from the total dissolved solids in the Wadesville water among other parameters. If resumed use of the Delaware water diversion is anticipated, an evaluation of that system is required to ensure that the capacity is available in the conveyance system and that water quality objectives can be met for discharge into the East Branch of the Perkiomen Creek.

Comment: 60-9-SW; Dirty polluted mine water

Response: These comments express concern in part over the health of the *Schuylkill River, including river flow and water quality. Surface water resources at LGS, including the Schuylkill River, and the effects of plant operations on surface water hydrology and quality are presented in Sections 2.2.4 and 4.3 of the SEIS. In addition, Section 2.1.6 of the SEIS details the surface water sources relied upon by LGS and include the sources of water used to augment low flows in the Schuylkill River. Section 2.1.7 further describes the surface water and groundwater sources used to support plant operations, the volumes of water used, and the regulatory conditions and associated regulatory agencies that govern the plant's water uses. With respect to the comments regarding depletion of the Schuylkill River, the NRC's evaluation of LGS's consumptive use of surface water is presented in Section 4.3.2.1 of the SEIS. As described in Section 2.1.7.1 and 4.3.2.1, the DRBC has imposed consumptive use limits on LGS's surface water withdrawals. During low river flows, the DRBC limits the plant's consumptive withdrawals to no more than 12 percent of river flow to be protective of aquatic life and downstream water users. Under average flow conditions, consumptive water use by LGS amounts to about 3 percent of river flow.*

With respect to concerns about pollution attributable to operation of LGS, effluent discharges to the Schuylkill River through its discharge structure are regulated by, and subject to water quality standards set by, the PDEP, in conjunction with the DRBC docket issued to Exelon. More precisely, these discharges are regulated through the National Pollutant Discharge Elimination System (NPDES) permitting process as discussed in Section 2.2.4.1. Although the Schuylkill River has historically been affected by a range of activities as described in Section 2.2.4.1 and further in Section 4.11.3 (Cumulative Impacts), the main stem of the Schuylkill River in the vicinity of the LGS currently meets designated water quality standards and uses, including use as a source for public water supply.

As required by its operating license, Exelon Generation conducts a REMP at LGS to assess the radiological impact, if any, to its employees, the public, and the environment around the plant site. The REMP measures the aquatic, terrestrial, and atmospheric environment for radioactivity, as well as the ambient radiation. The NRC's staff's evaluation of the radiological impacts of LGS operation and its REMP are discussed in Section 4.8 of this SEIS. As part of its evaluation, the NRC staff reviewed Exelon's annual radiological environmental operating reports (REOP) for 2006–2010 to look for any significant impacts to the environment or any unusual trends in the data. A 5-year period provides a representative data set that covers a broad range of activities that occur at a nuclear power plant. Based on the review of the radiological environmental monitoring data, the staff found that there were no unusual and adverse trends, and there was no measurable impact to the offsite environment from LGS operations. Further,

the NRC's ongoing Inspection Program periodically inspects Exelon's Radioactive Effluent Monitoring and REMP programs for compliance with the NRC's radiation protection standards in 10 CFR Part 20. The NRC's Inspection Program evaluates the data for compliance with radiation protection standards. If the data were to show a noncompliance with requirements, the NRC would take appropriate enforcement action. Additional information for LGS can be found at http://www.nrc.gov/reactors/operating/ops-experience/tritium/plant-specific-reports/lim1-2.html.

Comments 1-23-SW, 4-5-SW, 4-10-SW, 45-9-SW, 54-4-SW, and 60-9-SW specifically raise the issue of the diversion of water from the Wadesville Mine Pool to augment the flow of the Schuylkill River. The use of mine pool water and other diversion sources to augment surface water flows to support LGS operations are described in Sections 2.1.6 and 2.1.7 of the SEIS. These sections also summarize the background and current status surrounding the ongoing water diversion demonstration project that is regulated by the DRBC. The NRC staff's evaluation of the projected impacts on surface water resources of the continued operations of LGS during the license renewal term are presented in Section 4.3 of this SEIS. Regarding use of the Wadesville Mine Pool and other low flow augmentation sources, the DRBC, and not the NRC, is responsible for regulating such activities. Likewise, and as mentioned above, the Pennsylvania DEP through the NPDES permitting process, along with DRBC's docket approval process, are responsible for regulating effluent discharges from LGS and will ultimately decide if revised effluent limits on chemical and thermal discharges are appropriate.

Comment: 55-6-SW; A note should be added regarding the diversion of Delaware River water to the East Bank of the Perkiomen. Due to the residential build-up along the Perkiomen Creek area, additional consideration should be presented and discussed with the Army Corps of Engineers and the National Weather Service regarding potential flooding impact this may have on the area.

Comment: 35-4-SW; Limerick Nuclear's request for re-licensing is ludicrous, considering its aging and inadequate equipment, its increased air pollution by particular matter, its horrific destruction of the Schuylkill River and dangerous above-ground spent fuel rod storage.

Response: *Aging management of plant systems is evaluated as part of the LRA safety review. The results of the staff's safety review of the LRA for LGS will be documented in the staff's SER.*

Air pollutant emissions associated with LGS operations are presented in Section 2.2.2.1 of the SEIS. The NRC's evaluation of LGS's air emissions is presented in Section 4.2 of this SEIS.

Surface water resources at LGS, including the Schuylkill River, and the effects of plant operations on surface water hydrology and quality are presented in Sections 2.2.4 and 4.3 of the SEIS. In addition, Section 2.1.6 of the SEIS details the surface water sources relied on by LGS and include the sources of water used to augment low flows in the Schuylkill River.

Comment: 24-1-SW; …I want to add that I want the NRC to look into potential water depletion issues from shale gas fracking upriver in both rivers.

Comment: 60-21-SW; Depleted water due to fracking up river

Response: *The contributions of past, present, and reasonably foreseeable future actions or activities in the Delaware River Basin, including hydraulic fracturing (fracking), have been considered in the cumulative impacts analyses of this SEIS as presented in Section 4.11 of the SEIS. With respect to surface water, these impacts are presented in Section 4.11.3. In addition, the environmental impacts of alternatives to the proposed action (i.e., whether to grant a renewed operating license to LGS) are evaluated in depth in Chapter 8 of the SEIS. This*

includes comparative analysis of a natural gas-fired combined-cycle facility as a replacement power source for LGS and considers related effects of hydraulic fracturing to supply natural gas.

A.2 Comments Received on Draft Supplemental Environmental Impact Statement

The staff distributed the *Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants Supplement 49 Regarding Limerick Generating Station, Units 1 and 2, Draft Report for Comment* (NUREG-1437, Supplement 49), referred to as the draft SEIS, to Federal, state, and local government agencies, and interested members of the public. As part of the process to solicit comments on the draft SEIS, the staff:

- placed a copy of the draft SEIS into the NRC's public Electronic Reading Room, on its license renewal website, Pottstown Regional Public Library in Pottstown, PA, and Royersford Free Public Library in Royersford, PA;
- sent copies of draft SEIS to the applicant, members of the public who requested copies, and certain Federal, state, and local agencies;
- published a notice of availability of the draft SEIS in the Federal Register on May 7, 2013 (78 FR 26663);
- placed newspaper ads and issued press releases announcing the issuance of the draft SEIS, the below noted public meetings and instructions on how to comment on the draft SEIS; and
- held two public meetings at Sunnybrook Ballroom, Pottstown, PA, on May 23, 2013, to describe the results of the environmental review and answer questions on the license renewal process (ADAMS Accession No. ML13172A026).

The staff has reviewed the public meeting transcripts and the written comments that are part of the docket file for the application, all of which are available online at the NRC public Electronic Reading Room (using ADAMS) or at the NRC's Public Document Room at the NRC Headquarters in Rockville, MD, referenced by the appropriate ADAMS accession number shown in Table A–4.

Each commenter was given a unique identifier so that every comment could be traced back to its author. Table A–4 identifies the individuals who provided comments applicable to the environmental review and the commenter ID associated with each person's set of comments. The individuals are listed in the order in which they spoke at the public meetings and in random order for written comments received.

Table A–4. Individuals Providing Comments on the Draft SEIS

Commenters are identified below, along with their affiliations and how their comments were submitted.

Commenter	Affiliation (if stated)	ID	Comment source	ADAMS Accession Number
Mariea Geho	East Coventry Township Supervisor	1	Afternoon Meeting	ML13172A019
Dr. Lewis Cuthbert	Alliance for a Clean Environment (ACE)	2	Afternoon Meeting Evening Meeting Written Comments	ML13172A019 ML13172A023 ML13182A040
Charlie Shank	Resident	3	Afternoon Meeting Evening Meeting Written Comments Written comments	ML13172A019 ML13172A023 ML13182A011 ML13190A307
Donna Cuthbert	ACE	4	Afternoon Meeting Evening Meeting	ML13172A019 ML13172A023
Betty Shank	Resident	5	Afternoon Meeting Evening Meeting Written Comments Written Comments	ML13172A019 ML13172A023 ML13182A011 ML13190A307
Steve Aaron	PA Energy Alliance	6	Afternoon Meeting	ML13172A019
Lorraine Ruppe	Resident	7	Afternoon Meeting Evening Meeting	ML13172A019 ML13172A023
Marci Dietrich	Resident	8	Afternoon Meeting	ML13172A019
Kim Murphy	Berks Conservancy	9	Afternoon Meeting	ML13172A019
Scott Portzline	Resident	10	Afternoon Meeting	ML13172A019
Shirley Whyte	Resident	11	Afternoon Meeting	ML13172A019
Tana Rinehart-Ulman	Resident	12	Afternoon Meeting	ML13172A019
Paul Gunter	Beyond Nuclear	13	Afternoon Meeting Evening Meeting	ML13172A019 ML13172A023
Alisa Otteni	Exelon	14	Afternoon Meeting	ML13172A019
Les Rinehart	Business Owner	15	Afternoon Meeting Written Comments	ML13172A019 ML13157A261
Chris Conroy	Exelon	16	Afternoon Meeting	ML13172A019
Leroy James Watters	Resident	17	Afternoon Meeting	ML13172A019
Michael Moyer	East Coventry Township Supervisor	18	Evening Meeting	ML13172A023
Mark Pavelich	Business owner	19	Evening Meeting	ML13172A023
Dr. Anita Baly	Resident	20	Evening Meeting	ML13172A023
Gail Brown	Resident	21	Evening Meeting	ML13172A023
Leanne Birkmire	Exelon	22	Evening Meeting	ML13172A023
Tina Daly	Resident	23	Evening Meeting Written Comments	ML13172A023 ML13190A308
Zach Chizar	PA Energy Alliance	24	Evening Meeting	ML13172A023
Marvin Lewis	Resident	25	Written Comments	ML13141A151 ML13141A152
Kelly Jameson	Resident	26	Written Comments	ML13170A313

Commenter	Affiliation (if stated)	ID	Comment source	ADAMS Accession Number
Janice Monger	Resident	27	Written Comments	ML13172A048
Barbara Rudnick	Environmental Protection Agency	28	Written Comments	ML13183A033
E. Christopher Abruzzo	Pennsylvania Department of Environmental Protection	29	Written Comments	ML13182A010
Corrine Hanson	Natural Resources Defense Council	30	Written Comments	ML13189A129 ML12326A976
Michael Stokes	Montgomery County Planning Commission	31	Written Comments	ML13192A004
Michael Gallagher	Exelon	32	Written Comments	ML13172A345

To evaluate the comments, the NRC staff gave each comment a unique identification code that categorizes the comment by technical issue and allows each comment or set of comments to be traced back to the commenter and original source (transcript, letter, or e-mail) from which the comments were submitted.

Comments were placed into one of the technical issue categories, which are based on the topics that will be contained within the staff's SEIS for LGS, as outlined by the GEIS. These technical issue categories and their abbreviation codes are presented in Table A–5.

Table A–5. Technical Issue Categories

Comments were divided into 1 of the 21 categories below, each of which has a unique abbreviation code.

Code	Technical Issue
AL	Alternative Energy Sources
AM	Air & Meteorology
AE	Aquatic Ecology
CC	Climate Change
CI	Cumulative Impacts
DC	Decommissioning
GE	Geology
GHG	Greenhouse Gas
GW	Groundwater
HA	Historical and Archeological
HH	Human Health
LU	Land Use
LR	License Renewal & NEPA Process
OR	Opposition to License Renewal
OS	Outside of Scope [(a)]
PA	Postulated Accidents and Severe Accident Mitigation Alternatives (SAMA)
RW	Radioactive Waste
SE	Socioeconomics
SR	Support of License Renewal
SW	Surface Water
TE	Terrestrial Ecology

[(a)] Outside of scope are those comments that pertain to issues that are not evaluated during the environmental review of license renewal and include, but are not limited to issues such as need for power, emergency preparedness, safety, terrorism, and security.

Comments received on the DSEIS are presented in this section, along with the NRC responses. They are presented in the order shown in Table A–6.

Table A–6. Comment Response Location in Order of Resource Area

A.2.1 Alternative Energy Sources (AL)

Comment: 2-15-AL; Even more astonishing than that, NRC staff concluded that continued operation of Limerick nuclear plant would have less environmental impacts than either solar or wind alternatives on air quality, groundwater, surface water, human health and aesthetics. Such conclusions are beyond untenable and unscientific.

Response: *NRC staff assessed the environmental impacts of the proposed action and alternatives based on the staff's technical evaluation using the best available information. NRC staff characterized potential environmental impacts for each resource area as SMALL, MODERATE, or LARGE based on the definitions of these impact levels in 10 CFR Part 51. Chapter 8 provides a discussion of these technical evaluations and a technical basis for the impact determinations for the alternatives, and Chapter 4 provides similar information for the proposed action. In Section 8.8 the staff concludes that impacts on air quality are less from continued operation of LGS than from any of the alternatives involving fossil fuels, though they are likely to be greater than wind and solar PV alone. Based on the evaluations in Chapters 4 and 8, the staff concludes that the environmental impacts of renewal of the operating license for LGS would be smaller than those of feasible and commercially viable alternatives studied in this SEIS that satisfy the purpose and need of license renewal (i.e., providing 2,340 MWe of baseload power to the grid).*

This comment does not provide any new and significant information, therefore, no changes were made to the SEIS.

Comment: 2-69-AL; IT IS INEXPLICABLE THAT NRC FAILED TO CONSIDER SOLAR POWER AS A COMMON SENSE ALTERNATIVE IN LIMERICK'S EIS.

- NRC failed to consider solar power as an alternative, despite ACE's 10-26-11 extensive EIS testimony documenting why solar power is a viable alternative to Limerick Nuclear Plant.
- NRC excluding solar power as an alternative is more evidence that NRC failed to seriously consider or acknowledge ACE's 10-26-11 public hearing comments.
- ACE identified large and small business installations, government building installations, schools, and residential solar installations already in the region of Limerick Nuclear Plant, including the Cuthberts' personal solar power with battery backup.
- ACE provided a list of news articles proving solar power had become cost competitive with nuclear power and that large back-up power installations were already available to use solar as baseload power.
- Since 2011, considerable additional evidence has become available showing that solar power is even more feasible from both a technical and economic standpoint.

LIMERICK'S FINAL EIS MUST BE CHANGED TO REFLECT THE REALITY OF SOLAR POWER AS A REASONABLE, FEASIBLE ALTERNATIVE.

NRC's Draft EIS for Limerick Nuclear Plant presented several conclusions that were simply not supported by scientific fact. Numerous assumptions appear to have been combined with predetermined, pro-nuclear conclusions. Many of the conclusions rise to the level of colossal incompetence, if not regulatory malpractice.

Several specific examples were included in oral and written testimony presented by Dr. Lewis Cuthbert at the NRC public meeting/hearing on May 23, 2013. One of the most ludicrous conclusions and assertions was that the impacts from continued nuclear operations at Limerick would result in the same impacts as from all other alternatives, all being "small[."] This unsupportable conclusion must be changed in the Final EIS to accurately reflect the far greater threats, risks, and impacts from nuclear operations.

The substantial written testimony submitted by ACE October 26, 2011[,] focused on solar power as a preferred and viable alternative for our region, rather than a renewed license for Limerick. Since that time, solar technology has increased, costs have declined dramatically, and installations in the region have proliferated at an ever-increasing pace.

Inexplicably, in its Draft EIS for Limerick, NRC totally dismissed solar power as a viable alternative, despite the considerable body of evidence to the contrary provided by ACE in 2011. Since that time, an even more compelling body of evidence has emerged supporting the viability of solar power as an alternative energy source.

The most recent compelling article on the viability of solar power appeared 3-25-13, "NRG Skirts Utilities Taking Solar Panels to U.S. Rooftop" by Christopher Martin, and Naureen S. Malik. This Article Confirms The Cost Effectiveness and Viability of Solar Panels Alternatives. This article supports our conclusion that we don't need Limerick Nuclear Power Plant.

- Utilities are aware that generating power at customer sites is leading to them losing their customers and disrupting their businesses. Solar power is being installed on vast numbers of rooftops, both residential and commercial.
- Costs for solar panels keep coming down. Installation costs keep coming down. Solar is being combined with battery technology and power management systems.
- Some utilities recognize their business is becoming far less important, eventually being used just for back-up.
- NRG Energy, the biggest power provider to U.S. utilities is providing electricity directly to consumers.
- Energy companies are challenging traditional utilities, by providing rooftop solar panels to power individual buildings.
- At least a dozen U.S. companies provide rooftop panels at no upfront cost to customers, who typically make fixed reduced monthly payments for the output under decades-long contracts, known as solar leases or power-purchase agreements.
- By-passing its utility clients, [NRG] is installing solar panels on rooftops of homes and businesses and in the future will offer natural gas-fired generators to customers to kick in when the sun goes down[.]
- NRG is running mini-generation systems that run a single building. This endeavor strikes at the core business of utilities.
- Companies such as Sunrun and Sungevity offer services at home-improvement stores.
- CEO of NRG, David Crane said, “Consumers are realizing they don’t need the power industry at all. That is ultimately where big parts of the country go[.”]
- Individual home-owners may soon be able to tie a machine to their natural gas line and tie that with solar on the roof, then totally disconnect the line from the transmission-distribution company.
- Independent power producers may be evaluating the merits of distributed generation, building many small systems at customer sites instead of a few large ones.

When viewed in conjunction with wind power, the need for and cost effectiveness of continued electric from Limerick is no longer a logical option. A glut of low priced natural gas is also contributing to cheaper power prices.

In addition to typical rooftop PV solar panels, new technology has dramatically reduced the footprint of installations. Homes, small businesses, governmental agencies, and large corporations have moved to solar power in increasing numbers. Rooftop leasing and thinner, lighter panels have redefined the cost and space constraints that NRC referenced in its flawed Draft EIS. Today, any home or business in our region can consider viable solar power with no up-front costs to the owner.

NRC’s Final EIS for Limerick Nuclear Plant must be changed to include all of this evidence, and accurately reflect the reality of solar power as a currently available and safer alternative to

Limerick's electric. NRC is encouraged to review and consider additional information that has emerged since 2011, and amend the Final EIS for Limerick accordingly.

Comment: 2-70-AL; ACE DID OUR OWN COMPARISON OF SOLAR, WIND, AND NUCLEAR BELOW:

NRC FAILED TO INCLUDE THESE COMPARISONS IN LIMERICK'S EIS.

1. Costs of solar and wind (relatively quick to install) will continue to plummet, while costs for nuclear power will continue to rise. Independent estimates suggest, adding in hidden costs to taxpayers and ratepayers, nuclear plants produce the most costly form of energy.

2. Clean, safe energies like solar and wind, along with energy efficiency, are estimated to provide more jobs per dollar spent than nuclear power.

3. Producing solar and wind energies closer to where they are needed, provides more energy security, removing the necessity for huge grids that can be attacked by terrorists.

4. The Department of Energy 2006 report stated solar power and wind power could provide far more energy than our nation needs – [t]hat solar alone could provide 55 times our entire nation's energy needs.

5. Costly security is not needed for solar or wind energy installations.

- Terrorists are not interested in attacking solar or wind installations.
- Attacks at solar or wind energy installations would not result in astronomical costs or cause long-term devastation.
- Nuclear plants can be turned into nuclear bombs, resulting in tens of thousands of deaths and hundreds of billions of dollars in damages from spreading radioactive contamination across vast areas which create dead zones for centuries.

6. Human error or mechanical failure of solar and wind technologies won't result in devastation like they can at nuclear plants.

7. Solar and wind would clearly be a far safer and less costly investment for taxpayers and ratepayers.

8. Solar and wind don't create dangerous high-level radioactive waste storage problems, with costs to taxpayers beyond meaningful calculation.

- Reprocessing is not the solution to high-level radioactive waste problems. Evidence shows reprocessing makes waste problems worse. Reprocessing is costly, ill-conceived, dangerous and environmentally damaging. Vitrification is also costly and has not been proven safe.

9. Nuclear plants are not emissions-free.

- Solar and wind energies don't routinely release radiation in to our air and water that is harmful to health. Radiation exposure can alter DNA, cause cancer, and shorten life-expectancy.
- Limerick Nuclear Plant Title V air pollution permit proves it is a major polluter under the Clean Air Act. There are 32 air pollution sources on site releasing a broad range of air pollutants, including greenhouse gases.
- From uranium mining to waste storage, nuclear power emits greenhouse gases.

10. Solar and wind energies don't present unprecedented threats and harms to the public water supplies such as those from Limerick Nuclear Plant.

11. Solar and wind are more dependable in heat and drought when you need power most. Nuclear reactors require enormous quantities of water to operate. If water sources diminish significantly or become too hot, due to droughts and heat waves (expected to increase under global warming), reactors cannot operate safely.

Response: *As described in Section 8.6, the NRC staff considered and eliminated a standalone solar power alternative from the range of reasonable alternatives to relicensing LGS. Alternatives that cannot meet future system needs by providing amounts of baseload power equivalent to LGS's current generating capacity do not justify inclusion in the analysis of reasonable alternatives. The potential for solar technologies to serve as a reliable baseload power alternative to LGS depends on the value, constancy, and accessibility of the solar resource. Within PJM, solar PV installations receive a 38-percent capacity credit (PJM 2014). On this basis, approximately 6,160 MWe of solar capacity would be necessary to replace LGS. While it is theoretically possible to replace LGS's capacity with solar photovoltaic technology, land requirements for such a facility would be significant. Exelon (2011) estimates that a utility-scale solar PV facility located in PJM receives 2.8 to 3.9 kWh of solar radiation per square meter per day. As a result, Exelon estimated that a solar PV facility would require approximately 6.5 ha (16 ac) per MWe of capacity (Exelon 2011). Thus, the total area necessary for solar PV installations in PJM to produce 6,160 MWe is approximately 40,000 ha (98,900 ac). The 2013 GEIS states that solar PV systems may have "substantial land requirements" and therefore believes that Exelon's land use estimate is reasonable.*

In addition, in the GEIS, the NRC noted that, by its nature, solar power is intermittent (i.e., it does not work at night and cannot serve baseload when the sun is not shining), and the efficiency of collectors varies greatly with weather conditions. A solar-powered alternative would require energy storage or backup power supply from other sources to supply equivalent electric power at night. Further, installations of solar panels on residential and commercial rooftops are referred to as "distributed solar power," and it is theoretically possible to replace LGS's annual generation with these types of solar installations. Assuming a 90-percent capacity factor, LGS produces over 20 million megawatt hours annually. Based on an average house size of 139 m^2 (1,500 square feet (ft^2)) with a usable roof space of 70 m^2 (753 ft^2) and a conversion efficiency of 15 percent, over 1,000,000 new or existing homes would have to be fitted with solar panels to replace the generation from LGS. With a 2009 inventory of 927,000 detached single-family homes, (http://www.census.gov/housing/ahs/data/philadelphia.html), all of these structures (plus 73,000 other structures of this size) in the Philadelphia metropolitan area would likely require installations of solar panels under this proposed alternative. Without significant government or utility incentives, installation of distributed solar panels on this scale in either commercial or residential applications is unlikely. In addition, this solar alternative would require energy storage or backup power supply from other sources at night to supply baseload generation equivalent to that of the LGS. For these reasons, NRC did not evaluate distributed solar as an alternative to LGS license renewal.

The comment also addresses the air and water impacts of the proposed action versus that of solar and wind power. These impacts were evaluated in Chapter 8 of the SEIS. The impacts were characterized as SMALL for all three scenarios, although the staff noted in Section 8.8 that impacts on air quality are less from continued operation of LGS than from any of the alternatives involving fossil fuels, though they are likely to be greater than wind and solar PV alone. NRC staff assessed the environmental impacts of the proposed action and alternatives based on the staff's technical evaluation using the best available information. NRC staff characterized potential environmental impacts for each resource area as SMALL, MODERATE, or LARGE

based on the definitions of these impact levels in 10 CFR Part 51. Chapter 8 provides a discussion of these technical evaluations and a technical basis for the impact determinations for the alternatives and Chapter 4 provides similar information for the proposed action. In addition, in Section 8.8 the staff concludes that impacts are less from continued operation of LGS than from any of the alternatives involving fossil fuels, though they are likely to be greater than wind and solar PV alone. Based on the evaluations in Chapters 4 and 8, the staff concludes that the environmental impacts of renewal of the operating license for LGS would be smaller than those of feasible and commercially viable alternatives studied in this SEIS that satisfy the purpose and need of license renewal (i.e., providing 2,340 MWe of baseload power to the grid).

The comments also relate to security concerns and operational programs. Site security and operational programs are outside the scope of the environmental review. An NRC safety review, which includes security and operational program considerations, for the license renewal period is conducted separately. Although a topic may not be within the scope of review for license renewal, NRC is always concerned with protecting health and safety. Any matter potentially affecting safety can be addressed under processes currently available for existing operating licenses, such as the reactor oversight process (ROP).

These comments do not provide new and significant information and does not fall within the scope of the license renewal; therefore, no changes were made to this SEIS.

Comment: 5-30-AL; How can NRC justify the risks to the public caused by Limerick's pervasive safety violations, when demand for nuclear energy is down, alternative energy is available, and so many local businesses have chosen solar over nuclear?

Response: *The comment relates to operational safety. Operational safety is outside the scope of the environmental review. An NRC safety review for the license renewal period is conducted separately. Although a topic may not be within the scope of review for license renewal, NRC is always concerned with protecting health and safety. Any matter potentially affecting safety can be addressed under processes currently available for existing operating licenses, such as the ROP. This comment does not provide new or significant information and does not fall within the scope of the license renewal, as set in 10 CFR Part 51.*

Regarding the aspects of the comment relating to nuclear energy demand, availability of alternative energy and the energy choices of local business, the NRC ultimately makes no decision about which alternative (or the proposed action) to carry out because that decision falls to utility, state, or other Federal officials. However, the Commission's regulations require that NEPA impacts associated with these alternatives be disclosed (10 CFR 51, Appendix A(5)). Comparing the environmental effects of these alternatives, however, will assist the NRC in its decision as to whether the adverse environmental impacts of license renewal are so great as to deny the option of license renewal for energy-planning decisionmakers (10 CFR 51.95(c)(4)).

This comment does not provide any new and significant information; therefore, no changes were made to this SEIS.

Comment: 13-5-AL; [I]t's one of our contentions that the industry and the agency have colluded to avoid answering questions about the lesser environmental impact from the on-coming renewable energy renaissance, revolution that is happening, that is attracting investment and is growing by leaps and bounds. The NRC doesn't want to make that kind of information in its Environmental Impact Statement.

Response: *NRC staff assessed the environmental impacts of the proposed action and alternatives based on the staff's technical evaluation using the best available information. NRC staff characterized potential environmental impacts for each resource area as SMALL, MODERATE, or LARGE based on the definitions of these impact levels in 10 CFR Part 51.*

Chapter 8 provides a discussion of these technical evaluations and a technical basis for the impact determinations for the alternatives and Chapter 4 provides similar information for the proposed action. Based on the evaluations in Chapters 4 and 8, the staff concludes that the environmental impacts of renewal of the operating license for LGS would be smaller than those of feasible and commercially viable alternatives studied in this SEIS that satisfy the purpose and need of license renewal (i.e., providing 2,340 MWe of baseload power to the grid).

This comment does not provide any new and significant information; therefore, no changes were made to this SEIS.

Comment: 30-8-AL; Section 8 of the GEIS Supplement retains many of the factual, legal, and analytical errors in the Applicant's ER previously identified by NRDC. See Natural Resources Defense Council Combined Reply To Exelon And NRC Staff Answers To Petition To Intervene In the Matter of EXELON GENERATION COMPANY, LLC (Docket No. 50-352-LR, Docket No. 50-353-LR (Limerick Generating Station, Units 1 and 2)) January 6, 2012 (License Renewal Application), p. 46–78. Furthermore the GEIS Supplement for LGS fails to conform to the basic guidelines for consideration of the No Action Alternative outlined in the GEIS (NUREG-1437, 1996). The Commission makes a distinction, as do all Federal agencies subject to NEPA, between the analysis of reasonable alternatives that satisfy the purpose and need for a proposed action—in this case meeting the future base load generating requirement currently being met by LGS via license extension or a reasonable alternative—and the alternative of no action, which by definition would not satisfy the purpose and need for nuclear or equivalent "base load" capacity, but might offer other advantages, such as the preservation of important environmental equities and/or the avoidance of significant environmental risks - such as a severe accident at LGS affecting the health, property, and livelihoods of millions of people within a 50 mile radius of the plant -- which could be uncovered through a NEPA analysis.

The Nuclear Regulatory Commission's (NRC's) environmental review regulations implementing NEPA (10 CFR Part 51) require that the NRC consider all reasonable alternatives to a proposed action before acting on a proposal, including consideration of the no-action alternative. The intent of such a consideration is to enable the agency to consider the relative environmental consequences of an action given the environmental consequences of other activities that also meet the purpose of the action, *as well* as the environmental consequences of taking no action at all. GEIS at 8-1 (emphasis added).

Thus, as is clear from the preceding quotation, the Commission regards the "No Action Alternative" as distinct from, and therefore not interchangeable with, consideration of the "Proposed Action" and "reasonable alternatives" that "also meet the purpose of the action."

Almost by definition, then, analysis of the "No Action Alternative" cannot be equated with satisfying the purpose and need for the proposed action, and therefore the required NEPA consideration of "No Action" cannot reasonably be equated with "replacing the generating capacity of LGS," or limited to an analysis of this particular problem. Instead, as we stated previously in our Contention 4E concerning the ER, absent LGS license extension, the likely evolution of electricity system resources [in the PJM Interconnection] is an empirical and analytical question…that necessarily involves making an informed projection of the likely portfolio of PJM electricity system resources available in the region served by LGS beginning 13 years and 18 years hence that could reasonably be expected to supply the *energy services* currently supplied by LGS." As we have stated previously, the "reasonably foreseeable system resources" available under no action include, *in addition to* those reviewed by Exelon as reasonable alternatives to extended operation of LGS, all forms of Demand Side Management (DSM), waste heat co-generation, combined heat and power, and distributed renewable energy resources (including rooftop and parking-lot PV solar, wind, small hydro, and gasified biomass

feeding small combustion turbines and fuel cells). The draft GEIS Supplement analysis of the No Action Alternative fails to consider the environmental impacts of this reasonably foreseeable *portfolio* of PJM system resources, and thereby fails to make the required comparison between the environmental impacts of No Action and the continued operation of LGS for an additional 20 years. Although now dated, the 1996 GEIS clearly suggests and sanctions this approach to analysis of the No Action Alternative. Section 8.1 of the GEIS includes a brief, but highly instructive discussion of "conservation and power import alternatives[.]"

Although these alternatives do not represent discrete power generation sources[,] they represent options that states and utilities may use to reduce their need for power generation capability. In addition, energy conservation and power imports are possible consequences of the no-action alternative. GEIS at 8-2 (emphasis added).

The GEIS outlines the necessary scope of environmental analysis for the no-action alternative as follows:

[T]he no-action alternative is denial of a renewed license. Denial of a renewed license as a power generating capability may lead to a variety of potential NRDC COMMENTS ON draft GEIS Supplement 49 June 27, 2013[,] page 9 of 24 outcomes. In *some* cases denial may lead to the selection of other electric generating sources to meet energy demands as determined by appropriate state and utility officials. In *other* cases, denial may lead to *conservation measures* and/or *decisions* to *import power.* In addition, denial may result in a *combination* of these different outcomes. Therefore, *the environmental impacts of such* resulting alternatives would be included as the environmental impacts of the no action *alternative.* GEIS at 8-2 (emphasis added).

The draft GEIS Supplement fails to take this integrated portfolio approach to its analysis of the No Action Alternative, and to a considerable extent, this deficiency also affects its analysis of reasonable alternatives for LGS replacement. In particular, it fails to project how the *current level of energy services* supported by LGS "baseload capacity" within PJM could be supplied 10 and 15 years hence by a balanced portfolio of end-use energy efficiency improvements, avoidance/reduction of transmission losses, utility-scale wind power (both land and offshore), residential solar, institutional/industrial/commercial rooftop solar, parking-lot solar, small hydro, small wind, distributed geothermal, industrial waste-heat cogeneration, residential and commercial combined heat and power systems, landfill and agriculture biogas generation using fuel cells and/or small combustion turbines, emerging wave/tidal/ocean thermal technologies, utility scale NGCC, and if needed, power imports from outside PJM. Such balanced portfolios for replacing existing traditional large-scale baseload generating assets are objectively reasonable and are indeed the target of current explicit state and federal policies.

Response: *The staff reviews and considers the details of the applicant's ER. In addition to that review, the NRC performs an independent assessment of the environmental impacts of proposed alternatives, including the No Action Alternative. Any information provided in the ER is evaluated by the staff prior to the NRC's independent assessment which informs the SEIS.*

The scope of the analysis of the no-action alternative is intended only to consider the environmental effects that arise directly as a result of plant shutdown, if NRC denies the application to renew the operating licenses for LGS. The No Action Alternative was evaluated and discussed in Section 8.7 of the SEIS. Section 8.2 of the GEIS states that "the no-action alternative is denial of a renewed license." Denial of a renewed license as a power generating capability may lead to a variety of potential outcomes. In some cases, denial may lead to the selection of other electric generating sources to meet energy demands as determined by appropriate state and utility officials. In other cases, denial may lead to conservation measures or decisions to import power or both. In addition, denial may result in a combination of these

different outcomes. In the SEIS, 18 alternatives to the proposed action were considered, including DSM and renewable resources. DSM and some other renewable resources were eliminated from detailed study because the staff determined that they cannot meet future system needs by providing amounts of baseload power equivalent to LGS's current capacity and, in some cases, whose costs or benefits do not justify inclusion in the range of reasonable alternatives. Assuming that a need currently exists for the power generated by LGS, the no-action alternative would require the appropriate energy planning decisionmakers (not NRC) to rely on an alternative to replace the capacity of LGS. For that reason, the environmental impacts of alternative energy sources are equally applicable to the no-action alternative in that the alternatives analyzed in this section are all possible actions resulting from denial of a renewed license.

This comment does not provide any new and significant information; therefore, no changes were made in the SEIS.

Comment: 30-9-AL; (page 8-2, line 7) "The NRC ultimately makes no decision about which alternative (or the proposed action) to carry out because that decision falls to utility, state, or other Federal officials. Comparing the environmental effects of these alternatives, however[,] will help NRC decide whether the adverse environmental impacts of license renewal are so great as to deny the option of license renewal for energy-planning decisionmakers (10 CFR 51.95(c)(4)."

The referenced regulation states, in pertinent part: "The Commission shall determine whether or not the adverse environmental impacts of license renewal are so great that preserving the option of license renewal for energy planning decisionmakers would be unreasonable." By failing to compare the environmental consequences of license renewal for the obsolescent LGS reactors—including the consequences of a low probability but severe LGS accident and the full life cycle consequences of LGS fuel production, storage, and disposal—with a reasonably projectable range of balanced electricity portfolios (comprised of energy efficiency and numerous distributed low-carbon energy resources) as outlined above, the draft GEIS Supplement fails to supply the information necessary to a fully informed, NEPA-compliant comparison of the environmental risks and consequences of the Proposed Action with the alternative of No Action, while also arbitrarily excluding such balanced low-carbon portfolios from its analysis of "reasonable" alternatives for LGS capacity replacement.

Response: *10 CFR 51.95(c)(4) states, in pertinent part: "…the NRC staff, adjudicatory officers, and Commission shall determine whether or not the adverse environmental impacts to license renewal are so great that preserving the option of license renewal for energy planning decicsionmakers would be unreasonable." Regarding severe accidents, the Severe Accident Mitigation Alternatives (SAMA) Analysis is limited to the proposed action, in this case, the operation of a nuclear power plant. It is a method to determine potential cost-beneficial measures, or mitigation, to reduce the probability and the resulting consequences of severe accidents. In accordance with 10 CFR 51.53(c)(3)(ii)(L), the license renewal Environmental Reports must provide consideration of alternatives to mitigate severe accidents if the staff has no previously evaluated SAMAs for the applicant's plants in an environmental impact statement or related supplement, or in an environmental assessments. LGS is a plant that had a previous SAMA documented in a NEPA document. Therefore, Exelon was not required to, and did not, submit a SAMA in its license renewal ER. Exelon did consider whether new and significant information affects the environmental determination in the NRC regulations. The staff also analyzed the information in the applicant's ER with respect to the 1989 SAMDA Analysis for LGS, public comments, and its own review of information relevant to LGS to search for new and significant information with respect to the NRC's determination not to conduct a second SAMA analysis at LGS for license renewal and the studies and assumptions underlying that*

determination. In conducting that search, the staff considered whether new information provided a seriously different view of the consequences of renewing the LGS operating license than previously contemplated. The staff also did not identify any new and significant information that rises to a level that requires staff to seek Commission approval to conduct a new SAMA analysis (similar to the waiver requirement that applies for Category 1 issues when staff identifies new and significant information). The impacts of all other new information do not contribute sufficiently to the environmental impacts to warrant their inclusion in a SAMA analysis, since the likelihood of finding cost-effective plant improvements that substantially reduce risk is small. Additionally, the staff did not identify a significant environmental issue not covered in the GEIS, or that was not considered in the analysis in the GEIS and leads to an impact finding that is different from the finding presented in the GEIS.

With regard to consideration of "life cycle consequences of LGS fuel production, storage, and disposal," on June 8, 2012, the United States Court of Appeals, District of Columbia Circuit, vacated the NRC's Waste Confidence Decision and Rule, after finding that it did not comply with NEPA. (See New York *v.* NRC*, 681 F. 3d 471 (D.C. Cir. 2012). Without the analysis in the Waste Confidence Decision, the NRC cannot assess how long the spent fuel will need to be stored on site. Therefore, the NRC has reclassified this GEIS issue from a Category 1 issue with no assigned impact level to an uncategorized issue with an impact level of uncertain. Therefore, the SEIS only considers the impact of onsite SNF storage for the term of the license renewal. The radiological impacts from the onsite SNF storage to human health during the term of the license renewal continue to be well within regulatory limits, and therefore meet the standard for a conclusion of SMALL impact.*

The impacts associated with onsite storage of SNF are discussed in Chapter 6 of the SEIS. This comment does not provide any new and significant information, therefore, no changes were made to the SEIS.

Comment: 30-10-AL; (page 8-2, line 25) "In evaluating alternatives to license renewal, the NRC considered energy technologies or options currently in commercial operation, as well as some technologies not currently in commercial operation but likely to be commercially available by the time the current LGS operating licenses expire." The GEIS Supplement does not appear to take into account technology change at all in its analysis, and in fact appears to rely on sources for the cost and performance of alternative generating technologies that are dated (e.g.[,] 2008, rather than 2012–13 when the GEIS Supplement analysis was prepared) suggesting that the Staff has continued to lean heavily on the flawed and dated analysis in the Applicant's ER. For example, the discussion of solar technology alternatives for replacing LGS Units 1 and 2 in *2024 and 2029,* respectively, is based on the technically dated 1996 GEIS, a ten-year-old analysis by utility-dominated Electric Power Research Institute (EPRI) conducted in 2003, the Applicant's own hugely deficient ER, which examines central station solar deployment alternatives that are absurdly unsuited to the geographic area served by PJM, and a *draft* 2010 BLM-DOE PEIS for "Solar Energy Development in *Six Southwestern States"* (emphasis added), while failing to cite a single document describing the extensive *distributed* solar development occurring right next door to LGS in the states of New Jersey and New York. The current and projected technical characteristics, capacities, and costs of various plausible solar and alternative low-carbon technologies, and combinations of such technologies are nowhere described, so there is no empirical basis for ascertaining whether the few arbitrarily selected and misconceived "alternatives" compare favorably or unfavorably with LGS license extension or the other large central stations alternatives ([p]ulverized coal, IGCC gas, new nuclear, and onshore wind) arbitrarily deemed "reasonable" and therefore subjected to "detailed" analysis. Nor does the draft GEIS Supplement make any attempt to project the performance and cost of solar and other renewable energy technologies that could plausibly be available beginning 10–

15 years hence as "reasonable" alternatives to LGS license extension, and potentially impose fewer environmental harms and risks than LGS and its supporting fuel cycle. Nor does the draft GEIS Supplement project the performance and cost of energy storage technologies and related low carbon technologies, such as fuel cells, that can "smooth" the output and extend the availability of "intermittent" renewable energy and thereby make it a round-the-clock dependable source of power on the grid. These vast gaps in the draft GEIS Supplement analysis are impossible to ignore.

Comment: 30-11-AL; (page 8-2, line 39) "Alternatives that cannot meet future system needs by providing amounts of baseload power equivalent to LGS's current generating capacity, and in some cases, those alternatives whose costs and benefits do not justify inclusion in the range of reasonable alternatives, were eliminated from detailed study." This statement abundantly illustrates why this analysis does not begin to fulfill the requirements of NEPA: (a) Please explain why, if NRC believes it is precluded from making a "decision about which alternative [including the proposed action] to carry out," it is nonetheless knows enough to both implicitly specify "future system needs" and then exclude alternatives that "cannot meet those needs by providing amounts of baseload power equivalent to LGS's current generating capacity?" (b) We note that the GEIS Supplement contains no projections of "future system needs," nor does it contain any evidence whatsoever that various plausible combinations of DSM, reduced-carbon distributed generation, and renewable energy resources would prove incapable of meeting future customer demand for energy services now met by LGS, thus requiring future dependence on LGS license extension or a similar large "baseload" facility.

Indeed, the analytical requirement that any "reasonable alternative" to LGS license renewal—with the exception of an exceptionally vague, barely considered "purchased power alternative" that is nonetheless deemed "reasonable"—must be comprised of a singular generating technology of equivalent effective generating capacity to LGS, is an unrealistic, unnecessary, arbitrary and capricious assumption. This is particularly true given that electric power from LGS license renewal or alternative would be sold into a competitive wholesale power market 10–*15 years hence*—allowing plenty of time for the Independent System Operator/Regional Transmission Organization (ISO/RTO) via competitive reverse auctions to "clear" the future capacity market represented by LGS's possible demise—and that DSM measures and all forms of utility-scale and distributed generation are free to compete in this marketplace to meet future demand.

Comment: 30-37-AL; (page 8-84, line 2, Alternatives Summary) The discussion under this heading presents conclusions that are based not on reasoned analysis supported by facts, but rather on the mere application of three vague qualitative labels—"SMALL," "MODERATE," and "LARGE," which are associated with no discernible quantitative measures of impacts, and are themselves frequently employed in combination—e.g.[,] "SMALL to MODERATE," "SMALL to LARGE," "MODERATE to LARGE["]—in a manner that further deprives the required comparison of environmental impacts among alternatives of any substantive meaning.

The lack of accurate up-to-date information on the environmental impacts and installed costs of various alternatives to LGS license extension deprives the analysis—and therefore the deciding agency, other federal agencies, state and local governments, and individual citizens—of any meaningful ability to weigh the environmental benefits and risks of these alternatives against their costs. The selection of alternatives deemed "reasonable" for detailed analysis is further biased by the imposition of an arbitrary screen that only "standalone baseload alternatives" capable of "replacing" LGS generating capacity *in toto* can meet the underlying purpose and need for LGS license renewal. Imposition of this screen excludes from detailed consideration a wide range of potential low-carbon/DSM/distributed generation/renewable energy *portfolios* that could plausibly provide the same level of energy services that would be otherwise be provided

by a 20[-]year LGS license renewal. In so doing, the draft GEIS Supplement ignores the clear requirement of NEPA to examine "all reasonable alternatives" to the Proposed Action—which courts have subsequently interpreted as requiring analysis of the full *range* of reasonable alternatives—including the environmental consequences of "No Action."

Response: *In developing its alternatives analysis, the NRC relied on published reports on each of the alternative energy technologies being considered. Importantly, the NRC's analysis of alternative energy technologies remained focused on the purpose and need of the proposed action, i.e., to provide an option that allows for power generation beyond the term of the current nuclear power plant operating license to meet future system generating needs, as such needs may be determined by state, utility, system, and where authorized, Federal (other than NRC) decisionmakers. In the SEIS, alternative technologies were evaluated for reliability (as a baseload power source), availability, resource requirements, environmental impact, and existing transmission infrastructure that would connect that alternative with the load centers being served by the reactor. Only after all such factors were considered were conclusions made regarding acceptable alternatives.*

To that end, 18 alternatives to the proposed action were considered, including DSM and renewable resources. DSM and some other renewable resources were eliminated from detailed study because the staff determined that they cannot meet future system needs by providing amounts of baseload power equivalent to LGS's current capacity and, in some cases, whose costs or benefits do not justify inclusion in the range of reasonable alternatives.

These comments do not provid any new and significant information, therefore, no changes were made to this SEIS.

Comment: 30-13-AL; (page 8-6, line 15) "In addition, because the natural gas-fired alternative derives much of its power from a gas-turbine cycle, and because it wastes less heat than the existing LGS unit, it requires significantly less cooling water." How much less? Please quantify this difference, both in terms of the consumptive uses of freshwater resources and the thermal loads discharged to receiving water bodies.

Comment: 30-14-AL; (page 8-6, line 17-20) The draft GEIS Supplement provides high capacity factors for LGS from 2003 to 2010. (a) Please provide the average capacity factors for these units before and after this time interval, and the average lifetime capacity factor achieved for each unit to date. (b) To what extent can the very high capacity factors achieved in this period be attributed to deferred maintenance and capital additions that must be recouped by higher downtimes in subsequent years? (c) To what extent might the very high capacity factors achieved for LGS from 2003 to 2010 reflect a higher degree of operating nuclear safety risk, due to the reluctance of regulators to interrupt economical operations to identify and rectify safety deficiencies? (d) In the more than two years since the Fukushima severe accident, and attendant increased regulatory attention, what has been the operating capacity factor of (a) the US nuclear fleet; (b) all reactors of the same design class as LGS (i.e.[,] GE-BWR Mark I's); (c) all reactors in the PJM Connection?

Comment: 30-15-AL; (page 8-6, line 23) "…the NRC presumes that appropriately sized units could be assembled annually to produce electrical power in amounts equivalent to LGS." (a) Why is it rational to presume that Natural Gas Combined Cycle (NGCC) capacity must nearly or entirely replace LGS capacity, leading to excessive fuel consumption and C[O^2] emissions, rather than examining supplemental NGCC use in a "firming" mode to support maximum achievable market penetration of clean renewable energy alternatives like wind and solar? (b) How much NGCC capacity would be required to firm and backstop sufficient wind, distributed PV, waste-heat cogeneration, and small hydro capacity to replace LGS Unit 1 in 2024 and Unit 2 in 2029, assuming a relicensed LGS capacity factor of 89% and implementation of DSM

measures that shrink future PJM demand for LGS output by an average 1.5% per year over 15 years? (c) Please compare the "load-following" characteristics of LGS versus efficient modular Natural Gas Combined Cycle (NGCC) generation. Which represents the better technology for load-following and "firming" high levels of market penetration for "intermittent" renewables?

Comment: 30-16-AL; (page 8-10, line 7) "The staff estimated that the consumptive water loss for an equivalent-sized combined cycle plant would be about one-third the LGS water use." Please quantify this comparison in gallons-per-day of consumptive use for each technology, and quantify the differences in thermal load discharged directly to receiving waters.

Comment: 30-17-AL; (page 8-10, lines 10–16) (a) Please present this stream flow calculation as a comparison between the LGS and IGCC alternative. (b) What is the reduction in stream flow in units of cubic meters per second and expressed as a percentage of the mean annual stream flow in the Schuylkill River, caused by operation of LGS, and what is this stream flow compared to the NGCC alternative? (c) What level of reduction in stream flow from LGS operation triggers "the need for low-flow augmentation from either the Delaware River or the Wadesville Mine Pool?" (d) Please provide technical references for the data used to make this comparison.

Comment: 30-18-AL; (page 8-12, lines 39–40) "Most of this land requirement would occur on land where gas extraction already occurs. Some natural gas could come from within Pennsylvania or nearby states." (a) Please provide the factual basis and references for these statements. (b) What percentage of this supply for a replacement NGCC plant might reasonably be expected to come from "fracked" natural gas sources?

Comment: 30-19-AL; (page 8-12, lines 41–44) Please provide the factual basis and references for the statement that satisfying the fuel requirement for an extended 20[-]year LGS operating life fuel requirement would result in the disturbance of 1,640 acres. Upon what assumptions, regarding ore grade, mining and processing techniques, and enrichment tails assay, is this calculation based?

Comment: 30-20-AL; (page 8-17, Section 8-2) "Supercritical Pulverized Coal-Fired Alternative": Please provide the detailed scientific and technical basis for the draft GEIS Supplement conclusion that, in light of the global scientific consensus surrounding coal power's outsized contributions to Global Warming, and the serious threat the latter presents to climate stability and species survival, a *new* Supercritical Pulverized Coal Plant with the approximate generating capacity of LGS is nonetheless a "reasonable" alternative to LGS license extension 10–15 years hence, while a low-carbon/renewable energy portfolio enhanced by DSM measures and another decade or more of technology improvements, as described earlier, is dismissed as "unreasonable." Take as much time as you like, as it will take you a long time to explain this assertion.

Comment: 30-21-AL; (page 8-20, lines 25–27) "Without CCS in place [i.e. the more likely deployment scenario] the staff's projected C[O^2] emissions for the SCPC alternative would be 18,363,843 tons (16,659,678 MT) per year. The overall impact from the releases of GHGs of a coal-fired alternative would be MODERATE." (a) Please describe the scientific and analytical basis for this statement? What specifically about the emission of 16.66 million metric tons of C[O^2], in addition to 559 MT of fine particulates and 1,118 MT of particulates qualifies as "MODERATE" in comparison to the air quality impacts of available and projected cleaner electricity portfolio alternatives? (b) Does this 16.66 million metric ton figure include the C[O^2]-equivalent emissions from all GHG gas sources involved in the coal mine-to-ash pond life cycle? If not, what would a more complete SCPC life cycle accounting amount to in metric tons of C[O^2] equivalent per year?

Comment: 30-22-AL; (page 8-28, line 11) "Several designs are possible for a new nuclear facility. However, a two-unit nuclear power plant similar to the existing LGS in output is most likely." (a) Please describe the "several designs" that NRC believes are not only "possible" but "reasonably foreseeable"—the relevant NEPA analytical standard—as partial or complete replacements for the license-extended capacity of LGS. (b) Please provide analytical support for the assertion that construction and operation of "a two-unit power plant similar to LGS in output" is "likely" in the economically competitive wholesale power environment of PJM, given that such costly units would have to be in the detailed planning stages today to be on line when LGS Unit 1's license expires in 2024. (c) Given the failure over the last 13 years of the ever impending "nuclear renaissance" to deploy a conventional gigawatt-class nuclear plant in a merchant power environment, please describe the set of economic and policy circumstances that NRC believes would make such a scenario "reasonably foreseeable" within the next 10–15 years. (d) Ironically, the draft GEIS Supplement fails to consider the contribution that purportedly safer, load-following, and less environmentally-intrusive Small (50–300 MWe) Modular Reactors (SMRs) might make to a low-carbon/renewable energy portfolio to "replace" LGS, even though the Commission is actively considering the licensing of such reactors within the same timeframe as LGS license extension. Please either justify or rectify this omission.

Comment: 30-23-AL; (page 8-31, lines 16–17) (a) Please offer quantitative technical support for the conclusion that "the overall impacts on surface water use and quality from construction and operations under the new nuclear alternative would be SMALL, and for the referenced determination (in 4.3.2) that "the impacts of LGS operations on surface water resources are SMALL" relative to other LGS license extension alternatives. (b) Please reconcile this conclusion with the finding on page 8-10, lines 3 to 16, that the "NGCC alternative would require much less cooling water than LGS Units 1 and 2, and consumptive water use would be much less…about one-third the LGS water use." (c) Since a gigawatt class nuclear power plant sets the top of the scale for power plant heat loading of aquatic environment and/or consumptive use of water (i.e.[,] it poses an unattractive tradeoff between two environmental harms) please explain how both the nuclear plant and an NGCC plant of equivalent capacity can, relative to each other, both have surface water impacts assessed as "SMALL"? (d) Are the harmful groundwater impacts of ISL uranium mining and natural gas "fracking" included in the assessment that the groundwater impacts of the LGS, New Nuclear, and NGCC alternatives are also "SMALL?" Please provide the empirical basis for this conclusion.

Comment: 30-24-AL; (page 8-33, lines 23–25) "According to GEIS estimates [that are now 17 years old], an additional 1000 ac (400 ha) of land would be affected by uranium mining and processing during the life of the new nuclear power plant." (a) Please clarify the comparison being attempted here—does the figure of 1000 ac affected by uranium mining and processing "during the life of the new nuclear plant" refer to the 20[-]year life of the new plant that is comparable to the 20[-]year license extension of LGS, or to the anticipated 60[-]year licensed lifetime of both plants[?] (b) If the latter, does this mean that NRC is asserting that fueling 2350 MW of nuclear capacity at LGS (or a new plant with similar specifications) for 20 years at >90% capacity factor would only require the disturbance of 1000/3 = 333.33 acres of land for mining, processing, conversion, enrichment, waste storage, fuel fabrication, and disposal? (c) Please provide the complete technical assumptions and methodology used in making this calculation, including the ore grade, mining technology, enrichment tails assay, and fuel burnup assumed in the original GEIS analysis and any updates that may be justified in light of new information after the passage of 17 years.

Comment: 30-25-AL; (page 8-46 to 8-48, Section 8.5: Purchased Power) Despite its alleged status as a "reasonable alternative" subjected to "detailed analysis" in the draft GEIS Supplement, this section is exceptionally brief (2.5 pages) and notably devoid of any

quantitative or even qualitative analysis. The projected mix(es) of "purchased power," including DSM resources, that could reasonably "replace" LGS Unit 1 in 2024 and Unit 2 in 2029 are nowhere specified, not even qualitatively, and the various broad "area impact" discussions consist of a single paragraph each and carry the usual meaningless labels made worse by[,] in most cases[,] embracing a fuzzy *qualitative range.* You can't get much further than that from an accountable quantitative analysis that can be objectively evaluated and assessed for accuracy.

Thus we are told, for example, that impacts from this unspecified mix of purchased power would be "Small to Moderate" for "Air Quality" and "Terrestrial and Aquatic," but "Small to Large" for "Land Use" and "Socioeconomics, Transportation, and Aesthetics." How these and other environmental conclusions were arrived at is a mystery, as the analysis is unmoored from any factual or analytical foundation.

The potential role of DSM resources receives a backhanded acknowledgement—"At some times, some portion of replacement power needs may be addressed by PJM's demand response program"—but this nod literally begs the questions "when" and "what fraction" of LGS replacement power needs could be met by DSM resources? PV solar and other distributed low carbon generation (e.g.[,] small wind, small hydro, industrial waste heat co-gen, combined heat and power, landfill/water-treatment/agricultural bio-gas) appear to be excluded from the "analysis," which merely refers to the Staff's "assessment" that "purchased power" 10 and 15 years hence "would likely come from one or more of the other types of alternatives considered in this chapter," but the analysis refers by name only to "the new nuclear, coal, and natural gas, and wind alternatives described in previous sections," and the mix of even this limited menu of resources that qualifies as "reasonable" (by virtue of its comparative environmental consequences) is never specified. In other words, this section fails to meet the minimum standard for analysis required under NEPA and the NRC's own implementing regulations.

Comment: 30-26-AL; (page 8-49, Section 8.6: Alternatives Considered but Dismissed) This section is plagued by a dearth of technical data and analysis to support its conclusions, and therefore not surprisingly its environmental conclusions range from misguided to false.

Response: *This series of comments are all requesting specific data and analyses that NRC staff reviewers developed to arrive at their conclusions. NRC staff assessed the environmental impacts of the proposed action and alternatives based on the staff's technical evaluation using the best available information. NRC staff characterized potential environmental impacts for each resource area as SMALL, MODERATE, or LARGE based on the definitions of these impact levels in 10 CFR Part 51. Chapter 8 provides a discussion of these technical evaluations and a technical basis for the impact determinations for the alternatives and Chapter 4 provides similar information for the proposed action. In addition, in Section 8.8 the staff concludes that impacts on air quality are less from continued operation of LGS than from any of the alternatives involving fossil fuels, though they are likely to be greater than wind and solar PV alone. Based on the evaluations in Chapters 4 and 8, the staff concludes that the environmental impacts of renewal of the operating license for LGS would be smaller than those of feasible and commercially viable alternatives studied in this SEIS that satisfy the purpose and need of license renewal (i.e., providing 2,340 MWe of baseload power to the grid).*

These comments do not provide any new and significant information, therefore, no changes to this SEIS were made.

Comment: 30-27-AL (page 8-49, lines 17–20) "Although some aspects of solar generation result in few environmental impacts, solar technology requires substantial land areas." This statement is misleading, and should be revised to say: "Although most (but not all) aspects of solar generation result in little or no harmful environmental impacts, and even net environmental benefits—for example[,] the shading and weather protection afforded by solar parking

structures, and the avoidance of long-range transmission impacts afforded by electricity production on or near the site of electricity consumption—some large utility-scale implementations of solar technology require substantial land areas, and some CSP technologies require roughly the same amount of water for cooling of the steam cycle as most other thermoelectric technologies."

Comment: 30-30-AL; (page 8-50, line 35) Contrary to Exelon's absurd portrayal in its ER of a virgin land-based 98,900[-]acre solar PV replacement for LGS license extension, "the Staff notes that much of the solar capacity installed in PJM is likely to be in the form of rooftop installations," and acknowledges that "this type of installation minimizes land disturbance, can provide electricity to end-users, and minimizes the modifications necessary to the transmission system[.]" Unfortunately, the draft GEIS Supplement does not follow through on the logical implications of these (already widely understood) beneficial characteristics of distributed PV solar, nor explore the likelihood that 100% of all solar PV "land-based installations" could also be undertaken on already disturbed land areas, such as parking lots, freeway embankments, abandoned military bases, and urban-industrial "brownfields, meaning that solar deployment in the densely populated PJM connection area would not require *any conversion* of current land in open space uses (e.g.[,] farm land, wildlife habitat, forest areas) to PV solar power production."

Comment: 30-28-AL; (page 8-49, line 21) "The potential for solar technologies to serve as reliable baseload power alternative (sic) to LGS depends on the value, constancy, and accessibility of the solar resource." But who is insisting that solar serve as a "reliable baseload power alternative." This is about as sensible as asserting, "The potential of Roger Federer to serve as a reliable quarterback in the NFL depends on the constancy of his throwing arm and his accessibility to the defense." It's asking current solar technologies to forgo what they do well—serving daytime intermediate and peaking power loads—and forcing them to do what everyone knows they can't (yet) do (until the advent of economical large scale electrical storage technologies[)]—provide 24-7 round the clock power to the grid in "discrete baseload applications."

Forcing solar technologies into the irrelevant straitjacket of "discrete baseload applications" is a none too subtle device to tilt the analytical playing field away from the applications that maximize solar's advantages and toward those that maximize the strengths of nuclear power, coal, and gas central-station alternative. Get rid of the "standalone baseload" assumption, and embed solar energy in a portfolio of other renewable and low-carbon electricity resources with *complementary characteristics,* and there is basically no limit to the reliable integration of solar energy into the future electricity grid. Such a system will necessarily be organized somewhat differently than the present system, allowing a far greater degree of autonomy, resilience, and reliability than the current central-station, hub and spoke model of electric power production and distribution that fails with virtually every intense summer thunderstorm or winter ice storm. In some areas of the country, some people are already meeting their entire electric power needs from off-grid solar applications, including round-the-clock availability via battery storage.

Comment: 30-29-AL; (page 8-50, line 10**)** "Because PV does not produce electricity at night and produces diminished amounts of power during particular weather conditions, the staff does not consider solar PV to provide a viable standalone alternative to license renewal." Again, no one save the NRC [s]taff and the Exelon is insisting that solar, in order to serve a portion of the load now served by LGS, must by itself provide a "viable standalone alternative to license renewal." This is an arbitrary hurdle confected by the [a]pplicant and [s]taff that bears no resemblance to reality.

In the real world of wholesale power markets and emission controls, there is no "standalone" baseload alternative to a 2.3[-]GW twin-unit nuclear plant save another 2.3[-]GW (or larger)

twin-unit nuclear plant. As the draft GEIS Supplement tacitly acknowledges by its acceptance of an *undocumented random mix* of "purchased power" on the wholesale power market as *a* reasonable alternative to LGS license extension, in the real world there are few if any "standalone" baseload options for LGS replacement power, and by far the likeliest LGS replacement option is a *portfolio* of resources, which by 2024 and 2029 will include a wide range of "reasonably foreseeable" electricity resources, including a significant rooftop and parking lot PV solar component.

Comment: 30-31-AL; (page 8-53, line 40) "The footprint of a utility scale standalone PV solar installation would be quite large. Based on Exelon's local PJM territory estimates, approximately 98,900 ac (40,000 ha or 155 mi^2 [400 km^2] of land would be needed to support a solar PV alternative to replace the LGS (Exelon 2011)." Why does the draft GEIS Supplement bother to repeat this absurd canard when the [s]Staff has already acknowledged on previous pages that its premises are false? No utility executive would seek to deploy such a massive solar facility on previously undeveloped land in the heavily populated PJM, nor would they obtain the environmental permits to do so, or the financing to purchase or lease that much land, and build the necessary transmission. It's a technical and economic non-starter. This farcical land-based "standalone" alternative distorts the range of solar PV environmental impacts reported in the draft GEIS Supplement (there is insufficient direct normal solar radiation in the PJM Connection area to support concentrating solar thermal power plants (CSP) plants).

Without this spurious alternative, the Land Use impacts of the "Solar PV Alternative" would be assessed as "SMALL" rather than "SMALL TO LARGE." "Terrestrial Ecology" impacts would likewise be "SMALL" rather than "SMALL TO MODERATE," and so on right down the list. If confined to existing structures and paved over areas in the already built urban and suburban environments, the PV solar alternative would have "SMALL" environmental impacts that would put it on par with the alleged assessed impacts of "continued operation of LGS," which are likewise deemed SMALL in all impact areas.

Response: *In Section 8.6.1.5, the NRC staff discussed the total land area required to support a solar PV alternative to replace LGS. The land area required would be up to 155 mi^2 (420 km^2) (see Section 8.6.1.7 of the SEIS). This represents a land area about 2.5 times larger than the land area of the District of Columbia. (The land area of the District of Columbia is 61.05 mi^2—see http://quickfacts.census.gov/qfd/states/11000.html.) However, the section also discusses the variability of the impact given that the alternative would include "many relatively small installations on building roofs or existing residential, commercial, or industrial sites."*

Additionally, as stated in Section 8.0 of the SEIS, "alternatives to renewing the LGS operating licenses must meet the purpose and need for the proposed action…." The proposed action is to "provide an option that allows power generation capability beyond the term of a current [in this case, LGS] nuclear power plant operating license…." LGS generates baseload power, thus alternatives considered must be capable of doing so as well. As stated in Section 8.6.1, solar PV systems have limitations that prevent them from being considered as a standalone system and was therefore eliminated on that basis. Solar power was also considered a part of a combination alternative in Section 8.6.2. That alternative was also eliminated from detailed study because NRC staff determined that the alternative may not be able to generate 2,340 MWe by the time the LGS licenses expire.

These comments do not provide and new and significant information, therefore, no changes were made to this SEIS.

Comment: 30-32-AL; (page 8-57, line 16) "Because this alternative [i.e. a combined 2300 MWe of installed wind capacity, 3000 MWe of solar PV capacity, and 400 MWe of NGCC capacity] many [may] not (sic) be able to generate 2,340 MWe because of the variable wind and

solar PV resources, the staff does not consider the wind, solar, and NGCC combination alternative to provide a viable standalone alternative to license renewal. The staff considers a standalone alternative here, however, because Exelon includes a wind, solar, and NGCC combination alternative in its range of alternatives to license renewal in the ER." This is a problematic and self-contradictory paragraph. First, it documents the fact that, for reasons that are not disclosed, the [s]taff's choice of reasonable alternatives is influenced not by the technical, environmental and economic performance of real world alternatives, by rather dictated by Exelon's earlier choice of alternatives in the ER, no matter how irrational these alternatives turn out to be when subjected to even a minimal review of relevant facts.

Second, it provides no analytical basis in the above alternative for truncating the fully dispatchable generation and storage components before attaining an aggregate capacity sufficient, with or without DSM measures, to reliably replace the energy services now supported by LGS. Of course, never mentioned is the fact that LGS itself *must be and is backed up* by excess grid "reserve capacity" (largely coal and gas-fired) for those times when one or both units are down for maintenance or even unplanned and possibly extended "outages," an inherent operational risk of nuclear plants.

Conceptually, this "load following" reserve capacity is no different from the intermediate generation resources needed to "firm" a combination of wind, solar and other renewable resources to whatever level of reliability is believed to be required. It is capricious to truncate this portfolio at some arbitrarily reduced level of readily dispatchable and responsive generation capacity (e.g.[,] at 400 MW of NGCC, as in this example) when it could just as easily include not only more natural gas NGCC capacity but also other distributed but reliably dispatchable resources, such as bio-gas, waste-heat cogen, pumped storage, battery storage, fuel cells, and small and large hydro, which together could reliably cover the range of integrated output fluctuations experienced by a geographically and technologically dispersed portfolio of renewable energy resources.

For example, why not include in this firming portfolio the 703 MWe of hydro potential (a 1997 number!) that the draft GEIS Supplement (p. 8-75, line 19) says is distributed across 104 sites in Pennsylvania, only one of which is larger than 100 MWe? Small hydro technologies have improved over the last 16 years, making it likely tha[t] *more than* 703 MWe could be extracted today from the state's hydro resources.

Comment: 30-33-AL; (page 8-78, line 18) "In the GELS [sic], the NRC indicated that technologies relying on a variety of biomass fuels had not progressed to the point of being competitive on a large scale or being reliable enough to replace a baseload plant such as LGS…the staff finds biomass fueled alternatives *are still unable to replace LGS capacity* and are not considered feasible alternatives to LGS license renewal (emphasis added)." *Once again, the draft GEIS Supplement employs an arbitrary and capricious construct—that each electricity technology considered must alone be sufficient to "replace LGS capacity"*—to ignore the contribution that "biomass fuels"—including fuel cells and microturbines running on captured methane from landfills, animal husbandry operations, and water treatment plants—could play in an integrated low[-]carbon electricity portfolio to provide the energy services that would otherwise be supplied by LGS license extension.

Comment: 30-34-AL; (page 8-79, lines 8–18) The fuel cell costs given in this paragraph are dated, and in any event, vary widely and should be expressed as a range based on the specific application and the value of the avoided costs arising from that specific application. For example, highly (70%) efficient distributed fuel cells running 75% on biogas and 75% in CHP mode offer significant avoided costs—e.g.[,] vastly reduced GHG emissions, and reduced transmission, fuel, and HVAC costs—that add up to a substantial value proposition that can

more than offsets their relatively high installed cost-per-kilowatt. NRDC believes that installed costs of fuel cell systems will go down significantly with the increased market penetration and higher production volumes of fuel cell systems in the time period leading up to the possible retirement of LGS Unit 1 in 2024.

The draft GEIS Supplement's unsupported assumption that "fuel cells are not economically or technologically competitive with other alternatives for electricity generation" may or *may not* hold true in 2024–2029. It thus merits closer analysis, given that distributed fuel cell power plants in the multi-megawatt range and smaller residential/commercial CHP systems are now being installed around the world, including by leading businesses in the U.S. These units have a high availability that approximates "baseload" power applications and could be employed to "firm" renewable energy output and render it "dispatchable" on the grid. As onsite-generated power at the point of consumption, they can also be employed to shed load from the transmission and distribution grid at peak times, and thus represent a potential DSM resource that would tend to reduce the need for extension of the full LGS plant capacity.

Comment: 30-35-AL; (page 8-79, line 12) Likewise, the installed cost of solar PV ($6,171/kW) given in the draft GEIS Supplement is wildly out of date, seemingly reflecting solar installed costs as of 2008, and thus suggests an lack of due diligence in preparation of the draft GEIS Supplement. As shown in the following chart, PV module prices have dropped 80% since 2008!

According to a December 2012 report from DOE's NREL and Lawrence Berkeley Laboratory, for utility-scale solar, the capacity-weighted average installed price *declined* from $6.2/W for projects installed during 2004–2008, to $3.9/W for projects installed during 2009–2010, and to $3.4/W for projects installed in 2011. (See http://emp.lbl.gov/sites/all/files/LBNL-5919e.pdf).

The draft GEIS Supplement analysis of solar alternatives appears to be predicated not only on faulty consumptive solar land use assumptions, but on erroneous cost assumptions as well, suggesting that the entire solar alternatives analysis must be redone.

Response: *The Council on Environmental Quality's "Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations" states that "[w]hen there are potentially a very large number of alternatives, only a reasonable number of examples, covering the full spectrum of alternatives, must be analyzed and compared in the EIS....What constitutes a reasonable range of alternatives depends on the nature of the proposal and the facts in each case." The NRC has determined that a reasonable set of alternatives should be limited to analysis of single, discrete electric generation sources and only electric generation sources that are technically feasible and commercially viable.*

As stated in 10 CFR Part 51, Appendix A, Section 5, "[a]ll reasonable alternatives will be identified." In the SEIS, 18 alternatives to the proposed action were considered, including combinations of different technologies and DSM. Section 8.0 of the SEIS states that the NRC staff "considered energy technologies or options currently in commercial operation, as well as some technologies not currently in commercial operation but likely to be commercially available by the time the current LGS operating licenses expire." The staff only examined in detail those alternatives that would be able to provide 2,340 MW of baseload by the time LGS's licenses expire. Alternative technologies were evaluated for reliability (as a baseload power source), availability, resource requirements, environmental impact, and existing transmission infrastructure that would connect that alternative with the load centers being served by the reactor. Only after all such factors were considered were conclusions made regarding acceptable alternatives.
In developing its alternatives analysis, the NRC relied on published reports on each of the alternative energy technologies considered. Importantly, the NRC's analysis of alternative energy technologies must remain focused on the purpose of the proposed action, i.e., to meet

future system generating needs, as such needs may be determined by state, utility, system, and where authorized, Federal (other than NRC) decisionmakers. This SEIS has accounted for any new and significant site-specific information developed since the preparation of the revised GEIS.

These comments do not provide any new and significant information; therefore, no changes were made to this SEIS.

Comment: 30-36-AL; (page 8-81, line 18, Comments on Section 8.7, No-Action Alternative) This section, which supposedly considers the environmental impacts of the "No Action Alternative" of not renewing the operating licenses of LGS Units 1 and 2 when they expire at the end of their current license terms, in 2024 and 2029, respectively. The section is only 3 pages long, including a half-page summary table, and thus constitutes a mere *pro[ ]forma* pretense at presenting a NEPA-compliant analysis of the environmental consequences—both harmful and beneficial—of "No Action." In fact, the analysis is impermissibly truncated because it addresses "only those impacts that arise directly as a result of plant shutdown," not including "the environmental impacts from decommissioning and related activities," which this section claims "have already been addressed in other documents," and other connected and reasonably foreseeable impacts.

This leaves prompt and direct "shut-down effects" as the only subject for analysis, and in all impact areas save one ("Socioeconomics," which may be "Small to Moderate") these are each assessed in a single paragraph as SMALL, making (absurdly) the impacts of "No Action" environmentally equivalent to the effects of "Continued Operation of LGS," which are likewise all assessed as being "SMALL." The vacuity of this analysis is readily apparent. How can the environmental consequences and risks of operating 2340 MWe of aging and technologically obsolescent nuclear capacity for an additional 20 years have no discernible difference in impacts when compared with not operating this capacity over the same time period?

Instead of reducing the required analysis of No Action to such meaningless comparisons, the draft GEIS Supplement must address the reasonably foreseeable range of real world consequences from implementing the No Action Alternative, such as potential increases in C[O^2] emissions and other pollution arising from increased reliance on fossil-fueled generation, to an increased reliance within PJM on DSM measures and low-carbon distributed generation, including vastly greater reliance on clean renewable energy solutions, to the less tangible benefits for citizens of the Philadelphia metro area of living with a reduced risk of being harmed by a severe nuclear accident. This section as currently drafted fails to comply with NEPA. Few potential impacts are examined, and none are quantified in a manner that admits meaningful comparison, as required by law.

Response: *The No Action Alternative was evaluated and discussed in Section 8.7 of the SEIS. The scope of the analysis of the no-action alternative is intended only to consider the environmental effects that arise directly as a result of plant shutdown if NRC denies the application to renew the operating licenses for LGS. Even with a renewed operating license, LGS will eventually shut down, and the environmental effects addressed in Section 8.7 will occur at that time. When LGS shuts down, either from the no-action alternative or at some time after license renewal, energy planning decisionmakers will be required to rely on an alternative to replace the capacity of LGS, rely on energy conservation or power purchases to offset parts of the LGS capacity, or rely on some combination of measures to offset and replace the generation provided by the facility. The environmental effects of such alternatives have been discussed and considered in the SEIS.*

Regarding the environmental impacts of decommissioning, those impacts are discussed in NUREG-0586, Chapter 7 of the license renewal GEIS, and Chapter 7 of this SEIS.

This comment does not provide any new and significant information; therefore, no changes were made to this SEIS.

A.2.2 Air & Meteorology (AM)

Comment: 2-8-AM; NRC must stop and delay all activities and actions related to Limerick Nuclear Plant's relicensing including finalizing this EIS until after several issues are addressed or take place.

……Number eight, Exelon installs filtration for Limerick's water intake to reduce harmful air pollution from the cooling towers....

Response: *Air pollutant emissions associated with LGS operations are presented in Section 2.2.2.1 of the SEIS. The NRC's evaluation of LGS's air emissions is presented in Section 4.2 of this SEIS.*

The commenter requests that NRC require Exelon to install filtration to the cooling towers to reduce emissions. Air permits for sources of air emissions at LGS are granted by the PDEP. The PDEP is responsible for developing, requiring and enforcing air permit criteria. The PDEP determines required pollution control technology.As discussed in Section 2.2.2 of the SEIS, as a condition of the Title V operating permit, Exelon is required to submit an annual compliance certification to the PDEP, which includes fuel usage and estimated air pollutant emissions. The methodology to estimate emissions is identified in the annual compliance certification, in accordance with the permit, and approved by the PDEP. The NRC staff requested and reviewed Exelon's Title V operating permit issued by the PDEP and annual compliance reports submitted to the PDEP (ML12110A222); LGS has been in continuous compliance with the requirements of the Title V permit .

This comment does not provide any new and significant information; therefore, no changes were made to this SEIS.

Comment: 2-61-AM; AIR POLLUTION—DRASTIC INCREASES IN DANGEROUS [PM_{10}] WERE PERMITTED FOR LIMERICK'S COOLING TOWERS IN 2009, YET NRC'S DRAFT CONCLUDED ENVIRONMENTAL IMPACTS FROM LIMERICK'S AIR POLLUTION WERE "SMALL."

THIS KIND OF AIR POLLUTION IS CONSIDERED MORE DEADLY THAN OZONE.

- IT IS NOT CREDIBLE FOR NRC TO CLAIM THE IMPACTS FROM LIMERICK NUCLEAR PLANT'S AIR POLLUTION ARE "SMALL."

LIMERICK'S DANGEROUS AIR POLLUTION HARMS HEALTH[.]

- LIMERICK IS CONSIDERED A MAJOR AIR POLLUTION SOURCE UNDER HEALTH-BASED STANDARDS OF THE CLEAN AIR ACT.

Comment: 4-7-AM; Limerick is a major air polluter under health-based standards of the Clean Air Act releasing so much air pollution from the cooling towers that a six-fold increase was granted in 2009 for the kind of air pollution that's more deadly than ozone.

Limerick's [PM_{10}] air pollution transports cooling tower toxics, pathogens and radionuclides into our air every day with 44 million gallons of steam. Exelon refused to install cooling towers at Oyster Creek[,] citing too much air pollution as the excuse. Need we say more?

Comment: 26-4-AM; Limerick is a major air polluter under health-based standards of the Clean Air Act, releasing so much cooling tower [PM_{10}], that Limerick needed a 6-fold permit increase in 2009. PM[$_{10}$] is considered more deadly than ozone.

Response: *As discussed in Section 2.2.2.1 of the EIS, Exelon maintains a Title V operating permit. The Title V operating permit is granted by the PDEP. PDEP is responsible for safeguarding the health of Pennsylvanians by achieving the goals of the Federal Clean Air Act (CAA), ensuring compliance with permitting requirements, and developing enforcement policies. The commenters note that Exelon applied for a Title V operating permit renewal in 2009; renewal of this permit was approved by the PDEP and the renewal did not reflect any change in air emissions from the facility and contained all the applicable requirements including monitoring, recordkeeping, and reporting (Pennsylvania Bulletin, Volume 39, Number 52: December 26, 2009). The 2009 Title V renewal revised the calculation methodology for PM_{10} emissions from each cooling tower at LGS (ML12110A233); the revised calculation methodology is more conservative and resulted in an increase in calculated PM_{10} emissions. There were no changes to cooling tower operation in the operating permit renewal.*

As noted by the commenters, Limerick is a major stationary source and subject to Title V permitting requirements. Major source status is determined by its potential to emit. As defined in 40 CFR 70.2, potential to emit is the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design. In other words, potential to emit is the complete and unrestricted operation of a source (365 days per year, 24 hours per day) at maximum design and emission rates. Actual emissions for a source will normally be less than the potential to emit as the operation is less than unrestricted operation. In accordance with the Title V permit, Exelon submits an annual compliance certification to the PDEP and emissions for 2007–2011 are presented in Table 2–1 of the EIS. As there are no plans for refurbishment for license renewal and there are no expected new air emissions associated with license renewal, the cumulative impacts from the proposed license renewal on air quality are SMALL.

These comments do not provide any new and significant information; therefore no changes were made to this SEIS.

Comment: 2-62-AM; LIMERICK NUCLEAR PLANT'S AIR POLLUTION INCLUDES:

- 1. Radiation—from routine operations and accidental
- 2. Schuylkill River Toxics—from withdrawing 56.2 Million Gallons Per Da[y]
- 3. Toxic Chemicals—from adding over 300 lbs per day to Cooling Tower
- 4. Greenhouse Gases, Combustion Chemicals & By-products—from Boilers, Etc[.]
- 5. Waste Fuel—from a Boile[r]

Comment: 2-63-AM; AIR POLLUTANTS from Limerick Nuclear Plant Include:

- Radiation
- PM[$_{10}$]
- VOCs
- NOx
- S[O_2]
- Arsenic

- Cadmium
- Chromium
- Lead
- PCBs
- Halogens

This dangerous SYNERGISTIC MIX continuously threatens the health of families in the region, especially children. ADDITIVE, CUMULATIVE HEALTH IMPACTS could be significant.

Response: *The comments identified above, along with supporting documentation submitted with the comments, raise concerns about air pollutant emissions from LGS and their impacts to human health, air emission sources at LGS, emission control technology, estimated emissions as opposed to actual emission measurements, permitted increases in air emissions by the PDEP, and radiation emissions.*

Chapter 2 of the EIS discusses air pollutant emissions and sources resulting from operations at LGS, and Chapter 4 of the EIS discusses the potential impacts on air quality from continued operation of LGS during the license renewal term.

The Environmental Protection Agency has set limits on six criteria air pollutants (O_3, CO, Pb, SOx, NOx, $PM_{2.5}$ and PM_{10}), known as primary standards, to provide public health protection, as these are considered harmful to public health. The CAA requires states to attain and maintain these standards. The PDEP is responsible for achieving the goals of the Federal CAA, by ensuring compliance with permitting requirements and developing enforcement policies.

As discussed in Section 2.2.2.1, LGS has a Title V permit issued by the PDEP to operate sources of air pollution at LGS, and Exelon is required to submit annual compliance certification to the PDEP. The NRC staff reviewed Exelon's emission inventory production reports for LGS for 2007 through 2011 that were submitted to the PDEP (ML12110A233), which identified the air pollutant emissions the commenter has highlighted. Emissions of criteria air pollutants resulting from operation are presented in Table 2–1, and the sources of air pollution, as noted by the commenter, are identified in Section 2.2.2.1 of the SEIS. Based on the NRC staff's review of LGS's air pollutant emissions and no planned site refurbishment activities during the license renewal term, the NRC staff concluded that the impact from continued operation would be SMALL.

In the supporting documentation provided with the comments, the commenter requests that NRC require Exelon to install filtration to reduce emissions; however, the PDEP is responsible for the requirements and enforcement of emission control technology. Additinally, the commenter expressed concernes about estimated calculated air emissions as opposed to actual measured air emissions. Exelon estimates actual air emissions and provides these estimated values to the PDEP as part of their annual compliance certification in accordance with the requirements of the Title V operating permit. The methodology to estimate emissions is identified in the annual compliance certification, in accordance with the permit, and approved by the PDEP. The NRC staff requested and reviewed Exelon's Title V operating permit issued by the PDEP (ML12110A222).

In the supporting documentation provided with the comments, the commenter also raised the concern that radiation emissions are omitted from the Title V permit. The NRC is responsible for regulating air emissions of radionuclides from nuclear power reactors. The Title V permit pertains to sources of criteria air pollutants (O_3, CO, Pb, SOx, NOx, $PM_{2.5}$, and PM_{10}) or hazardous air pollutants not regulated by the NRC. The impacts to human health from

radioactive effluent releases from LGS are discussed in Chapter 4 of the SEIS. Based on the NRC staff's review of LGS's radioactive effluent and environmental monitoring programs, the NRC concluded that doses were within NRC and EPA radiation protection standards and the impact during the license renewal term would be SMALL.

These comments do not present any new and significant information; therefore, no changes were made to this SEIS.

A.2.3 Aquatic (AQ)

Comment: 23-27-AQ; Dilution is not a solution for pollution. P. 2-45 line 11, Exelon has not conducted sampling or monitoring of aquatic biota in Possum Hollow Run[.] Why not? Almost criminal, has DEP? Read the NPDES Permit application and weep.

Where are the dredge spoils for the Vincent Dam that were removed from the Schuylkill River several years ago? Were they tested for RAM? Why is this information so hard to get?

Response: *Section 2.2.6 provides an overview of aquatic resources within the vicinity of LGS and its associated cooling system, including relevant aquatic monitoring and other studies conducted by Exelon and Federal, State, and local natural resource agencies. Sections 2.1.6 and 2.2.4.2 describe Exelon's NPDES permit and associated monitoring. For example, Exelon's NPDES permit specifies maximum levels of various chemical concentrations and thermal limits in the discharge. In general, the purpose of an NPDES permit is to ensure that the concentration of various chemicals, organisms, or other pollutants within water bodies meet mandatory state and Federal standards for clean water. This comment does not provide any new and significant information; therefore, no changes were made to this SEIS*

Comment: 23-38-AQ; Marcellus shale, page 4-47 line 28. Please note article attached p 5-29-13. New since LNPP went on line.

Comment: 23-39-AQ; Please explain this. Page 4-48 line 12 (4.12.3.4 conclusion). This is completely illogical and dangerous. New since LNPP went on line. Stresses on river. Recently for 8 years agonized over and Exelon won—river is now augmented and groundwater in Schuylkill County and the river devoted to LNPP. Yes—increasing urbanization[.] Yes—increasing demand for water. People have right to clean water depend on factors NRC can[']t qua[n]tify. How can you write that and then make a conclusion?

Response: *Section 4.12.3 describes the cumulative impacts to aquatic resources from other past, present, and reasonably foreseeable Federal and non-Federal activities that could have overlapping impacts with the continued operation of LGS. Section 4.12.3.2 specifically describes potential cumulative impacts from the mining of Marcellus shale. This section was updated based on new projects that have been considered or approved since publication of the draft SEIS.*

NRC staff characterized potential cumulative impacts on aquatic resources as SMALL to MODERATE by applying the definitions of these impact levels in 10 CFR Part 51. This assessment is based on the staff's technical evaluation using the best available information.

Comment: 32-14-AQ; Page 2-37, Lines 11 to 13, Section 2.2.6. During the water supply demonstration project (see LGS License Renewal Application Environmental Report, p. 3-8, Section 3.1.2.1), the DRBC removed temperature as a restriction on water withdrawal from the Schuylkill River, and the DRBC docket issued on May 8, 2013[,] did not reinstate any temperature restriction. Accordingly, Exelon requests that the sentence in lines 11 to 13 on page 2-37 be revised as follows: "When ~~temperature and~~ flow conditions in the Schuylkill River

do not meet DRBC criteria for water use, LGS secondarily relies[ ]on water from Perkiomen Creek."

Comment: 32-15-AQ; Page 2-40, Line 31, Section 2.2.6.1. During the water supply demonstration project (see LGS License Renewal Application Environmental Report, p. 3-8, Section 3.1.2.1), the DRBC removed temperature as a restriction on water withdrawal from the Schuylkill River, and the DRBC docket issued on May 8, 2013[,] did not reinstate any temperature restriction. Accordingly, Exelon requests that the sentence in lines 11 to 13 on page 2-37 be revised as follows: "As described in Section 2.1.6, LGS withdraws water from Perkiomen Creek, rather than the Schuylkill River, if the flow ~~and temperature~~ conditions in the Schuylkill River do not meet DRBC criteria for water use."

Response: *The NRC staff updated Section 2.2.6 of the SEIS to reflect the most current DRBC docket that was issued on May 8, 2013.*

Comment: 32-24-AQ; NRC's determination of SMALL to MODERATE cumulative impacts on aquatic resources is based on the combination of past flow alterations, increased suburban residential/commercial development, existing power/industrial/municipal NPDES dischargers, Marcellus shale/energy development activities, and climate change. Exelon requests that this conclusion be further clarified by adding the following sentence at the end of the paragraph in line 17 on page 4-48: "***However, the most significant contributory effects would come from activities in the region that are unrelated to continued LGS operation."***

Response: *Section 4.13.3 examines the cumulative impacts from other past, present, and reasonably foreseeable Federal and non-Federal activities that could have overlapping impacts with the continued operation of LGS. The NRC staff determined that the cumulative impacts from other past, present, and reasonably foreseeable activities would range from SMALL to MODERATE. As stated in Section 4.6 and stated in Section 4.13.3, impacts to aquatic resources from the continued operation of LGS would be SMALL. This comment does not provide any new and significant information; therefore, no changes were made to this SEIS.*

A.2.4 Climate Change (CC)

Comment: 28-3-CC; As new science emerges on the topic of Climate Change, this facility should consider adaptations that might be appropriate for the future. Please address this issue in the Final EIS[.]

Response: *NRC is actively engaged to stay abreast of changes in environmental conditions at its licensed facilities. In informing NRC's operating reactor license renewal environmental reviews, NRC utilizes consensus information from the U.S. Global Change Research Program (USGCRP). The USGCRP integrates and presents the prevailing consensus of Federal research on climate and global change, as sponsored by 13 Federal agencies. Climate change and its related impacts on air quality (Section 4.12.1), water resources (Section 4.12.2), aquatic resources (Section 4.12.3), and terrestrial resources (Section 4.12.4) are discussed in the EIS. The discussions identify the environmental impacts that could occur from changes in regional climate conditions specific to a resource area. Climate change adaptation of a facility is considered out of scope for the environmental review, which documents the potential environmental impacts of continued operation, and was not evaluated in the development of this SEIS.*

Implications of global climate change are important to the operating conditions and infrastructure of LGS. All currently operating nuclear power plants are located in consideration of site-specific environmental conditions. This siting analysis included consideration of meteorologic and hydrologic siting criteria set forth in 10 CFR Part 100, as applicable, and

nuclear power plants were designed and constructed in accordance with 10 CFR Part 50, Appendix A, General Design Criteria (GDC). These regulations require that plant structures, systems, and components important to safety be designed to withstand the effects of natural phenomena such as flooding from severe storms, without loss of capability to perform safety functions. Plant operations are dictated by NRC-issued operating license technical specifications which ensure that plants operate safely at all times. Technical specifications and operating procedures exist to ensure safe operation of the facility. Any proposed changes in operating conditions contrary to operating license technical specifications requires the NRC to conduct safety reviews of any such license amendment prior to allowing the specific licensee to continue operation. Additionally, the NRC evaluates nuclear power plant operating conditions and physical infrastructure to ensure continued safe operations through its reactor oversight program. If new information becomes available, the NRC evaluates the new information to determine if any changes are needed at existing plants or to its regulations.

The NRC performs a safety review of the applicant's license renewal application to determine if there is reasonable assurance that the effects of aging will not adversely affect any systems, structures, or components. The results of the safety review are documented in the SER.

This comment does not provide any new and significant information; therefore, no changes were made to this SEIS.

A.2.5 Cumulative Impacts (CI)

Comment: 2-14-CI; NRC staff also concluded that cumulative impacts from Limerick's license renewal would be small in all areas except aquatic ecology and terrestrial ecology. That conclusion is patently absurd. You arrogantly and irresponsibly dismiss the harms, risks, and threats from Limerick as callously as you consider the members of our community to be merely acceptable collateral damage.

Response: *The definition of a cumulative impact is the impact on the environment which results from the incremental impact of the action (license renewal) when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time.*

As discussed in Chapter 4 of the SEIS, with the exception of aquatic and terrestrial ecology, continued operation of Limerick during the license renewal term would have SMALL to no impact on environmental conditions in the region beyond what is already being experienced. For example, since Exelon has no plans to hire additional workers during the license renewal term, overall expenditures and employment levels at Limerick would remain unchanged with no additional demand for permanent housing and public services. Based on this and other information presented in Chapter 4 of the SEIS, there would be no contributory effect from the continued operation of Limerick on environmental conditions in the region beyond what is already being experienced. Therefore, the only contributory effects would come from reasonably foreseeable future planned activities at Limerick, unrelated to the proposed action (license renewal), and other reasonably foreseeable planned offsite activities.

This comment does not provide any new and significant information; therefore, no changes were made to the SEIS.

Comment: 9-1-CI; I am here to testify on behalf of the Schuylkill River Restoration Fund that Exelon supports. The Berks Conservancy has been a successful annual award recipient and implementer of the Schuylkill River Restoration Fund grants for agricultural best management practices since the inception of the fund.

The implementation of agricultural best management practices directly affect the quality of water in the Schuylkill River watershed and are done to positively impact the drinking water for hundreds of thousands of people who live in our region. The Schuylkill River Restoration Fund grant awards have been critical to the completion of dozens of agricultural best management practice projects on different farms in Berks County. These projects are done in prioritized subwatersheds of the Schuylkill River watershed, generally those where they are ranked as the most impaired.

The Schuylkill River Restoration Fund as a private grant fund has granted us over $1.3 million since 2008 and has enabled us to leverage larger, significant public funds including [U.S. Department of Agriculture] USDA Natural Resource Conservation Grants.

Our Schuylkill River Restoration Fund Agriculture Best Management Practice Project has taken a holistic approach to water protection utilizing conservation and nutrient management planning. The north storage barnyard patrols, stormwater controls, segregating clean rainwater from surface manures, stream bank venting, prescribed grazing, and riparian buffer restoration.

Investment in conservation measures on Schuylkill River watershed farms is critical on numerous fronts: upgrading farm facilities, especially in regard to the manure management and fertilizer dollars[,] helps to keep farmers competitive and successful. When farms are competitive and successful, conversation of farms to development is less likely to occur, thereby retaining fields capable of groundwater recharge as opposed to the impervious surfaces of housing and commercial ventures which generate serious stormwater and water quantity impact.

Proper management and timing of application of manure by segregation from surface waters on farms and stormwater generated on farms is not only beneficial to farmers' time management and bottom line, but it's also beneficial to plant growth and production and to water quality as nutrients are utilized by crops and not lost in streams, thereby protecting water quality.

The implementation of this agricultural best management practice, Schuylkill River Restoration Fund Project has also served as the impetus for public drinking water suppliers to participate and invest in these projects as additional funders and has been an exemplary model for public/private cooperation and a successful mode for accomplishing the work on the ground for water quality.

The Schuylkill River Restoration Fund has positively influenced the water quality and quantity of the surface water of the Schuylkill River watershed utilized by local and regional drinking water suppliers like Philadelphia Water Department, Aqua PA, Reading Area Water Authority, Western Berks Water Authority, Birdsboro Water Authority, and Kutztown Borough.

The Berks Conservancy strongly supports the continuation of the Restoration Fund for its benefit to the food and water supplies security of the Schuylkill River watershed and welcomes Exelon's continued support.

Response: *This comment expresses appreciation for Exelon's continued support for the Schuylkill River Restoration Fund. The comment highlights the positive influence the fund has had on water quality, and the quantity of surface water in the Schuylkill River watershed utilized by local and regional drinking water suppliers.*

The staff considered the comment to determine if the information provided would change the staff's findings in Chapter 4 of this SEIS that the potential cumulative impacts would range from SMALL to MODERATE, depending on the resource. The staff determined that the information provided in the comment did not provide new and significant information; therefore, no changes were to this SEIS.

A.2.6 Decommissioning (DC)

Comment: 2-28-DC; 2-3-13 It was reported that Exelon provided NRC with inaccurate information about how much money will be available to decommission Exelon's power plants, potentially hiding a shortfall of "roughly $1 Billion[."] This should show NRC why they can't trust any information provided by Exelon, especially in radiological monitoring reports.

Comment: 5-9-DC; Decommissioning. That's funded through hidden charges in our electric bills and through miscalculations, deliberate or not, on Exelon's part, $100 million will be needed for Limerick which Exelon wants ratepayers to fund. Exelon makes mistakes, but we pay for them.

Response: *The NRC does not assess licensee decommissioning financial assurance as part of license renewal; rather licensees are required to provide an updated decommissioning funding status report every two years for NRC review. The most recent licensee decommissioning funding status reports were submitted to the NRC in March of 2013 and the staff's analysis is summarized in SECY-13-0105, which is available on the NRC website.* *http://www.nrc.gov/reading-rm/doc-collections/commission/secys/2013/*

These commenst do not provide any new and significant information; therefore, no changes were made to this SEIS.

Comment: 23-42-DC; Closure and decommissioning should be clearly understood by local population. If the life is what will be left at the end and who is liable? So do a complete EIS for decommissioning[.]

Comment: 23-43-DC; What? P. 7-1, line 27. There are no site-specific issue related to decommissioning. The site will be the same whether or not the plant operates? Of course there are issues[,] and NRC should spell them out.

Comment: 23-44-DC; Brownfields is the biggest public scam there is[;] it[']s about liability and transferring it on to public. The spent fuels rods will be there. What will happens to them? Closure – What happens to radioactive materials like cement, steel, water, sole etc. in closure? What happens to the HLW pool? How long is Exelon liable? What gets dumped there?

Comment: 2-16-DC; In Section 9.3.2 of your EIS Exelon claims "after decommissioning these facilities, and restoring the area, the land could be available for other productive uses." This is a delusional conclusion, worthy of no less than four Pinocchios. This is the same land that Exelon claimed was worth zero when it fought to avoid paying its fair share of property taxes for years.

Response: *The impacts of decommissioning are described in the* Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities: Regarding the Decommissioning of Nuclear Power Reactors*, NUREG-0586 (decommissioning GEIS). Some activities (e.g., security and oversight of SNF) would remain unchanged, while others (waste management, office and clerical work, laboratory analysis, surveillance, monitoring, and maintenance) would continue at reduced or altered levels after the termination of reactor operations.*

The decommissioning process, by its very nature, generates wastes. The wastes generated are shipped off site, where they are permanently disposed of, or stored onsite for a certain period or indefinitely. Under the three decommissioning options analyzed in the decommissioning GEIS, the DECON process would generate the most waste. In this process, the equipment, structures, and portions of the facility and site that contain radioactive contaminants are removed and decontaminated to a level that permits termination of the license after cessation of operations. In the SAFSTOR process or ENTOMB process, the materials are left on site temporarily or permanently, respectively.

The types of wastes generated during decommissioning would include low level radioactive waste, mixed waste, hazardous waste, and nonradioactive, nonhazardous waste. No spent fuel, high level radioactive waste, or transuranic waste would be generated during decommissioning because spent fuel would have been removed from the reactor and stored in either the reactor's spent fuel pool or in an ISFSI before the start of decommissioning.

The NRC has developed regulations and guidance for the decommissioning of nuclear facilities, including nuclear power plants. These regulations are found in 10 CFR 50.82 (Termination of License), Subpart E to 10 CFR Part 20 (Radiological Criteria for License Termination), and the guidance document Consolidated NMSS Decommissioning Guidance*, NUREG-1757.*

At the completion of decommissioning, which may take up to 60 years to complete (10 CFR 50.82(a)(3)), the licensee would conduct a final status survey to demonstrate compliance with criteria established in the decommissioning plan. At the end of the decommissioning process, the nuclear power plant site and any remaining structures on the site may be released for unrestricted or restricted use. The radiological criteria for releasing sites for unrestricted use are given in 10 CFR 20.1402. The criteria for restricted conditions and alternate criteria that the NRC may approve under certain conditions are listed in 10 CFR 20.1403 and 10 CFR 20.1404, respectively.

These comments provided no new and significant information; therefore, no change was made to this SEIS.

A.2.7 Geology (GE)

Comment: 2-55-GE; Earthquakes can break and disrupt pipes. There is an earthquake fault right under the site, with four others within 17 miles.

Comment: 2-59-GE; Earthquakes can cause leaks by shaking and breaking Limerick's miles of underground pipes and vast numbers of fittings.

- Limerick is 3rd on the nation's earthquake risk list for nuclear plants.
- Two earthquake faults are extremely close to Limerick—9 miles and 17 miles away.
- There is great cause for concern, considering the August 23, 2011[,] earthquake

Comment: 4-2-GE; […]which reminds me, four months have passed since the NRC failed to get back to me when I asked how close the R[a]mapo fault line is to the Limerick nuclear reactors? Maybe I can get an answer today[.]

Comment: 4-14-GE; It took five months for the Nuclear Regulatory Commission to answer my question concerning how close the nearest fault[ ]line is to Limerick Nuclear Plant. No wonder! Two faults are dangerously close. Chalfont Fault is only 9 miles East. Ramapo Fault is 17 miles [n]orthwest. This is alarming!

Comment: 7-3-GE; My search for earthquake fault lines closest to Limerick Nuclear Plant is one big reason I have no confidence in any of NRC's conclusions in Limerick's Environmental Impact Statement. May 2011, I asked NRC how close the nearest fault lines were to Limerick Nuclear Plant. Six months later in September 2011 at the first EIS hearing, I repeated my request. When NRC finally responded, I received a letter and a map showing earthquake fault 17 miles from Limerick.

Later, I learned NRC failed to disclose an earthquake fault right under the Limerick site and two others within two miles. Local residents discovered a 1974 seismic study for Limerick in the Pottstown Library, clearly identifying these faults. So why did NRC fail to disclose these faults when I asked about the closest earthquake faults to Limerick?

Comment: 7-4-GE; The August 2011 earthquake in Virginia shook Limerick Nuclear Plant and caused a Limerick notice of violation. This should have caused NRC to require Exelon to reduce seismic risk immediately. Rosebrook did admit that the Ramapo Fault just 17 miles from Limerick is active. He also validated my concern about the blasting at the quarry bordering Limerick.

Comment: 30-3-GE; Limerick should NOT be approved for an extension with their permit for the following reasons:

- Limerick is designated as one of the TOP THREE nuclear plants in the country based on [its] construction (which is similar to the ones in Japan—and we see how they failed) and the fact that it sits on an earthquake fault line.
- The NRC JUST a few weeks ago stated that "more information needs to be done and studied" regarding further fortifying nuclear plants regarding earthquakes. Thus, until you folks know exactly what needs to be done, etc.[ ]THERE IS NOTHING TO APPROVE as long as Limerick sits in [its] current position.
- Do NOT think that earthquakes only happen on the West Coast—as we JUST had a 6+ earthquake less than a[ ]month ago. BY ONLY luck was there no damage to the plant, environment[,] or community.

Response: *These comments express concern that identified earthquake faults located near LGS could affect plant operations and safety as well as concern for measures to address seismic risk. Geologic and seismic conditions and related natural hazards were considered in the original siting and design of all nuclear power plants, including Limerick, and are part of the license bases for operating plants. Seismic conditions are attributes of the geologic environment that are not affected by continued plant operations and are not expected to change appreciably during the license renewal term. Seismic hazards and related natural phenomena are assessed in the site-specific safety review, where appropriate, that is performed for license renewals, rather than in the environmental review. NRC's Safety Evaluation Report for Limerick is available at http://pbadupws.nrc.gov/docs/ML1217/ML12173A470.pdf. This report is also available to the public through the ADAMS electronic reading room on the NRC's website (www.NRC.gov). The ADAMS accession number for the site report is ML12173A470.*

Further, the NRC requires all licensees to take natural phenomena, including seismic activity and related effects, into account in order to maintain safe operating conditions at all nuclear power plants. When new information becomes available, the NRC evaluates the new information to determine if any changes are needed at existing plants. This has been the case with all such events with lessons for maintaining safe operating conditions at nuclear power plants including the events of September 11, 2001, the accident at the Fukushima Dai-ichi nuclear power plant resulting from the March 11, 2011, Great Tohoku Earthquake and subsequent tsunami, and the August 23, 2011, earthquake near Mineral, Virginia, close to the North Anna Power Station. This evaluation process remains separate from license renewal.

For example, following the events of September 11, 2001, NRC required all nuclear plant licensees to take additional steps to protect public health and safety in the event of a large fire or explosion. If needed, these additional steps could also be used during natural phenomena

such as earthquakes, tornadoes, floods, and tsunami. In general, these additional steps are plans, procedures, and prestaged equipment, whose intent is to minimize the effects of adverse events. In accordance with NRC regulations, all nuclear power plants are required to maintain or restore cooling for the reactor core, containment building, and spent fuel pool under the circumstances associated with a large fire or explosion. These requirements include using existing or readily available equipment and personnel, having strategies for firefighting, operations to minimize fuel damage, and actions to minimize radiological release to the environment. Thus, topics related to the impact of earthquakes on plant systems are outside the scope of the environmental review. Nevertheless, as part of characterizing the environmental baseline (affected environment) and associated resource conditions of the Limerick site and vicinity, Section 2.2.3 of this SEIS includes a discussion of the geologic environment including its seismic setting.

The bedrock of the Eastern United States is essentially laced with faults and similar structural features that are primarily attributable to ancient tectonic events and associated displacement that has not continued into the present. Most of the mapped faults have no seismic significance at all as there has been no differential movement along most such faults since their formation, and no associated earthquake activity in recent times. Such is the case with the Triassic-age bedrock that underlies the LGS site as described in Section 2.2.3 of this SEIS. As discussed in Section 2.2.3, the small faults mapped in proximity to the LGS site have been well-documented, have not been active for at least 140 million years based on field studies, and they are not included in the U.S. Geological Survey's Quaternary Fault and Fold Database. Consequently, these small faults are not considered "capable" of producing earthquakes as defined in NRC's regulations at 10 CFR Part 100, Appendix A.

All earthquakes that do occur are centered on faults in the earth's crust, and the relatively infrequent earthquakes experienced in the Eastern United States are located on faults that are deeply buried, making identification of the causative fault difficult. For locations east of the Rocky Mountains, the best guide to earthquake hazard is the frequency and distribution of earthquakes themselves. Regionally, in association with tectonic margins in deep crustal rock, there are more extensive fault systems that have been associated with earthquake activity. As referenced by commenters, one of these is the Ramapo fault system, which is also described in Section 2.2.3 of this SEIS. Section 2.2.3 summarizes historical and current earthquake activity within the region surrounding Limerick.

These comments do not present any new and significant information; therefore, no changes were made to this SEIS.

Comment: 23-24-GE; P. 2-30 line 28 "…shaking would likely result[…]" too vague and wishful

Response: *This comment expresses concern over a statement in Section 2.2.3 of the SEIS regarding the effects from ground shaking expected to be produced in eastern Pennsylvania from a magnitude 6.0 earthquake occurring in southeastern New York or northern New Jersey. As part of characterizing the environmental baseline (affected environment) and associated resource conditions of the Limerick site and vicinity, Section 2.2.3 of this SEIS includes a discussion of the geologic environment, including its seismic setting, based on the best available information. However, no impacts or hazard analysis has been performed. Seismic hazards and related natural phenomena are assessed in the site-specific safety review, where appropriate, that is performed for license renewals, rather than in the environmental review.*

Seismic hazard is also addressed on an ongoing basis as part of the ROP and other processes, which are separate from license renewal.

As also cited in Section 2.2.3 and listed in Section 2.4 of the SEIS, the information referenced by the NRC staff in making the statement originates from a report from the Pennsylvania Department of Conservation and Natural Resources, Bureau of Topographic and Geological Survey. Specifically, the referenced report discusses historical shaking effects in eastern Pennsylvania from moderate earthquakes that occurred in 1737 and 1884.

For additional information, see also NRC's response to Comments 2-55-GE*, 2-59-GE, 4-2-GE, 7-3-GE, 7-4-GE, and 30-3-GE.staffThis comment does not present any new or significant information; therefore, no changes were made to this SEIS.*

Comment: 23-25-GE; P. 2-30 line 30 " adequately conservative" vague and pathetic considering all things Japanese.

Response: *This comment expresses concern over a statement in Section 2.2.3 of the SEIS regarding the level of earthquake-produced ground shaking for which LGS was designed. As cited in Section 2.2.3 and listed in Section 2.4 of the SEIS, the statement cited by the commenter is based on the Updated Final Safety Analysis Report for LGS. Geologic and seismic conditions and related natural hazards were considered in the original siting and design of all nuclear power plants, including Limerick, and are part of the license bases for operating plants. Further, the NRC requires all licensees to take natural phenomena, including seismic activity and related effects, into account in order to maintain safe operating conditions at all nuclear power plants. When new information becomes available, the NRC evaluates the new information to determine if any changes are needed at existing plants. For additional information, see also NRC's response to Comments 2-55-GE, 2-59-GE, 4-2-GE, 7-3-GE, 7-4-GE, and 30-3-GE.*

This comment does not present any new or significant information; therefore, no changes were made to this SEIS.

A.2.8 Greenhouse Gas (GHG)

Comment: 32-27-GHG; The LGS DSEIS states that the various studies reviewed show that "the relatively low order of magnitude of GHG [greenhouse gas] emissions from nuclear power, when compared to fossil fueled alternatives (especially natural gas), *could potentially disappear if* available uranium ore grades drop sufficiently . . ." (Emphasis added.) This statement is speculative, based on worst-case assumptions, and a review of the information presented in the draft LGS DSEIS reveals it to be incorrect. None of the studies cited in Table 6-3 (page 6-7) shows that the difference in GHG emissions between nuclear and natural gas would "disappear," even under the worst-case speculative conditions of declining ore grades and best-case future improvements in natural gas technology. *See*, *e.g.*, POST (2006) (showing GHG emissions nearly an order of magnitude lower for nuclear even under these assumptions). For this reason, Exelon suggests reevaluation of the accuracy of the conclusions in the draft LGS DSEIS regarding future relative magnitudes of GHG emissions from nuclear power plants compared to natural gas power plants.

Response: *The NRC staff relied on current available information in discussing its independent analysis of Greenhouse Gas Emissions in Section 6.2. Table 6–2 through Table 6–4 present a sampling and wide range of studies of lifecycle GHG emissions estimates of various electricity generation technologies. The statement the commenter identifies is supported by Mortimer (1990), Storm van Leeuwen and Smith (2008), and Sovacool (2008) (all cited in Table 6–3). These studies present data on the variation of carbon dioxide emissions released from nuclear power with uranium ore grade and illustrate that low grade uranium ores (less than 0.01 percent uranium oxide), nuclear power lifecycle carbon dioxide emission could potentially exceed those*

of fossil-fuel fired power plants. Storm van Leeuwen and Smith (2008) particularly present the comparison between nuclear power and a gas-fired power plant emissions with decreasing ore grade. The commenter references POST (2006), which is also presented in Table 6–3.

The statement regarding future relative magnitudes of GHG emission has not been revised as this independent analysis has presented current available data and the sources that support the statement questionedby the commenter However, the NRC staff recognizes that additional clarification should be provided and additional clarification has been inserted under the note on Table 6–2 and Table 6–3.

Comment: 32-28-GHG; On page 6-9, the draft LGS DSEIS states in line 40 that "[f]ew studies predict that nuclear fuel cycle emissions will exceed those of fossil fuels within a timeframe that includes the LGS periods of extended operation." However, none, rather than "few," of the studies cited in the draft LGS DSEIS appear to support this thesis. Therefore, Exelon suggests that the quoted sentence be deleted and replaced with the following sentence: "***Nearly all studies predict that nuclear fuel cycle emissions will remain an order of magnitude or more below those of all types of fossil fuels during the LGS periods of extended operation***."

Response: *The NRC staff agrees that this statement needs to be revised. However, there are studies that support that nuclear power GHG emissions can possibly exceed those of fossil fuels if the ore grade decreases after the year 2050 (See Storm van Leeuwen and Smith 2008). Since the renewed operating licenses would allow an additional 20 years of operation for Limerick Units 1 and 2, the renewed licenses would expire in 2044 and 2049, respectively. Therefore, the statement has been revised to read:*

Few studies (e.g., Mortimer 1990, Storm van Leeuwen and Smith 2008) predict that nuclear lifecycle emission will exceed those of fossil fuels as a result of declining ore grade, however, this is not expected to occur within the timeframe that includes the period of extended operation of LGS.

A.2.9 Groundwater (GW)

Comment: 2-52-GW; Some of Limerick's radioactive leaks continued for long periods of time unabated.

Comment: 2-53-GW; NRC never required clean-up of groundwater or soil and vegetation around it.

Comment: 2-56-GW; IN NRC'S DRAFT EIS FOR LIMERICK, NRC IRRESPONSIBLY CALLED LIMERICK'S GROUNDWATER CONTAMINATION "SMALL" AND MADE INACCURATE STATEMENTS.

- GIVEN THE LACK OF INDEPENDENT PROOF AND THE HUGE INCREASING RISK FOR RADIOACTIVE LEAKS IN THE MILES OF BURIED PIPES UNDER LIMERICK'S SITE, NRC'S CONCLUSION MUST BE CHANGED FROM "SMALL" TO "UNKNOWN[."]

Comment: 2-57-GW; THERE IS CAUSE FOR CONCERN, PRECAUTION, AND PREVENTION!

- AS A CONDITION OF RELICENSING, EXELON SHOULD BE REQUIRED TO CLEAN UP THE RADIOACTIVE GROUNDWATER AND SOIL THAT IS ALREADY CONTAMINATING THE SITE, TO TRY TO AVOID TRAVEL TO OFF-SITE RESIDENTIAL AND BUSINESS WELLS.

Comment: 2-60-GW; RADIOACTIVE GROUNDWATER CONTAMINATION CAN SPREAD INTO OFFSITE WELLS UNDETECTED NOW AND IN THE FUTURE

- Limerick is one of the 102 of 104 of our nation's nuclear reactors that contaminated groundwater with radiation.
- Groundwater is confirmed to be radioactive under Limerick's 600 acre site.
- Reliable monitoring to accurately determine the full extent of spreading radioactive groundwater contamination would be cost prohibitive. Radiation could poison well water for long periods of time.
- Limerick's radioactive contaminated groundwater could have been spreading long periods of time, in any direction, in this fractured bedrock aquifer. Radioactive groundwater contamination may have already moved off the Limerick site, undetected or unreported by Exelon.
- Radiation in Limerick's groundwater was never cleaned up. There is no plan to clean it up.
- New leaks and spills can happen without full disclosure.
- Exelon failed to fully disclose and address radioactive water contamination at some of its other nuclear plants.
- At one nuclear plant site in Illinois, Exelon failed to provide full and accurate disclosure for years, then finally supplied 600 residents with bottled water for years more until they were finally put on public water.
- The same thing could happen at Limerick jeopardizing drinking water and public health.
- Once groundwater becomes radioactive it is difficult, if not impossible to clean up. Exelon never tried, either here or at its other nuclear plants.

Comment: 3-1-GW; My comments concern the groundwater, an issue that is finally getting some attention at U.S. nuclear plants is the leakage of radioactive water into the ground, beneath and around these plants. All plants leak. These leaks come from pipes, tanks, and 1 many of the plant's systems. The NRC states that events happen at all plants that are often unknown of, unseen, uncontrolled, and unmonitored releases of 4 radioactive liquids into the ground. Exelon spokesmen will tell you that they monitor everything and that they have everything under control. Don't believe it.

The NRC's statement contradicts that propaganda. These radioactive releases are in addition to the known surface spills that frequently occur. In 2006, nuclear plants started a program to check into this mounting leakage problem. Fifteen wells were drilled on Limerick property outside of the power block areas where the reactors and other equipment sit. One well, P12, south and downgrade of the power block area, showed 4400 picocuries per liter of tritium, well over the reasonable European safe drinking water level for tritium which is 2700 picocuries per liter.

Not liking the result, that well was closed and almost immediately a new well was drilled. Well NWRL-9. This well west and downgrade of the power block showed 1700 picocuries per liter. Over the next few years as all 15 wells were tested, they all showed tritium and all showed gross beta emitters.

Three wells contained gamma emitters, nine had alpha emitters, four out of five wells tested positive for uranium. All the ground around Limerick's plant is radioactively contaminated. Most

water flow at 4 Limerick, both surface and subsurface, is to the south and west towards Possum Hollow Creek, the Schuylkill River and yes, East Coventry Township. Many wells on the East Coventry side of the river are in the same Brunswick fractured bedrock formation.

Response: *These comments express concern over groundwater quality impacts related to the operation of LGS as well as groundwater monitoring and the need for cleanup of groundwater contamination. In summary, groundwater resources at LGS and the effects of plant operations on groundwater hydrology and quality are presented in Sections 2.2.5 and 4.5.2.2 of the SEIS. Section 2.2.5 summarizes the state of knowledge related to historical radionuclide releases to groundwater beneath the site, hydrogeologic investigations performed at the site, and the results from historical and ongoing groundwater monitoring. More specifically, Section 2.2.5.1 discusses groundwater users at and in the vicinity of the plant and Section 2.2.5.2 summarizes the results of NRC's review of Exelon's RGPP for LGS, including the placement of site groundwater monitoring wells. The NRC staff specifically reviewed the hydrogeologic investigation prepared for LGS in 2006 and the results of ongoing groundwater quality monitoring. Section 4.9.2 of this SEIS presents the NRC staff's evaluation of the impacts of radionuclide releases from LGS to groundwater and other media with respect to human health. All studies reviewed by the NRC staff are cited in Chapters 2 and 4 of this SEIS.*

Sections 2.2.5.2, 4.5.2.2, and 4.9.2 of this SEIS have been updated to reflect the latest groundwater monitoring results for LGS, which are documented as part of Exelon's annual REOP submitted to the NRC. These reports document the results of Exelon's REMP. Exelon must also submit radionuclide effluent release reports to the NRC as required by 10 CFR 50.36a. The regulation requires nuclear power plants to annually submit a report that lists the types and quantities of radioactive effluents released into the environment as a requirement of each nuclear power plant's operating license. As detailed in Section 4.9.2 of this SEIS, the REMP measures the aquatic, terrestrial, and atmospheric environment for radioactivity, as well as the ambient radiation. The REMP supplements the radioactive effluent monitoring program by verifying that any measurable concentrations of radioactive materials and levels of radiation in the environment are not higher than those calculated using the radioactive effluent release measurements and transport models. These reports are publicly available at http://www.nrc.gov/reactors/operating/ops-experience/tritium/plant-specific-reports/lim1-2.html.

Based on the staff's review and as presented in Section 4.5.2.2 of this SEIS, no strontium-90 or gamma-emitting radionuclides have been detected in groundwater or surface water associated with LGS operations or at levels above natural background. While inadvertent releases of liquids containing tritium (a radioactive isotope of hydrogen) have occurred to the ground and subsurface at LGS as recently as 2012, levels in groundwater are less than one-tenth of the drinking water standard of 20,000 picocuries per liter. No upward trend in tritium levels has been observed, and Exelon's ongoing RGPP functions to detect and address potential new sources of groundwater contamination. Regardless, there are no offsite drinking water wells downgradient of LGS that could be affected by inadvertent releases of radionuclides to groundwater. Additionally, the NRC's ongoing Inspection Program periodically inspects Exelon's radioactive effluent monitoring and REMP programs (as described in Section 4.9.2 of this SEIS) for compliance with NRC's radiation protection standards in 10 CFR Part 20. The NRC's inspection program evaluates the data for compliance with radiation protection standards. If the data were to show a noncompliance with requirements, the NRC would take appropriate enforcement action.

Exelon has implemented its RGPP as part of its participation in the Nuclear Energy Institute's Groundwater Protection Initiative (NEI 2007). The program is designed to ensure timely detection and effective response to situations involving inadvertent radiological releases to

groundwater, from whatever the source, and to enhance licensee communications with their stakeholders about these situations. The early detection of contamination, typically through onsite monitoring wells, allows licensees to take actions as necessary to prevent the offsite migration of licensed radioactive material. The NRC also reviews licensees' implementation of the industrywide Ground Water Protection Initiative as part of its radiation protection program oversight. The program itself is not an NRC-required program and NEI's guidance document is not subject to regulatory enforcement.

With respect to contamination, there are regulatory requirements for licensees to conduct radioactive effluent and environmental surveys and monitoring for routine effluents and also for abnormal spills and leaks of radioactive liquids. Specifically, 10 CFR 50.75(g) requires that licensees keep records of radiological information important to the safe and effective decommissioning of the facility. These records include information on known leaks, spills, or other unusual occurrences involving the spread of contamination in and around the reactor facility. These records contain information on significant radioactive contamination remaining after any cleanup or when the contamination may have spread to inaccessible areas within the facility. Such records of spills and leaks are periodically reviewed by NRC inspectors.

At the end of the renewed operating license, a licensee's decision to remediate contamination before the plant is decommissioned is typically based on several factors, including "as low as is reasonably achievable" (ALARA) considerations for potential worker and public dose, cost, feasibility, disposal options, and external stakeholder considerations. The NRC has defined radiation limits for the decommissioning of a nuclear reactor and release of the facility or site for unrestricted use by members of the public. The requirements are contained in 10 CFR Part 20, Subpart E, "Radiological Criteria for License Termination."

These comments do not present any new or significant information; therefore, no changes were made to this SEIS in response to these comments.

Comment: 2-41-GW; Water companies are not required to continuously monitor, test, or filter the water for all Limerick's radionuclides.

Comment: 2-43-GW; Limerick Nuclear Plant Testing Reports Reveal Iodine-131 In Water and Fish. Limerick is Clearly A Major Source of Iodine-131 Found In Philadelphia Water At The Highest Levels Of Any Water Treatment Plant In The Nation, Out Of 66 Cities Tested. Philadelphia is only about 20 Miles Downstream from Limerick.

Response: *These comments express concern over testing for radionuclides in public water supplies. NRC's authority does not extend to requiring public systems to test for contaminants. That authority is held by the Commonwealth of Pennsylvania in their implementation of the provisions of the Safe Drinking Water Act. staff*

These comments do not present any new or significant information; therefore, no changes were made to this SEIS in response to these comments.

Comment: 32-12-GW; Page 2-23, Lines 30to 31, Sections 2.1.7.2. Because the DRBC docket for LGS has been approved, revise the sentence in lines 30 to 31 on p. 2-23 as follows: "~~The draft docket issued by the DRBC (see Section 2.1.7.1) proposes groundwater production limits for LGS.~~ ***The approved DRBC docket for LGS (see Section 2.1.7.1) restricts groundwater withdrawals from each LGS well and from the total system, except during fire emergencies and other plant emergencies."***

Response: *The NRC staff updated Section 2.1.7.2 of this SEIS to be consistent with the May 8, 2013, docket approval by the DRBC.*

Comment: 32-29-GW; Page 8-9, Lines 22 to 23, Section 8.1.2. Because LGS does not use groundwater for service water makeup, revise the sentence in lines 22 to 23 on page 8-9 as follows: "This includes the use of groundwater for ~~service water makeup~~ ***backup supply of fire emergency water*** and potable and sanitary uses."

Response: *The NRC staff updated Section 8.1.2 for consistency with Section 2.1.7.2 of the SEIS with regard to current uses of groundwater at LGS.*

Comment: 32-31-GW; Page 8-12, Lines 12 to 13, Section 8.2.2. Because LGS does not use groundwater for service water makeup, revise the sentence in lines 12 to 13 on page 8-21 as follows: "This includes the use of groundwater for ~~service water makeup~~ ***backup supply of fire emergency water*** and potable and sanitary uses."

Response: *The NRC staff updated Section 8.2.2 for consistency with Section 2.1.7.2 of the SEIS with regard to current uses of groundwater at LGS.*

Comment: 32-32-GW; Page 8-30, Lines 41 to 42, Section 8.3.2. Because LGS does not use groundwater for service water makeup, revise the sentence in lines 41 to 42 on page 8-30 as follows: "This includes the use of groundwater for ~~service water makeup~~ ***backup supply of fire emergency water*** and potable and sanitary uses."

Response: *The NRC staff updated Section 8.3.2 for consistency with Section 2.1.7.2 of the SEIS with regard to current uses of groundwater at LGS.*

A.2.10 Historical and Archaeological (HA)

Comment: 1-1-HA; The rehabilitation of Frick's Locks Village as a historical site and destination within the township is very exciting. The rehabilitation work performed by Exelon has given the village renewed life and has brought our history into focus. The community has benefitted as a result of Exelon's commitment to work with the township on preserving Frick's Locks Village. And they did a wonderful job. We had an opening there last week and it was really great.

Comment: 21-1-HA; And my neighbor is the Limerick Generating Station. I live a short distance from Frick's Lock National Registered Historic District. About two thirds of this district is within the exclusionary boundary, right on the cusp of the Limerick Generating Station, therefore, uninhabited.

Greatly due to increasing vandalism and a fire at the Lock Tender's House in February 2008, the Frick's Lock stakeholders were formed to negotiate a satisfactory resolution towards the preservation of Frick's Lock. The stakeholders were represented by members from Exelon, the Schuylkill River Heritage Area, East Coventry Township, Chester County, Senator Breneman and Preservation Pennsylvania, and the Pennsylvania Historic and Museum Commission.

On February 14, 2011, Valentine's Day, an agreement between Exelon and East Coventry Township was accepted to rehabilitate Frick's Lock. Construction began and was completed the following year 2012. The first public tour of Frick's Lock Historic District is scheduled for June 8, 2013.

I believe this is the first time a major utility has rehabilitated a National Historic District in negotiated terms to allow a local historical commission limited access to conduct guided tours within the EAB. Not only did this project enrich the history and heritage of our community, but Frick's Lock also lies adjacent to the proposed Schuylkill River Trail and as a trail head will be a tourist destination and a boost to our local economy.

As a member of the Frick's Lock stakeholders, I am still amazed at what can be accomplished when a large corporation, Exelon, is willing to come to the table and work with individuals and a community to contribute to and enhance our resources. Thank you, Exelon, and I look forward to a continued participation within the Frick's Lock stakeholders.

Response: *These comments are supportive of Exelon's rehabilitation of the Fricks Lock Historic District. These comments provide no new or significant information; therefore, no changes were made to this SEIS.*

Comment: 23-10-HA; Historic resources, Frick's Lock aside, don't include some of the places that I know are on the Historic District and it also said that there were no federal lands owned in the 50-mile radius except Valley Forge. Maybe the Independence National Park isn't nationally owned. I don't know. Hopewell Furnace, the Heinz National Wildlife Refuge, I question that.

Response: *Identification and discussion of specific historic and archaeological resources is limited to those resources which may be directly or indirectly affected by continued operations of LGS. Other historic and archaeological resources may exist within the general vicinity of LGS and surrounding counties; however, identification of historic and cultural resources focuses on those resources located within the defined area of potential effect (APE)—the plant site and its immediate environs. The existence of historic and archaeological resources outside of the APE, such as Pottstown Historic District, is referenced in Section 2.2.10.2 of this SEIS.*

Section 2.3, "Related Federal and State Activities," has been updated to accurately reflect Federally owned lands, facilities, and wildlife refuges and reserves within 50 mi of LGS.

Comment: 32-18-HA; Page 2-83, Lines 35 to 37, Section 2.2.10.2. Because rehabilitation and mothballing activities at the Fricks Lock Historic District have been completed, revise the sentence in lines 35 to 37 on page 2-83 as follows: "The rehabilitation and mothballing activities are specified to meet the Secretary of Interior's Standards for Rehabilitation and construction activity***, which began*** ~~is expected to begin~~ in 2012***, was completed in May 2013***."

Response: *The NRC staff updated Section 2.2.10.2 of the SEIS to include the information in the comment.*

A.2.11 Human Health (HH)

Comment: 2-66-HH; RADIATION INTERACTING WITH OZONE ENHANCES CANCER RISKS From Mc Donnell, M.D. Health Effects Research Laboratory EPA Testimony, April 9, 1987, to U.S. Senate

- OZONE WORKS SYNERGISTICALLY WITH RADIATION TO ENHANCE THE CANCER-CAUSING EFFECTS OF RADIATION.

Radiation, the most potent carcinogen, is routinely released from Limerick Nuclear Plant. Radiation is the signature, most dangerous toxic released from nuclear plants. Radiation levels released cause more risk of cancer when breathed in with VOCs and NOx.

Comment: 2-67-HH; <u>RADIATION RELEASES TO AIR</u>

- Limerick routinely releases a broad range of radionuclides into the air.
- Radioactive air particulates are not listed in Limerick's Title V Air Permit, even though all air pollutants and sources from a major air polluter are supposed to be listed.
- Actual data and/or harmful health impacts from Limerick's routine and accidental radioactive releases are unknown.

Radiation Testing and Reporting To NRC Are Deceptive

- Radiation Levels Reported By Exelon For Limerick's Releases To Air Do Not Reflect Risks To The Public From All Limerick's Radionuclides Released Into Our Air.
- JUST BECAUSE EXELON ISN'T REQUIRED TO REPORT ALL RADIONUCLIDES LIMERICK RELEASES INTO OUR AIR, DOESN'T MEAN THOSE RADIONUCLIDES DO NOT INCREASE OUR RISK.

Radiation Levels identified by monitoring are only reported for Limerick by Exelon when they are above an arbitrary background level. Above background reporting is deceptive. Exelon can hide actual radiation releases from Limerick and actual risks.

Radiation Background Levels Are Arbitrary, Deceptive, and Clearly Not Protective:

- 80 to 100 Millirems Per Year - Natural background BEFORE Chernobyl
- 360 Millirems Per Year - AFTER Chernobyl
- 620 Millirems Per Year - AFTER Fukushima, Japan

The National Academy of Sciences Says There Is NO SAFE DOSE

March 16, 2011, After Japan's Nuclear Disaster, NRC Legally Sanctioned Increased Radiation Harm To Regions Like Ours, Routinely Exposed To Nuclear Plant Radiation Releases.

Other Deceptive Unprotrective Tactics In Radiation Reporting

- Exelon, the company with a vested interest in the outcome that has shown it can't be trusted, controls all radiation monitoring, testing, and reporting.
- Exelon is allowed to [“]CALCULATE” and “AVERAGE” results.
- The system fails to report on radiation spikes.

Examples From Exelon's 2007 Self-Monitoring Report to NRC

1. Lower Limit Detection (LLD) - ABOVE BACKGROUND IS DECEPTIVE.

Defined as smallest concentration of radioactive material in a sample that would yield a net LLD does not mean the actual level detected - Level detected could be far higher

2. Positive Results Were “CALCULATED” - Gamma Spectroscopy

Standard deviations represent variability of measured results for different samples rather than single analysis uncertainty.

3. Net Activity - Calculated by subtracting background from sample.

MDC was reported in all cases - but they can claim positive activity was not detected.

Radioactive Air Particulates - Air particulate samples collected weekly in 2007.

- GROSS BETA WAS DETECTED AT ALL LOCATIONS.

  Beta Emissions Can Include Strontium-90, Tritium, and Many Other Radionuclides
- GAMMA WAS DETECTED IN ALL SAMPLES

  Be-7 Beryllium 7: UNstable (1/2 life 53 days) was detected in all samples

Beta Particles and Gamma Rays Penetrate the Human Body and Environment, Causing Biological, Chemical, and/or Physical Damage.

- Cancer, Leukemia, Heart Failure, Neuromuscular Diseases and Many Other Health Effects Can Result From Long-Term Exposures.
- Harmful Health Impacts Can Take Many Years To Develop.

Examples: Harmful Health Impacts To Specific Parts Of The Body

- Thyroid / Ovaries Iodine - 131 Beta / Gamma Emitter
- Liver / Ovaries Cobalt - 60 Beta / Gamma Emitter
- Bone / Ovaries Zinc - 65 Beta / Gamma Emitter
- Muscles / Ovaries Cesium - 137 Beta / Gamma Emitter
- Bones / Teeth Strontium-90 Beta Emitter 29 year

Strontium 90 (SR-90) Attaches To Particulate Matter - Easily Travels With Air SR-90 Masquerades As Calcium - Absorbs Into Bones and Teeth.

- Some of the highest levels of Strontium-90 were found in the teeth of children around Limerick Nuclear Power Plant (Tooth Fairy Study)

All GAMMA Radiation Emitters Attack REPRODUCTIVE ORGANS

- Prostate Cancer Increased in Montgomery County 132% Since Limerick Nuclear Power Plant Started(Mid 1980s to Mid 1990s)
- Other related cancers also drastically increased above the national average since Limerick started operating.

Radiation Can Cause Birth Defects, Mutations, and Miscarriages,

- In 1st and / or Successive Generations After Exposure.
- Infant death and childhood cancer reductions after nuclear plant closings in the United States – 2002 Study - Deaths among infants who had lived downwind and within 64 km of each plant dropped.
- Infant and Neonatal Mortality In The Area Around Limerick Are Far Higher Than State Averages and Higher Than Philadelphia or Reading.

Other radionuclides in testing were claimed by Exelon to be less than the MDC

- BUT Minimum Detectable Concentration (MDC) Is Only An ESTIMATE and Only Reported IF Above Background

Comment: 2-68-HH; ACE provided NRC with documented PA Cancer Registry and CDC data showing that after Limerick started operating in 1985, that cancer in communities near Limerick skyrocketed far higher than the national average, especially in children. ACE also provided NRC with researched links between elevated cancer rates and Limerick Nuclear Plant's routine radiation releases.

Comment: 2-12-HH; In Section 9.3.1 of your EIS you admit that “during nuclear power plant operations, workers and members of the public would face unavoidable exposure to radiation and hazardous toxic chemicals.” Despite this fact, NRC has actually suggested in this repugnant EIS that all of the environmental harms from Limerick are small. I'm going to repeat, all of the environmental harms from Limerick are small and have no measurable impacts.

Comment: 2-31-HH; Not one word appears in Limerick's EIS about the documented cancer crisis in communities near Limerick. Nor have the high infant and neonatal mortality issues been acknowledged or discussed.

Comment: 2-34-HH; AMONG THE MOST GLARING OMISSIONS IN NRC'S DRAFT EIS IS THE DOCUMENTED COMPELLING EVIDENCE ACE PROVIDED 10-26-11 ON THE LINKS BETWEEN OUR CANCER CRISIS AND LIMERICK'S ROUTINE AND ACCIDENTAL RADIATION RELEASES SINCE 1985.

- WE SHOWED WHY LIMERICK'S RADIATION RELEASES ARE CLEARLY A MAJOR FACTOR IN CANCER RATES FAR HIGHER THAN THE NATIONAL, STATE, AND TRICOUNTY AVERAGES, ESPECIALLY IN OUR CHILDREN.
- CANCER RATES ARE DOCUMENTED TO HAVE SKYROCKETED FAR ABOVE THE NATIONAL, STATE, AND TRI-[COUNTY] AVERAGES IN [COMMUNITIES] NEAR LIMERICK, AFTER LIMERICK STARTED OPERATING.
- YET, OUR ALARMING CANCER RATES AND HIGH INFANT [MORTALITY] RATES ARE NOT EVEN MENTIONED IN NRC'S DRAFT EIS. THERE IS NOT ONE WORD ABOUT CANCER INCREASES IN COMMUNITIES NEAR LIMERICK AFTER LIMERICK STARTED OPERATING AND RELEASING RADIATION INTO OUR LIFE-SUPPORT SYSTEMS AND OUR BODIES.
- THIS OMISSION IS UNACCEPTABLE. THE EVIDENCE IS CLEAR. NRC'S FINAL DRAFT MUST BE CHANGED TO INCLUDE THE CANCER INCREASES. FOR NRC'S CONVENIENCE WE HAVE INCLUDED SOME OF THE DETAILS BELOW.

Comment: 2-39-HH; Limerick poisons the river water with radiation, routinely and accidently discharging radioactive wastewater containing a broad range of radionuclides, some with long half-lives. NRC previously tried to mischaracterize Limerick's discharges as just one radionuclide, Tritium, even though Exelon's Radiological Monitoring Records in NRC's own files prove the water, sediment, and fish all contain many radionuclides

Comment: 2-40-HH; NRC does no testing. No independent agency ever did long-term monitoring for all the radionuclides associated with Limerick operations. But when the National Academy of Sciences says there is no safe level of exposure, the kinds and levels are not as important as the fact that almost two million people are always exposed to radiation in their water from Limerick.

Comment: 2-42-HH; The Consequences Of Additive, Cumulative, and Synergistic, Radioactive Discharges From Limerick Nuclear Plant Into The Schuylkill River Since 1985 Are Obviously Significant NRC Doesn't Test or Even Take Split Samples. Far More Radionuclides Could be In Water And Fish[ ]Than Reported. NRC Simply Reviews Exelon's Unreliable Reports.

Comment: 4-4-HH; One Limerick radionuclide is confirmed in the babies' teeth of our children at some of the highest levels in our nation. Additive, cumulative, and synergistic harmful since 1985 are unknown, but clearly enormous. NRC never did independent testing for each radionuclide or toxic chemical in each round of exposure.

Comment: 4-14-HH; In 2005, the National Academy of Sciences, BEIR VII Report said there is no safe level. Dr. John Gofman, once head of AEC’s labs raised dire warnings about permitted releases from nuclear plants. He published research warning about permitted releases from nuclear plants. He estimated 32,000 Americans would die each year from fatal cancers induced by allowable radiation releases. Gofman said the entire nuclear power program is based on a fraud that there is a permissible dose that wouldn't hurt anyone. And frankly, we're tired of hearing NRC people say that.

We provided NRC with evidence showing communities around Limerick already exacted a high public health toll since Limerick started operating. A cancer crisis has been documented by Pennsylvania cancer registry statistics and CDC data. Cancer rates skyrocketed far above the national average after 1985 when Limerick started releasing radiation into our air, water, soil, and people. Links to Limerick are clear. Limerick routinely releases radiation. Radiation causes cancer. We have a cancer crisis and one of the largest relays for life anywhere.

The upward trend in childhood cancer rates provides the most tragic link. By the late 1980s, childhood cancer rates climbed to 30 percent higher than the national average; higher by 60 percent in the early 1990s and a shock 92.5 percent higher than the national average in the late 1990s. Infant and neonatal mortality rates are far higher than the state average and even higher than Philadelphia and Redding. Studies provide a link.

When nuclear plants open, infant mortality rates go up. When they close, rates go down. Autism rose a whopping 310 percent from 1990 to 2000. Learning disabilities increased by 94 percent, a rate double the state increase. Strontium-90 radiation is an undeniable link. Limerick releases strontium-90. It's in our air, water, and soil. Strontium-90 is also documented in the babies' teeth of our children at some of the highest levels in the nation. NRC still shamefully tries to blame decades old bomb testing far from our region. It's ridiculous.

Many cancers rose dramatically by the late 1990s. Examples include thyroid cancer, 128 percent increase; multiple myeloma, 91 percent increase; breast cancer, 61 percent increase, higher than the national average in every age group and it is 51 percent higher in women 30 to 44. There's a 48 percent increase in leukemia, almost double the state average Limerick nuclear plant is clearly a major factor in the tragic and costly health crisis around it with children the most profoundly impacted victims. Exposure to Limerick's radiation is an unavoidable and intolerable injustice. We can't see it, smell, taste, or feel it, but it's everywhere. We can't avoid it.

As long as Limerick nuclear plant continues to operate, radiation and other dangerous toxics will be released into our air and water and more people will suffer needlessly. We have lost patience with NRC's lies, cover ups and negligence. NRC should close Limerick now to protect public health. It's time to stop unnecessary exposures and associated suffering and healthcare costs due to Limerick's operations.

Comment: 5-2-HH; Hollow evacuation plans, lack of meaningful regulation, perfunctory public inclusion, and NRC's willful blindness to the consequences of our routine radiation exposure, increased public risk.

Comment: 5-7-HH; Avoidable diseases, cancers and other illnesses in this region are much higher than the national average and are linked to Limerick's radiation. The cost for one six-month-old child treated for just two years who has cancer is over $2 million.

Comment: 2-64-HH; Synergistic, Additive, and Cumulative Harmful Health Impacts From Limerick's Air Pollution Are Unknown, But Clearly Unprecedented, When They Include:

1. A Broad Range of Radionuclides
2. Massive Emissions of Many Dangerous Cooling Towers Toxics….

Comment: 8-2-HH; So I have so much that I could talk about and what I really want to put at the last part of this, that I didn't get into is basically we have a way of quantifying and qualifying the risk now to humans and that is genetic testing. We can actually test the genes and do studies now of the people that live in the region of a nuclear power plant. We know that nuclear energy or nuclear problems occur in damaged chromosomes. We now have the technology and medicine and research to actually look and take blood from people that live in a region of

nuclear power and actually demonstrate what is going on inside that person's body, things that just because we don't see it on the outside of a person, does not mean that there is not chromosomal damage already that we can quantify, qualify in their blood.

Why there has not been any research ongoing about that, I don't know. The good old Tooth Fairy test of strontium-90, that sort of has been pushed to aside, but we have had the technology to actually do research on genetic changes in people's blood from radiation and let's look at the results of that. Let's have tests done about and let's see what's going on and we can actually really take note of this and go from there about what damage is really occurring and that's not from a meltdown. We know that happens. We know there's breakage of chromosomes and such. But what really -- we can look at the silent damage that's occurring from just the normal use of a power plant.

Comment: 23-7-HH; Throughout the supplemental, we are told that there is no new information to change the past EIS and decisions. The fact is there are lots of new pieces of information. One of the new pieces Donna mentioned is the National Academy's National Research Council BEIR[ ]VII No. Report which says there's no safe level of exposure to radiation. This is new since LGS started up. It is not considered here. I couldn't find anything about it in the document that I was given.

Comment: 23-35-HH; [P.] 4-21, Human Health, Did we know about baby teeth and strontium 90 when the plant began? Have we learned nothing about RAM and cancer and other illnesses in 40 years? Come on. NRC relied on Exelon for info on health? Can you see cancer on a site visit? Did you ignore ACE in scoping? What info, not paid for by Exelon or other corporate interest did NRC evaluate for this?? I see none or too few in your bibliographies.

Comment: 23-36-HH; Page 4-22 line 27, normal operations is uprating “normal”? All this about radiological impacts of so call normal operation (Define the term “normal”) must be prefaced with the National Academy finding that there is no safe level of exposure to ionizing radiation. The rest is fluff

Comment: 25-2-HH; The recent discoveries concerning epigenetics put the past predictions of health effects on future generations into grave doubt. The predictions based on Mendel's observations do not nor were meant to predict neot[e]ny due to genes being switched on or off by uncontrolled radiation.

Comment: 26-3-HH; Don’t be fooled! 'Permissible' doesn't mean safe. The National Academy of Sciences BEIR VII report (2005) said there is “NO SAFE DOSE[.”]

Dr. John Gofman, former Atomic Energy Commission chief, raised dire warnings about permitted radiation releases from nuclear plants, publishing research showing an estimated 32,000 Americans would die each year from fatal cancers induced by “allowable” radiation releases. Gofman said, “The entire nuclear power program is based on a fraud, that there is a permissible dose that wouldn't hurt anyone.”

Cancers skyrocketed after 1985, when Limerick started releasing radiation into us and our environment. Shocking cancer rates are documented far higher than the national average, especially in children, with data from the PA Cancer Registry and CDC website. ACE cancer mapping is alarming. Our relay for life is one of the largest anywhere. Limerick's radiation releases are obviously a major factor.

Response: *The NRC’s mission is to protect the public health and safety and the environment from the effects of radiation from nuclear reactors, materials, and waste facilities. The NRC’s regulatory limits for radiological protection are set to protect workers and the public from the harmful health effects (i.e., cancer and other biological impacts) of radiation on humans.*

Radiation standards reflect extensive scientific study by national and international organizations. The NRC actively participates and monitors the work of these organizations to keep current on the latest trends in radiation protection.

Although radiation can cause cancers at high doses, currently there are no data to unequivocally establish the occurrence of cancer following exposures to low doses, below about 10 rem (0.1 Sv). Radiation protection experts conservatively assume that any amount of radiation may pose some risk of causing cancer or a severe hereditary effect and that the risk is higher for larger radiation exposures. Therefore, a linear, no-threshold dose response relationship is used to describe the relationship between radiation dose and detriments such as cancer induction. Simply stated, any increase in dose, no matter how small, is assumed to result in an incremental increase in health risk. This theory is accepted by the NRC as a conservative model for estimating health risks from radiation exposure, recognizing that the model probably overestimates those risks. Based on this theory, the NRC conservatively establishes limits for radioactive effluents and radiation exposures for workers and members of the public. While the public dose limit is 100 mrem (1 mSv) for all facilities licensed by the NRC (10 CFR Part 20, "Standards for Protection Against Radiation"), the NRC has imposed additional more-restrictive dose constraints on nuclear power reactors. Nuclear power reactors, including LGS, have license conditions that limit the total annual whole body dose to a member of the public outside the facility to 25 mrem (0.25 mSv). In addition, there are other license conditions that limit the dose to a member of the public from radioactive material in gaseous effluents to an annual dose of 15 mrem (0.15 mSv) to any organ; for radioactive liquid effluents, a dose limit of 3 mrem (0.03 mSv) to the whole body, and 10 mrem (0.1 mSv) to any organ.

All nuclear plants were licensed by the NRC with the expectation that they would generate, store, and release radioactive material to both the air and water during normal operation. To ensure that nuclear power plants are operated safely, the NRC licenses the plants to operate, licenses the plant operators, and establishes license conditions for the safe operation of each plant. The NRC provides continuous oversight of each plant under the NRC's inspection and enforcement programs. The NRC's ROP integrates the NRC's inspection, assessment, and enforcement programs. The operating reactor assessment program evaluates the overall safety performance of operating commercial nuclear reactors and communicates those results to applicant management, members of the public, and other government agencies. The assessment program collects information from inspections and performance indicators in order to enable the NRC to arrive at objective conclusions about an applicant's safety performance. Based on this assessment information, the NRC determines the appropriate level of agency response. The NRC conducts followup actions, as applicable, to ensure that the corrective actions designed to address performance weaknesses were effective. While the NRC maintains regulatory oversight of LGS, it is the responsibility of LGS's management to ensure that plant operation complies with NRC requirements at all times.

Chapter 4 of this SEIS discusses the REMP that LGS uses for environmental monitoring. The purpose of the LGS REMP is to evaluate the radiological impact that operation may have on the environment. The program is designed to highlight and look at specific consumption pathways for local inhabitants and special interest groups. The LGS REMP is made up of three categories based on the exposure pathways to the public. They are as follows: atmospheric, aquatic, and ambient gamma radiation. The atmospheric samples taken around LGS are airborne particulate, airborne iodine, milk, and broad-leaved vegetation. Sampling for the LGS REMP program is performed as specified in Appendix I to 10 CFR Part 50, "Domestic licensing of production and utilization facilities." The NRC routinely inspects LGS's radioactive effluent monitoring and environmental monitoring programs for compliance with NRC regulations. In addition, LGS cooperates with the PDEP Bureau of Radiation Protection to share environmental

samples and data. In Chapter 4 of this final SEIS, the NRC staff reviewed LGS's radioactive effluent and environmental monitoring programs to determine the potential impacts of renewing the LGS operating licenses. The NRC staff concluded that the impacts to human health during the license renewal term would be SMALL.

The amount of radioactive material released from nuclear power facilities is controlled, measured, monitored, and known to be very small. The radiation dose received by members of the public as a result of exposure to nuclear power facilities are so low (i.e., less than a few mrem in a year) that cancers attributed to radiation have not been observed and would not be expected. To put this in perspective, each person in this country receives a total annual dose of about 620 mrem (6.2 mSv). About half of the total annual average radiation exposure comes from natural sources. The other half is mostly from medical procedures. The average annual radiation exposure from natural sources is about 310 mrem (3.1 mSv). Radon and thoron gases account for two-thirds of this exposure, while cosmic, terrestrial, and radiation from potassium-40 that exists naturally in our bodies account for the remainder. No adverse health effects have been discerned from exposure to natural radiation. Manmade sources of radiation from medical, commercial, and industrial (which includes nuclear power plants) activities contribute about another 310 mrem (3.1 mSv) to our annual radiation exposure. As stated above, this dose is mostly from medical procedures. One of the largest of these sources of exposure is computerized tomography (CT) scans, which account for about 150 mrem (1.5 mSv) of the average annual exposure. Other medical procedures together account for about another 150 mrem (1.5 mSv) each year. Because of the increased use of medical imaging procedures in health care, the average radiation dose has shown a significant increase in the last two decades. In addition, some consumer products, such as tobacco, fertilizer, welding rods, exit signs, luminous watch dials, and smoke detectors, contribute about another 10 mrem (0.1 mSv) to our annual radiation exposure. Although there is distinction between natural and manmade radiation, there is no difference in the potential health impacts.

A number of studies have been performed to examine the health effects around nuclear power facilities. The following is a list of some of the studies that have been conducted:

- *In 1990, at the request of Congress, the NCI conducted a study of cancer mortality rates around 52 nuclear power plants and 10 other nuclear facilities. The study covered the period from 1950 to 1984 and evaluated the change in mortality rates before and during facility operations. The study concluded there was no evidence that nuclear facilities may be causally linked to excess deaths from leukemia or from other cancers in populations living nearby. Note: On April 7, 2010, the NRC contracted with the NAS to perform a state-of-the-art study on cancer risk for populations surrounding nuclear power facilities (ADAMS Accession No. ML100970142). The NAS has a broad range of medical and scientific experts who can provide the best available analysis of the complex issues involved in discussing cancer risk and commercial nuclear power plants. The NAS study will update the 1990 U.S. National Institutes of Health NCI report, "Cancer in Populations Living Near Nuclear Facilities." The study's objectives are to: 1) evaluate whether cancer risk is different for populations living near nuclear power facilities, 2) include cancer occurrence, 3) develop an approach to assess cancer risk in geographic areas that are smaller than the county level, and 4) evaluate the study results in the context of offsite doses from normal reactor operations. The initial pilot phase of the study began in the summer of 2010 and is currently examining the cacer risks around seven nuclear sites using two types of epidemiological studies. One type will examine multiple cancer*

types in populations of all ages living near the nuclear sites and the other will be a record-linkage-based case-control study of cancers in children living near the nuclear sites.

- *Investigators from the University of Pittsburgh found no link between radiation released during the 1979 accident at the Three Mile Island Nuclear Station and cancer deaths among nearby residents. This study followed more than 32,000 people who lived within 5 mi (8 km) of the facility at the time of the accident.*
- *In January 2001, the Connecticut Academy of Sciences and Engineering issued a report on a study around the Haddam Neck Nuclear Power Plant, in Connecticut, and concluded that exposures to radionuclides were so low as to be negligible and found no meaningful associations to the cancers studied.*
- *In 2001, the American Cancer Society concluded that, although reports about cancer clusters in some communities have raised public concern, studies show that clusters do not occur more often near nuclear plants than they do by chance elsewhere in the population. Likewise, there is no evidence linking the isotope strontium-90 with increases in breast cancer, prostate cancer, or childhood cancer rates.*
- *In 2001, the Florida Bureau of Environmental Epidemiology reviewed claims that there are striking increases in cancer rates in southeastern Florida counties caused by increased radiation exposures from nuclear power plants. However, using the same data to reconstruct the calculations on which the claims were based, Florida officials did not identify unusually high rates of cancers in these counties compared with the rest of the State of Florida and the Nation.*
- *In 2000, the Illinois Public Health Department compared childhood cancer statistics for counties with nuclear power plants to similar counties without nuclear plants and found no statistically significant difference.*

In summary, there are no studies to date that are accepted by the Nation's leading scientific authorities that indicate a causative relationship between radiation dose from nuclear power facilities and cancer in the general public.

The NRC staff addressed human health impacts from radioactive material from LGS during the license renewal term in Chapter 4 of the final SEIS and concluded that the impacts would be SMALL.

These comments do not provide any new and significant information; therefore, no changes were made to this SEIS in response to these comments.

Comment: 5-19-HH; NRC has repeatedly raised background radiation levels, which raise risks for the public here at Limerick:

The "background level" number that NRC assigns is a trigger point: nuclear plants must report levels above "background" on-site, as a spike indicates a serious problem. Our concern is that NRC's current number is so high that Exelon can claim Limerick's "routine operations and radiation releases" which may not reach the trigger point, comply with NRC regulations, but which, in reality, greatly increasing Limerick's adverse impact on public health, safety, and the environment. This is the history of NRC's assigned radiation level increases:

- Pre-1964: natural background radiation: 60-80 Mill[i]rems per year
- Post-1964: NRC raised the level to 80-100 Mill[i]rems per year. A noted above, the significance of this is that it is a trigger point: when radiation readings at nuclear plants spiked above that NRC-set trigger point, notification of the NRC was required,
- Post-Chernobyl (1986): NRC raised the level to 360 Millirems per year
- Post-Fukushima (2011): NRC raised the level to 620 Millirems per year
- However, the 2005 NAS's BEIR VII Study, funded by the EPA, revealed that the smallest radiation dose could increase human health risks: there is no safe dose.

Comment: 25-4-HH; Back when I was a child, the radiation background was reported as 60 millirems per year. The background is now reported by the DoE and EPA as 600 to 700 millirems per year. Long ago, the background was 600 or 700 millirems per year. When the background radiation fell to 600 or 700 millirems per year, life on this Earth proliferated with a profusion of species and animals as never before. Evolution ran rampant. We are faced with a background dose that may make mankind an endangered species. The time to stop dumping radiation into the air, water and soil is past. Stop now!

Response: *It is estimated that each person in this country receives a total annual dose of about 620 mrem (6.2 mSv). This information on background radiation was obtained from the National Council on Radiation Protection and Measurements (NCRP), Report 160. The NCRP reported that about half of the total annual average radiation exposure comes from natural sources. The other half is mostly from medical procedures. The average annual radiation exposure from natural sources is about 310 mrem (3.1 mSv). Radon and thoron gases account for two-thirds of this exposure, while cosmic, terrestrial, and radiation from potassium-40 naturally in our bodies account for the remainder. No adverse health effects have been discerned from exposure to natural radiation. Manmade sources of radiation from medical, commercial, and industrial (which includes nuclear power plants) activities contribute about another 310 mrem (3.1 mSv) to our annual radiation exposure. As stated above, this dose is mostly from medical procedures. One of the largest of these sources of exposure is CT scans, which account for about 150 mrem (1.5 mSv) of the average annual exposure. Other medical procedures together account for about another 150 mrem (1.5 mSv) each year. Because of the increased use of medical imaging procedures in health care, the average radiation dose has shown a significant increase in the last two decades. In addition, some consumer products, such as tobacco, fertilizer, welding rods, exit signs, luminous watch dials, and smoke detectors, contribute about another 10 mrem (0.1 mSv) to our annual radiation exposure. Although there is distinction between natural and manmade radiation, there is no difference in the potential health impacts. Additional information about radiation can be viewed on the NRC's website using the following link: www.nrc.gov/about-nrc/radiation.html.*

These comments do not provide any new and significant information; therefore, no changes were made to this SEIS.

Comment: 2-65-HH; Cooling Towers Host Pathogens

Research Shows Health Threats From Cooling Towers Include Pathogens

Cooling Towers Spray Infectious Pathogens Into Our Air. These Pathogens Can Cause Disease in Humans, Even Legionella

- Section 4.9.3 on Microbiological Organisms of NRC'S DRAFT EIS States That Limerick Cooling Towers Release Microbiological Organisms, INCLUDING:
  SALMONELLA[,] LEGIONELLA[,] AND PSEUDOMONAS AERUGINOSA[,] which can cause serious and sometimes fatal infections in immune compromised individuals.
- THESE TOXINS ARE DOCUMENTED TO BE HARMFUL TO HUMANS AND ANIMALS.
- Exelon requested PA DEP to provide comments or confirm Exelon's conclusion about a low likelihood of risk from pathogens released from Limerick contribute to related health effects.
- PA DEP would not make any conclusions regarding the effect on public health.
- NRC says optimal growing temperature is 99 degrees F, but Limerick's cooling tower waters are allowed to be up to 110 degrees.

NRC HAS CONCLUDED THAT IMPACTS ON PUBLIC HEALTH FROM THESE ORGANISMS WOULD BE “SMALL[,”] BUT THERE NO PROOF OF THAT, WHETHER IN RELEASES TO AIR OR WATER.

- 44 MILLION GALLONS Of Cooling Tower Steam Are Released Into Our Air Every Day.
- 14.2 MILLION GALLONS Of Limerick's Wastewater Are Released Into The River Every Day.
- There Are NO Measurements By NRC Or Exelon For The Pathogens In The Air Or River Releases From Limerick's Cooling Towers.
- Limerick's Cooling Tower Waste Water Is Allowed To Be Heated Up To 110 Degrees.
  - NRC HAS NO ACCURATE IDEA OF HOW THESE PATHOGENS ARE IMPACTING[ ]THE POPULATION OVER TIME.
  - NRC MUST CHANGE ITS CONCLUSION THAT IMPACTS WOULD BE “SMALL” TO IMPACTS ARE “UNKNOWN[.”]

Comment: 3-4-HH; When water is hotter than 95 degrees Fahrenheit it fosters the growth of thermophilic microbial organisms. These organisms include legionella, yes, legionella, and salmonella among others. These pathogens thrive in warm water. They can also cause fatal infections and pneumonia in compromised individuals and the elderly. This hot water needs to be cooled down more than it can be at the present time.

Comment: 15-13-HH; Another concern: everyday, 14.2 million gallons of very hot water leave the cooling towers loaded with dissolved solids and radiation. This hot brew goes down pipe 001 to the diffuser and into the Schuylkill River. It enters the river at 110 F, a much higher temperature than the Schuylkill River limit of 87 F. When water is hotter than 95 F, it fosters the growth of thermophilic microbic organisms. These organisms include Legionella and Salmonella, among others. These pathogens thrive in warm water. They can also cause fatal infections and pneumonia in compromised individuals and the elderly. This hot water needs to be cooled down more than it can be at the present time.

Exelon asked the Pa. DEP to provide comments about these pathogenic organisms in the river. Exelon wanted the Pa. DEP to confirm Exelon's conclusions that no harm would come from the pathogens during an extended period of operation with these higher temperatures.

The Pa. DEP, to its credit, said it had no data on these organisms in the river to support Exelon's claims. The Pa. DEP was unable to reach any conclusions as to the possible health effects, thus not supporting Exelon's contentions

Response: *The NRC acknowledges that there is a potential impact from thermophilic organisms associated with the discharge of thermally heated water and specifically reviews this issue as part of the license renewal process. In Section 4.9.3 of the LGS SEIS, the NRC staff reviewed the potential impacts from thermophilic microorganisms associated with thermally heated water from LGS discharged into the Schuylkill River.*

As discussed in Section 4.9.3 of the SEIS, the research data show that thermophilic microorganisms generally occur at temperatures of 77 °F to 176 °F (25 °C to 80 °C) with an optimal growth temperature range of 122 °F to 150 °F (50 °C to 66 °C), and minimum and maximum temperature tolerances of 68 °F (20 °C) and 158 °F (70 °C), respectively. However, thermal preferences and tolerances vary across bacterial groups. For examples, pathogenic thermophilic microbiological organisms of concern (i.e., Salmonella spp. and Shigella spp., the Pseudomonas aeruginosa bacterium, the pathogenic strain of the free-living amoebae Naegleria spp., and Legionella spp.) have optimal growing temperatures of approximately 99 °F (37 °C).

The NRC staff reviewed the LGS NPDES permit issued by the State of Pennsylvania (permit no. PA0051926) which requires the temperature in the thermal discharge to be monitored at least once weekly for compliance with an instantaneous maximum limit of 110 °F (43.3 °C) for the protection of human health. Although thermophilic microbiological organisms of concern during nuclear reactor operation could grow at that stated instantaneous maximum temperature limit, several years of LGS's Discharge Monitoring Report data were reviewed by the NRC staff, which showed that maximum summer discharge temperatures ranged from 90 °F to 95 °F (32.2 °C to 35.0 °C). These temperatures are below the optimal growing temperature of approximately 99 °F (37 °C); therefore, the NRC staff concluded that the ambient river conditions are not likely to support the proliferation of the pathogenic organisms of concern.

In addition, salmonella organisms are associated with poor sanitation and while they can survive in water, they do not multiply in water. LGS discharges its sanitary sewage to the local publicly owned treatment works, which further reduces the potential for the facility's discharged water to introduce pathogenic microorganisms that could present a threat to recreational users of the Schuylkill River.

NRC staff characterized potential impacts on human health as SMALL by applying the definitions of the SMALL, MODERATE, and LARGE impact levels described in 10 CFR Part 51. These comments do not provide any new and significant information; therefore, no changes were made to this SEIS.

Comment: 7-8-HH; And manganese, one of the toxics can lead to permanent brain damage from showering.

Comment: 7-10-HH; How can we take care of our health when we are forced to drink, bathe in, and breathe in toxic chemicals from Limerick operations every day? Too many people are really sick, have thyroid problems and are dying of dreaded disease like cancer.

Look at the huge cancer rallies in our community. Why should we risk our lives and fear 15 meltdown, more sickness, cancer from Limerick's electricity when safer energy is available. The problem is NRC appears to be more of a salesman than a policeman.

Nuclear power already destroyed parts of the world. This dangerous dinosaur technology must make way for safe, clean energy alternatives that won't destroy our water supplies and our health. Thank you

Response: *The NRC staff considered the potential impacts on human health and the environment from the industrial use of chemicals at LGS during the license renewal term.*

LGS must monitor its chemical and radioactive discharges into the Schuylkill River in order to comply with NRC's radiological limits and the Commonwealth of Pennsylvania's chemical limits. Discharges of wastewater containing chemicals are subject to discharge authorizations under the NPDES implemented by the Commonwealthof Pennsylvania. LGS must comply with these regulatory requirements. As part of its environmental review for the license renewal of LGS, the NRC staff reviewed LGS's radioactive and nonradioactive waste management programs. Details of LGS's radiological and nonradiological effluent monitoring programs and the NRC's evaluation of the two programs are contained in Chapters 2 and 4 of this final SEIS.

In addition, nonradioactive groundwater and soil contamination at LGS is subject to characterization and cleanup under EPA- and State-regulated remediation and monitoring programs. As discussed for discharges to the river, LGS must comply with these regulatory requirements.

The NRC staff discussed LGS's radiological and nonradiological waste programs and their potential impacts in Chapters 2 and 4 of this final SEIS and concluded that the impacts were SMALL.

This comment does not provide any new and significant information; therefore, no changes weremade to the SEIS.

Comment: 32-21-HH; Because the type of dosimeter used to measure environmental radiation doses may be changed from time to time, revise the sentence in lines 14 to 16 on page 4-23 as follows: "The ambient gamma radiation pathway measures direct exposure from environmental radiation doses using ~~thermoluminescent~~ dosimeters***, which are typically thermoluminescent dosimeters.***"

Response: *The NRC staff agree with this comment and the SEIS has been updated to reflect this information*

A.2.12 Land Use (LU)

Comment: 23-28-LU; Page 2-24 line 35, Conrail rail line. Page 2-24 line 33, "all activities on the LGS site are under the control of Exelon." Exactly what does that mean? Is Conrail under the control of Exelon? Please be specific.

New since LNG started, changes to Conrail that very well might impact us all. See attached article about Paulsboro and Conrail and liability. When LNG began Conrail was owned by one entity and since then has changed hands. I think it is a common carrier but it may be that users contract between themselves and Conrail or CSX or NS. All of this is important, mixed with Exelon stating on p. 2-24 line 33 that it controls all activities. NRC must stop the approval of the GEIS and all relicensing until the public is informed about the railroad and who is liable for what at this site.

Comment: 23-33-LU; P. 4-1, there is no mention of issues related to the rail line (thru the site) which I view as very critical for the public to understand in detail. What is Exelon[']s relationship with the railroad(s)?

Response: *For security reasons, Exelon controls and protects all onsite activities involving commercial reactor operations and the storage of nuclear material at the LGS site. The Conrail line that passes through the LGS site is located within a right-of-way on Exelon property. Maintenance of the rail line is the responsibility of Conrail and is outside the control of Exelon. Conrail is a separate corporation not under the control of Exelon Corporation or Exelon Generation Company, LLC. These comments did not provide any new and significant information; therefore, no changes were made to the SEIS.*

Comment: 23-34-LU; [P.] 4-1, tables refer to GEIS so citizens have a hard time getting needed info.

Response: *The comment asserts that the NRC purposely makes it difficult to access needed information (e.g., GEIS). The NRC has a longstanding practice of conducting its regulatory responsibilities in an open and transparent manner. In that way, the NRC keeps the public informed of the agency's regulatory, licensing, and oversight activities. The NRC views nuclear regulation as the public's business and, as such, believes it should be transacted as openly and candidly as possible to maintain and enhance the public's confidence. Ensuring appropriate openness explicitly recognizes that the public must be informed about, and have a reasonable opportunity to participate meaningfully in, the NRC's regulatory processes. This means that public stakeholders must have access to clear and understandable information about the NRC's role, processes, activities, and decisionmaking. The NRC encourages members of the public to participate in the license renewal review process and contribute ideas and expertise so that the NRC can make regulatory decisions with the benefit of information from a wide range of stakeholders.*

Copies of the Generic Environmental Impact Statement for License Renewal of Nuclear Plants *(NUREG-1437) (GEIS) are available upon request. The GEIS is also available on line at http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1437/. Local libraries and reference librarians can provide assistance in accessing this document. The GEIS can also be accessed by using the ADAMS Public Electronic Reading Room at http://www.nrc.gov/reading-rm/adams.html/ under ADAMS accession numbers ML13106A241, ML13103A242, and ML13106A244. This comment does not provide any new and significant information; therefore, no changes were made to this SEIS.*

A.2.13 License Renewal & NEPA Process (LR)

Comment: 2-1-LR; ACE objects to NRC proceeding on this EIS at this time with important questions and issues not yet addressed or answered. There is no need when Limerick's current licenses do not expire until 2024 and 2029.

Comment: 2-10-LR; This premature and incomplete EIS is apathetic example of a lack of courage and integrity at the NRC. You have abandoned and violated your own mission to protect public health and safety. You have betrayed this entire region once again. NRC's failure to protect our environment and residents is irrefutable evidence that you no longer have a moral compass. Your rush to rubber stamp Limerick's EIS and license renewals is a cowardly betrayal of every man, woman, and child in this community, as well as future generations that will unquestionably be harmed by 20 additional years of operation at Limerick.

Comment: 3-5-LR; I think it would be better to have more independent study done now than solve any unknowns before racing to relicense Limerick. We have 11 years remaining in the present license period to properly work out these problems. We should not just skip over them or wait until a serious accident happens. The job of the NRC is to promote public safety, not the nuclear industry.

Comment: 8-1-LR; Now let me see, I'm wondering why do we have to have a relicensing, right now, for 20 more years for Exelon? I don't get it. If it's already licensed now to like 2017 or 2024, 2029, why are we in the world have to do this now unless we're waiting for something bad to happen? We better get the license on board first because if something really bad happens, well, maybe we'll stop to fix it. We can't get shut down if we already have the license. I don't know. I was a naval officer one time, but I'm not someone who knows a lot about systems.

So what's the rush of getting the license right now? Well, I don't know.

Comment: 18-4-LR; Why does the NRC seem to be in such a mad rush to relicense a[ ]nuclear facility when its license doesn't even expire until 2024? Why? Why? Why?

Comment: 13-6-LR; That's why -- that's precisely why Exelon or any of these other utilities can make application as early as 20 years. That's the rule.

I mean what kind of Environmental Impact Statement is worth anything if it's fixed 20 years before the federal action is even required?

This gives you the basic plan and blueprint for a bias that this Agency and this industry have concocted to expedite these license extensions prior to what they view as a lot of unwelcome and unnecessary questions about renewable wind, solar, energy efficiency, and whole host of 21st century energy policy chances that are going to happen, that are happening.

Comment: 20-2-LR; But environmental impacts, crucial as they are, are secondary questions. I really wish would address why this licensing procedure is happening so early. Unit 2's present license, as Mr. Moyer explained, isn't even up for 16 years. Only God knows what will happen tomorrow, let alone 16 years from now. We will be learning that only as we go along.

Comment: 20-3-LR; Much will happen in the next 12 years that no one can foresee. To proceeding with licensing now makes no sense. It almost seems as though the NRC is saying to us our mind is made up. Do not confuse us with any present or future facts, circumstances, insights, developments, or technologies. Someone must be profiting by this reckless rush to relicense, but the public is being harmed by the haste. You, Nuclear Regulatory Commission, have the power to change this. Please, slow the process down.

Comment: 27-4-LR; We are wondering why it[']s so important for Limerick power plant to renew their license so soon.

Comment: 30-1-LR; *"The NRC makes the decision to grant or deny license renewal based on whether the applicant has demonstrated that the environmental and safety requirements in the agency's regulations can be met during the period of extended operation." (page 1-1, lines 12-14)*

The existing licenses for Units 1 and 2 of the Limerick Generating Station (LGS) expire on October 26, 2024, and June 22, 2029, respectively. The current licenses for LGS do not expire for another 11 (Unit 1) and 16 years (Unit 2). Renewing these licenses for another 20 years would result in the licenses expiring in 2044 (Unit 1) and 2049 (Unit 2). *Has the NRC defined when, in the course of an applicant's current license, that applicant can or should apply for a license extension?* If an applicant applies for a license extension early, as in this case more than a decade before expiration of current licenses, then the NEPA analysis which supports the federal action has to be projected further out into the future and is therefore less certain and can be relied on with less confidence in the government's decision. For example, as noted below, Section 3 of the GEIS Supplement concerns the environmental impacts of refurbishment, including major refurbishment activities in a boiling water reactor (BWR) such as replacement of recirculation piping and pressurized water reactor steam generators. The GEIS Supplement for LGS did not include an evaluation of the environmental impacts of nuclear power plant

refurbishment because "Exelon did not identify the need to undertake any major refurbishment or replacement actions" (page 3-2, lines 10-11). However after a further decade of operation the need to undertake major refurbishment could arise. In another example, Section 4 of the GEIS Supplement for LGS discusses the fluctuations in measurements of tritium in groundwater at monitoring wells since 2006 (page 4-6, lines 27-33). As the LGS units age over another decade, tritium levels in groundwater could fluctuate further, necessitating additional environmental review under NEPA.

NRDC recommends that, in order to reduce uncertainty, the federal government defer a final decision on license extension for LGS until a time period closer to the expiration of current licenses for these two reactors, for example within two years of expiration of current licenses.

Reinforcing this position, the GEIS Supplement asserts that: "The NRC has established a license renewal process that can be completed in a reasonable period of time with clear requirements to ensure safe plant operation for up to an additional 20 years of plant life" (page 1-3, lines 20- 22). If the license renewal process can be completed in a reasonable time, then renewing licenses for LGS so far in advance is unwarranted, and forces NRC's analysis in support of the NEPA process to be significantly weakened, as the NRC must thereby predict events farther in the future in support of government decision making.

Response: *According to NRC regulations, 10 CFR Part 54, "Requirements for renewal of operating licenses for nuclear power plants," a nuclear power plant licensee may apply to the NRC to renew a license as early as 20 years before expiration of the current license. The NRC determined that 20 years of operating experience is sufficient to assess aging and environmental issues at the site. Additionally, 20 years is a reasonable lead period because, if the NRC denies the license renewal application, it takes about 10 years to design and construct major new generating facilities, and long lead times are required by energy-planning decisionmakers.*

These comments do not provide any new and significant information; therefore, no changes were made to the SEIS.

Comment: 23-32-LR; There are no definitions, what does "refurbishment" mean?

Comment: 30-2-LR; GEIS Supplement Section 3 "ENVIRONMENTAL IMPACTS OF REFURBISHMENT" does not, in fact, analyze the environmental impacts of refurbishment because: "Exelon did not identify the need to undertake any major refurbishment or replacement actions associated with license renewal to support the continued operation of LGS beyond the end of the existing operating license" (page 3-2, lines 10-12). NRDC requests that the NRC itself determine if Exelon's statement is reasonable in a final GEIS Supplement. A steam generator replacement will likely be needed to support operation in the extended license period, probably in conjunction with the planned, but now deferred, power uprate for Limerick. The GEIS Supplement is deficient in this regard, as major refurbishment activities have occurred at numerous reactors in the course of their operating life, and may or may not occur at LGS in the future. Given the length of time to the end of extended licenses for LGS Unit 1 and Unit 2, 31 and 36 years, respectively, how much certainty can the NRC have that major refurbishment will not be required after decades of continued operation? Given the uncertainty in projecting aging effects so far forward in time, a conservative and robust approach to NEPA requirements in support of the government's decision should include an analysis of the environmental impacts of refurbishment at LGS.

Response: *Refurbishment activities are physical activities or changes to the facility or site that are undertaken to prepare a nuclear power facility for continued operation. These activities, which occur as needed, include enhanced inspection, surveillance, testing, maintenance and*

repair, replacement, and modification of plant systems, structures, and components. For some facilities, replacement of large components of the nuclear steam supply system (e.g., steam generator or pressurizer) may be necessary; repair or replacement of pumps, pipes, control rod systems, electronic circuitry, electrical and plumbing systems, or motors may be necessary as well.

Not many facilities are expected to need refurbishment activities in connection with license renewal. Many License renewal applicants anticipate that they will replace components and conduct additional inspection activities within the bounds of normal facility component replacement and inspection. Refurbishment activities (e.g., steam generator and vessel head replacement) have already taken place during the current operating license term at a number of nuclear power plants. These activities have been conducted for economic, reliability, or efficiency reasons during refueling or maintenance outages under the original operating license. In addition, very few applications have identified any refurbishment activities associated with license renewal. The NRC acknowledged in the 1996 GEIS that licensees may undertake refurbishment activities for reasons of safety, economics, reliability, or efficiency (i.e., not just to support license renewal). Few of the applications received to date have identified major facility refurbishment activities or modifications necessary to support the continued operation of the facility beyond the end of the existing operating license.

As part of the license renewal safety review, the applicant must confirm whether the design assumptions made during the plant's initial licensing about the length of time the plant would be operated will continue to be valid throughout the period of extended operation and whether aging effects will be adequately managed. The applicant must demonstrate that the effects of aging will be managed in such a way that the intended functions of "passive" or "long-lived" structures and components (such as the reactor vessel, reactor coolant system, piping, steam generators, pressurizer, pump casings, and valves) will be maintained during extended operation. For active components (such as motors, diesel generators, cooling fans, batteries, relays, and switches), surveillance and maintenance programs will continue throughout the period of extended operation.

LGS Units 1 and 2 are General Electric (GE) BWRs producing steam for direct use in the steam turbine. Unlike pressurized water reactors (PWRs), BWRs do not need steam generators to support power generation. Extended power uprates usually require significant modifications to major pieces of nonnuclear equipment such as high-pressure turbines, condensate pumps and motors, main generators, or transformers, but no new construction on previously undisturbed land is anticipated to occur (Exelon 2011).

If additional aging management activities are needed, the applicant may be required to establish new monitoring programs or increase inspections. For instance, applicants would specify activities that need to be performed (such as activities related to water chemistry and inspections) to prevent and mitigate age-related degradation. These activities increase the likelihood that the program is effective in minimizing degradation and that a component is replaced if specified thresholds are exceeded.

Plant maintenance activities not associated with license renewal are outside the scope of the environmental review for license renewal. The NRC provides continuous oversight of nuclear power plants through its ROP to verify that they are being operated and maintained in accordance with NRC regulations. This oversight includes having full-time NRC inspectors located at the plant and periodic safety inspections conducted by NRC inspectors based in an NRC Regional Office. The inspections look at a plant's compliance with NRC's regulations, which include the following: plant safety (routine and accident scenarios), radiation protection of plant workers and members of the public, radioactive effluent releases, radiological

environmental monitoring, emergency preparedness, radioactive waste storage and transportation, quality assurance, and training. The NRC has full authority to take whatever action is necessary to protect public health and safety.

These comments do not provide any new and significant information; therefore, no changes were made to the SEIS.

Comment: 30-12-LR; (page 8-3, line 14) "A three-level standard of significance -SMALL, MODERATE, or LARGE-is used to indicate the intensity of environmental effects for each alternative undergoing in-depth evaluation." This vague taxonomy of relative impacts conveys almost no meaningful information regarding the specific nature and ecological harms of the impacts thus described, but only that some are (supposedly) relatively larger or smaller than others, but often not even that much information is conveyed, as when a "qualitative" range is employed (e.g.[,] "SMALL to LARGE") to characterize an impact area, and compared to the same environmental facet of alternatives likewise expressed as a range ("SMALL to MODERATE" or "SMALL to LARGE["].] Thus, for example when the "Land Use" impact is given as SMALL for "License Renewal," but "SMALL to MODERATE" for "New Nuclear at an Alternate Site," and "SMALL to LARGE" for Solar PV, no useful information is conveyed, as it is entirely possible that the *specific implementations* of each of these alternatives could all be characterized as "SMALL." In fact, if the comparison had not encompassed a phony solar alternative focused on gargantuan utility-scale solar development on undisturbed lands, and focused solely on distributed rooftop and parking lot PV deployments, the net consumptive land use requirements of the "unreasonable" solar alternative would actually be zero, *less than* the "SMALL" and "SMALL to MODERATE" impacts of the nuclear alternatives! The failure to meaningfully quantify and compare impacts is a violation of NEPA, as "the analysis for all draft environmental impact statements will, to the fullest extent practicable, quantify the various factors considered." Only to the extent that there are "important qualitative consideration or factors that cannot be quantified" is it acceptable for NRC to discuss "considerations or factors in qualitative terms." See 10 C.F.R. 51.71(d); *see also* 40 C.F.R. § 1502.22(a), "[i]f the incomplete information relevant to reasonably foreseeable significant adverse impacts is essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant, the agency shall include the information in the environmental impact statement."

Response: *The impacts discussions presented in the LGS SEIS explain and quantify the various environmental factors considered in reaching an impact significance level of SMALL, MODERATE, or LARGE for each of the license renewal NEPA issues listed in Table B-1 in NRC regulations 10 CFR Part 51. A standard of significance was established for each NEPA issue based on the CEQ terminology for "significantly" (see 40 CFR 1508.27). Since the significance and severity of an impact can vary with the setting of the proposed action, both "context" and "intensity," as defined in CEQ regulations 40 CFR 1508.27, were considered. Context is the geographic, biophysical, and social context in which the effects will occur. In the case of license renewal, the context is the environment surrounding the nuclear power plant. Intensity refers to the severity of the impact in whatever context it occurs. Based on this, the NRC established three levels of significance for potential impacts: SMALL, MODERATE, and LARGE. The definitions of the three significance levels are presented in the footnotes to Table B-1 of 10 CFR Part 51, in Appendix B to Subpart A.*

As required under NRC regulations 10 CFR 51.71(d), the LGS draft SEIS includes analyses that consider and weigh the environmental effects of the proposed action (license renewal) and the environmental impacts of alternatives to the proposed action. The LGS draft SEIS relies on impact significance level conclusions from supporting information in the 1996 and 2013 GEIS.

While a range of replacement power alternatives are discussed in the LGS SEIS, the only real alternative to license renewal within NRC's decisionmaking authority is to not issue a renewed operating license. The NRC has no authority or regulatory control over the selection of replacement power alternatives. In addition, the NRC cannot ensure that environmentally preferable replacement power alternatives are selected. The impacts of not issuing a renewed operating license are addressed in the LGS SEIS as alternatives to license renewal.

This comment does not provide any new and significant information; therefore, no changes weremade to the SEIS.

Comment: 31-4-LR; The relicensing process has raised local questions about the Limerick Generating Station. It will become more of a permanent element of the community with extension of the license as requested. Therefore, it is vital to have an effective and continuous education program about the generating station and the associated risks presented by its operation. Education can take the form of many types of activities that further engage local residents and keep them better informed about the plant and their role and responsibilities in the event of an emergency at the facility

Response: *The NRC's OPA is available to address the public concerns and questions regarding nuclear safety and information regarding Limerick. The office follows news coverage of the agency and responds to media and public inquiries. If members of the public have questions or comments about the NRC, nuclear safety, or related topics, they can contact OPA at OPA.Resource@nrc.gov. For specific questions and concerns regarding Limerick, the public can contact the Region I OPA at OPA1.Resource@nrc.gov. Additional contact information for OPA can be accessed at http://www.nrc.gov/about-nrc/organization/opafuncdesc.html.*

This comment does not provide any new and significant information; therefore, no changes were made to this SEIS.

Comment: 2-23-LR; NRC Did NO Independent Monitoring Or Testing For Limerick's EIS. It Is Indefensible For NRC To Claim Limerick's Impacts Are "Small" When A Body Of Evidence Suggests Otherwise.

Comment: 2-24-LR; NRC FAILED TO HAVE AN INDEPENDENT EXPERT ANALYZE THE ADDITIVE, CUMULATIVE, AND SYNERGISTIC HARMS TO THE ENVIRONMENT AND PUBLIC HEALTH OVER THE PAST 28 YEARS. THEREFORE, NRC CAN'T MAKE A RELIABLE, DEFENSIBLE PREDICTION ABOUT THE HARMS FROM LIMERICK UNTIL ITS LICENSES EXPIRE IN 2029, NOR UNTIL 2049, DURING ANOTHER 20 YEARS IF LIMERICK IS RELICENSED.

Comment: 4-5-LR; NRC's EIS conclusions rely on self-serving biased calculations, estimates, monitoring, and reports totally controlled by Exelon, the company with a vested interest in the outcome that has shown it can't be trusted.

Comment: 23-25-LR; Prior to NRC's scoping process, ACE repeatedly urged NRC and other agencies to do a year of independent monitoring and testing for all of Limerick's broad range of radionuclides, as well as other toxics massively released into our air and water from Limerick. NRC never even responded to our requests.

Response: *The NRC does not routinely perform independent monitoring around nuclear power plants. Independent sampling and monitoring by the NRC is only performed in rare and exceptional situations where there is credible evidence that a licensee's monitoring program is not adequate to demonstrate adequate protection of public health and safety. The NRC licenses the nuclear plants, licenses the plant operators, and establishes regulations and license conditions for the safe operation of each plant. The NRC provides continuous oversight*

of plants through its ROP to verify that the plants perform all required monitoring and are being operated in accordance with NRC rules and regulations. The NRC has authority to take appropriate action as necessary to protect public health and safety and may demand immediate licensee actions, up to and including a plant shutdown.

The NRC staff relies on other governmental agencies for data on issues outside its purview. For example, the SEIS, in Section 2.2.4, Surface Water Resources, uses data from the U.S. Geological Survey to document the volume of water flowing in the Schuylkill River near LGS. Also, in Section 2.2.4.2, Surface Water Quality and Effluents, the NRC staff uses data from the PDEP-issued NPDES permit No. PA0051926 to assess the impacts to the Schuylkill River from nonradiological wastewater effluents. For radiological environmental monitoring data, in Section 4.9.2, Radiological Impacts of Normal Operations, the NRC staff used data from the PDEP Bureau of Radiation Detection's independent environmental monitoring program. Throughout the SEIS, there are environmental issues where the NRC staff used governmental agencies to obtain environmental data independent of Exelon's data.

Based on the NRC's staff review of data from Exelon and governmental agencies, no new and significant information was found to question the quality or integrity of the data used in the LGS SEIS; therefore, no changes were made to the SEIS.

Comment: 2-30-LR; NRC CLEARLY DID NOT GIVE A FULL AND FAIR REVIEW NOR ADDRESS THE DOCUMENTED EVIDENCE OF ENVIRONMENTAL AND HEALTH HARMS AND THREATS SUBMITTED FROM ACE 10-26-11 ON BEHALF OF PUBLIC INTERESTS.

- NRC ALSO REFUSED ACE'S REQUEST TO MEET TO DISCUSS OUR POLLUTION PERMIT ANALYSES, DESPITE THE FACT THAT NRC FAILED TO INDEPENDENTLY ANALYZE LIMERICK NUCLEAR PLANT'S POLLUTION PERMITS.

Comment: 2-38-LR; IT IS IMPOSSIBLE FOR NRC TO ACCURATELY PREDICT WHAT WILL HAPPEN UNTIL 2049 WHEN NRC FAILED TO REVIEW AND ANALYZE LIMERICK'S WATER PERMITS AND DOCKETS, AND NRC REFUSED TO MEET WITH PUBLIC INTEREST CITIZENS WHO DID REVIEW AND ANALYZE LIMERICK'S WATER PERMITS AND DOCKETS FROM BEFORE LIMERICK WAS LICENSED THROUGH THE MOST[ ]RECENT PERMITS AND DOCKETS ISSUED 4-13.

Comment: 4-2-LR; ACE analyzed Limerick's air and water pollution permits and Exelon's radiological monitoring reports which document enormous harms. NRC's PR people are embarrassingly uninformed about Limerick's air and water pollution. Instead of giving ACE an hour, NRC met with agencies that just issued five-year pollution permits with exemptions for high levels of dangerous pollution in violation of protective laws.

Response: *The NRC acknowledges the commenter's concerns about meeting with NRC sStaff and agrees that public participation and input are necessary and important. Following the issuance of the draft SEIS for LGS and as further described in Appendix A, Section A.2, NRC announced and held two public meetings at Sunnybrook Ballroom, Pottstown, PA, on May 23, 2013, to describe the results of the environmental review and answer questions on the license renewal process. Each meeting was preceded by a one-hour open house where the public could meet with and ask questions of NRC staff. These activities and interactions were conducted in accordance with NRC's policy and procedures for conducting public meetings in support of NRC's regulatory processes. The NRC staff's responses to public comments received relative to LGS operations and regulatory requirements are contained in Section A.2 of this Appendix.*

These comments do not present any new or significant information; therefore, no changes were made to this SEIS.

Comment: 2-2-LR; NRC has failed to acknowledge or respond in writing to substantial written testimony submitted by ACE in October 2011 on 14 major categories.

Comment: 2-21-LR; NRC'S Mission Is To Protect Public Health And Safety Related To Limerick Nuclear Plant Operations. Minimally, That Requires NRC To Provide Full, Fair, And Accurate Disclosure Of All Of Limerick Nuclear Plant's Unprecedented Environmental Threats And Harms. The Health And Safety Of Millions Of People In The Greater Philadelphia Region Will Be Further Jeopardized By Negligent Conclusions In NRC'S DRAFT EIS For Limerick Nuclear Plant. NRC Conclusions In Limerick Nuclear Plant's DRAFT EIS Are An Unethical Injustice To The Public, And Must Be Changed To Reflect The Documented Evidence Of Unprecedented Threats And Harms.

ON BEHALF OF THE HEALTH, SAFETY, AND FINANCIAL INTERESTS OF MILLIONS OF PEOPLE:

1. ACE Is Requesting That NRC'S DRAFT EIS For Limerick Nuclear Plant Relicensing Be Changed To Accurately Reflect The Documented Evidence ACE Put On NRC'S Public Hearing Record For Limerick's EIS October 26, 2011.
2. ACE Is Also Requesting That NRC's Final EIS Reflect Additional Evidence Of Environmental Threats And Harms Included In This June 24, 2013 Written Testimony.

Comment: 4-1-LR; NRC failed to respond to our massive documentation. Would acknowledging facts require NRC to close Limerick? NRC wouldn't give ACE one hour for a meeting with NRC's Environmental Review Team. NRC clearly doesn't want to face the facts

Comment: 23-11-LR; I love "The comments considered to be within the scope of the environmental license renewal…" Judging the public and ignoring the public. P. 1-3 line 6.

Comment: 26-1-LR; NRC ignored and/or dismissed the hundreds of pages of ACE written EIS testimony presented to NRC October 2011, documenting through permit reviews, records from NRC's own files, PA Cancer Registry data, and other state health statistics, Limerick's unprecedented threats and harms to our region and its residents.

Response: *The NRC considers public participation necessary and important for the environmental review process. As part of the environmental review for LGS, every scoping comment and supporting documentation received during the scoping comment period was evaluated and considered in the preparation of the site-specific anlyisis for LGS, as appropriate. Scoping Comments that were considered outside the scope of the environmental review were addressed in the Scoping Summary Report issued in March 2013. The Scoping Summary Report is publicly available and can be accessed from the ADAMS Public Electronic Reading Room at http://www.nrc.gov/reading-rm/adams.html/ under ADAMS accession number ML12131A499. The scoping comments considered to be in scope are listed in Section A.1 of this SEIS.*

Every comment and supporting documentation received on the draft SEIS was considered and, if appropriate, incorporated into the final SEIS. All of the comments on the draft SEIS are listed in Section A.2 of this SEIS, along with the discussion about whether the comments were within the scope of license renewal and, if appropriate, where changes to the text of the final SEIS were made in response to the comments.

These comments do not provide any new and significant information; therefore, no changes were made to the SEIS.

Comment: 18-1-LR; Let me give you a very specific example. On September 14, 2012, I wrote the NRC to request a delay of final public hearing on the Environmental Impact Statement of relicensing the Limerick Generating Station until the NRC's U.S. court-ordered spent fuel study was complete. I never received a response. Not a phone call. Not a letter. Not an email. No response.

Recently, I called Congressman Jim Gerlach's office and I also called Senator Bob Casey's office for help in getting a response to my letter. I'd like to publicly thank Greg Francis from the Congressman's office and Kurt Imhof from the Senator's office for personally contacting the NRC on my behalf. Even after those efforts, and now some eight months after I had written that letter, I still haven't heard back from the NRC. And I suspect I never will.

This helps to illustrate a real-life example of how regulatory capture works. In this case, the regulatory agency in question seems to be more concerned, in my opinion, with keeping Exelon's relicensing of the Limerick Generating Station on track than they are with responding to the concerns to protect the public interest.

Response: *The NRC receive an e-mail from Congressman Jim Gerlach's office on May 13, 2013, requesting that the NRC provide a response to commenter's concern regarding the public meeting on draft SEIS for Limerick. NRC responded to Congressman Jim Gerlach's office request and stated in its response that the commenter claimed that the U.S. Court of Appeals decision on the NRC's waste confidence decision and rule meant no final public hearing on the DSEIS could be held was incorrect. The response further explained that in August 2012, the Commission issued an order directing the NRC staff to continue to work on licensing activities, but not to issue licenses dependent on the waste confidence rule until the court's remand is appropriately addressed. The order specifically states that "this determination extends just to final license issuance; all licensing reviews and proceedings should continue to move forward."*

NRC's response to Congressman Jim Gerlach's office is publicly available and can be accessed from the ADAMS Public Electronic Reading Room at http://www.nrc.gov/reading-rm/adams.html/ under ADAMS accession number ML13162A446.

This comment does not provide any new and significant information: therefore, no changes were made to the SEIS

Comment: 23-5-LR; This is a meeting that's being transcribed. Are we on the record as we would be at a hearing? Is NRC on the record? I agree with Mr. Moyer, the supervisor, that there should be an on the record public hearing. NEPA Section 1502.2(f) says agencies shall not commit resources prejudging selections of alternatives before making a final decision.

On page 123 of this document it says "the USNRC preliminary recommendation is that the adverse environmental impacts of license renewal for LGS are not great enough to deny the option of license renewal for energy planning decision makers." I think the NRC is not in compliance with NEPA and I think this needs to be looked into. I think the law is being broken.

Response: *The public meetings held on May 23, 2013, to receive public comments on the draft SEIS were transcribed. As stated earlier in this section, the meeting transcripts are publicly available and can be accessed from the ADAMS Public Electronic Reading Room at http://www.nrc.gov/reading-rm/adams.html/ under ADAMS accession numbers ML13172A019 and ML13172A023. The NRC staff conducted the environmental review for Limerick in accordance with NEPA and NRC's regulations in 10 CFR 51. As part of the review the staff evaluated reasonable alternatives to license renewal, including the no-action alternative as required by NEPA. NEPA does not require that a Federal agency choose an alternative with the least impact but rather that it disclose all potential impacts so that the decision that the agency makes can be fully informed. The NRC has no authority or regulatory control over the ultimate*

selection of future energy alternatives. Likewise, the NRC cannot ensure that environmentally superior energy alternatives are used in the future. The NRC makes a decision to renew or not to renew a license based on safety and environmental considerations. The final decision on whether or not to continue operating the nuclear facility will be made by the licensee and by state and Federal (non-NRC) decision-makers.

This final decision will be based on economics, energy reliability goals, and other objectives over which the other entities may have jurisdiction. Moreover, given the absence of the NRC's authority in the general area of energy planning, the NRC's identification of a superior alternative does not guarantee that such an alternative will be used.

The staff's evaluation of reasonable alternatives to license renewal can be found in Chapter 8 of this SEIS.

Comment: 23-12-LR; Where is the safety report? Can we see it and comment in public? P. 1-3 line 23

Response: *The results of the staff's safety review are available to the public. There is no formal comment period required for the safety review. While members of the public do not have an opportunity to comment on the SER, the Adivisory Committee on Reactor Safeguard (ACRS) meetings are open to the public. The ACRS is an independent panel of experts that advises the Commission on matters related to nuclear safety. The ACRS conducts an indepent review of the the applicant's safety analysis report, the staff's SER, and the results of the onsite inspections, and makes its recommendation to the Commisson regarding issuance of the renewed license.*

Additionally, any person who believes they would be adversely affected by a specific reactor license renewal may request a hearing. Approximately two months after the NRC receives the application, a notice is posted in the Federal Register indicating the opportunity for hearing regarding the renewal fo the operating license and instructions for filing a request for a hearing. Members of the public may also petition the Commission, in accordance with the provisions in 10 CFR 2.206, for consideration of safety issues during current operation and the period of extended operation of the plant.

The staff's SER for Limerick is publicly available and can be accessed from the ADAMS Public Electronic Reading Room at http://www.nrc.gov/reading-rm/adams.html/. The ADAMS accession number for the SER is ML12357A349. The SER is also available on the Limerick license renewal public website at http://www.nrc.gov/reactors/operating/licensing/renewal/applications/limerick.html.

This comment does not provide any new and significant information; therefore, no changes were made to this SEIS

Comment: 2-26-LR; NRC'S negligent conclusions protect Exelon's profits and NRC jobs, but fail to protect public health and safety.

Comment: 2-37-LR; NRC IS PREPARING AN ENVIRONMENTAL IMPACT STATEMENT FOR LIMERICK NUCLEAR PLANT WITHOUT ACKNOWLEDGING OR ANALYZING LIMERICK'S ACTUAL IMPACTS ON SCHUYLKILL RIVER WATER, ECOSYSTEMS, WILDLIFE AND PUBLIC HEALTH TO DATE.

Comment: 23-3-LR; The DSEIS is completely self serving and shows how far NRC is in bed with Exelon. Nuclear [R]egulatory means regulate. NRC is paid for by all of us and should be fair and impartial. It is strange that the NRC wrote the DEIS. The NRC set up the interior rules, including small, moderate, and large -- what a brilliant idea -- and whether something is new or

old. And the NRC will decide whether or not to relicense. What a farce. This is not the way to make decisions.

Response: *These comments address concerns regarding the staff's environmental review and development of the draft SEIS. The NRC staff performed its environmental review and developed the draft SEIS in accordance with NEPA and NRC's requirements in 10 CFR Part 51. The NRC staff evaluated the impacts of license renewal on several resource areas, such as threatened and endangered species, terrestrial resources, aquatic resources, air quality, ground and surface water, land use, socioeconomic factors, and human health. The staff's evaluation of the impacts of license renewal on all resource areas can be found in Chapter 4 of this SEIS.*

These comments do not provide any new and significant information; therefore, no changes were made to the SEIS.

Comment: 2-11-LR; And finally, ACE today is formally requesting on the record that NRC hold a public hearing in Pottstown at some date in the future to address all of the relicensing issues for Limerick Nuclear Plant not specifically or adequately addressed in the Environmental Impact Statement.

Comment: 2-18-LR; And finally, ACE is again formally requesting that NRC hold a public hearing in Pottstown to address all of the relicensing issues for Limerick nuclear plant not specifically or adequately addressed in the environmental impacts. Our community deserves nothing less.

Response: *The NRC acknowledges the comments and agrees that public participation and input are necessary and important. It is NRC practice to hold at least two sets of public meetings on plant-specific SEISs in the vicinity of the reactor site that is the subject of a license renewal application. These meetings occur at important stages of the environmental review of the application.*

The first set of meetings occur in the vicinity of the nuclear power plant after the license renewal application is received and provides the public an opportunity to provide its insights on the scope of the plant-specific SEIS. Transcripts of the meetings are made available to the public after the meetings are conducted. As stated, earlier in this Appendix, for the LGS license renewal review, the NRC held two public meetings at the Sunnybrook Ballroom in Pottstown, PA, September 22, 2011. During the meeting attendees had an opportunity to provide oral statements that were recorded and transcribed by a certified court reporter. Trancripts of the entire meeting are publicly available and can be accessed from the ADAMS Public Electronic Reading Room at http://www.nrc.gov/reading-rm/adams.html/ *under ADAMS accession numbers ML11287A207 and ML11287A211.*

The second set of public meetings occurs after issuance of the draft SEIS and is also held in the vicinity of the nuclear power plant requesting license renewal. The purpose of these meetings, typically consisting of an afternoon and evening session, are to present an overview of the draft SEIS and to obtain comments from the public and other interested stakeholders related to the draft. Transcripts of these public meetings are made available after the meetings are conducted. The NRC held to two meeting at the Sunnybrook Ballroom in Pottstown, PA, on May 23, 2013. Trancripts of the entire meeting are publicly available and can be accessed from the ADAMS Public Electronic Reading Room at http://www.nrc.gov/reading-rm/adams.html/ *under ADAMS accession numbers ML13172A019 and ML13172A023.*

The NRC currently does not plan to hold additional meetings for the environmental review.

These comments do not provide any new and significant information; therefore, no changes were made to the GEIS in response to these comments.

Comment: 23-13-LR; Mitigation of adverse impact means you still allow adverse impacts and try not to do worse things, but you might, P. 1-4 line 29[.]

Response: *According to the CEQ regulations in 10 CFR 1508.20, mitigation means:*

- *avoiding the impact altogether by not taking a certain action or parts of an action,*
- *minimizing impacts by limiting the degree or magnitude of the action and its implementation,*
- *rectifying the impact by repairing, rehabilitating, or restoring the affected environment,*
- *reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action, and*
- *compensating for the impact by replacing or providing substitute resources or environments.*

In terms of the impacts during license renewal, this definition can include such activities as:

- *using best-management practices to mitigate the impact of any required dredging;*
- *relocating a project, such as additional storage or laydown yards, to avoid impact on a historic or an archeological site;*
- *reconfiguring intake structures to reduce impingement or entrainment of fish or shellfish larvae; and*
- *making structural changes to equipment to mitigate the potential for severe accidents.*

For Limerick the staff considered mitigation measures for each Category 2 (i.e., site specific) issue, as applicable. The staff's evaluation can be found in Chapter 4 of this SEIS.

Comment: 23-37-LR; [P.] xvii line 1. Rules – a revised rule is expected to be published. Let's put this application aside for about 15 years until the rules are in and in effect and the public know what they say.

Response: *This comment is concerning staffthe revision of the NRC's requirements in 10 CFR Part 51, which is discussed in the Executive Summary of the draft SEIS.*

On June 20, 2013, the NRC published a final rule (78 FR 37282) revising 10 CFR Part 51, "Environmental protection regulations for domestic licensing and related regulatory functions." The final rule updates the potential environmental impacts associated with the renewal of an operating license for a nuclear power reactor for an additional 20 years. A 2013 revised GEIS, which updates the 1996 GEIS, provides the technical basis for the final rule. The revised GEIS specifically supports the revised list of NEPA issues and associated environmental impact findings for license renewal contained in Table B–1 in Appendix B to Subpart A of the revised 10 CFR Part 51. The 2013 rule revised the previous rule to consolidate similar Category 1 and 2 issues, change some Category 2 issues into Category 1 issues, consolidate some of those issues with existing Category 1 issues, and add new Category 1 and 2 issues.

The 2013 rule became effective July 22, 2013, after publication in the Federal Register*. Compliance by license renewal applicants was not required until June 20, 2014 (i.e., license renewal applications submitted later than 1 year after publication must be compliant with the new rule). Therefore, it does not apply to Exelon's license renewal application. Nevertheless,*

under NEPA, the NRC must now consider and analyze, in its license renewal SEIS for Limerick, the potential significant impacts described by the revised rule's new Category 2 issues, and, to the extent there is any new and significant information, the potential significant impacts described by the revised rule's new Category 1 issues.

The environmental review of the LGS license renewal application was performed using the criteria from the 1996 and 1999 GEIS. Neither Exelon nor NRC identified information that is both new and significant related to Category 1 issues that would call into question the conclusions in the GEIS. This conclusion is supported by the NRC's review of the applicant's ER and other documentation relevant to the applicant's activities, the public scoping process, public comments on the draft SEIS, and the findings from the environmental site audit conducted by the NRC staff.

The NRC staff also reviewed information relating to the new issues identified in the 2013 GEIS, specifically, geology and soils, radionuclides released to the groundwater, effects on terrestrial resources (noncooling system intake), exposure of terrestrial organisms to radionuclides, exposure of aquatic organisms to radionuclides, human health impacts from chemicals, physical occupational hazards, environmental justice, and cumulative impacts. These issues are documented in Chapter 4 of this SEIS.

This comment does not provide any new and significant information; therefore, no changes were made to the SEIS.

A.2.14 Opposition to License Renewal (OR)

Comment: 5-10-OR; I do not support NRC's decision to relicense Limerick or understand why it is rushing to do so.

Comment: 5-29-OR; What is the reason that Exelon, a declining private corporation, which some say is on the wrong side of energy progress, can operate Limerick, thus eliminating the public's right to clean air, water, and the environment for posterity, as guaranteed in Pennsylvania's constitution when its method?

Comment: 11-1-OR; It is my feeling, and a lot of other people I know, that the NRC should not even be considering relicense of Limerick nuclear power plant considering the density of our population and the increasing risk that exists for a meltdown.

Comment: 23-2-OR; I am oppose[d] to the relicensing and I believe this plant should be safely decommissioned as soon as possible and with full on-the-record public participation at every step.

Comment: 23-45-OR; The alternative I cho[o]se is closure now.

Comment: 23-47-OR; This not the time to approve this SEIS. This is not the time to consider extending the license to operate. This is the time to close this NPP. Venting, Terror, threats, earthquakes, expected regulatory changes; do not renew while these issues and many others are not resolved.

Comment: 27-1-OR; After hearing all the facts in regards to the safety of the Limerick Nuclear Plant, there is no doubt that this power plant should be closed down. I was watching Frontline on TV and saw where Germany shut down sixteen of their Nuclear power plants.

Comment: 27-5-OR; For all of our safety this power plant should be shut down.

Response: *These comments express opposition to license renewal of LGS. The comments provide no new and significant information; therefore, no changes were made in this SEIS in response to these comments.*

A.2.15 Out of Scope (OS)

Comment: 2-3-OS; NRC must stop and delay all activities and actions related to Limerick Nuclear Plant's relicensing including finalizing this EIS until after several issues are addressed or take place.

Number one, Limerick's emergency evacuation plan has been revised to include three specific changes: immediate notification of radiation releases through independent monitoring and report; expanding the evacuation zone to 50 miles; and expanding the ingestion pathway zone to 100 miles…..

Comment: 2-17-OS; As an approach [throughout] this EIS, Limerick's evacuation plan is a perfect example of the checklist mentality. Exelon was required to have an update to its plan on file with NRC no later than 2011. The document was finally submitted to NRC in December 4 2012. Analysis of that document, Exelon's evacuation time estimate, ETE, for Limerick nuclear plant's plume exposure pathway reveals that that update is based on unrealistic, unworkable suppositions, assumptions, inconsistencies, inaccuracies which we have enumerated, and illogical conclusions. NRC refused repeated requests to meet to review our detailed analysis of Exelon's fatally-flawed report.

Even more shocking than that, was the admission by NRC officials that they had no need or intention to review, evaluate, or approve Exelon's ETE. The report was turned in, checked, good enough.

Comment: 10-2-OS; Concerning evacuations, well, let me go back to radiation. You had radiation detectors in the building. You have hydrogen that's not being accounted for properly. The Nuclear Regulatory Commission no longer has their own monitors that they maintain for radiation at nuclear plants. They're relying on the states to do that and the licensee to do that. Fortunately, at Three Mile Island, we have our own radiation monitoring network from the citizens.

Evacuations. A year ago, I provided documentation that the severe accident -- well, it's called a state-of-the-art accident consequences analysis, showed that it was rigged. There's probably going to be an investigation into that. May end up being in Congress, possibly bordering on the criminal investigations, whatever regulatory agencies, whatever that would be called.

The premise that there's no undue risk, that's what this is all about. Is there undue risk associated with this relicensing? The answer is yes. The premise that no undue risk will occur is always 8 about a timely evacuation. The NRC is not charged with protecting your property. They're charged with making sure you get out of town if something terrible starts to happen.

Could somebody show me one accident that happened in the world where a timely evacuation occurred? Or even where one was ordered in a timely way? It's not going to happen. Because what will happen is that people at the plant will finally realize, wow, the conditions are such that we've got to order an evacuation which did not happen at Three Mile Island. The reactor was already in the condition that the evacuation should have been ordered. It was pre-agreed. Yet, they didn't follow that guideline.

So the plant will call the governor's office and the governor will say okay, thank you. He'll take ten minutes to think about it. He'll start getting some phone calls saying now wait a minute, we think we got this going for us. And it gets delayed and it gets delayed. Next thing you know evacuation gets ordered and people are going around with higher degrees of radiation because they waited too long. That happened at Three Mile Island. Fukushima, plenty of disagreements of when evacuation should have taken place, let alone the cleanup.

Comment: 11-2-OS; Limerick is the second most densely populated nuclear plant in the nation. Relicensing 1 would be a major adjustment to millions of people in the greater Philadelphia area. Evacuating from a meltdown would be far worse than any evacuation portrayed by Hollywood. There would be traffic gridlock, accidents, panic. It will keep people directly exposed to massive radiation for far too long, increasing the risk of immediate radiation sickness and 19 eventually cancer and other disease and disability. People could become so radioactive they might be turned from a hospital. The hospitals here are not equipped or prepared to have such a disaster. They train for natural disasters, but not massive radiation exposure.

Reality suggests that the population could evacuate safely. I mean it can evacuate safely. Montgomery County officials basically confirm that in the 2011 testimony to you to the NRC that they already knew in 1980 a public hearing on evacuation, the NRC said Limerick could take double the population that could be safely evacuated within 30 miles. And now they know 30 miles is not nearly enough, even close to the safe distance to avoid radiation plume.

The NRC allows Limerick to move forward despite risk to so many. And now the NRC plans to relicense Limerick knowing the population density is four times than the original number that they thought they could evacuate safely.

I have devastating caused by evacuation decisions by the Japanese government at Fukushima. NRC was supposed to approve Limerick's evacuation plan by looking at the population growth and the distance needed to escape the radioactive plume. Instead, NRC is dismissing lessons weakening evacuation plans and failing to expand evacuation zones.

In 2001, the ACE reported “Exelon seeks to cut costs in planning for emergencies.” The NRC allowed PECO and Exelon to cut corners at the expense of public interest. NRC's new rules make no sense. NRC now allows emergency drills to be run without practicing for radiation releases. NRC requires fewer exercises for radiation accidents. NRC's recommendation is fewer people evacuate after an incident to avoid a gridlock. So they'll do it in stages.

Comment: 20-1-OS; Environmentally, I am concerned about evacuation. Now I just learned tonight that evacuation, alas, falls into another unit of the NRC's portfolio. But since the professed number one mission of the NRC is to protect the public health and safety and because I don't know whether that other unit will ever invite public comment, I would like to speak briefly to evacuation tonight.

I am in my mid-60s. I am healthy, mobile, resourceful, informed, and well educated. I believe my chances of successfully evacuating in the event of a nuclear disaster are slim to none. I live a mile from the plant at the Sanatoga Ridge Retirement Community. I believe the chances of my neighbors evacuating successfully, most of my neighbors are in their 80s or 90s, I think their chances could be described as simply not having a prayer.

To pretend otherwise seems like a cruel hoax. Any previous hopes that people would be 19 evacuating only in a ten-mile area, it seems to me, have been definitively answered and dashed by the actual human behavior we saw at Fukushima during their nuclear 22 disaster. People evacuated within a 50-mile area and they had to.

When nuclear disaster strikes at Limerick, people will be evacuating all over the greater Philadelphia area and into New Jersey. Millions of people, all competing in a panic mode for the same roads that serve us so poorly around here during an ordinary rush hour. And it can only get worse because daily the population increases.

Comment: 31-1-OS; As the Environmental Impact Statement indicates, the population in the 50-mile radius of the plant was 6,819,505 in 1980 and is expected to reach 9,499,925 by 2030,

a 39 percent increase in population. It is also noted that according to 2010 Census, there are 1,365,850 people residing within 20 miles of the Limerick Generating Facility. Limerick Township, where the plant is located, and nearby Upper Providence Township have been two of the most rapidly growing communities in the county. This growth occurring along the US Route 422 Expressway has dramatically changed the character of the area surrounding the Limerick Generating Station. In the past few years, the Philadelphia Premium Outlet. Mall, a 600,000 square foot retail facility, and the adjoining Costco shopping center opened along US Route 422 about one mile north of the Limerick Generating Station property.

The land adjoining those facilities is being considered for various types of retail and residential uses. Other lands in Lower Pottsgrove Township near the Limerick Generating Station have also been proposed for similar types of uses[.]

While the county planning commission has tried to promote lower densities of growth in proximity to the Limerick Generating Station, the local communities and the marketplace favor this location for significant development due to its proximity to the US Route 422 interchange at Township Line/ Evergreen Road. The growth that has taken place in the area around the power plant and in particular the growth taking place in the area immediately adjoining the plant and the primary access to it, as well as the projected growth in the future, could complicate evacuation plans and the movement of appropriate emergency response personnel to the plant in the event of a disaster. Certainly this access could be even more critical in the event of a natural disaster when other roads to the plant may be impassable. The Environmental Impact Statement needs to analyze this growth in the vicinity of the power plant to evaluate what impact it would have on plant operations and whether or not safe evacuation can take place from the newly developed areas within the extended licensing period.

Comment: 31-2-OS; The growth in the whole US Route 422 Corridor has raised numerous proposals for expanding the vehicle capacity of the 422 Expressway. Congested traffic conditions, are a way of life along the expressway and raise concern about future viability of the expressway and other local arterial roads as a safe evacuation routes for the region. The county transportation plan recognizes the need for various roa[d] improvements along the US 422 Corridor to address current and future traffic demands. The current county comprehensive plan recommends several measures to enhance transportation capacity in this portion of the county, though due to funding limitations in Pennsylvania, these projects are not likely to move forward at this time. Possible mitigation strategies to be considered in the license renewal could include the role of Exelon in funding the important road improvements needed in -this area to ensure safe evacuation and access to the plant in any type of disaster.

Comment: 2-74-OS; NRC weakened regulations and requirements, including for emergencies and evacuation.

- NRC overhauled community emergency planning for the first time in more than three decades, however <u>NRC pared down emergency rules and evacuation plans, further jeopardizing the public.</u> NRC's new rules after Fukushima make no sense.
- <u>Many emergency responders view NRC's new rules as downright bizarre</u>.
    - 1) NRC Allowed Emergency Drills To Be Run Without Practicing for Radiation
    - 2) NRC Requires FEWER Exercises for Major Radiation Accidents
    - 3) NRC Recommends FEWER People Evacuate Right Away

- Instead Of Attempting To Minimize Chaos And Reduce Radiation Exposure Through Better Emergency Planning and Drills For A Radioactive Accident / Meltdown:
    - 1) NRC Deceived The Public and Weakened Emergency Rules
    - 2) NRC Denied Radiation Risks and Harms
    - 3) Despite Evidence from Fukushima, NRC Failed To Expand Emergency Zones
    - 4) NRC Has Denied Repeated Requests To Expand Evacuation Zones to 50 Miles, and Ingestion Pathway Zones to 100 Miles. This Would Better Protect Public Health, Safety, and Financial Interests For Vast Numbers Of People

Comment: 27-2-OS; We should not have to prepare for a nuclear disaster. If we would have a disaster, there is no way that the evacuation plan would work.

Comment: 28-2-OS; EPA suggests that the Final GEIS include greater detail of potential environmental impacts and the measures taken to address the increase population surrounding the facility both the aspect of emergency notification/evacuation planning and from cumulative effects perspective. As you may be aware there has been substantial population growth around the area of the LGS. While section 5 provides details on postulated accidents, and Section 4.12.8 includes summary of cumulative impacts, it is unclear in both cases, how the increase of population has been factored into the analysis.

Comment: 5-16-OS; Inaccurate prediction models, faulty assumptions: age-related degradation is already surpassing original models for predicting its speed:

No prediction model can protect the public from the dire consequences of Exelon's inaccurate hypotheses, calculations or poor judgment, which the NRC notes are pervasive at Limerick. And problems are growing, due to the age-related degradation resulting from 28 years of nuclear operations. Even so, with about a decade to go of Limerick's original licensed period, inexplicably, NRC is approving Exelon's license renewal request based on relaxed standards for Limerick:

- In 2012, NRC refused NRDC's request for an update of Limerick's SAMA, labeling the request "An impermissible attack on our regulations[."]
- In 2012, NRC pared down emergency and evacuation planning, without re-evaluating earthquake risks
    - In 2013, ACE members discovered that NRC was either not aware of, or covered up, the existence of the Sanatoga Fault under the nuclear site (that met with a quarry splay that ran through the active blasting quarry that shares its border with the nuclear plant). NRC public statements have understated the risks.
    - In 2013, NRC threatened to refer ACE to its allegation team for expressing concerns about Exelon's unworkable Limerick Evacuation Time Estimate (which NRC requires for re-licensing, but refuses to review).This seems unwarranted, when NRC invites "meaningful" public participation.

Response: *The informating presented in these comments primarily discusses issues related to emergency planning (evacuation). Section 2.2.9.5 of the SEIS acknowledges that the*

populations of Berks, Chester, and Montgomery Counties have continued to grow since 1970 contributing to increased traffic volumes on local roads around LGS (see also Table 2–9). However, emergency preparedness and evacuation planning are part of the current operating license and are outside the scope of the environmental analysis for license renewal. Emergency preparedness programs are required at all nuclear power plants and require specified levels of protection from each licensee regardless of plant design, construction, or license date. Requirements related to emergency planning are in the regulations at 10 CFR 50.47 and Appendix E to 10 CFR Part 50. These requirements apply to all operating licenses and will continue to apply to facilities with renewed licenses. The NRC has regulations in place to ensure that existing emergency preparedness and evacuation plans are updated throughout the life of all plants. For example, nuclear power plant operators are required to update their evacuation time estimates after every U.S. Census or when changes in population would increase the estimate by either 25 percent or 30 minutes, whichever is less. Additionally, the NRC assesses the capabilities of the nuclear power plant operator to protect the public by requiring the performance of a full-scale exercise—that includes the participation of various Federal, state, local government agencies, and Tribes—at least once every two years. These exercises are performed in order to maintain the skills of the emergency responders and to identify and correct weaknesses.

Within the context of license renewal, the Commission considered the need for a review of emergency planning issues during the 1991 rulemaking proceedings on 10 CFR Part 54, which included public notice and comment. As discussed in the statements of consideration for the rulemaking (56 FR 64943, 64966-67; December 13, 1991), the programs for emergency preparedness at nuclear power facilities apply to all nuclear power facility licensees and require the specified levels of protection from each licensee regardless of plant design, construction, or license date. As a result, the Commission determined that, "[t]here is no need for a licensing review of emergency planning issues in the context of license renewal" (56 FR 64966-67). Therefore, issues related to emergency planning are outside the scope of the license renewal review .

Comment 5-16-OS, also discusses concerns regarding NRC refusing the NRDC's request for an update of the Limerick SAMA and identified faults lines near LGS that could effect plant operations and safety. Both of these issues are considered within scope of the environmental review for license renewal. Staff responses to similar comments concerning the NRDC's request for an updated SAMA analysis for Limerick are presented in Section A.2.16 of this SEIS. Staff responses to similar comments concerning identified seismic faults located near LGS are presented is section A.2.7 of this SEIS.These comments do not provide any new and significant information; therefore, no changes were made to the SEIS.

Comment: 10-3-OS; So I guess lastly I want to talk about sabotage because that's what I mostly do at every nuclear power plants and counterterrorism issues since 1984. Never went public until 1993 as a result of a[n] intrusion where a man drove a station wagon into the nuclear plant at Three Mile Island into the turbine building itself. It took four hours to find him and of course everything was fine according to the NRC report until the federal hearings came up and made them reconsider security.

Response: *This comment discusses issues related to security and terrorism. Security issues are periodically reviewed and updated at every operating plant. While security issues are legitimate matters of concern, they will continue to be addressed through the ongoing regulatory process as a current and generic regulatory issue that affects all nuclear facilities and many of the activities conducted at nuclear facilities. The issue of security and risk from malevolent acts at nuclear power facilities is not unique to facilities that have requested a renewal of their licenses. These reviews continue throughout the period of an operating license, whether*

original or renewed. If issues related to security are discovered at a nuclear plant, they are addressed immediately, and any necessary changes are reviewed and incorporated under the operating license. In addition, since 9/11, the NRC and other Federal agencies have heightened vigilance and implemented initiatives to evaluate and respond to possible threats posed by aircraft against commercial nuclear power facilities and ISFSIs.

The comment is outside the scope of the license renewal review and will not be evaluated further in the development of the SEIS.

Comment: 2-27-OS; 10-26-11 ACE provided NRC with several specific examples of why Exelon can't be trusted to provide full, accurate, or timely disclosure of Limerick's monitoring, testing, calculating, estimating, or reporting.

Example of Exelon's Unreliable Monitoring:

- V A vital radiation monitor was inoperable for over an entire year.

Example of Exelon's Delayed Disclosure:

- Exelon waited 23 days to inform the public about a huge radioactive spill into a vital public drinking water source for almost two million people.

Comment: 3-2-OS; Recently, the Limerick nuclear plant refueled Reactor. It also uprated the plant to produce more energy. To do this they have mixed in a more powerful fuel, GNF2, and changed the shape of the fuel bundles. These changes make more power, more radiation, more heat, and more stress on the aging equipment. Exelon is now close to the maximum output for the Limerick reactors. To add more power, expensive changes would be necessary to handle even greater stresses and greater radiation.

Comment: 3-8-OS; They allow 20 times increase in pipe leakage rates for Limerick so it can pass a test. They stall fuel pool liner repairs. They stall protective vent installation. They fail to require filters for the vents. They misled Limerick construction costs.

Comment: 4-6-OS; Exelon's deceptive radiation monitoring tactics were identified by ACE. Included radwaste monitoring declared inoperable for over a year. Exemptions from reporting using lame excuses like misplaced monitors.

Comment: 5-11-OS; NRC relinquished control of NRC's regulatory process related to the a crucial valve critical to maintaining Limerick plant stability:

Exelon is now in control of that crucial valve. In 2011, during an accident at Limerick, NRC cited Limerick with noncompliance of a *legally binding* requirement involving the “failure of feedwater Motor Operated Valve (MOV) which resulted in loss of Core Isolation Coolant (RCIC) for longer than specifications allow according to Technical Specifications (TS)[.”] The NRC cited the violation as a WEAKNESS IN MAINTAINING PLANT STABILITY.

In 2012, Exelon requested an amendment taking the MOV out of Technical Specifications (TS), under NRC regulatory control, and moving the MOV into the Technical Manual (TM),under Exelon's control and not regulated by NRC.

In 2013, the NRC inexplicably granted Exelon's request! However, at TMI, on March 28, 1979, the immediate cause of the loss-of-coolant accident that allowed the uncovering of the core and the melting of about half of it was a valve that stuck open and allowed large volumes of water to escape.

Is this one of those valves? We have grave concerns about it and would appreciate a comprehensive investigation of it.

Comment: 5-11-OS; NRC laxity regarding Limerick's aging GE Mark II Boiling Water Reactors (BWRs):

NRC Inspection Reports note serious degradation of Limerick's BWRs that could impact stability, like wear and tear at BWR vessel attachments, and yet NRC has inexplicably granted Exelon "Relief Requests" for such things as *weld inspections, counting relief as compliance for re-licensing.* GE has repeatedly warned Limerick about BWR deficiencies, suggesting tests be performed to ensure safe shut down. Did NRC require Exelon to test? What was the outcome?

It is important to note that a nuclear accident in Germany at the AEG-Kraftwerks Union (KWU) Wurgassen Nuclear Plant was caused by a GE Mark II Boiling Water Reactor in 1974. This is relevant because that accident drew attention to the essential design flaw inherent to all GE Mark II Boiling Water Reactors. The KWU accident resulted from a rupture due to enormous unanticipated BWR vibrations, equal to the seismic vibrations of a major earthquake that built up during the quenching process (cooling process) causing the safety relief valve to fail to close.

But PECO had made a financial investment in Limerick's BWRs by that time. SO, to save them, it experimented with an armature to less[e]n the vibrations. The Philadelphia Inquirer (1984) reported that: "Limerick's modifications included hundreds of additional pipe supports and elaborate bracing systems to make the reactor systems more rigid.., similar to PP&L's Susquehanna Plant... You see pipe supports three times as big as the pipes themselves because of the changes."

Why has NRC granted Exelon relief requests for Limerick Vessel Attachment Weld Inspection and Evaluation Guidelines? In 1984, it was reported that hundreds of safety-related welds at the nuclear plant were not properly performed by the Bechtel Power Corp. welders and that the welds were not properly inspected by Bechtel and NRC inspectors (Mercury, 8/31/84).inspectors (Mercury, 8/31/84).

On July 11, 2012, the NRC cited Exelon with a violation due to an accident by operator error involving BWR channels at Limerick. The inoperability of two independent channels was an issue: Limerick maintains that safety was maintained, however fatigue cracks were observed along the weld toe due to reverse bending and indicated the line was subject to vibration. Exelon was further cited for failing to respond to NRC in a timely fashion about the issue. We do not know if NRC's oversight in this area is as protective of the public as we would like it to be.

We are very concerned that the following NRC actions may further increase risks to the public:

- License Amendment to Modify Safety Limit Minimum Unit 1, Cycle 15 ***GRANTED*** Jan. **30/** 2012
- Core Operating Limits Report For Limerick Generating Station Unit 1, Cycle 15 ***GRANTED*** April 3,2013
- "Withdrawal Notice" of "Reporting procedure for mathematical models selected to predict heated effluent dispersion in natural water bodies." (Regulatory Guide (RG) 4.4, NRC-posted in the Federal Register) **GRANTED** April 3[,] 2013
- Core Operating Limits Report For Limerick Generating Station Unit 2, Reload 12 ***GRANTED*** June 10, 2013
- Questions concerning these NRC/Exelon actions:
    - Was the intent of these actions to remove impediments to limiting heated discharges? If so, why? [These] actions have serious implications for adverse health risks.

- If Exelon can't comply with standard limits on heated effluents, why doesn't NRC withhold granting the requests?
- Do these actions totally remove the core limits? Do they compromise the integrity of the already degraded BWRs?
- If the BWRs run hotter, won't they degrade faster?
- Will NRC adjust its application approval by mandating an adjustment to Exelon's calculation for the accelerated aging effects that may impact the already degrading BWRs, due to higher heat? We believe a new fuel mix[ ](GNF2) is being used at Limerick. If so, does the new fuel mix produce more heat?
- NRC/Exelon history shows a pattern of proceeding with action before (or despite) the possible
- Is there any way to independently check Limerick's discharge temperatures with NRC or Exelon interference?

Comment: 5-17-OS; The NRC has approved Exelon amendments that eliminate Limerick's compliance to NRC's re-licensing application requirements, meaning that problems are hidden, without being resolved.

Comment: 5-18-OS; NRC has relinquished regulatory control to Exelon officials, who determine what regulations Exelon will comply with and which ones it will eliminate.

Comment: 5-20-OS; Why is the NRC allowing Limerick to operate in violation of its license? Over a decade of ACE research shows massive deficiencies, and at the top of this list of concerns is the fact that Limerick's GE Mark II Boiling Water Reactors are defective and NRC can't ensure public safety because Limerick's containment is not guaranteed.

Comment: 5-21-OS; Why does NRC rely on Exelon, a company with a vested interest in the outcome, to control Limerick's data and to amend NRC's regulations of Limerick so that Exelon appears to conform to regulations without actually having to comply?

Exelon explains Limerick's current licensed period: "The 40-year license term reflects the amortization period generally used by electric utility companies for large capital investments[."] Exelon's use of nuclear power is a purely financial decision. So, public safety is dependent on NRC regulation. Inexplicably, NRC states that Exelon controls the data that NRC receives and relies on to assess the safety of Limerick. We believe this process is upside-down and poses a significant threat to public health, safety, and the environment.

Comment: 5-22-OS; Why isn't NRC using Limerick's abysmal safety record as the strongest evidence that NRC should not rush approval of Limerick's license renewal?

Comment: 5-25-OS; How can NRC have any excuse for re-licensing Limerick when Limerick's present condition is so degraded that even *current* operations pose an incalculable risk public health, safety, and the environment?

Comment: 5-26-OS; Why do the four items, that the 1984 NRC section chief said that his staff wanted cleared up before licensing Limerick, still exist at Limerick? (Mercury, 8/31/84)

- Improper procedures: pervasive and repeatedly cited by NRC.
- Incomplete safety measures: pervasive and repeatedly cited by NRC. A defective hydrogen remover: at least one accident in the re-licensing period

involved a hydrogen leak: is there a way to confirm that the defective hydrogen remover was repaired or replaced?

- Faulty valves: In 2011, about six months after Exelon applied for Limerick's license renewal, the NRC cited Limerick with a "white" violation, defined as a **"**WEAKNESS IN MAINTAINING LONG-TERM PLANT STABILITY[."] Unlike Limericks' usual violations of noncompliance to regulations, this violation was a[ ]*"Violation of a Legally Binding Requirement[."]* The violation involved the failure of the Motor Operated Valve (MOV), mentioned on the first page of this letter.

Comment: 13-2-OS; Let me read you what the general design criteria says according to the NRC's own requirement. "The principal design criteria establish the necessary design, fabrication, construction, testing, and performance requirements for structures, systems, and components important to safety. That is structures, systems, and components that provide reasonable assurance that the facility can be operated without undue risk to the public health and safety." How can this Agency proceed with licensing, relicensing in view of the dramatic failures that we all witnessed world-wide on television at the moment at Fukushima Daiichi and those series of explosions which now demonstrate that the General Electric Mark I boiling water reactor containment system is a 100 percent guaranteed failure. Three operational units at the time, Units 1, 2, and 3, 100 percent failure under severe accident conditions. Multiple explosions, 5 massive land contamination, marine contamination, groundwater contamination, and that's the evidence. That's what we all witnessed.

But it doesn't stop there. The NRC's own general design criteria focuses on the containment design itself for this nuclear power plant. These two units. And that is general design criterion. And again, this is the NRC's own language. "Containment design. Reactor containment and associated systems shall be provided to establish an essentially leak-tight barrier against the uncontrolled release of radioactivity to the environment and to assure that the containment design conditions important to safety are not exceeded for as long as a postulated accident condition is required. The NRC knows that the Limerick Units 1 and 2 containment design is very likely to fail if challenged by a nuclear accident. In fact, the NRC's own staff in a paper prepared for the Commission, SECY-2012-0157, identifies that for the General Electric Mark II boiling water reactor at Limerick, involving core damage, there is roughly a 50-50 chance of recovering from the nuclear accident within the pressure vessel with no significant reactor release from containment. That's their language. The flip side is that it's a 50-50 chance that the vessel will fail with a significant release from containment.

It goes on to say, this is the NRC staff that "if the vessel fails, there's a 25 percent chance that the operators might cool the molten core inside the containment with no significant release to the environment." Okay, the flip side of that is there's a percent chance that they will recover, that there will be a release, a significant release. This is the NRC's own estimate of Limerick 1 and 2.

That said, NRC states there is an 11.8[-]percent chance that a severe core damage sequence will lead to early over pressure containment failure where there is a 90 percent chance the molten core will bypass the containment system, principally the suppression pool because it will burn through seals in the containment and there will be a catastrophic release of unfiltered radioactivity into the environment and to the population down wind. That's you. That's us. That's miles and miles and miles away. This is the kind of gambling that the Agency and the industry are engaged in for the emolument of a few men. We don't need this plant to be operating at that risk.

In fact, this plant should not receive a license renewal and should be put into a phase out just on the fact that they are in violation of their license agreement.

Response: *These comments discuss issues related to safety concerns and past safety performance at LGS. The NRC assesses plant performance continuously and communicates its assessment of plant performance in letters to the licensees. These assessment letters are available on a plant performance page for each plant, and are posted on the website as they become available. The NRC assessment reports for LGS can be accessed at http://www.nrc.gov/NRR/OVERSIGHT/ASSESS/LIM1/lim1_chart.html and http://www.nrc.gov/NRR/OVERSIGHT/ASSESS/LIM2/lim2_chart.html.*

Additionally, there are two methods of reporting safety and security concerns to the NRC. The choice depends on whether the concern is considered an emergency or not. Emergency concerns include:

- any threat, theft, smuggling, vandalism, or terrorist activity involving a nuclear facility or radioactive materials;
- lost or damaged radioactive materials; and
- any accident involving a nuclear reactor, nuclear fuel facility, or radioactive materials.

Members of the public reporting an emergency concern should call the NRC's 24-hour Headquarters Operation Center at 301-816-5100. Nonemergency concerns should be brought to the attention of the NRC project manager assigned to a specific plant. The list of NRC project managers is located at http://www.nrc.gov/reactors/operating/project-managers.html#pwr. *This web page also contains a quick link to the NRC telephone directory.*

These comments are not within the scope of the environmental review and will not be evaluated further in the development of the SEIS.

Comment: 2-54-OS;

- There are countless opportunities for future leaks in the miles of buried, hard-to-inspect pipes under the Limerick site.
- For 28 years some pipes have been transporting highly corrosive, heated, and radioactive water. Aging and deterioration can cause pipes to become brittle and leak.

Comment: 5-1-OS; NRC regulations have become as deteriorated and unprotective as Limerick's aging equipment. That equipment is plagued by thinning, pitting, fatigue, erosion, leaching, embrittlement, and GE Mark II boiling water reactor stress corrosion cracking. The list of opportunities for disaster is endless. Limerick monitoring equipment has been out of service, unnoticed sometimes for more than a year, and automated systems have failed, discovered only after accidents occur. Public statements by NRC and Exelon following such events are generic and deceptive.

Comment: 7-2-OS; What worries are the miles of hard to inspect pipes and cables buried under Limerick that can be disrupted and then incapable of delivering vital electricity and cooling water to prevent meltdown. NRC should be worried, too, but instead gave Limerick until 2017 to come up with a new seismic risk study or plan. It's beyond negligence for NRC to allow Exelon to wait years to take action.

Comment: 5-24-OS; Why does NRC's "License Renewal Requirements for Power Reactors" sound less like "requirements" and more like a "disclaimer"?

On page '1- 3' of Limerick's Safety Evaluation Report, 2012, released Jan. 10, 2013, NRC states that "License renewal requirements for power reactors are based on two key principles:

1. The regulatory process is adequate to ensure that the licensing basis of all currently operating plants maintain an acceptable level of safety with the possible exceptions of the detrimental aging effects on certain functions of certain structures, systems or components, as well as a few other safety-related issues, during the period of extended operation.
2. The plant-specific licensing basis must be maintained during the renewal term in the same manner and to the same extent as during the original licensing term. "Would a person buy a used washing machine with a warranty like that? Limerick is a nuclear plant: it should be held to the highest standards, yet NRC has never required Limerick nuclear plant to be in compliance. Why?

Comment: 5-31-OS; Why has NRC excused Limerick from complying Compliance with GALL regulations in Limerick's License Renewal Application?

In 1998, the NRC allowed the NEI to amend the GALL Report to make the process of nuclear plant license renewal easier and faster. The Nuclear Energy Institute (NEI) is the powerful lobbying arm of the nuclear industry. GALL Commitment No. 46 requires applicants for license renewal to test and confirm that their programs for aging equipment and systems work as a condition for re-licensing.

However, Exelon requested the elimination of GALL Commitment No. 46 by amendment that would substitute a one-time test at Limerick in the future. NRC pointed out that eliminating the test would create a 10-year gap during which there would be no way to tell if planned "aging management programs are effective, require modification, or whether there is a need to develop new aging management programs[."] Exelon's application also contained:

- Deviations from GALL (Generic Aging Lessons Learned)
- Unclear explanations
- Unclear theory for aging management

And yet NRC approved Exelon's application for Limerick license renewal. The NRC goes through the motions, but the rewording of compliance regulations by NRC and Exelon virtually eliminates literal active safety compliance.

Response: *These comments discuss issues related to NRC's safety review of the license renewal application. The NRC's environmental review is confined to environmental matters relevant to the period of extended operation requested by the applicant. The regulations governing the environmental review are contained in 10 CFR Part 51, and the regulations for the safety review are contained in 10 CFR Part 54. Because the two reviews are separate, operational safety issues and safety issues related to aging are outside the scope for the environmental review.*

The principal safety concerns associated with license renewal are related to the aging of structures, systems, and components important to the continued safe operation of the facility. When the plants were designed, certain assumptions were made about the length of time each plant would be operated. During the safety review for license renewal, the NRC must determine whether aging effects will be adequately managed so the original design assumptions will continue to be valid throughout the period of extended operation. The SER for the safety review of the Limerick license renewal reviewed can be accessed from the ADAMS Public Electronic Reading Room at http://www.nrc.gov/reading-rm/adams.html/ under ADAMS

accession number ML12357A349. The SER is also available on the Limerick license renewal public website at http://www.nrc.gov/reactors/operating/licensing/renewal/applications/limerick.html.

These comments are not within the scope of the environmental review and will not be evaluated further in the development of the SEIS.

Comment: 2-5-OS; NRC must stop and delay all activities and actions related to Limerick Nuclear Plant's relicensing including finalizing this EIS until after several issues are addressed or take place….

……Number three, Exelon has completed all necessary inspections, maintenance, and corrective actions at Limerick Nuclear Plant that have been deferred by NRC until sometime between 2017 and within six months of the expiration of the current license in 2024….

Comment: 2-7-OS; NRC must stop and delay all activities and actions related to Limerick Nuclear Plant's relicensing including finalizing this EIS until after several issues are addressed or take place.

…..Number five, Earthquake mitigation plans have been completed, 2017. And all necessary change have been made at Limerick.

Number six. NRC required vents have been install to prevent radioactive hydrogen gas buildup and explosions 2017.

Number seven. Exelon installs filters for those vents to minimize radiation releases during meltdowns. NRC's own staff has concluded the consequences of not installing filters could be so bad that filters should be required regardless of expense….

Comment: 2-77-OS; NRC IS ALLOWING DANGEROUS DELAYS FOR IMPORTANT SAFEGUARDS RECOMMENDED BY NRC'S OWN POST-FUKUSHIMA TASK FORCE.

NRC allowed Exelon to DELAY important post-Fukushima safeguards recommended by *their own staff, even though Limerick is considered a high-risk nuclear plant with GEMark II* boiling water reactors similar to those at Fukushima.

NRC Is I[g]norin[g] Its Own Orders, Based On Fukushima Task Force Recommendations Issued July, 2011. MARCH, 2012 - NRC officially issued three orders to U.S. nuclear power plants:

1. Plants must develop and implement measures to keep spent fuel rods cool after an extreme natural disaster.
2. Sturdier venting systems are required to help prevent pressure-induced explosions.
3. They must have a reliable read of water levels in spent fuel containers.

MARCH 13**,** 2012 NRC Issued Order to Modify Licensees Requirements for Mitigation Strategies for Beyond-Design-Basis External Events NRC 3-12-12 Letter (E-mail notice 3-13-12).

NRC's Order Requires a 3-phase Approach For Mitigating Beyond-Design-Basis External Events.

1. Initial phase - Requires use of installed equipment and resources to maintain or restore core cooling, containment, and SFP cooling.
2. Transition phase - Requires providing sufficient, portable, onsite equipment and consumables to maintain or restore these functions until they can be accomplished with resources brought from off site.

3. Final phase - Requires obtaining sufficient offsite resources to sustain those functions INDEFINITELY.
    - It is not clear any of these orders have been, or will be, required by NRC to be completed prior to relicensing of Limerick Nuclear Plant. It is important to remember that Fukushima was relicensed just a short time prior to the catastrophe. What was clear was the collusion between the owner and the regulator.
    - It is not clear any safety measure will be completed before 2017, six years after the Fukushima disaster.

Comment: 13-1-OS; I'm here to speak in opposition to the Limerick relicensing primarily because the NRC, following the Fukushima accident, should suspend all relicensing license extension reviews, particularly this is important because the Limerick unit is similar to the General Electric boiling water reactors that exploded at the Fukushima Daiichi nuclear power plant site. So it's a concern that the Agency and the industry are proceeding with a conveyor belt-like process that is ignoring the environmental impacts. It's failing to consider the environmental impacts that are still coming out, that are still being revealed by the accident at Fukushima.

I can tell you that the concern goes far beyond just the fact that the NRC is ignoring these concerns. The problem is that the NRC doesn't have the ability or the will to actually challenge a license extension for any nuclear power plant, let alone the Limerick plant as it is a sister plant to Fukushima Daiichi.

Comment: 18-3-OS; How can the NRC properly assess the environmental impact of relicensing Limerick Generating Station until the earthquake mitigation plans have been completed? And we won't know the results until sometime in 2017.

Comment: 13-4-OS; The concerns here are far reaching and I think that the story that I wanted to bring to start off with was the concern is how can you do an accurate Environmental Impact Statement if in the midst of trying to figure out just how far the reach of the Fukushima Daiichi nuclear accident really is and in terms of its impact on land contamination, air, water, and marine environment contamination by radioactivity from this accident? And so it's our recommendation, request, that this relicensing be suspended until there's a more reliable reviewable Environmental Impact Statement that tells us what's the results from Fukushima Daiichi and the nuclear catastrophe that happened at the GE boiling water reactors there similar to those here.

Comment: 7-5-OS; Fracking could trigger an earthquake, disrupting underground pipes and cables. Over 3,000 gas wells were approved in Pennsylvania. Two thousand more are to be approved this year. Structural problems and flaws associated with Limerick construction are of concern. For example, Limerick's PAC 70 fuel pools were constructed with substandard cement. After all of this, NRC isn't requiring Limerick to do important seismic upgrades until after 2017, even though Limerick is considered by some to be third on the nation's earthquake risk list.

By then we can have an earthquake and a meltdown. Limerick should never have been built in the first place. NRC falsely claims earthquake risk were considered prior to Limerick approval. That's not true. The first reactor was delivered to Limerick's construction site in 1972, two years before this 1974 when the seismic study was completed. With earthquakes becoming stronger and more frequent NRC owes it to us to shut Limerick down before it melts down.

Comment: 10-1-OS; The plants are no longer required to have hydrogen recombiners. So during an accident event, much hydrogen is created. But they no longer are required to try to eliminate that problem that leads to an explosion. The vents that were used in Fukushima did employ the fix that was recommended here in the United States by the Nuclear Regulatory Commission. One hundred percent of those vents failed. It's a very similar vent that's here at Limerick.

In an accident scenario, the releases could be much more dangerous than what these reports assume. This is one of the faulty data sets that I'm going out. This conclusion should not be accepted by anyone because the assumptions that are made are not conservative meaning on the side of safety. They are sometimes at best protective of their interest rather than the health and safety of the people.

Response: *As explained above, the NRC's ongoing safety review of operating reactors is outside the scope of this environmental review for license renewal. The NRC will continue to take necessary actions to ensure that all plants, including LGS, operate safely under their current and extended operating periods. The NRC continues to evaluate and act on the lessons learned from the March 2011 nuclear accident in Japan to ensure that appropriate safety enhancements are implemented at nuclear power plants here in the United States.*

On March 12, 2012, the NRC issued the first regulatory requirements for the Nation's reactors based on the lessons learned at Fukushima Dai-ichi. The NRC issued three orders requiring safety enhancements of operating reactors, construction permit holders, and combined license holders. These orders require nuclear power plants to implement safety enhancements related to (1) mitigation strategies to respond to extreme natural events resulting in the loss of power at plants, (2) ensuring reliable hardened containment vents, and (3) enhancing spent fuel pool instrumentation. The plants are required to promptly begin implementation of the safety enhancements and complete implementation within two refueling outages or by December 31, 2016, whichever comes first. In addition, the NRC issued a request for information, requesting each licensee to reevaluate the seismic and flooding hazards at the site using present-day methods and information, conduct walkdowns of its facilities to ensure protection against the hazards in its current design basis, and reevaluate emergency communications systems and staffing levels.

The NRC continues to implement Fukushima lessons learned within existing regulatory processes that include review of industry response to orders, requests for information (RFIs), use of operating experience, rulemaking, and conducting additional research.

The public can access additional information regarding the NRC response to the Japan nuclear accident on the NRC's public Web site at http://www.nrc.gov/reactors/operating/ops-experience/japan-dashboard.html.

Comment: 26-6-OS; FIN[A]NCIAL INJUSTICE OF MAJOR PROPORTIONS!

We get the harms, Exelon gets the profits, and others including in other states get electric. Limerick's electric goes to the grid. It isn't produced just for people in our region. However, ratepayers in our region paid the lion's share of the $6.8 billion in costs for Limerick construction in their monthly electric bills from 1985 to 2010, and we still pay each month for Limerick decommissioning. Property taxes were avoided by PECO/Exelon from 1985 to 2002, when a court ordered Exelon to pay only $3 million each year, instead of the $17 million that should be paid each year.

Response: *This comment addresses concerns regarding the cost of energy. The regulatory authority over licensee economics (including the need for power) falls within the jurisdiction of the States and to some extent within the jurisdiction of the Federal Energy Regulatory*

Commission. The proposed rule for license renewal had included a cost-benefit analysis and consideration of licensee economics as part of the NEPA review. However, during the comment period, State, Federal, and licensee representatives expressed concern about the use of economic costs and cost-benefit balancing in the proposed rule and the GEIS. They noted that the President's CEQ regulations interpret NEPA to require only an assessment of the cumulative effects of a proposed Federal action on the natural and man-made environment and that the determination of the need for generating capacity has always been the States' responsibility. For this reason, the purpose and need for the proposed action (i.e., license renewal) is defined in the 1996 GEIS as follows:

> *The purpose and need for the proposed action (renewal of an operating license) is to provide an option that allows for power generation capability beyond the term of a current nuclear power plant operating license to meet future system generating needs, as such needs may be determined by State, licensee, and, where authorized, Federal (other than NRC) decision-makers.*
>
> *The purpose and need for NRC's proposed action is to provide an option to continue plant operations beyond the current licensing term to meet future system generating needs, as such needs may be determined by State, utility, system, and, where authorized, Federal (other than NRC) decision-makers*

Section 51.95(c)(2) of 10 CFR states that:

> *The supplemental environmental impact statement for license renewal is not required to include discussion of need for power or the economic costs and economic benefits of the proposed action or of alternatives to the proposed action except insofar as such benefits and costs are either essential for a determination regarding the inclusion of an alternative in the range of alternatives considered or relevant to mitigation.*

The comment is outside the scope of the license renewal review and will not be evaluated further in the development of the draft SEIS.

A.2.16 Postulated Accidents & SAMA (PA)

In CLI-13-07, the Commission directed the staff to review the significance of any new SAMA-related information in its environmental review of Exelon's license renewal application, including the information presented in NRDC's waiver petition (NRDC 2012), and to discuss its review in the final supplemental EIS (NRC 2013b). Comments numbered 30-XX-PA were NRDC comments relating to SAMA, including those in the waiver petition. Similar comments submitted by other stakeholders are binned with the NRDC comments.

Comment: 30-3-PA; (Section 5.3, pages 5-3 to 5-14) The NRC begins this section by recounting the reasons the Commission concluded in 1999 that future updating of the 1989 Severe Accident Mitigation Design Alternatives (SAMDA) analysis would be unnecessary-the basis for 10 CFR 51.53(c)(3)(ii)(L). To the contrary, as shown here, subsequent events have proven that the Commission's earlier thinking was flawed. We begin by quoting from the GEIS Supplement: "The staff has previously performed a site-specific analysis of severe accident mitigation in a NEPA document for LGS in the Final Environmental Statement Related to Operation of LGS Units 1 and 2 in NUREG-0974, Supplement 1 (NRC 1989) ("1989 SAMDA Analysis")." (Page 5-3, lines 13-15). The staff concluded that: "The risks of early fatality from potential accidents at the site are small in comparison with risks of early fatality from other human activities in a comparably sized population, and the accident risk will not add significantly to population exposure and cancer risks. Accident risks from Limerick are expected to be a small fraction of the risks the general public incurs from other sources. Further, *the best*

estimates show that the risks of potential reactor accidents at Limerick are within the range of such risks from other nuclear power plants (emphasis added)." (page 5-3, lines 25-31). The last sentence in the quote above is false, in that the theoretical "best estimate" calculation of core damage frequency is orders of magnitude lower than the historical risk, when world data are used, as described below.

The staff goes on to say: "However, in the LGS specific 1989 SAMDA Analysis, the staff acknowledged: In the longer term, these same severe accident issues are currently being pursued by the NRC in a systematic way for all utilities through the Severe Accident Program described in SECY-88-147, "Integration Plan for Closure of Severe Accident Issues" (NRC 1988c). The plan includes provisions for an Individual Plant Examination (IPE) for each operating reactor, a Containment Performance Improvement (CPI) program, and an Accident Management (AM) program. These programs will produce a more complete picture of the risks of operating plants and the benefits of potential design improvements, including SAMDAs. The *staff believes that the severe accident program is the proper vehicle for further review of severe accidents at nuclear power plants, including Limerick."* (page 5-3, lines 32-43, emphasis supplied). Of course subsequent to the Fukushima Dai-ichi accident, the last sentence in the quote above turned out to be incorrect, in that the Staff and Commission have decided to address most of the Fukushima issues in separate venues.

The staff then go on to observe: "In light of these studies, the Commission believed [in 1996] it was "unlikely that any site-specific consideration of SAMAs for license renewal will identify major plant design changes or modifications that will prove to be cost-beneficial for reducing severe accident frequency or consequences" (61 FR 28467)." (page 5-4, lines 5-8). Again, the Commission programs for addressing a wide range of safety issues requiring potential plant design changes as a follow up to the accident at Fukushima Dai-ichi have proven that the Commission's earlier conclusion was short sighted and in error.

Beginning on page 5-7, the Staff correctly observes: "Additionally, both the applicant and the NRC must consider whether new and significant information affects environmental determinations in the NRC's regulations, including the determination in 10 CFR 51.53(c)(3)(ii)(L) and Table B-1 that the agency need not reconsider SAMAs at license renewal if it has already done so in a NEPA document for the plant." (page 5-7, lines 10-13). The Staff then sets a high bar: "New information is significant if it provides a seriously different picture of the impacts of the Federal action under consideration. Thus, for mitigation alternatives such as SAMAs, new information is significant if it indicates that a mitigation alternative would substantially reduce an impact of the Federal action on the environment. Consequently, with respect to SAMAs, new information may be significant if it indicated a given cost-beneficial SAMA *would substantially reduce the impacts of a severe accident, the probability or consequences (risk) of a severe accident occurring."* (page 5-7, lines 13-15, emphasis added).

Having set the bar high, the staff proceeds to analyze four issues, and does so individually, rather than collectively. The Staff ignores an issue we raised in NRDC's intervention in the Limerick license renewal proceeding. The Declaration of Thomas B. Cochran, Ph.D., Matthew G McKinzie, Ph.D., And Christopher J. Weaver, Ph.D. on behalf of the Natural Resources Defense Council, In the Matter of Exelon Generating Company, LLC, (Limerick Generating Station License Renewal Application) Dockets No. 50-352-LR and 50-353-LR), November 22, 2011, namely, that the risk of a core damage accident at Limerick is likely to be much greater than the theoretical estimate based on the Limerick Probabilistic Risk Assessment (PRA). In the Cochran, McKinzie, Weaver declaration we stated: "The Limerick SAMDA analysis relies on a Core Damage Frequency (CDF) of 4.2×10^{-5} per year (NRC, 1989) and the Environmental Report submitted by the applicant cites an estimate of CDF, which only includes internal events, for Limerick Units 1 and 2 of 3.2×10^{-6} per year based on a Probabilistic Risk Assessment

(PRA) (Exelon, 2011b). In a recent update to the licensee's IPEEE model to include internal fire risks as well as internal events in its PRA, the license calculated a total CDF of 1.8 x 10' per year for these hazard groups (NRC, 2011b). Because the PRA is based on modeling assumptions that contain a large number of approximations, large uncertainties, and omissions, the absolute value of a CDF calculated using PRA is not a reliable predictor of the actual CDF value."

Worldwide, NRDC calculates that there have been approximately 429 light water reactors (LWR) that have operated approximately 11,500 reactor-years, and that five of these LWRs (Three Mile Island Unit 2, Greifswald Unit 5, Fukushima Daiichi Units 1, 2, and 3) have experienced core damage as CDF is defined in NUREG-1150 Vol. 1, pg. 2-3. Thus, for this class of nuclear power reactors, LWRs, the CDF is approximately 4.3×10^{-4} per reactor-year based on the historical record. I calculate that in the United States there have been approximately 116 LWRs that have operated approximately 4,100 reactor years. One of these LWRs (Three Mile Island Unit 2) experienced core damage as defined by NUREG-1150. Thus, for this class of nuclear power reactors the CDF is approximately 2.4×10^{-4} per reactor-year based on the historical record. The Limerick reactors, BWRs with Mark 2 containments, are similar in many respects to Fukushima Daiichi Units 1, 2 and 3, BWRs with Mark 1 containments. While no U.S. BWRs have experienced core damage as defined by NUREG-1150, I calculate that worldwide there have been approximately 117 BWRs that have operated approximately 3,300 reactor years. Three of these BWRs (Fukushima Daiichi Units 1, 2, and 3) have experienced core damage as defined by NUREG-1150. Thus, for this class of nuclear power reactors worldwide the CDF is approximately 9×10^{-4} per reactor-year based on the historical record.

In sum, the global CDFs for all LWRs and the subset of BWRs based on historical data are much greater than the theoretical value calculated by the applicant for Limerick Units 1 and 2, as is the U.S. historical CDF for LWRs. If a larger CDF is assumed in a PRA, then the calculated cost of severe accidents within a SAMA analysis would be increased proportionally, and thus it would be more likely that the economic viability of the measures to mitigate such accidents would be cost-beneficial.

We do not argue that any of the above CDF estimates based on the historical evidence represent the most accurate CDFs for Limerick Units 1 and 2. In our judgment the most accurate values of CDF probably lie somewhere between the theoretical values calculated by the applicant and one or more of the U.S. or global values based on the historical record. However, the CDFs used in a Limerick SAMA analysis should be evidence based. The applicant's estimates of CDF are non-conservative and a Limerick SAMA analysis would benefit from a sensitivity analysis in which higher core damage frequencies are assumed. Given the historical operating record of similar reactors, we assert that it is simply not credible to assume the CDF for older BWR reactors in the United States, such as Limerick Units 1 and 2, to be as low as 1.8×10^{-5} per reactor year, i.e., about one core damage event per 55,000 reactor-years of operation.

A range of CDF values including values close to those estimated from the global historical evidence should be used in the SAMA analyses for Limerick Units 1 and 2. This issue should be analyzed and discussed in the Limerick environmental report and the final environmental impact statement.

In our view a current-day SAMA analysis is required in the NEPA analysis of severe accidents one that includes the cumulative impacts of a severe accident based on new and significant information, including a range of core damage frequencies between the very low frequency

estimated by the theoretical PRA process and the high frequency estimated using historical world data.

Response: *The commenter states, "the global CDFs for all LWRs and the subset of BWRs based on historical data are much greater than the theoretical value calculated by the applicant for Limerick Units 1 and 2." The staff recognizes that the CDF could be calculated on a generic basis from direct experience or on a site-specific basis using probabilistic risk assessment. This is also recognized by the commenter. The commenter states, "First, the probability can be estimated using the techniques of probabilistic risk assessment [PRA]. In a PRA study, analytic techniques such as fault trees are used to predict the occurrence of comparatively rare sequences of events that would lead to severe fuel damage and, potentially, a radioactive release. Second, the probability can be estimated from direct experience."*

The staff disagrees that a SAMA is not credible because the CDF is not estimated generically from direct experience. The site-specific, plant-specific PRA takes into account site-specific hazards, design of the plant, and plant specific operational practices that affect how a particular plant responds to potential challenges. This site-specific PRA is expected to yield a much more accurate estimate of risk (including CDF) than a historical rate calculation using an extremely limited set of data points that aggregates all different plant designs, operational practices, and site conditions around the world. The SAMA analysis for license renewal is a Category 2 issue, which means that it should be evaluated on a site-specific bases. In the Limerick example, Exelon calculates the current CDF using plant specific fault trees, event trees and reliability information. This approach is consistent with the current guidance for preparing a SAMA analysis provided in Revision A of Nuclear Energy Institute (NEI) 05-01, "Severe Accident Mitigation Alternatives (SAMA) Analysis" (NEI 2005), which was endorsed by the staff for use in SAMA analysis. This guidance provides the applicant guidance to use the plant-specific PRA model. Based on this site specific information, the applicant is to estimate the severe accident risk, off-site dose and economic impacts of a severe accident.

While the commenter further suggests that the direct experience model could help refine site-specific PRA estimates, the commenter does not provide specific proposals on how the direct experience model could improve those estimates, other than to state that the true CDF for Limerick might lie between the two. The staff believes that, the plant-specific estimate, based on the most current information regarding the plant design, appears to be the most accurate measure of risk at Limerick.

The NRC also recognizes that newer calculation methods could be developed or operating experience could occur that might identify a new SAMA candidate for consideration (See CLI-10-11) (noting that while "there will always be more data that could be gathered, agencies must have some discretion to draw the line and move forward"). In promulgating the license renewal rule, the Commission recognized that additional SAMAs could be identified. However, the Commission indicated that future SAMAs would only likely identify cost-beneficial changes that "generally would be procedural and programmatic fixes, with any hardware changes being only minor in nature and few in number." Therefore, the Commission explicitly determined that, if a consideration of SAMA was completed, another need not be completed at license renewal, despite the fact that future SAMA analyses may uncover additional, cost-beneficial SAMAs. This is because the NRC has evaluated and continues to evaluate severe accidents in the current operating term. Significantly, while the Commission did impose additional safety requirements on operating reactors following Fukushima, the Commission did so on the basis of a safety analysis conducted under the Backfit Rule, not the results of a SAMA analysis conducted for NEPA purposes. Those SAMA analyses had long assumed that prolonged station blackouts, such as the one experienced by the Fukushima reactors, could yield devastating consequences. Therefore subsequent events, including the Fukushima events,

have confirmed the Commission's twin expectations that 1) future SAMA analyses would not likely find major plant improvements cost beneficial and that 2) the NRC would continue to reduce risk at regulated facilities through its ongoing safety oversight.

Finally, the comment suggests that the Staff erred by considering the challenges (earthquakes, population increases, etc.) to the Limerick SAMDA analysis separately, instead of collectively. However, considering the challenges to the Limerick SAMDA analysis collectively in an undisciplined fashion may yield unrealistic results. Therefore , the staff evaluated the challenges separately, as provided in Chapter 5 of the Limerick environmental impact statement. Moreover, as discussed in Chapter 5, the CDF at Limerick has decreased dramatically since 1989 and the 1989 SAMDA analysis rested on many conservatisms. Therefore, the Staff finds it unlikely that these challenges, even considered together, would constitute new and significant information with respect to severe accident mitigation at Limerick and no changes were made to the SEIS.

Comment: 2-74-PA; Exelon and NRC want to exempt Limerick, as one of three nuclear plants that never again have to consider an updated Severe Accident Mitigation Analysis in connection with new and significant environmental information under NEPA in relicensing.

Comment: 2-75-PA; The National Resource Defense Council (NRDC) Filed a Legal Appeal and won in the 3rd Circuit Court of Appeals in Philadelphia, Against Exelon's Attempt To Circumvent a Safety Analysis Requirement for Limerick Nuclear Plant's Outdated, Unacceptable Accident Mitigation Analysis.

- The judge agreed with NRDC's conclusion that ignoring the population growth around Limerick is unacceptable if an emergency evacuation at Limerick becomes necessary.
- Common sense planning is needed stating that what was acceptable in 1989 is not good enough now and in the future.
- Limerick's Severe Accident Mitigation analysis was last completed in 1989, relying on the census for 1980 population.

Even after Fukushima, involving boiling water reactors similar to Limerick's, and drastically increased populations that would clearly be impacted by a Fukushima-type disaster at Limerick, NRC illogically joined Exelon in an appeal against a federal court decision, in order to avoid an updated safety analysis for Limerick. The federal court decision stated that Limerick can't be exempted.

Comment: 2-79-PA; Exelon should not be using decades-old 1989 information to determine health and economic impacts. It is inexcusable for NRC to allow Exelon to use decades old comparisons for anything, especially population. NRC is letting Exelon get away with declaring its review of new and significant information compared to 1989, claiming Exelon did not uncover any cost beneficial plant improvements or SAMAs that would substantially decrease risk of a severe accident. That doesn't even make sense considering NRC's own post-Fukushima recommendations. Cost beneficial to whom? Certainly NOT public interests!

- Exelon's evaluations and claims are based strictly on their costs. That leads to decisions ignoring unacceptable risks to the public.
- NRC's job is to ensure public safety, not protect Exelon's profits.
- NRC is supposed to protect the public's interests. NRC has failed to consider and compare impacts and costs to the public for Exelon not being required to spend the money for the safest accident mitigation.

Costs to the public for an accident/meltdown at Limerick Nuclear Plant could be astronomical, in terms of suffering, health care costs, and financial costs.

- Off-site economic costs for multiple radiation accidents/meltdowns in Limerick's reactors and/or fuel pools, in the densely populated Greater Philadelphia region surrounding Limerick Nuclear Plant have not been accurately assessed by anyone.
- Millions of people would need temporary housing and/or permanent relocation. In today's economy and political dysfunction, the millions of people in the Greater Philadelphia Region who could lose everything would get no help.
- Costs for dealing with a Limerick disaster are estimated to be a trillion dollars, with taxpayers paying all but $12 billion.
- In addition to complete loss of property, possessions, businesses, and jobs, the short and long term health-care costs would be staggering. There would not even be enough treatment centers or hospitals to deal with the numbers of people who could end up with acute radiation poisoning or worse. In Japan, people, including children, were turned away because they were too radioactive.

NRC never bothered to address any of the public interest issues above in Limerick's DRAFT EIS. NRC is only considering costs to Exelon and Exelon's profits, NOT costs to the public for a Limerick accident/meltdown because NRC failed to require the safest accident mitigation strategies. That is profoundly negligent!

IF NRC CONSIDERED DRASTIC INCREASES IN POPULATION, RELATED TO THE COSTS FOR LOSSES, NRC SHOULD COME TO THE CONCLUSION THAT IT IS JUST TOO RISKY TO CONTINUE TO OPERATE LIMERICK NUCLEAR PLANT.

In NRC's FINAL LIMERICK EIS, THE PUBLIC'S OFF-SITE COSTS FOR A LIMERICK RADIATION ACCIDENT/MELTDOWN MUST BE ACCURATELY ESTIMATED BY AN INDEPENDENT ECONOMIC EXPERT WHO UNDERSTANDS WHAT TOTAL RADIOACTIVE CONTAMINTION WOULD DO TO THE ENVIRONMENT AND THE POPULATION.

Comment: 5-14-PA; NRC's refusal to update Limerick's SAMA:

NRC has allowed many of its regulations to be systematically re-written by the NEI (Nuclear Energy Institute), the powerful lobbying arm of the nuclear industry. The NRC has allowed the NEI to thus create more regulatory protection for the industry, which significantly weakens safety for the public.

An example is the difficulty encountered by the NRDC, when it attempted to require an updated SAMA for Limerick. The NRC would not consider it. NRC's stubborn position is reinforced by the legal armature designed to preserve Limerick for financial reasons, without consideration of whether there's a need for nuclear energy. NRC stated its SAMA position in the federal register (2007): "Staff Position: The NRC staff recommends that applicants for license renewal follow the guidance provided in Nuclear Energy Institute (NEI) 0501, Severe Accident Mitigation Alternatives (SAMA) Analysis Guidance Document, Revision A, when preparing their SAMA analysis."

In 2012, the NRC Commission refused the National Defense Resource Council's request (submitted in 2011) for an update of Limerick's SAMA on the grounds that the request was "an impermissible attack on our regulations".

Comment: 30-4-PA; On page 5-4 of the GEIS Supplement, the NRC discusses the Containment Performance Improvement (CPI) Program and the Individual Plant Examination (IPE), and in this discussion the GEIS Supplement repeatedly states that the NRC relies on these programs in determining that Severe Accident Mitigation Alternatives (SAMAs) need not be performed at license renewal if the staff had already performed a SAMA review in an earlier NEPA document. The phrasing clearly implies that any new and significant information that may be discovered in the intervening years between initial licensing and the license renewal stage will have been adequately considered and should satisfy all requirements pursuant to NEPA, namely a thorough analysis of environmental impacts. However, the CPI, IPE, Individual Plant Examination of External Events (IPEEE), or any other accident management programs or processes, cannot substitute for NEPA review under the legal precedent *United States v. Coalition for Buzzards Bay,* 644 F.3d 26, 38 (1st Cir. 2011), which rejected arguments that alternative process can substitute for NEPA. In addition, the case *Limerick Ecology Action, Inc. v. NRC,* 869 F.2d 719, 729 (3rd Cir. 1989)) established that Atomic Energy Act procedures cannot substitute for compliance with NEPA.

Response: *Several comments were made regarding the need to perform an updated SAMA analysis. As provided in the introductory section of Section 5.3 of this SEIS, the Commission made the generic determination, codified in Table B-1 of Part 51 and 10 C.F.R. § 51.53(c)(3)(ii)(L), that if the NRC had conducted a site-specific consideration of severe accident mitigation alternatives ("SAMA") for a plant in a previous EIS or environmental assessment ("EA"), another SAMA need not be done for license renewal.*

The Staff has previously performed a site-specific analysis of severe accident mitigation design alternatives ("SAMDA") in a NEPA document for LGS in the Final Environmental Statement Related to Operation of Limerick Generating Station, Units 1 and 2, NUREG-0974 Supplement 1 (ADAMS Accession No. ML112221A204)). Therefore, the applicant's license renewal ER for Limerick and the Staff's SEIS do not have to reassess the issue.

Importantly, this does not mean that the Commission only considers ways to mitigate severe accidents at a given site once. Instead, the Commission has considered alternatives for mitigating severe accidents at many sites, including Limerick, multiple times through a variety of NRC programs. Examples of these NRC programs include the containment improvement program, Individual Plant Examination, Individual Plant Examination of External Events, Accident Management Program, 10 CFR 50.54(hh) rulemaking Regarding Loss of Large Areas of the Plant Caused by Fire or Explosions, Severe Accident Mitigation Guidelines, and Fukushima-Related Activities. These NRC programs are described in sections 5.3.1 through 5.3.8 of Chapter 5 of this FSEIS.

Chapter 5 of Exelon's ER also contained an evaluation of new information to determine whether it was significant as required by 10 CFR 51.53(c)(3)(iv). The assessment described in Section 5.1 found no new and significant information that would change the small impact determination for severe accidents set forth in the GEIS (NRC, 1996a, Sec. 5.5.2). Also, the applicant determined that no new and significant information has been found that would change the generic conclusion codified by the NRC that LGS need not reassess severe accident mitigation alternatives for license renewal [10 CFR 51.53(c)(3)(ii)(L)].

Furthermore, the Staff's independent evaluation of new and significant information is discussed in sections 5.3.9 through 5.3.17 of this Limerick SEIS. The Staff took a hard look at new information to determine if it was significant for purposes of the National Environmental Policy Act (NEPA). The Staff did not identify any new and significant information that would invalidate the 1989 Limerick SAMDA Analysis or the Commission's generic conclusions in 51.53(c)(3)(ii)(L). In making this determination, the NRC reasonably relied on the studies

mentioned above, among other things, to inform its analysis of SAMAs under NEPA. This is discussed in sections 5.3.1 through 5.3.8 of Chapter 5 of this FSEIS.

Comment: 30-38-PA; Exelon has omitted from its ER a required analysis of new and significant information regarding the potential new severe accident mitigation alternatives previous considered for other BWR Mark II Containment reactors.

Response: *Regarding this comment, the staff sent a letter dated February 12, 2014, to Exelon requesting additional information about potentially new SAMAs previously considered for other plants. The staff's review of this information is provided in section 5.3.17 of the SEIS.*

During the litigation on this issue the staff extensively discussed these claims and provided further analysis in its legal filings. The staff's briefs to the Commission are available at ML13072A804 and ML13079A501 and provide the staff's position on the issue. The Commission's rulings on the issue are in CLI-12-19 (NRC 2012a) and CLI-13-07 (NRC 2013b).

Comment: 30-39-PA; Exelon's reliance on data from TMI in its analysis of the significance on new information regarding economic cost risks constitute an inadequate analysis of new and significant information.

The ER analysis of the significance of including information regarding the potential economic impact of a severe accident at Limerick erroneously relies on data from an analysis done at TMI, a site that involves a markedly different and less economically developed area than the area within 50 miles of Limerick, which includes the densely populated urban environments of Philadelphia, PA, Camden and Trenton, NJ and Wilmington, DE. The ER thus fails to evaluate the impact of a properly conducted economic analysis on the assessment of the environmental consequences of a severe accident at Limerick.

The ER ignores new and significant information regarding the likely cost of cleanup from a severe accident in a metropolitan area like Philadelphia and thus understates the impact of a properly conducted economic analysis on the environmental consequences of a severe accident at Limerick.

Response: *The staff's review of this information is provided in section 5.3.12 and 5.3.13 of the SEIS. Since Limerick's calculation was reasonable, more conservative than any of the population increase evaluations found in the GEIS, and mitigation alternatives as a result of population increases are implemented in the current term, the staff find's Limerick's evaluation acceptable and population increases at Limerick are not new and significant information. Moreover, even if population increase led to another SAMA becoming cost beneficial, that SAMA would still not likely result in a substantial reduction in offsite risk, given the substantial reduction in CDF at Limerick since the 1989 SAMDA analysis.*

During the litigation on this issue the staff extensively discussed these claims and provided further analysis in its legal filings. The staff's briefs to the Commission are available at ML13072A804 and ML13079A501 and provide the staff's position on the issue. The Commission's rulings on the issue are in CLI-12-19 (NRC 2012a) and CLI-13-07 (NRC 2013b).

Comment: 30-40-PA; A legally sufficient analysis of newly identified severe accident mitigation alternatives for Limerick must utilize modern techniques for assessing whether those alternatives are cost-beneficial, and Exelon's ER erroneously concluded that new mitigation alternatives can be evaluated without use of those modern techniques.

Response: *The staff review of this comment determined that a modern SAMA analyses for LGS would be unlikely to uncover cost-beneficial major plant improvements or plant improvements that could substantially result in lower doses to offsite populations in the event of*

a severe accident. The staff's review of this information is provided in section 5.3.18 of the SEIS.

During the litigation on this issue the staff extensively discussed these claims and provided further analysis in its legal filings. The staff's briefs to the Commission are available at ML13072A804 and ML13079A501 and provide the staff's position on the issue. The Commission's rulings on the issue are in CLI-12-19 (NRC 2012a) and CLI-13-07 (NRC 2013b).

Comment: 2-4-PA; NRC must stop and delay all activities and actions related to Limerick Nuclear Plant's relicensing including finalizing this EIS until after several issues are addressed or take place.

……Number two, the National Resource Defense Council legal action appeals on Limerick's severe accident mitigation analysis requirements have been resolved. That's an open, legal issue…

Comment: 23-41-PA; Page 5-1, Postulated Accidents leads to 5.3 SAMA. I concur with NRDC.

Response: *The comments above are in support of the NRDC's contentions and waiver petiton submitted regarding the need to perform an updated SAMA analysis.*

As provided in the introductory section of Section 5.3 of this SEIS, the Commission made the generic determination, codified in Table B-1 of Part 51 and 10 C.F.R. § 51.53(c)(3)(ii)(L), that if the NRC had conducted a site-specific consideration of SAMA for a plant in a previous EIS or environmental assessment, another SAMA need not be done for license renewal.

The staff has previously performed a site-specific analysis of SAMDA in a NEPA document for LGS in the Final Environmental Statement Related to Operation of Limerick Generating Station, Units 1 and 2, NUREG-0974 Supplement 1 (ADAMS Accession No. ML112221A204)). Therefore, the applicant's license renewal ER for Limerick and the staff's SEIS do not have to reassess the issue.

On October 31, 2013, the Commission issued order CLI-13-07 (ML13304B417), which denied NRDC's waiver request but indicated that the issues raised in the NRDC's waiver petition bear consideration in the staff's environmental review of the Exelon's application outside the adjudicatory process. The Commission referred the waiver petition to the Staff as additional comments on the Limerick DSEIS for the Staff's consideration and response. The Commission also directed the Staff to review the significance of any new SAMA-related information in its environmental review of Exelon's application, including information presented in the NRDC waiver petition, and to discuss its review in the FSEIS. The staff has reviewed all potentially new and significant SAMA-related information, including information presented in the NRDC waiver petition and discussed its review in Chapter 5 this SEIS as directed by the Commission in CLI-13-07. Additionally, the staff has considered the information in the NRDC waiver petition as public comments on the DSEIS and responded to these comments in Appendix A of this SEIS.

Comment: 2-76-PA; Limerick is the 2nd most densely populated nuclear plant in the nation. Still, NRC is refusing to consider increased population and health risks associated with a Limerick Nuclear Plant accident/meltdown.

- Due to Limerick's location, the potential impact of a severe accident would be far greater than at most other U.S. nuclear plants (NRDC research).
- Over 8 million people live within 50 miles of Limerick, the radius NRC told Americans to evacuate in Japan during the Fukushima accident.

- 1.4 million people are now living downwind in the Philadelphia-Wilmington-Newark metropolitan area.
- In 1980 Limerick already had double the population density within 30 miles than could evacuate safely (NRC standard). Now the population density is four times higher.

Response: *The issue regarding population growth around Limerick Generating Station is discussed in Section 5.3.2 in the SEIS. It should be noted that the NRC emphasizes the integration of safety, security, and emergency preparedness as the basis for the NRC's primary mission of protecting public health and safety (10 CFR 50.54(q), which contains the requirements for following and maintaining current emergency plans). To prepare for a radiological emergency, NRC developed regulations, guidance, and communications related to emergency preparedness for nuclear power plants which is summarized at http://www.nrc.gov/about-nrc/emerg-preparedness/regs-guidance-comm.html.*

Comment: 2-78-PA; 1974 Reactor Safety Study Published by NRC - Referred to as The Rasmussen Report[:]

- 45,000 Radiation Sickness Cases (Requiring Hospitalization)
- 3,300 Deaths (From Acute Radiation Sickness)
- 45,000 Fatal Cancers (over 50 years)
- 250,000 Non-Fatal Cancers (over 50 years)
- 190 Children Born With Birth Defects Per Year

Note: Non-Insurable Property Damage Was Estimated At $14 Billion

<u>NRC's Estimated Consequences For An Accident (CRAC REPORT) For Limerick Nuclear Power Plant - Reported To Congress In 1982</u>

74,000 Early Fatalities
610,000 Early Injuries
34,000 Cancer Deaths

Census Records From 1980 to 2010 Show That These Numbers Would Be Drastically Higher Today.

<u>Our Population Increase Demands Updated, More Realistic Planning</u>

Census Shows - From 1980 to 2010 (2000 and 2010 Census Data)

Numbers For Fatalities, Injuries, and Deaths Above Would Be Drastically Higher Today Due To A<u>: FOUR-FOLD INCREASE IN POPULATION DENSITY SINCE 1980.</u>

LIMERICK'S 10-MILE EPZ Is The 2ND MOST DENSELY POPULATED In The U.S.

<u>INFORMATION ABOVE RENDERS NRC'S CLAIMS IN LIMERICK'S DRAFT EIS - SAMA PAGE 5-3 - MISLEADING, AND INDEFENSIBLE</u>

It appears NRC will say anything to fool the public to save Exelon money.

- "Risks of early fatality from potential accidents at the site are small in comparison with risks of early fatality from other human activities in a comparably sized population."
- "The accident risk will not add significantly to population exposure and cancer risks."

- "Accident risks from Limerick are expected to be a small fraction of risks the general public incurs from other sources." THIS IS ABSURD!
- "Best estimates show risks of ... reactor accidents at Limerick are within the range of risks from other nuclear plants."- THIS IS A MEANINGLESS COMPARISON.

Shame on NRC! This agency has lost all credibility!

- A Limerick Accident/Meltdown Could Cause A Catastrophe That Could Render The Entire Greater Philadelphia Region A Dead Zone For Generations.
- A Limerick Accident/Meltdown Is About High-Levels Of Radiation Exposure That We Can't See, Taste, Smell, Or Feel, But That Cause Radiation Sickness, Cancer, Death, And Impacts Into Future Generations.

Response: *With respect to the commenter's concern regarding calculations from the "Rasmussen Study" or "CRAC report," the NRC has devoted considerable research resources, both in the past and currently, to evaluating accidents and the possible public consequences of severe reactor accidents. The NRC's most recent studies have confirmed that early research into the topic led to extremely conservative consequence analyses that generated invalid results for attempting to quantify the possible effects of very unlikely severe accidents. They often used unnecessarily conservative estimates or assumptions concerning possible damage to the reactor core, the possible radioactive contamination that could be released, and possible failures of the reactor vessel and containment buildings. These previous studies also failed to realistically model the effect of emergency preparedness. The NRC staff is currently pursuing a new state-of-the-art assessment of possible severe accidents as part of its ongoing effort to evaluate the consequences of such accidents. The State-of-the-Art Reactor Consequence Analyses (SOARCA) project incorporates the results of more than 25 years of research to analyze the realistic outcomes of postulated severe reactor accidents, even though it is considered highly unlikely that such accidents could occur. The SOARCA objective is to develop updated and more realistic analyses of severe reactor accidents by including significant plant changes and updates (e.g., system improvements, training and emergency procedures, and offsite emergency response) that plant owners have made, which were not reflected in earlier assessments conducted by the U.S. Nuclear Regulatory Commission (NRC). These plant changes also include recent enhancements in respone to the terrorist attacks on September 11, 2001.*

NUREG/BR-0359, "Modeling Potential Reactor Accident Consequences," describes the research and it can be access on the NRC's public webiste at http://www.nrc.gov/reading-rm/doc-collections/nuregs/brochures/br0359/

In light of these more recent analyses, these comments do not provide any new and significant information; therefore, no changes were made to the SEIS.

Comment: 7-1-PA; I'm concerned about an earthquake triggering one or more meltdowns at Limerick Nuclear Plant.

Comment: 5-15-PA; NRC's refusal to update Limerick's earthquake analysis:

The Fukushima disaster began on March 11, 2011. Inexplicably, three months later, Exelon submitted its license renewal application for Limerick Nuclear Plant to the NRC.

NRC held a public meeting (9/22/11) to receive public comments on re-licensing Limerick. We were in the audience. A resident commented that she was still waiting for a response from the

NRC about Limerick's closest faults, reminding the NRC that Limerick was ranked third on the U.S. Earthquake risk list.

Through ACE, we saw a copy of the resident's response from NRC. The letter and the map focused on the Chalfont Fault (9 miles away) and the Ramapo Fault (17 miles away). The map was complex, but yellow and orange highlight indicated the faults and the fault network.

But we remembered hearing rumors that there was a fault under the plant, and the NRC's map was so hard to decipher that we decided to go to the Pottstown Library to see if there were any other maps there that would be easier to understand. Among the Limerick volumes lining a shelf in the archives, we found a decades-old Geologic Survey by Dames and Moore submitted to PECO in 1974. Within its pages we found a large fold-out map in color that clearly showed the Sanatoga Fault running under the proposed Limerick Nuclear Plant site. It did not show the Chalfont or Ramapo Faults, but it did show the Linfield Dike not far from the plant, as well as the line marked Quarry Splay close to the site.

In March 2012, when the NRC held a less formal NRC public meeting, we took a copy of the 1974 Geologic Survey map that we had found in the Library to show to the NRC. The NRC Chief, Projects Branch 4, said he'd never seen it before and he referred us to the NRC official who was the author of the resident's response letter and map, who was also present. He had never seen the 1974 map before, either. It seemed that neither had ever even heard of the Sanatoga Fault. However, we were very surprised to hear the author of the letter off-handedly mention that the Ramapo Fault was active.

ACE had arranged a meeting with our local paper and we shared both maps and their respective stories with a reporter. It was weeks after the NRC meeting when the story finally broke, and it covered several pages. Both the Geologic Survey map and the resident's NRC-provided map were splashed across the front page. The paper was full of articles providing an excellent review of many renewed earthquake concerns, including fracking and quarry issues (an active blasting quarry shares its border with Limerick).

The newspaper reported that an NRC spokesperson's answer to the question of whether the NRC had considered the Sanatoga Fault when it licensed Limerick began with "The short answer is yes"....and went on. <u>Missing from the story was what is always missing: the central issue at stake: the evasiveness of the NRC. Whenever there's an issue of import, like an unusual event or accident at Limerick, the NRC dusts up the story to create the impression that everything is under control.</u>

Comment: 5-27-PA; To what degree is NRC allowing Modifications to Requirements for Mitigation Strategies for Beyond- Design-Basis External Events? (Issuance of Order: 3/13/12)

Response: *These comments address issues related to the potential impacts of natural disasters on the plant. The potential impacts of natural disasters, such as earthquakes and hurricanes and the plant's ability to continue to operate are addressed on an ongoing basis as part of the NRC's current oversight process. These actions are being addressed independent of license renewal.*

The NRC has directed licensees to perform a seismic re-evaluation using updated information. Operating reactor sites are using present-day information to re-evaluate the earthquake effects—or hazards—that could impact their site. These newly re-evaluated hazards, if worse than what the plant had originally calculated, will be analyzed to determine if plant structures, systems, and/or components need to be updated to protect against the new hazard. The NRC will review each step in the analysis process and take action to require plant changes as necessary.

Additional information is provided at:

http://www.nrc.gov/reactors/operating/ops-experience/japan-dashboard/seismic-reevaluations.html

Modifications to requirements for mitigation strategies for beyond design basis external events are evaluated on a plant by plant basis and are currently ongoing. Information regarding the Status of Limerick 1 and 2 is available at:

http://www.nrc.gov/reactors/operating/ops-experience/japan/plants/lim1.html

As discussed in section 5.3.15 of chapter 5, the Limerick SAMDA analysis contained very large conservatisms regarding seismic risk. Therefore, these comments do not provide any new and significant information; therefore, no changes were made to the SEIS.

Comment: 10-4-PA; Well, things are a lot better in the security state, but there's still some problems. But I want to point out one specific issue using their report and it's in Section 5.2. This will be the last thing I have to say. In Section 5.2 regarding severe accidents, they did an analysis of sabotage and said that core damage and radiological release from such acts would be no worse than the damage and release expected from internally-initiated events. Well, first of all, that wording should be changed. Internally initiated could indicate sabotage even from an insider. So that should be accidental events rather than internally. We're talking about sabotage versus accident.

- From GEIS: With regard to sabotage, quantitative estimates of risk from sabotage are not made in external event analyses because such estimates are beyond the current state of the art for performing risk assessments. The commission has long used deterministic criteria to establish a set of regulatory requirements for the physical protection of nuclear power plants from the threat of sabotage, 10 CFR Part 73, "Physical Protection of Plants and Materials", delineates these regulatory requirements. In addition, as a result of the World Trade Center bombing, the Commission amended 10 CFR Part 73 to provide protection against malevolent use of vehicles, including land vehicle bombs. This amendment requires licensees to establish vehicle control measures, including vehicle barrier systems to protect against vehicular sabotage. The regulatory requirements under 10 CFR part 73 provide reasonable assurance that the risk from sabotage is small. Although the threat of sabotage events cannot be accurately quantified, the commission believes that acts of sabotage are not reasonably expected. Nonetheless, if such events were to occur, the commission would expect that resultant core damage and radiological releases would be no worse than those expected from internally initiated events.

Based on the above, the commission concludes that the risk from sabotage and beyond design basis earthquakes at existing nuclear power plants is small and additionally, that the risks form other external events, are adequately addressed by a generic consideration of internally initiated severe accidents.

Although external events are not discussed in further detail in this chapter, it should be noted that the NRC is continuing to evaluate ways to reduce the risk from nuclear power plants from external events. For example, each licensee is performing an individual plant examination to look for plant vulnerabilities to internally and externally initiated events and considering potential improvements to reduce the frequency or consequences of such events. Additionally, as discussed in Section 5.4.1.2, as part of the review of individual license renewal applications, a site-specific consideration of alternatives to mitigate severe accidents will be performed in order

to determine if improvements to further reduce severe accident risk or consequences are warranted.

The second and most important of what I'm saying is they say they could identify no issues that were greater than internally-initiated events. What if the containment building is no longer intact? What if the saboteurs found a way of nuclear transport -- there's that nuclear term, engineering term -- of radioactive material outside the containment building during a sabotage event. Well, that happened at Three Mile Island, not from sabotage, but the valves in the 16 drain were already lined up, where radioactivity was escaping the building early.

Response: *A complete discussion of what is meant by internally-initiated events in the context of sabotage is provided on page E-7 to E-8 of GEIS Rev. 1.*

In this context, internal events refer to initiating events such as a loss of feedwater. If the loss of feedwater occurs because of sabotage or catastrophic failure, the plant effect is the same. Also, as provided in the SEIS, comprehensive deterministic criteria in regulatory requirements are established for the physical protection of nuclear power plants from the threat of sabotage. Further information on NRC's actions regarding sabotage is available at: http://www.nrc.gov/security/post-911.html.

As explained in section 5.2 of Chapter 5, the NRC has concluded that the threat of sabotage is too remote and speculative for consideration under a NEPA analysis, and the Third Circuit Court of Appeals has upheld this view. However, the NRC will continue to evaluate terrorist acts for all nuclear facilities through the ongoing regulatory process that affects all nuclear facilities.

These comments do not provide any new and significant information; therefore, no changes were made to theSEIS.

Comment: 25-1-PA; P. R. A. Probable risk assessments are used to emphasize the likelihood that the plant will survive for a specific period. PRA demand the conclusion that enough plants operating long enough will suffer a devastating and 'beyond design basis accident.' The public does not see the dark side of the PRA analysis!

The accidents at TMI#2 and Chernobyl and Pleasantville (AKA Fukushima) demonstrate the above.

Response: *One of the Nuclear Regulatory Commission's key responsibilities is to ensure the operation of nuclear power plants and other NRC-licensed facilities present no undue risk to public health and safety. The agency does this by applying and enforcing a set of technical requirements on plant design and operations, described in 10 CFR Part 50. Generally, these are written in terms of traditional engineering practices such as "safety margins" in design, construction, and operations. Probabilistic risk assessment (PRA) systematically looks at how the pieces of a complex system work together to ensure safety. PRA allows analysts to quantify risk and identify what could have the most impact on safety. A fact sheet regarding PRA is provided at:*

http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/probabilistic-risk-asses.html

Note that consideration of risk is an important element of decisionmaking at the NRC to determine adequate protection of the health and safety of the public. In short, this requires an assessment of the probabilities and consequences of a particular risk, as well as a hard look at whether concerns raised in a proposal are based on realistic assumptions, or real world safety, security, or legal issues. The "adequate protection" standard does not mean "zero risk." The NRC does not have a technical or legal basis to ever try and achieve zero risk in a given area. Therefore, determining how much risk is acceptable is a critical function of the NRC.

These comments do not provide any new and significant information; therefore, no changes were made to the SEIS.

A.2.17 Radiological Waste (RW)

Comment: 2-13-RW; For NRC to claim that all power generating facilities generate similar wastes is another lie. You stated "the generation of spent fuel and waste material including low-level radioactive waste, hazardous waste, and nonhazardous waste would also be generated at non-nuclear power generating facilities." Really?

Comment: 2-33-RW; High-level and low-level radioactive waste issues have not been adequately addressed.

NRC does no testing. No independent agency ever did long-term monitoring for all the radionuclides associated with Limerick operations. But when the National Academy of Sciences says there is no safe level of exposure, the kinds and levels are not as important as the fact that almost two million people are always exposed to radiation in their water from Limerick.

Comment: 2-82-RW; LOW-LEVEL DOES NOT MEAN LOW RISK.

LIMERICK NUCLEAR PLANT'S "SO-CALLED" LOW-LEVEL RADIOACTIVE WASTES CAN TAKE AS LONG AS 500 YEARS TO FADE TO NATURAL [BACKGROUND] LEVELS.

NRC FAILS TO TRACK VOLUME OF LOW-LEVEL RADIOACTIVE WASTES PRODUCED AT LIMERICK EACH YEAR. IN MARCH 2013 AN NRC OFFICIAL TOLD ACE THAT TRACKING THE VOLUME OF LIMERICK'S LOW-LEVEL RADI[OA]CTIVE WASTE ISN'T IMPORTANT. WE DISAGREE!

- IF NRC DOESN'T KNOW HOW MUCH IS PRODUCED, NRC CAN'T CONFIRM WHAT HAS HAPPENED WITH ALL OF THE MASSIVE LOW-LEVEL RADIOACTIVE WASTES PRODUCED AT LIMERICK NUCLEAR PLANT.
- PROBLEM: EXELON COULD STILL BE BURNING SOME OF LIMERICK'S LOW-LEVEL RADIOACTIVE WASTES IN LIMERICK'S BOILER "A" WITHOUT NRC'S KNOWLEDGE.

NRC HAS NO ACCURATE IDEA HOW MUCH LOW-LEVEL RADI[OA]CTIVE WASTE IS PRODUCED AT LIMERICK EACH YEAR OR WHERE IT IS GOING.

- WE HAVE NO CONFIDENCE NRC HAS ANY IDEA WHAT EXELON IS DOING WITH ALL OF[ ]LIMERICK'S MASSIVE LOW-LEVEL RADIOACTIVE WASTES.
- NRC'S STATEMENTS AND NEWS REPORTS DON'T MATCH LOW-LEVEL RAD-WASTE DESTINATIONS REPORTED BY EXELON ON NRC'S WEBSITE (SIMPLY AS NUMBERS OF TRAIN OR TRUCK SHIPMENTS).
- JANUARY 2010, EXELON GOT PERMISSION TO SHIP LIMERICK'S LLRW TO PEACH BOTTOM. MARCH 2013 NRC TOLD US LIMERICK'S LLRW WAS SHIPPED TO PEACH BOTTOM. YET, NO SHIPMENTS WENT TO PEACH BOTTOM AT ALL IN 2010, 2011, OR 2012, ACCORDING TO NRC'S WEBSITE.

<u>PROBLEM: NRC HAS BEEN DECEIVING US ABOUT INCINERATION OF LOWLEVEL RADIOACTIVE WASTES AT LIMERICK NUCLEAR PLANT.</u>

- SINCE 2009, NRC HAS BEEN DENYING THAT LIMERICK EVER BURNED LOW-LEVEL RADIOACTIVE WASTES.
- MARCH 2013 AN NRC OFFICIAL FINALLY ADMITTED WHAT WE SUSPECTED FROM REVIEWING LIMERICK'S AIR POLLUTION PERMIT IN 2009 - THAT EXELON BURNED LOWLEVEL RADIOACTIVE WASTES AT LIMERICK.

INCINERATING ANY OF LIMERICK'S LOW-LEVEL RADIOACTIVE WASTES IS NOT AN ACCEPTABLE OPTION, ESPECIALLY IN THIS HEAVILY POPULATED REGION WHERE THERE IS ALREADY A HEALTH CRISIS.

- BURNING RADIOACTIVE WASTES DOES NOT DESTROY THE RADIONUCLIDES, BUT INSTEAD DISPERSES THEM IN SUCH A WAY THAT THEY ARE MORE EASILY INHALED, INCREASING THREATS TO HEALTH FROM THE INTERNAL RADIATION EXPOSURE, THE MOST DANGEROUS EXPOSURE.
- POTENTIAL HARMS FROM BURNING LIMERICK'S LOW-LEVEL RADIOACTIVE WASTES MUST BE INCLUDED IN LIMERICK'S FINAL EIS FOR RELICENSING.

Comment: 2-83-RW; EXELON IS CLAIMING THEY WON'T CONTINUE TO BURN LIMERICK'S LOW-LEVEL RADI[OA]CTIVE WASTES, BUT:

- EXELON'S TRACK RECORD SHOWS WHY WE CAN'T BELIEVE OR TRUST EXELON
- NRC HAS NO SYSTEM IN PLACE TO ACCURATELY CONFIRM WHAT IS BEING DONE WITH ALL LIMERICK LOW-LEVEL RADIOACTIVE WASTE.

NRC HAS NO LONG-RANGE PLAN FOR WHAT WILL BE DONE WITH ALL LIMERICK'S MASSIVE LOW-LEVEL RADIOACTIVE WASTES UNTIL LIMERICK'S CURRENT LICENSE IN 2029.

- NRC CANNOT JUSTIFY RELICENSING LIMERICK FOR 20 YEARS BEYOND 2929 WHEN THERE IS NO SAFE PLACE TO STORE ALL THE LOW-LEVEL RADIOACTIVE WASTE THAT WILL BE PRODUCED.
- THERE IS NO ROOM AT LIMERICK TO STORE THE LLRW THAT MUST BE KEPT AWAY FROM PEOPLE FOR UP TO 500 YEARS,
- PEACH BOTTOM CANNOT CONTINUE TO TAKE LIMERICK'S WASTES FOR DECADES. NRC SAID THERE IS NO PLAN TO TAKE LIMERICK'S WASTES TO PEACH BOTTOM FOR MORE THAN ONE YEAR AT A TIME.
- THE NATION IS RUNNING OUT OF ROOM TO STORE LOW-LEVEL RADIOACTIVE WASTES AT THE FEW SITES DESIGNATED IN OUR NATION TO STORE IT.

RECYCLING CANNOT BE AN OPTION EXPOSING PEOPLE TO RECYCLED RADIOACTIVE WASTES IN THEIR PRODUCTS SUCH AS BELT BUCKLES, DISHES, AND BABY CARRIAGES INCREASES HEALTH THREATS AND COSTS. IT IS SHAMEFUL AND NEGLIGENT.

RECYCLING RADIOACTIVE WASTES CAN BE COSTLY TO BUSINESSES. FOR EXAMPLE, THE BED, BATH, AND BEYOND RECALL ON RADIOAC[TI]VE TISSUE HOLDERS.

Comment: 5-9-RW; High-level radioactive waste storage. Tons are produced at Limerick every year, remaining deadly virtually forever. The public cost is in higher taxes. And we are charged for it to be stored at Limerick.

Comment: 23-14-RW; Minimize means it is still there but may be less. P. 2-1 line 36

Comment: 23-15-RW; Keep in mind the National Academy has said there is no safe level of exposure to ionizing radiation. P. 2-1 line 39 stuff are about minimizing, controlling, meeting standards that allow exposure etc. ALARA is a laugh. Calculate p. 2-2 line 9 – not prevent, not measure but calculate (how??) Objective is to limit releases [p.] 2-2 line 13. Not stop but limit. P. 2-2 line 23 Reduce to ALARA. I mean really, this all very silly but very scary.

Comment: 23-16-RW; Waste from laundry P. 2-2 line 38. Does it stay in the same tank forever? What happens to it?

Comment: 23-18-RW; P. 2-6 line 9- a favorite line "diluted with air," it['']s still there. P. 2-6 line 18 permanent disposal. There is no such thing as permanent disposal or permanent – just moving it around.

Comment: 23-19-RW; Another favorite, p. 2-7 line 33 "using corporate procedures" What are they?

Comment: 23-20-RW; Exelon want uprates. Keep that in mind. What is now may differ with uprates. Line 34 p. 2-8 "… does not expect…" nicely vague.

Comment: 27-3-RW; They are polluting our air and water and we in Pottstown and surrounding areas are paying the price.

Comment: 29-1-RW; As it relates to management and disposal of LLRW, Exelon has received approval from the NRC for storage of LGS LLRW at the Peach Bottom Atomic Power Station (PBAPS) in Delta, PA. The NRC consulted with DEP prior to approval of Exelon's request. Considering the lack of an interim LLRW storage facility at the LGS, the small number of shipments, and the existing capacity of the interim LLRW storage facility at the PBAPS, DEP determined that the transfer of LLRW from LGS to PBAPS would not pose any danger to public health, safety or the environment. However, DEP stated that it expects Exelon to immediately cease shipments of LLRW from LGS to PBAPS when a disposal facility for Class B and C wastes becomes available. The new Waste Control Specialists facility in Texas is now fully operational and, as such, Exelon has confirmed that they will begin shipments of LGS LLRW to the Texas facility and halt future shipments of LLRW from LGS to PBAPS.

Response: *All nuclear plants were licensed by the NRC with the expectation that they would generate, store, and release radioactive material to both the air and water during normal operation. Airborne and liquid releases of radionuclides from nuclear power plants must meet radiation dose-based limits specified in NRC's 10 CFR Part 20, the ALARA criteria in 10 CFR Part 50, Appendix I, and EPA's 40 CFR Part 190. Regulatory limits are placed on the radiation dose that members of the public might receive from all of the radioactive material released by nuclear plants. Licensees are required, on an annual basis, to report the amount and type of radioactive liquid and gaseous effluents discharged into the environment as well as the amount of solid radioactive waste shipped for disposal. In addition, licensees must report the results of their REMPs annually to the NRC. The annual effluent release and radiological environmental monitoring reports submitted to the NRC are available to the public through the ADAMS electronic reading room available through the NRC website (www.NRC.gov).*

The NRC provides continuous oversight of each plant under the NRC's inspection and enforcement programs. The NRC's ROP integrates the NRC's inspection, assessment, and enforcement programs. The operating reactor assessment program evaluates the overall safety

performance of operating commercial nuclear reactors and communicates those results to applicant management, members of the public, and other government agencies. The assessment program collects information from inspections and performance indicators in order to enable the NRC to arrive at objective conclusions about an applicant's safety performance. Based on this assessment information, the NRC determines the appropriate level of agency response. The NRC conducts followup actions, as applicable, to ensure that the corrective actions designed to address performance weaknesses were effective. While the NRC maintains regulatory oversight of LGS, it is the responsibility of LGS's management to ensure that plant operation complies with NRC requirements at all times.

NRC regulation 10 CFR 20.2004, "Treatment or disposal by incineration," allows for the incineration of contaminated waste oil. However the radioactive effluent releases must be added to the plant's radioactive gaseous effluents, and the dose to members of the public must be within NRC dose limits. In addition, LGS must report, in its annual radioactive effluent release report, the total radioactive emissions from this disposal method. While LGS is allowed to use incineration to dispose of its contaminated waste oil, the NRC staff reviewed LGS's annual radioactive effluent release reports for the years 2007staffto 2011 and found no instances when contaminated waste oil was incinerated. The NRC staff's review of the LGS's 2011 annual radioactive effluent release report (ADAMS Accession No. ML12129A391) found that LGS officially eliminated the option to incinerate contaminated waste oil. This action was taken when the LGS plant manager approved the change to the LGS Offsite Dose Calculation Manual which removed the option to burn contaminated waste oil in the plant's auxiliary boiler system. This action by the LGS plant manager prevents the burning of contaminated waste oil. As discussed in the previous paragraph, the NRC inspectors periodically review LGS's radiological programs to ensure compliance with NRC requirements and LGS's procedures and program requirements.

In Chapter 4 of this SEIS, the NRC staff reviewed LGS's radioactive waste management program and environmental monitoring programs to determine the potential impacts of renewing the LGS operating licenses. The NRC staff concluded that the impacts to human health would be SMALL.

These comments do not provide any new and significant information; therefore, no changes were made to the SEIS in response to these comments.

Comment: 2-6-RW; NRC must stop and delay all activities and actions related to Limerick Nuclear Plant's relicensing including finalizing this EIS until after several issues are addressed or take place.

…Number four, NRC's court-ordered high level radioactive waste study has been completed, 2014 or later, and all waste storage issues and rules are in effect, including for Limerick….

Comment: 2-78-RW; NRC'S DRAFT EIS HAS FAILED TO ADEQUATELY ADDRESS THE SITE SPECIFIC ENVIRONMENTAL IMPACTS OF THE MASSIVE AMOUNTS OF HIGHLEVEL RADIOACTIVE WASTES CURRENTLY STORED IN FUEL POOLS AND CASKS ON THE LIMERICK SITE, AND THE IMPACTS OF THE FUTURE PRODUCTION OF LIMERICK'S HIGH-LEVEL RADIOAC[TI]VE WASTES DURING LIMERICK'S RELICENSING PERIOD.

What could possibly have more of an impact on the future environment of the entire Greater Philadelphia Region than storing more and more of the most deadly materials on earth in fuel pools (like Fukushima's) and above ground casks that can eventually leak?

- Devastating Long-Term Environmental Impacts Can Result From Storing Or Transporting Limerick's High-Level Radioactive Wastes.

- NRC's DRAFT EIS Fails To Adequately Address Specific Environmental Impacts of The Massive Amounts Of High-Level Radioactive Wastes Currently In Limerick's Fuel Pools and Casks.

A New Review Of Limerick's Spent Fuel Storage Is Imperative BEFORE Limerick's EIS DRAFT Is Finalized. There Are Many Unanswered Questions With Serious Implications For Devastating Environmental Consequences For Generations, If Not Forever.

What could have more impact on the future environment of the entire Greater Philadelphia Region than storing massive amounts of the most deadly materials on earth, in corroding and thinning fuel pools, originally made with substandard cement, and extremely vulnerable to meltdowns from earthquakes and terrorist strikes with planes and missiles (like Fukushima's, high above reactors with no containment)?

- NRC's decision to allow Exelon to avoid an assessment of environmental impacts from all the deadly high-level radioactive wastes stored on the Limerick site until after the EIS is approved for relicensing, is really about protecting Exelon's interests, not public interests.
- There is NO NEED to rush Limerick's relicensing, when its original license doesn't expire for over a decade, another 11 years.
- Given the extreme dangers and destruction faced by the entire Greater Philadelphia from Limerick's high-level radioactive waste storage at Limerick, NRC would be negligent to ignore the unprecedented threats to the environment and population in Limerick's Environmental Impact

Comment: 2-79-RW; NRC STATEMENT IN LIMERICK'S APRIL 2013 DRAFT EIS *"If the results of the Waste Confidence Decision EIS identify information that requires a supplement to the EIS, the NRC staff will perform any appropriate additional NEPA review for those issues before NRC makes a final licensing decision."* (6-3)

THAT MAKES NO SENSE AND IS UNACCEPTABLE FOR TWO REASONS

1. THERE IS NO NEED TO RUSH TO COMPLETE LIMERICK'S FINAL EIS BEFORE 2014, WHEN NRC'S COURT-ORDERED STUDY IS COMPLETED. LIMERICK'S FIRST LICENSE DOES NOT EXPIRE UNTIL 2024, A DECADE AWAY.

   It is unacceptable for NRC to finalize Limerick Nuclear Plant's EIS prior to finalization of NRC's Court-Ordered Waste Confidence Rules, which will not occur until 2014. The U.S. Court of Appeals for the D.C. Circuit found that an Environmental Impact Statement needed to add additional discussions concerning the impacts of failing to secure permanent disposal of spent nuclear fuel, and concerning the impacts of certain aspects of fuel pool leaks and fires.

2. THERE ARE MAJOR UNADDRESSED AND UNANSWERED SPECIFIC CONCERNS ABOUT CURRENT STORAGE OF LIMERICK'S HIGH-LEVEL RADIOACTIVE WASTES, ESPECIALLY THE WASTE CURRENTLY STORED IN LIMERICK'S FUEL POOLS.

NO FINAL LIMERICK EIS SHOULD BE COMPLETED UNTIL AFTER NRC'S WASTE CONFIDENCE RULING HAS BEEN FINALIZED AND ALL LIMERICK SPECIFIC HIGHLEVEL RADIOACTIVE WASTE ISSUES HAVE BEEN COMPLETELY ANSWERED AND ADDRESSED.

IT WOULD BE PREMATURE AND ABSOLUTELY INAPPROPRIATE TO ISSUE LIMERICK'S FINAL EIS WITHOUT INCLUDING THE RULING FROM THE COURT-ORDERED WASTE STUDY, AND WITHOUT ANSWERING IMPORTANT QUESTIONS AND CONCERNS.

Comment: 2-80-RW; Spent Fuel Pools- A Ca[ta]strophe Waiting to Happen

- Limerick's Fuel Pools are OVERLOADED with massive amounts of high level radioactive waste rods, Wastes held in pools exceed design basis
- Large volumes of Limerick's high level produced since Limerick started operating in 1985 are stored in limerick pool
- Fuel Pool are corroding and thinning faster than expected
- Pools are filled with radioactive fluids that are threatening to boil away, introducing radiation into the air.
- Pools are outside the reinforcement containment structures for the reactors.

Comment: 2-81-RW; THERE IS NO SAFE SOLUTION FOR LIMERICK'S HIGH-LEVEL RADIOACTIVE WASTES.

- Facts About Limerick's Dangerous Deadly High-Level Radioactive[ ]Wastes Show The Only Logical Solution Is To Stop Making It.
- LIMERICK SHOULD BE CLOSED AS SOON AS POSSIBLE, NOT RELICENSED. EACH YEAR LIMERICK OPERATES MANY TONS MORE OF LIMERICK'S DEADLY HIGH-LEVEL RADI[OA]CTIVE WASTES WILL BE PRODUCED. THREATS WILL OBVIOUSLY INCREASE IF LIMERICK IS RELICENSED.
- LIMERICK'S RADIOACTIVE WASTES ALREADY PRODUCED NEED TO BE STORED ON SITE SAFER.
- NRC CANNOT JUSTIFY IGNORING LIMERICK SPECIFIC ENVIRONMENTAL IMPACTS FROM LIMERICK'S MASSIVE AMOUNTS OF HIGH-LEVEL RADIOACTIVE WASTES.
- NRC'S FINAL EIS FOR LIMERICK NUCLEAR PLANT SHOULD NOT BE COMPLETED UNTIL AFTER NRC'S COURT-ORDERED HIGH-LEVEL RADIOACTIVE WASTE STUDY IS COMPLETED IN 2014 AND THE RESULTING ACTIONS ARE APPLIED TO LIMERICK.
- THE OUTCOME OF NRC'S COURT-ORDERED HIGH-LEVEL RADIOACTIVE WASTE STUDY MUST BE INCORPORATED INTO LIMERICK'S FINAL EIS, REGARDLESS OF THE LENGTH OF TIME REQUIRED.
- THERE IS NO NEED TO RUSH TO COMPLETE LIMERICK'S EIS FOR RELICENSING, WHEN LIMERICK'S FIRST LICENSE DOES NOT EXPIRE FOR OVER A DECADE.

Comment: 5-28-RW; Is the NRC conducting a substantive "waste confidence study" that protects the public or, as we fear, relying on its phone conference with Exelon?

We hope it is not taking Exelon's word for how it is coping with the substandard containment, or protecting the above-ground storage from a terrorist attack, or providing for backup power in case of extended power outages to cool the fuel pools.

NRC officials told us at a meeting in 2013, that they rely on Exelon to take care of that and they couldn't tell us anything about waste-storage issues.

Comment: 18-2-RW; How is it in the public interest, for example, to attempt to assess the environmental impact of relicensing Limerick Generating Station when we don't know the results of the spent fuel study? And we won't know the results until some time in 2014.

Comment: 23-8-RW; New also is the above-ground storage of spent nuclear fuel. That certainly wasn't here before and that certainly presents a huge danger to us all. And I might add the public hearing on that was held in the context of whether they could put cement pads in a certain zoning district.

New rules about spent fuel may be released in 2014, so this relicensing is obviously premature. The whole document is full of things like the term "permanent disposal." There is no such thing as permanent disposal.

Comment: 23-40-RW; page 4-50 line 39, spent fuel storage. New since LNPP began, a de facto HLW dump. What rules govern it? Limerick township zoning? And Building codes? Who has liability?

Comment: 28-1-RW; EPA concluded this rating in part due to deficient information on the potential environmental impact associated with the onsite disposal of spent fuel subsequent to the decommission of Units 1 and 2. Section 6 of the draft generic EIS provides information on impacts associated with spent fuel both "Onsite and Offsite"; however, it does not provide sufficient detail of potential environmental impacts of onsite storage subsequent to reactor decommissioning. EPA recommends that the Final EIS address this aspect of the project's future activities.

Comment: 29-2-RW; Regarding the storage of spent nuclear fuel at the LGS site, DEP has publicly expressed concerns about long-term storage of spent nuclear fuel at the reactor sites. We encourage the NRC to continue with the timely development of an environmental impact statement, as part of its Waste Confidence decision and rule, to account for the long-term storage of spent nuclear fuel and high-level radioactive waste and associated transportation. The Commonwealth of Pennsylvania has been and continues to be a strong advocate for the Department of Energy's creation of a permanent repository for disposal of spent nuclear fuel and high-level radioactive waste.

Comment: 30-5-RW; In the GEIS Supplement Section 6, the NRC states[,] "There are no Category 2 issues related to the fuel cycle and waste management["] (page 6-1, line 19). The implications of this determination for the fuel cycle and solid waste management are that storage, transportation and offsite radiological risk associated with spent nuclear fuel are independent of the proximity and size of populations in the region of LGS spent nuclear fuel storage, or the sizes of populations along roads or rail lines if spent nuclear fuel is transported offsite from LGS. In Section 5 of the GEIS Supplement, Exelon estimates that the population within 50 miles of LGS is projected to increase to 9,499,925 in the year 2030 (page 5-9, lines 7-8). This population estimate, which includes portions of the Philadelphia metropolitan area, shows that LGS is an outlier among US nuclear power plants in terms of having large nearby populations. Therefore fuel cycle and solid waste management issues cannot be analyzed generically for LGS. The draft GEIS Supplement should re-analyze fuel cycle and solid waste management on a site-specific basis with respect to evaluating the risks and consequences of extending the operating licenses for LGS.

Comment: 30-6-RW; Despite the fact that the NRC has determined that fuel cycle and solid waste management are category I issues, the NRC did examine site-specific impacts in the GEIS Supplement with respect to the potential for new and significant information: "the staff did

not find any new and significant information related to the remaining uranium fuel cycle and solid waste management issues listed in Table 6-1 during its review of the Limerick Generating Station environmental report (ER) (Exelon 2011), the site visit, and the scoping process.

Therefore, there are no impacts related to these issues beyond those discussed in the GEIS. For these Category 1 issues, the GEIS concludes that the impacts are SMALL, except for the issue, "Offsite radiological impacts (collective effects)," which the NRC concluded are acceptable["] (page 6-2, lines 8-14)[.] As discussed in the GEIS Supplement Section 1, "The NRC's standard of significance for impacts was established using the Council on Environmental Quality (CEQ) terminology for "significant." The NRC established three levels of significance for potential impacts: SMALL, MODERATE, and LARGE["] (page 1-4, lines 6-8). NRDC notes that the impacts for the fuel cycle issue "Offsite radiological impacts (collective effects)" has not been evaluated using the three levels of significance which the NRC has established. NRDC comments that the NRC should clarify the impacts of "[Offsite] radiological impacts (collective effects)" in terms of SMALL, MODERATE or LARGE impacts, and describe the basis for this categorization of the risk.

Comment: 30-7-RW; Regarding the June 2012 U.S. Court of Appeals for the District of Columbia Circuit's decision to vacate the NRC's Waste Confidence Decision (WCD) Update *(State of New York, et al. v. NRC,* 681 F.3d 471 (D.C. Cir. 2012)) that has forced the NRC to develop an Environmental Impact Statement (EIS), in Section 6 of the GEIS Supplement NRC states that: "If the results of the WCD EIS identify information that requires a supplement to this EIS, the NRC staff will perform any appropriate additional NEPA review for those issues before the NRC makes a final licensing decision." NRDC comments that the potential environmental impacts defined by a future WCD EIS could plausibly be LARGE and be a deciding factor in the federal government's decision as to whether or not to extend the operating licenses of the two reactors at LGS. Exelon's ER and the draft GEIS supplement does not now include an analysis of the environmental impacts caused by the storage of nuclear waste at Limerick following the end of the requested operating license nor does it contain an analysis of the environmental effects of failing to establish a repository (and thus the necessity of a site specific review of indefinite storage of spent fuel). The absence of such an analysis violates NEPA and related regulations. Because neither the ER nor the GEIS (NUREG-1437), nor the NRC in any other context has examined these impacts, and because, as reiterated in the GEIS supplement, the United States Court of Appeals for the District of Columbia Circuit vacated the findings and regulations that NRC relied on to bar consideration of such impacts in license renewal, such analysis is now required to satisfy the requirements of NEPA for license extension at LGS. Furthermore, since these nuclear waste impacts are an intrinsic part of the NEPA analysis required to support a Commission decision on license renewal, and this analysis is missing from the draft circulated for public comment that we are commenting on today, this draft GEIS Supplement should be reissued and recirculated for public comment when this missing analysis becomes available.

Response: *The NRC is committed to ensuring that both SNF and low-level radioactive wastes are managed to prevent health impacts to the public. Spent nuclear fuel is currently stored at LGS in its spent fuel pool and in its ISFSI. This practice is expected to continue until DOE is ready to take possession of the SNF. At this time, it is uncertain when this will happen.*

The NRC is aware that a repository for SNF may not be available in the time frame that it was originally envisioned. Historically, the NRC's Waste Confidence Decision and Rule represented the Commission's generic determination that spent fuel can continue to be stored safely and without significant environmental impacts for a period of time after the end of a reactor's licensed life for operation. This generic determination meant that the NRC did not need to consider the storage of spent fuel after the end of a reactor's licensed life for operation in NEPA

documents that supported its reactor and spent fuel storage application reviews. The NRC first adopted the Waste Confidence Decision and Rule in 1984. The NRC amended the Decision and Rule in 1990, reviewed it in 1999, and amended it again in 2010 (49 FR 34658 and 34694; 55 FR 38474; 64 FR 68005; and 75 FR 81032 and 81037). The Waste Confidence Decision provided a regulatory basis and NEPA analysis to support the Waste Confidence Rule (10 CFR 51.23).

On December 23, 2010, the Commission published in the Federal Register a revision of the Waste Confidence Rule, supported again by a Waste Confidence Decision, to reflect information gained from experience in the storage of spent fuel and the increased uncertainty in the siting and construction of a permanent geologic repository for the disposal of spent nuclear fuel and high-level waste (75 FR 81032 and 81037). In response to the 2010 Waste Confidence Rule, the States of New York, New Jersey, Connecticut, and Vermont—along with several other parties—challenged the Commission's NEPA analysis in the decision, which provided the regulatory basis for the rule. On June 8, 2012, the United States Court of Appeals, District of Columbia Circuit in New York v. NRC, 681 F.3d 471 (D.C. Cir. 2012) vacated the NRC's Waste Confidence Rule, after finding that it did not comply with NEPA.

In response to the court's ruling, the Commission, in CLI-12-16 (NRC 2012a), determined that it would not make final decisions for licensing actions that depend upon the Waste Confidence Rule until the court's remand is appropriately addressed. The Commission also noted that all licensing reviews and proceedings should continue to move forward. In addition, the Commission directed in SRM-COMSECY-12-0016 (NRC 2012b) that the NRC staff proceed with a rulemaking that includes the development of a generic EIS.

The generic EIS, which provides a regulatory basis for the revised rule, would provide NEPA analyses of the environmental impacts of spent fuel storage at a reactor site or at an away-from-reactor storage facility after the end of a reactor's licensed life for operation ("continued storage"). As directed by the Commission, the NRC will not make final decisions regarding renewed license applications until the court's remand is appropriately addressed. This will ensure that there would be no irretrievable or irreversible resource commitments or potential harm to the environment before the impacts of continued storage have been appropriately considered.

On September 13, 2013, the NRC published a proposed revision of 10 CFR 51.23 (i.e., the Waste Confidence Rule), which, if adopted as a final rule, would generically address the environmental impacts of continued storage (78 FR 56776). The NRC also prepared a draft generic EIS to support this proposed rule (NRC 2013b) (78 FR 56621). The final rule is scheduled to be published by October 2014. Upon issuance of the final rule and GEIS, the NRC staff will consider whether additional NEPA analysis of continued storage is warranted before taking any action on the LGS license renewal application.

The impacts associated with onsite storage of SNF are discussed in Chapter 6 of the SEIS. These comments do not provide any new and significant information; therefore no changes were made to the SEIS.

Comment: 32-1-RW; Page 2-6, Lines 12 to[ ]13, Section 2.1.2.2. Clarify the sentence that reads "Discharge of these gases are planned, monitored, controlled, and discharged through the south stack" by changing it to read as follows (see LGS ER page 3-18, 3rd para.): "Discharge of these gases ~~are~~ **is** planned, monitored, and controlled**.** ~~and~~ ***All are discharged through the north stack, except those from the reactor enclosures, which are*** discharged through the south stack."

Comment: 32-2-RW; Page 2-6, Lines 14 to 15, Section 2.1.2.2. Clarify the sentence that reads "The standby gas treatment system (SGTS) and the reactor enclosure recirculation system[ ](RERS) are used to reduce radioactive levels before being discharged into the environment" by changing it to read as follows (see LGS ER page 3-18, 4th para.): "The standby gas treatment system (SGTS) and the reactor enclosure recirculation system (RERS) are used to reduce ~~radioactive~~ radioactivity levels ~~before being discharged into the environment~~ ***in gases from the reactor enclosures before they are discharged into the environment."***

Response: *The NRC staff updated Section 2.1.2.2 of the SEIS to include the information in the comments.*

Comment: 32-3-RW; Page 2-6, Lines 17 to 18, Section 2.1.2.3. Clarify the sentence that reads "The solid waste management system collects, processes, and packages solid radioactive waste for storage and offsite shipment and permanent disposal" by changing it to read as follows (see LGS ER page 3-19 and 3- 20): "The solid waste management system collects, processes, and packages solid radioactive waste***s*** for ***temporary onsite*** storage***, as well as shipment and permanent offsite disposal*** ~~and offsite shipment and permanent disposal~~."

Comment: 32-4-RW; Page 2-6, Lines 23-24, Section 2.1.2.3. Because not all dry wastes are sent to Duratek for processing and (2) Duratek does not provide final disposal services, clarify the sentence that reads "Compressible and non-compressible wastes are packaged and temporarily stored until they are sent to Duratek in Tennessee for processing or final disposal" by changing it to read as follows (see LGS ER page 3-20): "Compressible and non-compressible wastes are packaged and temporarily stored until they are sent ***offsite*** ~~to Duratek in Tennessee~~ for processing or final disposal."

Comment: 32-5-RW; Page 2-6, Lines 26 to 29, Section 2.1.2.3. Clarify the sentence that reads "Wastes from the reactor water cleanup (RWCU) system floor drains, equipment drains, and fuel pool system usually exceed the criteria for LLRW or low specific activity material and are packaged in containers and stored in the high level storage area (HLSA), which is located in the Radwaste Enclosure" by changing it to read as follows (see LGS ER page 3-20): "***However, wet*** wastes from the reactor water cleanup (RWCU) system ~~floor drains, equipment drains, and fuel pool system~~ usually exceed the criteria for ***both Class A*** LLRW ~~or~~ ***and*** low specific activity material. ~~,and~~ ***Therefore, if they cannot be reused, they*** are packaged in containers and stored in the high level storage area (HLSA), which is located in the Radwaste Enclosure."

Comment: 32-7-RW; Replace the last two sentences of the paragraph that begins in line 41 on page 2-6 as follows: "~~Class B/C LLRW stored at LGS or packaged in the future will be sent to PBAPS to be stored at the LLRW storage Purpose and Need for Action facility at that site. The storage capacity for LGS Class B/C 1 wastes at PBAPS is expected to be sufficient through the extended operating license for both LGS units.~~***Class B/C LLRW stored at LGS or packaged in the future may be sent to PBAPS to be stored at the LLRW storage facility at that site. The storage capacity for LGS Class B/C wastes at PBAPS is expected to be sufficient through the extended operating license for both LGS units. However, storage of LGS Class B/C wastes at PBAPS should be unnecessary during the term of a contract, which was executed in February 2013, for treatment and disposal of such wastes at a licensed offsite facility in Texas****."*

Response: *The NRC staff updated Section 2.1.2.3 of the SEIS to include the information in the comments.*

Comment: 32-8-RW; Page 2-7, Lines 7 to 9, Section 2.1.2.4. Clarify the words "however, if it were necessary to treat and dispose of LLMW during the license renewal period, Exelon would store it on site, in compliance with the 1976 Resource Conservation and Recovery Act (RCRA) storage and treatment conditional exemption" as follows: "however, if ~~it were necessary to treat and dispose of~~ LLMW ***were generated*** ~~during the license renewal period~~ during the license renewal period, Exelon would store it on site, in compliance with the ~~1976 Resource Conservation and Recovery Act (RCRA)~~ storage and treatment conditional exemption."

Comment: 32-9-RW; Consider deleting the paragraph in lines 13 to 17 on page 2-7 because it repeats information provided in the preceding paragraph. In addition, although Exelon has previously shipped LLMW for treatment and disposal by the facilities named in the paragraph, future contractual arrangements may be different.

Response: *The NRC staff updated Section 2.1.2.4 of the SEIS to include the information in the comments.*

Comment: 32-10-RW; Page 2-8, Lines, 20 to 21, Section 2.1.3.1. Under Pennsylvania regulations there are 4 types of universal waste management facilities: large quantity handlers of universal waste (LQHUWs), small quantity handlers of universal waste (SQHUWs), universal waste transporters, and destination License Renewal Environmental Report, LGS is classified as a Small Quantity Handler of universal wastes (less than 5,000 kg accumulated at any time). Accordingly, the sentence in lines 20 to 21 on p. 2-8 of the draft SEIS, should be corrected to read as follows: "LGS is considered a ~~Large Quantity Generator~~ ***Small Quantity Handler*** of universal wastes ***(less than 5,000 kg accumulated at any time)*** ~~(greater than 2,200 lb [1,000 kg] permonth)~~"[.]

Response: *The NRC staff updated Section 2.1.3.1 of the SEIS to include the information in the comments*

A.2.18 Socioeconomics (SE)

Comment: 5-5-SE; As taxpayers and ratepayers, the public does not benefit from Limerick nuclear energy because Exelon makes its enormous profits while the public pays the lion's share of its business costs in one of the biggest corporate welfare schemes ever. Public costs include construction costs, the enormous costs skyrocketed and were attached to electric rates that climbed to a whopping 55 percent 2 above the national average.

Comment: 5-6-SE; Property and school taxes, Exelon refused to pay its fair share for years. Eventually, a settlement was reached and Exelon now pays around $3 million a year. But that's a pittance compared to the $17 million it should have been paying each year all along.

Comment: 23-31-SE; Does Limerick Nuclear PP pay its fair share of taxes [?] Probably not.

Response: *Chapter 2, Section 2.2.9.6, of this SEIS presents a discussion of the regional tax structure and the distribution of present revenues to each taxing jurisdiction and district. The NRC has no role in how states and local jurisdictions tax their utilities, assess power plant value, or distribute tax money. These comments do not provide any new and significant information; therefore, no changes were made to the SEIS.*

Comment: 23-29-SE; P. 2-69 and commuting routes. New population growth, see attached news article. There has been major population growth and use of roads. Just go on 422 at rush hour- leave your NRC desk and come try driving around. Many roads are already clogged.

Response: *Section 2.2.9.5 of the SEIS acknowledges that the populations of Berks, Chester, and Montgomery Counties have continued to grow since 1970, contributing to increased traffic volumes on local roads around LGS (see also Table 2–9). However, as discussed in Section*

4.10.5, since Exelon has no plans to add additional workers during the license renewal period, traffic volume and levels of service on roadways in the vicinity of LGS are not expected to change because of license renewal. Therefore, there would be no transportation impacts during the license renewal term beyond those already being experienced. This comment did not provide any new and significant information; therefore, no changes were made to the SEIS.

Comment: 23-30-SE; Because health can be adversely impact by exposure to RAM there are costs to schools [and] to the health system. These are not discussed or the discussion is inadequate.

Response: *According to NRC regulation 10 CFR 51.71(d), draft SEISs prepared at the license renewal stage under § 51.95(c) need not discuss the economic costs and benefits of license renewal. The draft SEIS relies on conclusions supported by health effects information presented in the GEIS. Radiation doses to the public from continued reactor operations during the license renewal term are expected to continue at current levels and would remain well within regulatory limits. The NRC has established multiple layers of radiation protection limits to protect the public against potential health risks from exposure to effluent discharges from nuclear power plant operations. This comment did not provide any new and significant information; therefore, no changes were made to the SEIS*

Comment: 32-17-SE; *Clarify the sentence in lines 8 to 10 on page 2-71 by revising it as follows: "As the ROI has a population greater than or equal to 190 persons per square mile within 80.4 km (50 miles), this translates to a Category 4,* **"in close proximity" population density based on the GEIS measure of proximity** *(greater than or equal to 190 persons per square mile within 50 miles)."*

Response: *The NRC staff updated Section 2.2.9.5 of the SEIS to include the information in the comment.*

Comment: 32-22-SE; In sections 4.10.2 to 4.10.5, which discuss the impacts of LGS license renewal on housing, public utilities, offsite land use, and transportation, the DSEIS does not reach conclusions on the level of impacts (i.e., SMALL, MODERATE, etc.). Instead each section concludes that "there would be no … impacts during the license renewal term beyond those already experienced." Exelon suggests that NRC consider providing impact level determinations in these sections using the standard levels of SMALL, MODERATE, and LARGE adopted in the GEIS.

Comment: 32-26-SE; Exelon suggests that NRC consider providing an impact level determination in Table 4-10 for "Socioeconomics" using the standard levels of SMALL, MODERATE, and LARGE adopted in the GEIS.

Response: The NRC staff's impact discussions and conclusions are consistent with regulations 10 CFR 51.70, 10 CFR 51.71, and NRC NEPA guidance in the Environmental Standard Review Plan, NUREG-1555, Supplement 1. These comments do not provide any new and significant information; therefore, no changes were made to the SEIS.**Comment: 32-23-SE;** Because payments to Chester County taxing entities are very small, consider revising the sentences in lines 33 to 37 on page 4-30 as follows: "As discussed in Chapter 2, Exelon pays ***the majority of its annual*** property taxes for LGS to the following entities in Montgomery ***County*** ~~and Chester Counties~~: Limerick Township,***;*** Spring-Ford Area School District~~, Lower Pottsgrove Township, Pottsgrove School District, Cherster County, East Coventry Township, and Owen J. Roberts School District~~. Exelon also makes tax payments to taxing authorities in ***Chester County and*** Bucks County, but the amounts are relatively minor."

Response: *The NRC staff updated Section 4.10.4.2 of the SEIS to include the information in the comment.*

Comment: 32-30-SE; The description of a NGCC plant in lines 32 to 33 on page 8-14 is credited to "Exelon 2011." However, section 8.9 lists no reference document to which this short form citation is assigned. Furthermore, since the draft LGS DSEIS excludes the existing LGS site as the host for replacement generating facilities (see page 8-3, lines 22 to 27), Exelon questions the assumption that an alternative NGCC plant would have two cooling towers that exceed 500 ft in height, which implies natural draft hyperbolic towers. Accordingly, Exelon suggests that the accuracy of the description on page 8-14 of onsite features at an alternative NGCC plant should be verified.

Response: *The NRC updated Section 8.1.10 of the SEIS by revising lines 32 to 33 as follows: "The four NGCC units could be approximately 100 ft (30 m) tall, with ~~two~~ exhaust stacks up to 150 ft (46 m) tall.~~with two cooling towers over 500 ft (152 m) high (Exelon 2011)~~" However, reference information to "Exelon 2011" has been added to Section 8.9.*

A.2.19 Support for License Renewal (SR)

Comment: 6-1-SR; As one of the founders of the Pennsylvania 8 Energy Alliance, I speak on behalf of a state-wide group of independent community, business, and environmental leaders and organizations representing a variety of professional backgrounds. We formed the coalition more than four years ago as a forum for like-minded Pennsylvanians who believe nuclear energy is a critical component of meeting our energy needs and to advocate for the continued operation of clean, safe, and reliable sources of electricity generation all throughout Pennsylvania.

Our members consists of a former Secretary of the PA Department of Environmental Protection, a former Pennsylvania Game Commission executive, a former Secretary of the PA Department of Environmental Resources, and a former Secretary of the Pennsylvania department of Conservation and Natural Resources. Like me, these environmental stewards all believe nuclear energy has an important role to play in our Commonwealth, and a green nuclear facility such as Limerick operates safely and well within environmental standards.

Nuclear energy provides clean energy that helps to power our homes and businesses reliably and safely. I personally have met many of the men and women who work in this industry and I know them to be smart, conscientious, earnest and passionate about the work that they do.

As you know, Pennsylvania is among the nation's largest producers of nuclear energy. To meet our ever-increasingly demand for electricity in a way that does not destroy our environment, we need a diverse energy mix that includes nuclear power, cleaner fossil fuels, renewable sources and energy efficiency. Conservation alone will not offset the expected growth in our electricity use and renewal sources like wind and solar, while certainly important, are often unreliable.

Support for nuclear power throughout the Commonwealth remains strong. In 2012, the PA Energy Alliance conducted a public opinion poll of nearly a thousand Pennsylvanians from all across the state that showed 90 percent of those surveyed believed nuclear power is an important part of meeting the country's electricity needs. More than three quarters believe that nuclear is a reliable source of energy and perhaps most importantly for today's proceedings, more than seven in ten support allowing existing nuclear power plants to extend their operating licenses.

We are pleased to see strong support comes from residents who live closest to our nuclear facilities. So on behalf of the membership of the Pennsylvania Energy Alliance, thank you for the opportunity to share these thoughts with you today.

Comment: 12-1-SR; I run a local daycare as well. We have toured Limerick, have taken the children on field trips there and they've always had such excellent field trips. The kids always

enjoyed going there to learn about Limerick and learn about nuclear power and how it benefits our community.

Also, they support local children's organizations such as soccer clubs and other -- baseball teams and things. They have been great supporters of the community. I would have no problem. I like the safeguards. We have a very comprehensive plan in place in case something would happen with Limerick, what to do with the children and how to get them safely out of the area. But I have no doubt that we will ever, ever have to use that plan and I've been working in this industry for years now. Thank you[,] Limerick[.]

Comment: 14-1-SR; Unlike some of you guys who have come three hours and thank you for coming three hours, I'm a local resident. I live in Chester Springs. I'm raising my kids here. I have three children at J. Roberts School District which is a local school district. I am a trained certified environmental auditor. I have years of international auditing experience. I've seen quite a lot out there, trust me. I have stories. But currently, for the last two years I have been employed by Exelon. I work for Corporate Environmental. I sit in the Kennett Square campus and I support and assist Limerick Generating Station.

Part of my job responsibility is to provide governance and oversight related to environmental complaints and make sure the site follows the environmental regulations and stays compliant. I believe the station has a very strong environmental program based on my history, my understanding of the rules and audits down by international, internal agencies. We get audited by more people than you've probably ever imagined with acronyms that I still cannot keep up with and I thought environmental regs had acronyms. I'm impressed with the staff at this plant.

These staff are your neighbors. They work in this plant. They care about their own environment, just like I do. I live here. My kids go here. I care about where I live.

And some of the other stuff I do with them is on the side. My children come just like the other woman said with her child. My kids take tours of the plant. They learn about how fission works and they learn about how a nuclear power plant works and they[ ]can talk conversationally about how Limerick works.

They help with the Boy Scouts and the Girl Scouts with building the trails and planting the pollinator gardens and bird houses. I also support the station, actually multiple stations with a Wildlife Habitat Council certification and the work that they do for that certification. And recently we started working with the Audubon Society.

So I'm pretty impressed and I'm here to say I support the Draft EIS renewal of the Limerick operating license. Thank you.

Comment: 15-1-SR; I'm a local business. My business is located right in front of the power plant. We have absolutely no problems with the powerplant. We're in favor of relicensing. I feel the same commitment they do as far as environmental safeguards They do it every day. We see it. We see security there. We see if anybody is out snooping around in front there, they send security over right away. And they have a lot of systems in place that protect the people.

[I] have lived and worked in and around the power plant all my life. I've hauled trash out of there when I was in high school. When the facility opened up, I hauled trash out of there. Now many years later, I built my business right next door. I have employees. None of them have any problems. Exelon is a great corporate neighbor. They're great for the neighbors there in the community. They do a lot for the community, donations and what have you. We all use electric. We all turn the lights on at night. We all need it. If you look around, there was two local coal-fired plants that were closed down recently. So we need a source. And Exelon is a good source. The power plant does a great job.

Years ago, when I was in high school, nobody wanted to build a house around the power plant. Nobody -- they were scared. Now they're building right next to it. And the reason they're doing that is because they see the safety track record. They have a safety track record there. They don't have any problems. There's no incidence there that I know that would make me feel uncomfortable about going into work.

I drink the water every day. And I repeat, I'm in favor of repermitting and thank you for your time.

Comment: 16-1-SR; I've worked for Limerick for about the past four years. And I do believe, based on my own experience that Limerick is operated in a way that's safe and protective of the environment. In my opinion, Exelon is a very good corporate citizen and operates 16 the plant in an environmentally-responsible manner.

Through my job at Limerick, I've had a lot of contact with staff from various regulatory agencies that issue Limerick operating permits and do inspections at Limerick on a regular basis. The comments and feedback that I've received from these agency staff have shown me that the agencies really appreciate a company like Exelon at Limerick that takes environmental responsibilities and environmental compliance seriously.

I support the approval of the Draft Environmental Impact Statement for Limerick's license 3 renewal application. Thanks.

Comment: 19-1-SR; I own a business called Organics and I operate it and live in Dowington. I'm extremely passionate about issues that relate to the environment as my company develops, manufactures and deploys materials in organic horticulture.

Thus, I'm in the forefront of environmental issues daily. And I do support the relicensing of Limerick Generating Station.

Comment: 22-1-SR; I believe that Limerick is safe both in its design and in that the employees come to work every day recognizing that nuclear technology is special and unique. I believe that Limerick is operated in a manner that protects the environment and that conservative decisionmaking is used at the station to ensure that we protect the plant, we protect the workers, we protect the public, and we protect the environment for future generations.

I support the approval of the Draft Environmental Impact Statement for renewal of Limerick's operating license.

I'm an administrator with the Pennsylvania Energy Alliance. Day in and day out, we educate Pennsylvanians about nuclear power as a clean, safe, and reliable source of energy for the future. One of the most rewarding parts of working with this coalition is getting out into the community to meet different people, so many of whom already support nuclear energy.

In early April, we were in this very room for Representative Mark Painter's Live Well Expo. Many attendees came by our table to learn about us and some even shared stories about Limerick Generating Station dating back to its origination when it was first opened.

Over the last six months, we've had two groups of fourth grade students from Brooke Elementary and Limerick Elementary nearby visit Limerick Generating Station. Nuclear energy is part of their current curriculum in school and the visit served as a perfect wrap up for the unit. The students were actively engaged and many asked great questions about the facility some of which were even interested in how to work there when they were older.

In addition, we were also present at the community information night that was held last week at Limerick Generating Station. Community events such as this continue to show that results from

our March 2012 poll still hold true that the public opinion of nuclear power is still very strong and positive near our State's five power plants.

As the need for energy continually increases, nuclear power proves to be the most reliable and environmentally friendly solution. Thank you.

Response: *These comments express support for nuclear power or the license renewal of LGS or both. The comments provide no new and significant information and no changes have been made in the SEIS in response to these comments.*

A.2.20 Surface Water (SW)

Comment: 2-9-SW; NRC must stop and delay all activities and actions related to Limerick Nuclear Plant's relicensing including finalizing this EIS until after several issues are addressed or take place.

…Number nine, Exelon installs filtration for Limerick's radioactive and toxic waste water discharge to reduce contamination of the primary drinking water source for almost two million Pennsylvanians.

And Number ten, Exelon installs filtration for toxic minewater pumped into a drinking water source in order to operate Limerick Nuclear Plant.

Comment: 2-22-SW; Facts Show Limerick Nuclear Plant's Environmental Threats Are Clearly "Large[,"] NOT "Small" As Inaccurately Claimed By NRC.

- Increases And Exemptions In Limerick Nuclear Plant's Air And Water Pollution Permits Should Be Sufficient For NRC To Conclude Limerick's Environmental Impacts Are "LARGE" NOT "SMALL[,"] Especially When Limerick Couldn't Meet Its Original Permit Limits Or Safe Limits In Place To Protect Public Health, And Exelon Won't Pay For Filtration to Reduce health Threats.

Comment: 2-32-SW; Major evidence related to Limerick's air and water pollution permit issues goes unaddressed.

Comment: 2-35-SW; THE SCHUYLKILL RIVER IS THE VITAL DRINKING WATER RESOURCE FOR ALMOST TWO MILLION PEOPLE FROM POTTSTOWN TO PHILADELPHIA. LIMERICK NUCLEAR PLANT IS SLOWLY BUT SURELY DESTROYING THE SCHUYLKILL RIVER.

LIMERICK NUCLEAR PLANT OPERATIONS THREATEN A DRINKING WATER DISASTER FOR THE ALMOST TWO MILLION PEOPLE FROM POTTSTOWN TO PHILADELPHIA WHO DEPEND ON THE SCHUYLKILL RIVER FOR THEIR WATER SUPPLY.

LIMERICK NUCLEAR PLANT OPERATIONS ARE CAUSING UNPRECEDENTED THREATS AND HARMS TO THE SCHUYLKILL RIVER INCLUDING FROM:

- Radioactive Discharges
- Toxic Discharges From Cooling Towers
- Heated Discharges
- Depletion Due To Cooling Towers Insatiable Water Use
- Toxic Mine Water Pumping To Operate Limerick

WATER RESOURCES ARE THREATENED ACROSS SIX COUNTIES

- Water Resources Threatened Across Six PA Counties From Potential Limerick Meltdowns.

Comment: 2-29-SW; ACE rejects NRC's inaccurate, absurd conclusions in its DRAFT EIS for Limerick Nuclear Plant.

10-26-11 ACE provided NRC with analyses that should have triggered investigations, not just consultations with agencies that allowed dangerous permit increases and exemptions in Limerick's pollution permits. NRC's conclusions show that NRC ignored and dismissed important documented evidence from several analyses related to Limerick's environment and health threats. These analyses were on:

- Exelon's Radiological Monitoring Reports to NRC
- Limerick's Title V air pollution permit renewal in 2009
- Limerick's NPDES permit for pollution discharges into the Schuylkill River
- Analyses of radioactive groundwater contamination

Comment: 2-36-SW; IT IS INDEFENSIBLE FOR NRC'S DRAFT EIS TO CLAIM LIMERICK'S UNPRECEDENTED THREATS AND HARM TO THE SCHUYLKILL RIVER ARE “SMALL[.”] THE EVIDENCE SHOWS OTHERWISE!

Historic evidence proves it was clear even before Limerick Nuclear Plant was constructed, that the Schuylkill River was unable to sustain Limerick's insatiable water use and abuse.

It is not clear that the river can continue to sustain the wide range of damages caused by Limerick operations even until Limerick's licenses expire in 2029. There is no guarantee there will be enough safe usable water for the almost two million people and other businesses that need the Schuylkill River for their water supply until 2029. If there is a meltdown requiring massive amounts of water, others will surely lose their water supply.

- NRC'S DRAFT EIS MUST BE CHANGED TO REFLECT REALITY. FACTS SHOULD BE CLEAR, EVEN TO NRC THAT THE SCHUYLKILL RIVER CANNOT SUSTAIN LIMERICK'S USE AND ABUSE UNTIL 2049.

Comment: 2-44-SW; A dangerous mix of massive toxic corrosive chemicals is discharged into the Schuylkill River from Limerick's cooling towers. Huge amounts of toxic chemicals are added to Limerick's cooling towers every day. Limerick uses at the site every day 94,293 to 192,614 pounds of toxic chemicals. [They] don't just disappear, but instead end up in air and water pollution releases from the site. Limerick uses Sodium Hypochlorite CHLORINE at the site - 16,000 to 58,000 lbs Per DAY - Chlorine is continuously discharged into the Schuylkill River with no continuous testing to determine the extent of harm. In fact, Limerick has just been given a permit exemption for the pollution that transports Limerick's cooling tower chlorine and other toxics into the river, unmeasured and unfiltered.

Comment: 2-45-SW; Limerick's discharges are violating Safe Drinking Water Standards for Total Dissolved Solids (TDS) (up to five times the safe level). TDS transports Limerick's radiation and cooling tower toxics into the river.

- To deal with continuous violations of Safe Standards, DEP EXEMPTED Limerick from a safe limit requirement, instead of requiring Exelon to filter the discharges.

- NRC is turning a blind eye to this enormous threat to public drinking water health risks and the eventual additional costs to water treatment systems and their customers.

Comment: 2-46-SW; Limerick Nuclear Plant has slowly but surely been depleting the Schuylkill River since it started operating in 1985. Limerick withdraws more than double the amount of water every day than is withdrawn for Pottstown, Phoenixville, and Norristown in total. Limerick only returns of that to the river. Even after supplementation, the Schuylkill River had record low flows by 1999.

Comment: 2-48-SW; Limerick's continuous heated discharges up to 110 degrees are regularly overheating the river with a temperature limit of 87 degrees. This jeopardizes the river ecosystem. Temperature restrictions for the river were just eliminated as requested by Exelon.

Comment: 2-49-SW; IT IS NOT CREDIBLE FOR NRC'S DRAFT EIS TO STATE SUCH ENORMOUS THREATS AND HARMS TO THE SCHU[YL]KILL RIVER ARE “SMALL” OR FOR NRC OFFICIALS TO CLAIM NRC IS NOT RESPONSIBLE TO ANALYZE THE ENVIRONMENTAL HARMS FROM LIMERICK'S WATER POLLUTION AND WATER USE PERMITS FOR LIMERICK'S ENVIRONMENTAL IMPACT STATEMENT.

Comment: 2-50-SW; THE LONGER LIMERICK OPERATES THE MORE RADIOACTIVE THE SCHUYLKILL RIVER WATER WILL BECOME AND THE MORE TOXIC THE RIVER WILL BECOME FROM LIMERICK'S MASSIVE COOLING TOWER TOXICS AND MASSIVE MINE WATER PUMPING. THE RIVER WILL BECOME MORE DEPLETED AND HEATED. THE MORE RISK THERE WILL BE FOR MELTDOWNS THAT CAN CAUSE TOTAL LOSS OF WATER RESOURCES FOR MILLIONS OF PEOPLE ACROSS SIX PA COUNTIES.

Comment: 2-51-SW; TO REDUCE FUTURE HEALTH THREATS TO MILLIONS OF PEOPLE, NRC SHOULD REQUIRE EXELON TO FILTER ITS RADIOACTIVE DISCHARGES, COOLING TOWER TOXICS, AND MINE WATER PUMPING AS A CONDITION OF RELICENSING.

Comment: 3-3-SW; Every day, 14.2 million gallons of very hot water leave the cooling towers loaded with dissolved solids and radiation. This hot brew goes down Pipe 001 to the diffuser and into the Schuylkill River. It enters the river at 110 degrees Fahrenheit a much higher temperature than the Schuylkill River limit of 87 degrees Fahrenheit. Over the course next 30 years, that will amount to about 150 billion gallons of polluted water going into the river.

Comment: 3-6-SW; They eliminate proper temperature controls and heat standards for the Schuylkill. They allow dirty Wadesville water into the Schuylkill.

Comment: 4-8-SW; Limerick is slowly, but surely destroying the drinking water source for almost two million people from Pottstown to Philadelphia. Limerick discharges a 14.2 million gallons of radioactive heated wastewater every day. Limerick drastically exceeds safe drinking water standards. Without filtration Limerick can't meet safe standards and Exelon won't pay to filter.

Comment: 4-10-SW; Cooling tower water used threatens drinking water supplies across six counties. Limerick withdraws more water than three towns -- doubles what three towns take in, Pottstown, Norristown, and Phoenixville. Cooling towers depleted the S[ch]uylkill River since 1985. By 1999, there were record low flows in the Schuylkill River. Since 2003, Exelon pumped billions of gallons of toxic unfiltered minewater into the river for Limerick operations. Decades of radioactive leaks and spills contaminated groundwater. Fifteen of wells detect beta radiation. Nine detect alphas. Three gamma. Four uranium. These radioactive leaks were never cleaned up and really this offensive EIS whitewash must[ ]be rejected by elected officials and the public.

Comment: 5-3-SW; Our drinking water supply is reduced and contaminated.

Comment: 5-8-SW; Water contamination. Limerick's toxic and radioactive waste water discharges cost water companies and their customers more money. Exelon should filter to[ ]protect public health and protect the water companies and the people who use their water downstream[.]

Comment: 7-7-SW; We shouldn't be faced with the depleting water supply because of Limerick's cooling towers or risk having no water if Limerick has an accident or a meltdown. Our drinking water could Exelon pumps toxic minewater into the river up to 80 times safe drinking water standards. The toxics don't magically disappear. They end up in our drinking water. dry up or become so radioactive we can't use it.

Comment: 7-9-SW; NRC dismissed serious threats to public drinking water from Limerick nuclear plant. NRC met with DEP and DRBC, but they just gave Limerick five-year permits to use and pollute our drinking water with dangerous loopholes and exemptions because Limerick can't meet safe drinking water standards or other protected limits. That didn't reduce our risks. Exelon should have been required to filter Limerick discharges and those from the minewater to protect our drinking water and public health. Limerick causes irreparable and irreversible damage to the river and then donates to a fund deceptively claiming they protect the river. Not one dime of that fund was ever spent to reduce Limerick's radioactive or other toxic discharges.

Comment: 17-1-SW; The water comes out from behind the Norristown Dam in Norristown which is the county seat where Pennsylvania's water comes from. And the first introduction that I had with Limerick had to do with a committee of the Norristown Boat Club, we were concerned about them boiling off all the water. And I was involved with the DRBC rules and regulations back to the original ones. And what the DRBC does is it controls consumptive use because Limerick can burn off a lot of our drinking water.

Comment: 23-1-SW; I also spent years worrying over the DRBC water augmentation request that dedicates the Schuylkill River to the production of nuclear power.

Comment: 26-5-SW; Limerick discharges of Total Dissolved Solids (TDS) into the Schuylkill River are up to five times Safe Drinking Water Standards. TDS transports radiation and cooling tower toxics into this vital drinking water source for almost two million people from Pottstown to Philadelphia. Cooling towers are depleting the river, even after supplementation with toxic unfiltered mine water and other sources.

Response: *These comments express concern in part over the water quality of the Schuylkill River and the impact of LGS water use and wastewater discharges. See also NRC's response to Comments 2-62-AM and 2-63-AM with respect to air quality issues and Comment 2-52-GW et al. regarding groundwater quality.*

Surface water resources at LGS, including the Schuylkill River, and the effects of plant operations on surface water hydrology and quality are presented in Sections 2.2.4 and 4.4 of the SEIS. In addition, Section 2.1.6 of the SEIS details the surface water sources relied upon by LGS and includes the sources of water used to augment low flows in the Schuylkill River. Section 2.1.7 further describes the surface water and groundwater sources used to support plant operations, the volumes of water used, and the regulatory conditions and associated regulatory agencies that govern the plant's water uses. These sections, as contained in this final SEIS, have been updated to reflect the DRBC's May 8, 2013, approval of a consolidated docket for Exelon governing surface and groundwater withdrawals by LGS and its effluent discharges to the Schuylkill River.

With respect to the comments regarding depletion of the Schuylkill River, the NRC's independent evaluation of LGS's consumptive use of surface water is presented in Section 4.4.2.1 of the SEIS. As described in Sections 2.1.7.1 and 4.4.2.1, the DRBC has imposed consumptive use limits on LGS's surface water withdrawals. During low river flows, and as prescribed by Exelon's approved consolidated docket, the DRBC limits the plant's normal consumptive withdrawals for two-unit full-power operation to no more than 12 percent of river flow to be protective of aquatic life and downstream water users. Under average flow conditions, consumptive water use by LGS amounts to about 3 percent of river flow.As stated in Section 4.4.2.1 based on the information and analysis presented, the NRC staff concludes that the impact on surface water resources and downstream water availability from consumptive water use by LGS, Units 1 and 2, during the license renewal term would be SMALL.

The docket issued by the DRBC for LGS also approves Exelon's water supply operation and maintenance plan for LGS which, in part, provides for the collection and analysis of data to ascertain Exelon's compliance with the terms of the docket. In accordance with the operation and maintenance plan, Exelon is specifically required to monitor and report the concentration of TDS discharged to the Schuylkill River via LGS's primary point source discharge structure (outfall 001). As indicated in the approved docket, this monitoring is intended to demonstrate that discharges from outfall 001 satisfy the DRBC's effluent limits and basin-wide water quality standards for TDS and, alternatively, to identify the need and basis for TDS-specific effluent limits on LGS.

Commenters also expressed concern about water quality degradation and standards, pollution sources, and chemical usage specifically attributable to operation of LGS and its effluent discharges to the Schuylkill River through its primary discharge structure (outfall 001). These discharges are regulated by, and subject to ambient water quality standards set by, the PDEP, in conjunction with the DRBC docket issued to Exelon. The DRBC is the agency responsible for setting Delaware River basinwide water quality standards for the protection of aquatic life and other beneficial uses, including use of basin waters as a public water supply. Point source discharges to surface waters including the Schuylkill River are regulated through the NPDES permitting process in accordance with the Federal Clean Water Act, as discussed in Section 2.2.4.2. For Pennsylvania, NPDES permit authority has been delegated by the EPA to the Pennsylvania DEP. Thus, the statutory and regulatory authority for setting water quality standards and permitting effluent discharges to surface waters rests with these agencies, and not the NRC.

LGS's current NPDES permit establishes effluent limits on various nonradiological contaminants, temperature, and cooling tower chemical additives, while prohibiting the introduction of some pollutants entirely. The permit also establishes usage rates for cooling tower chemical additives. The permit also stipulates that the release of radiological materials be in compliance with NRC regulations at 10 CFR 50, Appendix I. Following the DRBC's issuance of a final consolidated docket for LGS in May 2013, the Pennsylvania DEP is expected to issue a revised NPDES permit for LGS in the near future, as discussed in Section 2.1.7.1 of this final SEIS. In accordance with its statutory and regulatory authority, DEP will ultimately decide if additional or more stringent effluent limits on chemical and thermal discharges are appropriate. Although the Schuylkill River has historically been impacted by a range of activities as described in Section 2.2.4.2 and further described in Sections 4.12.2 and 4.12.3 (Cumulative Impacts) of this final SEIS, the main stem of the Schuylkill River in the vicinity of the LGS currently meets designated water quality standards and uses, including use as a source for public water supply.

Regarding radiological contaminants, Exelon maintains a radioactive effluent monitoring and a REMP at LGS to assess the radiological impact, if any, to its employees, the public, and the environment around the plant site. Exelon must annually submit radionuclide effluent release

reports to the NRC as required by 10 CFR 50.36a. The regulation requires nuclear power plants to annually submit a report that lists the types and quantities of radioactive effluents released into the environment as a requirement of each nuclear power plant's operating license. As further described in Section 4.9.2 of this SEIS, the REMP measures the aquatic, terrestrial, and atmospheric environment for radioactivity, as well as the ambient radiation. The REMP supplements the radioactive effluent monitoring program by verifying that any measurable concentrations of radioactive materials and levels of radiation in the environment are not higher than those calculated using the radioactive effluent release measurements and transport models. These reports are publicly available at http://www.nrc.gov/reactors/operating/ops-experience/tritium/plant-specific-reports/lim1-2.html.

The NRC staff's evaluation of the radiological impacts of LGS operation and its REMP are discussed in Section 4.9.2 of this SEIS. As part of its evaluation, the NRC staff, in part, reviewed Exelon's annual radiological environmental operating reports (REOP) for 2007 to 2012, which are submitted under the REMP, to look for any significant impacts to the environment or any unusual trends in the data. Such a timeframe provides a representative data set that covers a broad range of activities that occur at a nuclear power plant. Based on the review of the radiological environmental monitoring data, the staff found that there were no unusual and adverse trends, and there was no measurable impact to the offsite environment from LGS operations. Further, the NRC's ongoing Inspection Program periodically inspects Exelon's Radioactive Effluent Monitoring and REMP programs for compliance with NRC's radiation protection standards in 10 CFR Part 20. The NRC's inspection program evaluates the data for compliance with radiation protection standards. If the data were to show a noncompliance with requirements, the NRC would take appropriate enforcement action. Additional information for LGS can be found at http://www.nrc.gov/reactors/operating/ops-experience/tritium/plant-specific-reports/lim1-2.html.

Several commenters also expressed particular concern over the use of water diverted from the Wadesville Mine Pool to augment the flow of the Schuylkill River. The use of mine pool water and other diversion sources to augment surface water flows to support LGS operations are described in Sections 2.1.6 and 2.1.7 of the SEIS. The NRC staff's evaluation of the projected impacts on surface water resources of the continued operations of LGS during the license renewal term are presented in Section 4.4 of this SEIS. Regarding use of the Wadesville Mine Pool and other low flow augmentation sources, the DRBC, not the NRC, is responsible for regulating such activities. The consolidated docket for LGS approved by the DRBC in May 2013 includes provisions for the use of water from the Wadesville Mine Pool for flow augmentation in the Schuylkill River, subject to certain conditions. Most notably, the consolidated docket permits Exelon to use Wadesville Mine Pool as a flow augmentation source only as long as TDS concentrations in the Schuylkill River remain below 500 mg/L. The DRBC has specified monitoring requirements to verify compliance with all terms and conditions of the consolidated docket.

These comments do not present any new or significant information; therefore, no changes were made to the SEIS in response to these comments.

Comment: 2-47-SW; A meltdown at Limerick could require so much water that Exelon could take everyone's water supplies without their permission, from Schuylkill County, the Delaware River, the Schuylkill River and all its tributaries, and the groundwater from the residents and businesses surrounding Limerick.

Response: *This comment expresses concern over the potential water demand to respond to a severe accident at LGS. The focus of the environmental review as documented in this SEIS is to evaluate the various potential environmental impacts associated with the expected normal*

operation of LGS for an additional 20 years. In the event of the occurrence of a design-basis accident or emergency shutdown condition requiring water for emergency core cooling, no more surface water or groundwater would normally be required than is currently required for full-power two-unit operation. Nonetheless, in accordance with LGS's consolidated docket issued by the DRBC in May 2013 (DRBC 2013), Exelon is authorized to withdraw surface water and groundwater as necessary until the emergency is abated.

For license renewal, the NRC discharges its NEPA obligation to consider severe accidents mitigation through 10 CFR 51.53 (c)(3)(ii)(L) and Table B–1. In accordance with 10 CFR 51.53(c)(3)(ii)(L), the license renewal ERs must provide consideration of alternatives to mitigate severe accidents if the staff has not previously evaluated SAMAs for the applicant's plants in an environmental impact statement or related supplement or in an environmental assessment. LGS is a plant that had a previous SAMA documented in a NEPA document. The staff has previously performed a site-specific analysis of severe accident mitigation design alternatives ("SAMDA") in a NEPA document for LGS in the Final Environmental Statement Related to Operation of Limerick Generating Station, Units 1 and 2, NUREG-0974 Supplement 1 (ADAMS Accession No. ML112221A204)). Therefore, the applicant's license renewal ER for Limerick and the Staff's SEIS do not have to reassess the issue.

Under NEPA, the applicant and NRC must consider whether new and significant information affects environmental determination in the NRC's regulations, including the determination in 10 CFR 51.53(c)(3)(ii)(L) and Table B–1, that the agency need not reconsider SAMAs at license renewal if it has already done so in a NEPA document for the plant. New information is significant if it provides a seriously different picture of the impacts of the Federal action under consideration. The staff's evaluation of new and significant information for SAMAs is addressed in Section 5.3 of this SEIS.

This comment does not present any new or significant information; therefore, no changes were made to the SEIS.

Comment: 3-7-SW; They alter the river flow rate measurements for convenience[.]

Response: *This comment expresses concern over river flow rate measurements, although the exact nature of the concern is unclear. As described in Sections 2.1.7.1 and 4.4.2.1 of this SEIS, the DRBC has imposed consumptive use limits on LGS's surface water withdrawals. During low river flows on the Schuylkill River, and as prescribed by Exelon's approved consolidated docket, the DRBC limits the plant's normal consumptive withdrawals for two-unit full-power operation to no more than 12 percent of river flow to be protective of aquatic life and downstream water users. Under average flow conditions, consumptive water use by LGS amounts to about 3 percent of river flow. River flow is based on measured flow at specified river gaging stations maintained by the U.S. Geological Survey, as referenced in Sections 2.1.6 and 2.2.4 of this SEIS. The docket also approves Exelon's water supply operation and maintenance plan for LGS which, in part, provides for the collection and analysis of data to ascertain Exelon's compliance with the terms of the docket.*

This comment does not present any new or significant information; therefore, no changes were made to the SEIS.

Comment: 23-17-SW; Where is the pump house shown on [p.] 2-17?

Comment: 23-23-SW; [p.] 2-17 Where it this? Very vague.

Response: *These comments express confusion over the location of the pumphouse shown in Figure 2–8 in the draft SEIS. The pumphouse is situated on the east bank of the Schuylkill River just southwest of the LGS plant site. In Figure 2–8 of the SEIS, the Schuylkill Pumphouse*

is labeled with a pointer arrow to the structure. The facility is discussed in Section 2.1.6.1 of this SEIS. These comments provide no new and significant information; therefore, no changes were made to the SEIS.

Comment: 23-22-SW; P. 2-16 Line 11 "clay lined" how do you know it doesn't leak? In significant interface – how do we know? No info given?

Response: *This comment expresses concern about the integrity of the spray pond. As discussed in Section 2.1.6.4 of this SEIS, the spray pond is connected to the emergency service water system to supply cooling water to emergency equipment. Heated water is pumped to the pond where it is evaporatively cooled by the pond's spray nozzles or, under certain conditions, returned via the winter bypass lines. As noted in Section 2.2.5.1 of this SEIS, the absence of discernible groundwater mounding beneath the pond indicates that no significant leakage is occurring. As described in Exelon's Environmental Report (Exelon 2011), performance of the spray pond is monitoring and accumulated sediment accumulated sediment on the ponds clay liner is removed, when required, to maintain the storage volume of the pond in accordance with performance requirements. In addition, the NRC carries out periodic inspections of all safety-related facilities in compliance with its licensing and regulatory requirements. This comment provides no new and significant information; therefore, no changes were made to the SEIS.*

Comment: 28-4-SW; Additionally, one of the leading causes of water quality impairment in Schuylkill River watershed is related to stormwater runoff. Over the last 20 years stormwater management practices have evolved from peak flow attenuation to low impact development. Please include any information on if or how the facility will upgrade its stormwater management practices over the re-licensing period. EPA recommends the facility to consider upgrading its stormwater management practices to current standards.

Response: *EPA's comment expresses concern over the need for LGS to upgrade its stormwater management facilities and practices. NRC's authority does not extend to requiring operating nuclear plants to replace or modify their stormwater management systems to reduce impacts. Nonetheless, the NRC expects that each licensee will comply with all applicable Federal, State, and local permits that the licensee must obtain to operate its plant, including those that are required by the Clean Water Act and its implementing regulations. Discharges to surface waters including the Schuylkill River are regulated through the NPDES permitting process in accordance with the Federal Clean Water Act, as discussed in Section 2.2.4.2 of this SEIS. For Pennsylvania, NPDES permit authority has been delegated by the EPA to the Pennsylvania DEP. Thus, the statutory and regulatory authority for stormwater management rests with the DEP. Exelon's current NPDES permit does require that a Preparedness, Prevention, and Contingency Plan be maintained for the LGS site which requires the use of best management practices to reduce pollutants in stormwater discharges. Exelon currently has an NPDES permit renewal application before the Pennsylvania DEP, as referenced in Sections 2.1.7.1 and 2.2.4.2 of this SEIS. In accordance with its statutory and regulatory authority, DEP will ultimately decide if additional or more stringent controls on stormwater are appropriate.*

This comment does not present any new or significant information; therefore, no changes were made to the SEIS.

Comment: 31-3-SW; The Limerick Plant will depend upon river water for a longer period of time as a result of the license renewal. During low flow periods, additional quantities of water are released into the river from the Wadesville Mine and Still Creek Reservoir in Schuylkill County to compensate for the water withdrawn at the plant through a docket approved by the Delaware River Basin Commission (DRBC). Since the relicensing action would extend the time period of this flow augmentation system, continued monitoring and analysis of the river is vital to ensure that the water quality of the river is not impaired by the total dissolved solids in the

Wadesville water among other parameters. This is particularly important due to the role of the Schuylkill River, a state scenic river, which is an important regional water supply source and recreation area. If resumed use of the Delaware water diversion is anticipated, an evaluation of that system should be undertaken to ensure that the capacity is available in the conveyance system and that water quality objectives can be met for discharge into the East Branch of the Perkiomen Creek.

Response: *EPA's comment expresses concern in part over surface water diversions from supplemental water sources to support continued LGS operations and the need for water quality monitoring.*

The regulation of surface waters across the Commonwealth of Pennsylvania, including discharges regulated under the Clean Water Act and water quality monitoring and assessment, is within the regulatory authority of the PDEP.

The DRBC is the agency responsible for setting Delaware River basinwide water quality standards for the protection of aquatic life and other beneficial uses, including setting allocation limits on the use of basin waters for end uses. Thus, the statutory and regulatory authority for evaluating the long-term effects of the water diversion activities cited by EPA rests with these agencies, not the NRC. The NRC performs plant-specific reviews of the environmental impacts of license renewal in conformance with NEPA and the requirements of 10 CFR Part 51. Accordingly, surface water resources at LGS, including the Schuylkill River, and the effects of plant operations on surface water hydrology and quality are presented in Sections 2.2.4 and 4.4 of the SEIS. In addition, Section 2.1.6 of the SEIS details the surface water sources relied upon by LGS and includes the sources of water used to augment low flows in the Schuylkill River. Section 2.1.7 further describes the surface water and groundwater sources used to support plant operations, the volumes of water used, and the regulatory conditions and associated regulatory agencies that govern the plant's water uses. These sections, as contained in this final SEIS, have been updated to reflect the DRBC's May 8, 2013, approval of a consolidated docket for Exelon governing surface and groundwater withdrawals by LGS and its effluent discharges to the Schuylkill River.

NRC's independent evaluation of LGS's consumptive use of surface water is presented in Section 4.4.2.1 of the SEIS. As described in Sections 2.1.7.1 and 4.4.2.1, the DRBC has imposed consumptive use limits on LGS's surface water withdrawals. During low river flows, and as prescribed by Exelon's approved consolidated docket, the DRBC limits the plant's normal consumptive withdrawals for two-unit full-power operation to no more than 12 percent of river flow to be protective of aquatic life and downstream water users. Under average flow conditions, consumptive water use by LGS amounts to about 3 percent of river flow. Under the approved docket, it is expected that LGS operations will be able to increasingly rely upon augmented flows in the Schuylkill River from upstream sources, including Wadesville Mine Pool, and less on diversions from the Delaware River.

The docket issued by DRBC also approves Exelon's water supply operation and maintenance plan for LGS which, in part, provides for the collection and analysis of data to ascertain Exelon's compliance with the terms of the docket. In accordance with the operation and maintenance plan, Exelon is specifically required to monitor and report the concentration of TDS discharged to the Schuylkill River via LGS's primary point source discharge structure (outfall 001). As indicated in the approved docket, this monitoring is intended to demonstrate that discharges from LGS's primary outfall structure satisfy the DRBC's effluent limits and basinwide water quality standards for TDS and, alternatively, to identify the need and basis for TDS-specific effluent limits on LGS. The docket and operation and maintenance plan also govern the

operation of the East Branch Perkiomen Creek diversion and Perkiomen Creek intake to ensure that instream flow and water quality objectives are met.

This comment does not present any new or significant information; therefore, no changes were made to the SEIS.

Comment: 32-6-SW; The sentence in lines 34 to 35 on page 2-16 reads as follows: "The screens have 0.25-in. (0.64-cm) mesh openings designed to limit water approaching the screens to a velocity of 0.75 fps (0.23 m/s)." As Exelon explained in its March 27, 2012 response to the NRC's Request for Additional Information, item E1-7, the information in this sentence was based on initial design information provided during the LGS construction permit stage (in Section 3.4.3 of the LGS ER-CP) and subsequently reflected in the LGS FES-CP and ASLB Initial Decision of June Pumphouse design resulted in a decrease from 0.75 fps to 0.61 fps in design velocity for the as-built screens. This decrease is acknowledged in Section 4.2.4 of the LGS FES-OL, as well as in the DRBC Docket No. D-1969-210 CP-13 (p. 3, Sec. A.2.b), which was approved on May 8, 2013. Accordingly, Exelon requests that the sentence in lines 34 to 35 on page 2-16 be revised to read as follows: "The screens have 0.25-in. (0.64- cm) mesh openings designed to limit water approaching the screens to a velocity of ~~0.75 fps (0.23 m/s)~~ ***0.61 fps (0.19 m/s)***.

Response: *The NRC staff updated Section 2.1.6.1 of the SEIS to include the information in this comment.*

Comment: 32-11-SW; Page 2-23, Lines 2 to 3, Sections 2.1.7.1. Beginning after the words "and held a hearing on August 28, 2012" on line 3, insert the following sentence: "***On May 8, 2013, the DRBC unanimously approved the docket for water withdrawals by and discharges from the LGS.***"

The approved DRBC Docket No. D-1969-210 CP-13 is available on the DRBC website at the following URL: http://www.state.nj.us/drbc/library/documents/dockets/050713/1969-210CP-13.pdf[.]

Response: *The NRC staff updated Section 2.1.7.1 of this SEIS to include an updated discussion of the docket review process for LGS as well as the May 8, 2013, approval.*

Comment: 32-13-SW; Page 2-33, Lines 45-47, Sections 2.2.4.2. In lines 45 to 47 on page 2-33, the LGS DSEIS indicates that Exelon has not received any Notices of Violation, nonconformance notifications, or related infractions associated with the site's NPDES permits or related to other water quality matters within the past 5 years, based on a letter from Exelon t[o] NRC responding to an NRC request for additional information, dated February 28, 2012. Please note that the Pennsylvania Department of Environmental Protection ([PD]EP) issued a Notice of Violation (NOV) to LGS dated 03/06/2012. The NOV addressed external corrosion and pitting observed by [PD]EP on the outer shells of the Unit 1 and 2 Sulfuric Acid Aboveground Storage Tanks (DEP Tank Nos. 001A and 002A) during inspections that were performed in December 2011. LGS completed the required corrective actions, had the tanks re-inspected, and submitted a letter to the [PD]EP on 03/27/2012 documenting the corrective actions. At this time, there are no open actions with respect to the NOV, and no other NOVs have been received in the past 5 years.

Response: *The NRC staff updated Section 2.2.4.2 of this SEIS to include the information provided in the comment.*

Comment: 32-19-SW; The sentence in lines 20 to 22 on p. 4-4 indicates that NRC staff did not consider use of water from the Wadesville Mine Pool and the Still Creek Reservoir in its impact level determination because the final DRBC docket had not been approved and use of these

waters remained a demonstration project. Exelon recommends modifying the sentence based on DRBC's approval of Docket No. D-1969-210 CP-13 on May 8, 2013 Exelon recommends modifying the sentence based on DRBC's approval of Docket No. D-1969-210 CP-13 on May 8, 2013. The approved docket, which authorizes the Wadesville Mine Pool and Still Creek Reservoir as augmentation water sources for the Schuylkill River, is available on the DRBC Web site at the following URL:

http://www.state.nj.us/drbc/library/documents/dockets/050713/1969-210CP-13.pdf

Response: *The NRC staff updated Section 4.4.2.1 of this SEIS consistent with the May 8, 2013, docket approval by the DRBC.*

Comment: 32-20-SW; Because the DRBC made the demonstration project permanent by approving Docket No. D-1969-210 CP-13 on May 8, 2013, consider revising the sentence in lines 28 to 30 on page 4-4 as follows: "This trend toward an increasing reliance on augmented flows in the Schuylkill River would be expected to increase during the license renewal term ~~should the demonstration project continue or be made permanent by~~ ~~DRBC, as requested by Exelon~~."

Response: *The NRC staff updated Section 4.4.2.1 of this SEIS consistent with the May 8, 2013, docket approval by the DRBC.*

A.2.21 Terrestrial (TE)

Comment: 32-16-TE; Page 2-62, Lines 6 to 21, Section 2.2.8.3. On February 18, 2013, a bald eagle was observed and photographed hunting waterfowl in the LGS spray pond. This observation will be reported in the Limerick Corporate Lands for Learning application to be submitted to the Wildlife Habitat Council in late June 2013.

Response: *The NRC staff updated Section 2.2.8.3 of the SEIS to include the information in the comment.*

Comment: 32-25-TE; Page 4-50, Lines 15-22, Section 4.12.4. NRC's determination of MODERATE cumulative impacts on terrestrial resources is based on neighboring energy-producing facilities, habitat fragmentation from increased suburban development, agricultural runoff, nearby parks and recreation areas, and climate change, with no contribution for the minimal terrestrial impacts from continued LGS operation. Considering that ,of the neighboring energy-producing facilities, one closed 2 units in 2011 (Cromby), another closed 1 unit in 2012 (Eddystone), and one was withdrawn (Linfield Energy Center), Exelon suggests that SMALL to MODERATE may be a more appropriate cumulative impact level, similar to aquatic resources.

Response: *The NRC staff updated Section 4.12.4 and Appendix F to correct the errors noted in the comment regarding the operational status of neighboring energy-producing facilities. However, because the conclusion of "MODERATE" cumulative impacts on terrestrial resources is based on the effects of neighboring energy-producing facilities in addition to a number of other factors, the staff determined that these corrections would not change the overall conclusion of MODERATE. This comment does not provide any new and significant information; therefore, no changes were made to the SEIS.*

A.3 References

10 CFR Part 2. *Code of Federal Regulations*, Title 10, *Energy*, Part 2, "Rules of practice for domestic licensing proceedings and issuance of orders."

10 CFR Part 20. *Code of Federal Regulations*, Title 10, *Energy*, Part 20, "Standards for protection against radiation."

10 CFR Part 50. *Code of Federal Regulations*, Title 10, *Energy*, Part 50, "Domestic licensing of production and utilization facilities."

10 CFR Part 51. *Code of Federal Regulations*, Title 10, *Energy*, Part 51, "Environmental protection regulations for domestic licensing and related regulatory functions."

10 CFR Part 54. *Code of Federal Regulations*, Title 10, *Energy*, Part 54, "Requirements for renewal of operating licenses for nuclear power plants."

[DRBC] Delaware River Basin Commission. 2013. Docket No. D-1969-210 CP-13, Exelon Generation Company, LLC Limerick Generating Station and Surface Water Augmentation, Montgomery, Bucks, Schuylkill, Berks and Chester Counties, Pennsylvania. Approved May 8, 2013. Available at <http://www.nj.gov/drbc/library/documents/dockets/050713/1969-210CP-13.pdf> (accessed 11 September 2013).

[Exelon] Exelon Generation Company, LLC. 2011. *License Renewal Application, Limerick Generating Station, Units 1 and 2, Appendix E, Applicant's Environmental Report, Operating License Renewal Stage.* ADAMS No. ML11179A104.

[NEI] Nuclear Energy Institute, NEI 05-01, "Severe Accident Mitigation Alternatives (SAMA) Analysis" (NEI 2005) ADAMS No. ML060530203

[NEI] Nuclear Energy Institute. 2007. *Industry Ground Water Protection Initiative – Final Guidance Document*. Washington, DC: NEI. NEI 07-07 [Final]. August 2007. ADAMS No. ML091170588.

[NEPA] National Environmental Policy Act of 1969. 42 U.S.C. § 4321 et seq.

[NRC] U.S. Nuclear Regulatory Commission. 1989. *Final Environmental Statement Related to Operation of LGS, Units 1 and 2*. Washington, DC: NRC. NUREG-0974, Supplement 1. August 1989. ADAMS No. ML112221A204.[NRC] U.S. Nuclear Regulatory Commission. 1996. *Generic Environmental Impact Statement for License Renewal of Nuclear Plants*. Washington, DC: NRC. NUREG-1437, Volumes 1 and 2. ADAMS Nos. ML040690705 and ML040690738.

[NRC] U.S. Nuclear Regulatory Commission. 1999. Section 6.3 – Transportation, Table 9.1, Summary of findings on NEPA issues for license renewal of nuclear power plants. In: *Generic Environmental Impact Statement for License Renewal of Nuclear Plants.* Washington, DC: NRC. NUREG-1437, Volume 1, Addendum 1. August 1999. ADAMS No. ML040690720.

[NRC] U.S. Nuclear Regulatory Commission. 2011a. Official Transcript of Proceeding, "Limerick Generating Station License Renewal Public Meeting: Afternoon Session." ADAMS No. ML11287A207

[NRC] U.S. Nuclear Regulatory Commission. 2011b. Official Transcript of Proceeding, "Limerick Generating Station License Renewal Public Meeting: Evening Session." ADAMS No. ML11287A211

[NRC] U.S. Nuclear Regulatory Commission. 2011c. Memorandum and Order CLI-11-05 September 9, 2011 (ADAMS No. ML11252B059)

[NRC] U.S. Nuclear Regulatory Commission. 2011d. NRC News S-11-07, "Adequate Protection in Commission Decision-Making, Remarks of Commissioner William C. Ostendorff," NEI Lawyers Committee Meeting, March 7, 2011 (ADAMS No. ML11060377)

[NRC] U.S. Nuclear Regulatory Commission. 2013a. Generic Environmental Impact Statement for License Renewal of Nuclear Plants. Washington, DC: Office of Nuclear Reactor Regulation. NUREG 1437, Revision 1, Volumes 1, 2, and 3. June 2013. ADAMS Nos. ML13106A241, ML13106A242, and ML13106A244.

[NRC] U.S. Nuclear Regulatory Commission. 2013b. Memorandum and Order In the Matter of EXELON GENERATION COMPANY, LLC (Limerick Generating Station, Units 1 and 2) CLI-13-07 October 31, 2013 (ADAMS No. ML13304B417)

[NRC] U.S. Nuclear Regulatory Commission. 2013c. NRC Staff's Brief on the Board's Referred Ruling in LBP-13-1, Mar 13, 2013, *ML13072A804*

[NRC] U.S. Nuclear Regulatory Commission. 2013d. ASLB Order Denying Petition for Waiver of 10 C.F.R. § 51.53(c)(3)(ii)(L) and Referring this Decision to the Commission LBP-13-01 February 6, 2013 (ADAMS No. ML13037A477)

[NRC] U.S. Nuclear Regulatory Commission. 2013e. Official Transcript of Proceeding, “Limerick Generating Station License Renewal EIS Public Meeting: Afternoon Session.” ADAMS No. ML13172A027

[NRC] U.S. Nuclear Regulatory Commission. 2013f. Official Transcript of Proceeding, “Limerick Generating Station License Renewal EIS Public Meeting: Evening Session.” ADAMS No. ML13172A019.

[NRC] U.S. Nuclear Regulatory Commission. 2013g. “Environmental Impact Statement, Scoping Process, Summary Report.” March 2013. ADAMS No. ML12131A499.

[NRDC] Natural Resources Defense Council. 2012. Natural Resources Defense Council’s Petition, By Way Of Motion, For Waiver Of 10 C.F.R. § 51.53(C)(3)(Ii)(L) As Applied To Application For Renewal Of Licenses For Limerick Units 1 And 2, November 21, 2012. ADAMS No. ML12326A976

Scoping Comment Letters and Meeting Transcripts

The following pages contain the comments, identified by commenter designation and comment number, from letters and public scoping meeting transcripts.

1 unthinkable proportions. Whether a natural disaster
2 or terrorist attack occurs, by relicensing Limerick, 1-1-PA
3 NRC would in effect be placing Russian roulette with
4 the lives of more than eight million people. NRC must
5 close Limerick Nuclear Plant by 2029.
6 There is no way for either NRC or Exelon 1-2-OS
7 to ensure the safety of the environment or the
8 residents impacted by this plant. It cannot be made
9 fail safe. No other facility has the potential to
10 render the entire region uninhabitable, possibly for 1-3-OS
11 centuries as the result of an accident or terrorist
12 attack. This is the highest-risk facility that could
13 exist in any community in this country.
14 Current 40-year operating licenses expire
15 in 2024 and 2029. Why the rush to renew these 1-4-LR
16 licenses now?
17 We urge the NRC to say no to Exelon's
18 requested license renewals. The public was led to 1-5-OR
19 believe that Limerick's generators, fuel pools, and
20 miles of underground pipes and cables could operate 1-6-LR
21 safely for 40 years and then the facility would close.
22 Is Exelon fearful that the longer they wait the more
23 serious problems may arise?
24 After only 26 of 40 years, numerous signs 1-7-OS
25 of aging and risk have been identified. Corrosion,

1 deterioration, fatigue, cracking, thinning with loss
2 of material, loss of fracture toughness are all 1-7-OS Cont'd
3 documented in Exelon's own renewal application in the
4 aging management section. Instances of equipment
5 fatigue and cracking of vital equipment include the
6 reactor vessel and coolant system.
7 Aging equipment, after only 26 years
8 suggests that NRC should not just close the plant by 1-8-OS
9 2029, but also ramp up their oversight vigilance
10 during the remaining 18 years of the current license.
11 In the past few years, Limerick has had numerous
12 unplanned shutdowns suggesting there are already
13 significant problems. Three occurred in one week in
14 June 2011. Loss of coolant leaks and accidents at 1-9-OS
15 Limerick have already been documented. Serious
16 radioactive contamination could go undetected and
17 unreported for years from the corroding
18 infrastructure, much of it underground.
19 There have already been two near misses at
20 Limerick from 1996 to 2001.
21 This aging plant is an accident waiting to
22 happen. Large volumes, more than 6,000 assemblies 1-10-RW
23 weighing more than a thousand tons of highly
24 radioactive waste in the form of spent fuel rods are
25 stored in densely-packed pools, elevated five stories

1 above and outside the reinforced containment 1-10-RW Cont'd
2 structure. This plant will produce about two more
3 tons of dangerous spent fuel rods every year that it 1-11-RW
4 operates. Limerick, in addition, is now third on the
5 earthquake risk list for nuclear plants in the United 1-12-OS
6 States.
7 With loss of cooling water, Limerick's
8 fuel rods could heat up, self ignite, and burn in an
9 unstoppable fire with catastrophic results. Exelon
10 has not been required to spend the money to guard 1-13-PA
11 Limerick against terrorists, missiles, or air strikes
12 despite repeated requests to do so.
13 Dry cask storage and transport are also 1-14-RW
14 very dangerous alternatives. It's time to close
15 Limerick and stop producing such deadly waste for
16 which there is no safe solution. As long as Limerick
17 operates harms to us and our environment will
18 increase.
19 Their harmful environmental impacts are
20 unprecedented. At the conclusion of our 11-year
21 investigation of routine radiation releases and review
22 of permits for major air pollution and a variety of
23 dangerous water contamination issues, it's clear that
24 this energy is not just dirty, it is in fact filthy.
25 Evidence that we've compiled has addressed a wide

1 range of topics: routine radiation releases into the
2 air, radioactive wastewater discharges into the
3 Schuylkill River, radioactive groundwater
4 contamination, radioactive nuclides associated with
5 the plant detected in our soil, our sediment, our
6 vegetation, our fish, our water, and milk.
7 Research has confirmed radiation in our 1-15-HH
8 children's baby teeth in this community. Major air
9 pollution issues under health-based standards of the 1-16-AM
10 Clean Air Act, 32 individual sources listed. Drastic,
11 harmful increases permitted in particulate matter
12 known also as PM-10 from the cooling towers, other air
13 pollution increases also permitted.
14 Dangerous depletion of the Schuylkill
15 River, in and by itself, a singular reason to deny 1-17-SW
16 this permit. The Schuylkill is a vital drinking water
17 source for nearly two million people from Pottstown to
18 Philadelphia. It is being depleted and contaminated
19 every day that this plant operates.
20 Alarming cancer increases that have been
21 well documented in this community repeatedly far 1-18-HH
22 higher than national and state averages after Limerick
23 started operating until the late 1990s. The
24 findings of our investigation lead us to conclude that
25 this plant is in common language a recipe for

disaster.

While NRC is required to prepare a supplement to the Limerick Environmental Impact Statement for license renewal, we have little confidence in the process based on NRC's regulatory history. It would be difficult to enumerate a short list, so I'm going to rely on written documents. 1-19-LR

There are critics of the NRC out there who have done a much better job than we have of generating such a list, most notably a scathing indictment by the Associated Press. I'm not going to re-enumerate that information.

It's long past time for the NRC to summon the courage to do the right thing in our judgment and actually protect the environment and the public, rather than the industry. 1-20-OR

Today, I am going to be submitting on the record summary packets of our research on Limerick's major air pollution, harms to the Schuylkill River, radioactive groundwater contamination, links between Limerick's radiation and our elevated cancers in this community and how Limerick's nuclear power can, in fact, be replaced with safer sources today.

Based on the compelling body of evidence of environmental harms to date and the enormous 1-21-OR

1-21-OR Cont'd

1 increased population in proximity to this facility,
2 Limerick Nuclear Plant must be closed by 2029.
3 There is no amount of energy production that is
4 worth risking the lives of so many people. Thank you
5 very much.
6 (Applause.)
7 FACILITATOR BARKLEY: Thank you, sir.
8 MR. MAGUIRE: Good afternoon. My name is
9 Bill Maguire and I am the site vice president at
10 Limerick Generating Station. And I have overall
11 responsibility for the safe and reliable operation of
12 the facility.
13 I have been working in the nuclear power
14 industry for 25 years and my career began at the
15 Limerick Generating Station as an engineer. I
16 continued with a license to be a licensed senior
17 reactor operator supervisor in the operations
18 organization and was the on-shift senior manager of
19 that facility for many years.
20 I have also worked at a few other nuclear
21 stations across the country and before rejoining
22 Limerick as the site vice president in May of 2010, I
23 was the site vice president at the Peach Bottom Atomic
24 Power Station in southeastern Pennsylvania in York
25 County.

1 Operating Limerick Generating Station
2 safely and reliably is a responsibility that everyone
3 at the power station takes very seriously. We
4 understand our obligation to the community, to the
5 environment, and to each other to operate the plant
6 safely.
7 A key component of a thriving community
8 like ours is the availability of safe, clean, and
9 reliable electricity. And as we look into the future
10 for the power needs of Pennsylvania and the United
11 States as a whole, we can see the increasing demand
12 for this very important resource. 2-1-SR
13 At the same time, there's a growing
14 concern about greenhouse gases and climate change that
15 is a result of burning fossil fuels. To help meet
16 that growing power demand and to help keep our
17 environment clean, Exelon has applied to the U.S.
18 Nuclear Regulatory Commission for a 20-year extension
19 to the plant's operating license. Limerick's current
20 license for Unit 1 will expire in 2024 and Unit 2 in
21 2029. With license renewal, Limerick can provide our
22 region with clean power through 2049.
23 We understand our special obligation to
24 operate the plant safely and reliably and to maintain
25 a close relationship with our neighbors. We pledge to

1 continue that special trust as we operate the plant 2-1-SR Cont'd
2 well into the future.
3 The 104 nuclear reactors in the United
4 States provide roughly 20 percent of our nation's
5 electricity. More than 70 reactors nationwide have
6 already received approval from the Nuclear Regulatory
7 Commission for a 20-year license extension including
8 the Peach Bottom Atomic Power Station in York County.
9 Limerick Generating Station operates in a
10 manner that preserves the environment. The plant
11 produces almost no greenhouse gases. The plant
12 conducts approximately 1700 tests annually on air,
13 water, fish, soil, cow's milk, and other food products
14 to measure for environmental impact. We also maintain
15 a chain of radiation monitors surrounding the plant.
16 In 2005, the environmental management
17 systems at Limerick Generating Station achieved
18 certification under the strict criterion of the
19 International Organization for Standardization, ISO.
20 This certification is known as ISO 14001, a common
21 industry reference for the environmental
22 certification. The ISO 14001 certification requires a
23 commitment to excellence to prevent pollution and to
24 ensure continuous improvement in environmental areas.
25 In 2010, the Wildlife Habitat Council

1 recognized Limerick Generating Station's commitment to
2 environmental stewardship by awarding us the Wildlife
3 at Work Certification. This distinction was awarded
4 to Limerick Generating Station for our commitment
5 towards establishing long-term wildlife habitat
6 enhancements that provided undisturbed habitats with
7 food, water, cover, and space for animal species
8 living on the plant station's landscape.
9 To ensure Limerick continues to operate
10 safely for years to come, Exelon is investing in
11 upgrades to plant equipment. Since 2010, Exelon has
12 invested more than $200 million into the plant
13 including installation of new safety equipment, new
14 electrical cables, new valves, and refurbishing the
15 cooling towers. In addition, Limerick has made more
16 than $40 million in physical security upgrades since
17 2001.
18 Our investment in the future does not stop
19 with equipment. We have hired and trained over 100
20 new employees over the last three years, mostly coming
21 from our native region here. We maintain a steady
22 workforce of approximately 850 people and during our
23 annual maintenance and refueling outages, we bring in
24 between 1500 and 2000 temporary workers that provide a
25 boost to our local economy. Hiring and

1 retaining top talent is a key priority for Limerick
2 Generating Station.
3 Over the past 25 years, Limerick has been
4 one of the best performing and most reliable
5 generating stations in the nuclear power industry.
6 During that time, the plant has set several records
7 for continuous days of operation and has been
8 recognized by the industry for our reliable operation.
9 In March 2010, Limerick completed a successful run of
10 727 continuous days for our Unit 1 plant. This
11 represented the second longest continuous run for a
12 boiling water reactor in the United States.
13 While we do not set out to break records,
14 continuous operations are on indicator of the
15 excellent human performance and equipment reliability
16 that Limerick strikes for every day.
17 We also take pride in our investments in
18 the community. In 2010, Limerick donated more than
19 $600,000 to the community in contributions to the
20 United Way, fire and ambulance companies, educational
21 health and youth organizations. And many of our
22 employees serve as volunteers in the local communities
23 around the plant.
24 In conclusion, Limerick Generating Station
25 looks forward to working with the Nuclear Regulatory

1 Commission as you review our license renewal. I
2 appreciate the opportunity to speak with you this
3 afternoon. Thank you.
4 FACILITATOR BARKLEY: Thanks, Bill.
5 (Applause.)
6 FACILITATOR BARKLEY: Representative
7 Quigley.
8 REP. QUIGLEY: Good afternoon, my name is
9 State Representative Tom Quigley. I represent the
10 146th District here of which lower Pottsville is a
11 party of that district, so I want to welcome the NRC
12 here today to the beautiful Sunnybrook Ballroom for
13 this meeting and thank them for coming out to listen
14 to the public and take commentary.
15 I'm here today to voice my strong support 3-1-SR
16 for the relicensing of the Limerick Generating
17 Station. I wanted to touch on a couple points of why
18 I feel it is important for this facility to be
19 relicensed.
20 First is the amount of electricity that is
21 produced by this facility. One of the things that
22 myself and my colleagues in Harrisburg hear
23 consistently from businesses and the Commonwealth and
24 our citizens is the demand for energy and electricity
25 now and more importantly what that demand is going to

1 be in the future.
2 Right now this facility generates enough
3 electricity for two millions homes and without
4 producing some of the greenhouse gases that we hear so
5 much about that could be produced by coal, natural
6 gas, or oil. And I'm going to put a caveat in there
7 for my good friends out in the western part of the
8 state where coal is a big part of the Pennsylvania
9 economy and I'm suggesting that this be done to the
10 exclusion of coal and nevertheless, some of the
11 technologies that they're developing out there are
12 also important for that industry and important for the
13 Commonwealth of Pennsylvania.
14 Again, one of the concerns we hear
15 consistently from businesses is how can we come here
16 into Pennsylvania with the infrastructure being what
17 it is which needs to be improved for the transmission
18 of the electricity, but more importantly the
19 generation of that electricity?
20 Number two, I think is important is the
21 jobs and overall economy. Again, in these tough
22 economic times that we're facing here in the
23 Commonwealth of Pennsylvania and also in this nation,
24 one of the top issues that we hear consistently about
25 is jobs.

3-1-SR Cont'd

1 And as was mentioned by the site vice
2 president, over 860 people are employed here with an
3 annual payroll of $75 million. The direct impact that
4 is to the Commonwealth of Pennsylvania, of course, is
5 realized through the state income tax and also all of
6 these local municipalities most of them enact an
7 earned income tax which again sustains their townships
8 as well as their respective school districts. To have
9 that taken away I think would have an even more
10 dramatic impact on our local economy.
11 As was mentioned the impact for the local
12 area here, the temporary workers who show up here
13 during the outages and the refueling, there's already
14 been two hotels that have sprung up along the 422
15 corridor with another one planned right up here at the
16 Sanatoga area. Again, more jobs and more economic
17 growth here for our communities.
18 Thirdly, I want to talk about the
19 communication that I've experienced in the seven years
20 that I've been in office with Exelon and with their
21 Government Affairs people as well as with their site
22 people. I've been on the site three times, twice for
23 a tour and one to make a presentation during an
24 anniversary of the facility. And I have to say that
25 it is a very secure area. I know a lot of people are

3-1-SR Cont'd

1 concerned about terrorism attacks or people being on
2 the property. But unless you've actually gone over
3 there and gone through a tour, seeing how things are
4 set up, seeing the armed guards there, seeing the
5 security measures that are in place, I think you come
6 away much more relieved with that. And I'm able to
7 speak to my constituents more affirmatively about the
8 safety and security of the facility.

3-1-SR Cont'd

9 Any time that there's been the slightest
10 occurrence there, whether it will be a couple times a
11 hunter has wandered onto the property where the
12 authorities were called, the Government Affairs people
13 at Exelon are on the phone to me or with an email
14 right away to let me know what's happening before the
15 word gets out to the media or to the press. So
16 they're always very well prepared in their
17 explanations, not only of things that happen at the
18 plant itself, but also incidents and issues that occur
19 around the country and around the world.
20 Obviously, what took place in Japan with
21 the incident over there, they were on the phone with
22 me and met with me a few times to explain what took
23 place over there and how the safeguards are being put
24 in place here so that doesn't happen at this facility.
25 It was mentioned earlier the dry cask

1 storage where the spent fuel rods are now stored
2 outside in a dry cask storage facility. When that was
3 proposed back in 2005-2006, the Generating Station
4 held two open houses that were very well attended. I
5 went to both of them where they had people on there to
6 explain to the people what exactly was taking place
7 with this dry cask storage, why it was necessary. A
8 lot of questions and answers back and forth and I
9 think a lot of the people came away better informed
10 about that process.
11 Just recently at an open house, the site
12 VP who just spoke, Bill Maguire, came out to give some
13 initial comments and wound up spending the full hour
14 in an impromptu question and answer session and not
15 again just planted questions, a lot of tough
16 questions. And I think again the people came away
17 feeling confident in the openness and the transparency
18 that was displayed in that question and answer
19 session.
20 Another point of that is for relicensing
21 for the overall environment here is the good corporate
22 citizenship that the Generating Station has exhibited.
23 As was mentioned by Bill, some of the charitable
24 contributions that have gone on, not only for the host
25 community of Limerick, but also for the surrounding

1 areas. I attended a few dedication services where
2 they provided money to the Upper Providence Elementary
3 School and the Limerick Elementary School for an
4 outside environmental classroom.
5 One of the things we talk about as
6 political leaders, and I'm on the House Education
7 Committee, is the need for our children to be educated
8 particularly in the sciences and given these budget
9 constraints that we're operating under, both the
10 school districts and the Commonwealth, it's good to
11 see a corporate citizen stepping up to the plate and
12 providing that financial support, particularly in the
13 area of science. They've also partnered with the
14 Montgomery County Community College to provide
15 assistance in support for an associate degree in
16 nuclear engineering technology.
17 Again, we hear so much about our students
18 here not being well versed in technology and
19 engineering and things of that nature. So again,
20 stepping up to the plate to provide that assistance
21 when, in fact, perhaps in these tough budget times
22 where the government might not be able to do that.
23 Last, I want to talk about overall public
24 opinion and safety issues. One of the things that I
25 looked at when I talk about safety and the feeling of

1 comfort that people have here is how many of the
2 people who work at that plant live within the ten-mile
3 radius of the facility? And I asked that question
4 when I first was elected in 2004 and I just asked it
5 again in preparation for this hearing and 563
6 employees live within the ten-mile radius.
7 The population growth in my District in
8 the past ten years, we're getting ready to redraw our
9 lines based on the 2010 Census, so I broke it down by
10 township as to how much the population has increased
11 in those areas: Limerick Township, increasing by 33.5
12 percent; Upper Pottsgrove by 29.5; Royersford Borough,
13 where I live, 11.9; Lower Pottsgrove, 7; Pottstown, 2;
14 now this is a little bit skewed, but I have a small
15 piece of New Hanover Township which actually increased
16 by 54 percent.
17 When you look at the public opinion, and
18 again, we get calls on a lot of different issues and
19 as I mentioned that dry cask storage issue. Back
20 then, at the same time that that issue was being
21 rolled out to the public, Boyd Gaming had purchased a
22 property next to our plant was getting ready to apply
23 -- had applied for a license, casino license. At that
24 time, my office had received 2 calls in regard to the
25 dry cask storage project, over 200 calls regarding the

1 casino application. So at the time, it appeared
2 people were more concerned about the prospect of a
3 casino being in their neighborhood than they were a
4 dry cask storage facility.
5 And lastly, as some of you heard, there is
6 a proposal right now to put a hold on Route 422. And
7 again, in the past six months with the incidents in
8 Japan, with the current earthquake we had here, with
9 the AP story telling you how these plants are all
10 falling apart, I received two calls regarding that one
11 where they could get the KI pills, one where they
12 could -- what was the evacuation plan for that, and
13 more calls and emails regarding the proposed 422. So
14 again, it appears that the constituents and the 146th,
15 they're more concerned about the prospect of paying a
16 toll to ride of 422 than they are about the nuclear
17 power plant issues.
18 So again, I strongly support the
19 relicensing of this for the reasons I mentioned.
20 Thank you.
21 (Applause.)
22 FACILITATOR BARKLEY: Thank you,
23 Representative Quigley.
24 The next three people I'd like to call,
25 first is Lorraine Ruppe, private citizen; and the

1 next, Michael Gallagher of Exelon; and finally, I'd
2 like to call Dr. Fred Winter after that.
3 MS. RUPPE: Hi, my name is Lorraine Ruppe.
4 I am speaking here today to represent the children
5 and future generations, especially in our community.
6 Residents are fearful about the possibility of
7 disasters here in light of Fukushima in March 2011 and
8 since the earthquake and Hurricane Irene in August
9 2011 affecting our area. Climate changes, etcetera,
10 are causing disasters everywhere and continuing to get
11 worse.
12 Increasing floods, droughts, earthquakes,
13 tornados have made us all feel insecure, making
14 nuclear power increasingly risky, especially with the
15 Limerick plant basically in our backyards. Any
16 earthquake that comes through this area could be a
17 possible Fukushima, Chernobyl or Three Mile Island
18 which reminds me, four months have passed since the
19 NRC failed to get back to me when I asked how close
20 the Remapo fault line is to the Limerick nuclear
21 reactors? Maybe I can get an answer today.
22 Indian Point nuke plant was sketched as a
23 possible terrorist target in reference to 9/11
24 attacks. A suspected terrorist worked at Limerick for
25 years without the industry knowing it. How scary is

4-1-PA

4-2-GE

4-3-OS

1 that?

2 The Pacific Ocean is now severely 4-4-OS
3 irradiated by Fukushima. Radiation impacts of
4 Fukushima equalled over 20 Hiroshima bombs when I last
5 researched. Our drinking and bathing water here is
6 being continuously polluted by Limerick every day,
7 24/7 for years with radiation and unfiltered toxic
8 contaminated mine water, thanks to the NRC and Exelon. 4-5-SW
9 This is disgusting.
10 Most of us have to depend on the water,
11 especially for bathing. Some of us pay extra for
12 water filtration or drink bottled water because we are
13 afraid to drink from the Schuylkill and because it
14 tastes really bad now. Imagine how toxic it would be
15 18 plus years from now if there was even any water
16 left.
17 There has been increased particulate
18 matter in the air and other toxics from Limerick 4-6-HH
19 causing increased asthma, heart attacks, and strokes.
20 And to add insult to injury, Limerick was granted a
21 permit to allow an eight-fold increase in air
22 pollution since 2009. Cancer rates in our area have
23 skyrocketed since Limerick has been up and running in
24 the '80s and rates have steadily increased.
25 The Toothfairy Project showed high levels 4-7-HH

of strontium 90, a radionuclide in baby teeth of children nearest to nuke plants. Baby teeth near Limerick plant had the highest levels in the whole United States. This stuff and God knows what else is in our bodies now thanks to a Nuclear Regulatory Commission that to put it nicely is less than enthusiastic about protecting us. 4-7-HH Cont'd

Solar wind, geothermal, ocean thermal, energy conservation and efficiency are now cheaper than nuclear power, along with being truly clean and safe. The Department of Energy 2006 report stated solar alone could provide 55 times our entire nation's energy needs which leads me to a point, there have been numerous studies proving the many dangerous and deadly consequences of nuclear power. There's no denying the massive devastation it has already caused and will continue to cause indefinitely, but the industry still goes on in their trance-like, indifferent fashion as if everything is safe and wonderful and will continue to be 18 plus years from now or until 2049 for our community. This is what really scares us the most. 4-8-AL

The NRC has turned into a culture of secrecy, hiding the dangers and sweeping the problems under the rug. The industry's addiction to money and

power has blinded them to moral life and death issues and facts set right in front of their faces. But my big question of the day is why is Exelon applying for an extension 18 years ahead of time? Thank you. 4-9-LR

(Applause.)

FACILITATOR BARKLEY: Thank you, Lorraine. Mike?

MR. GALLAGHER: Good afternoon. My name is Mike Gallagher and I'm the Vice President of License Renewal for Exelon. I have overall responsibility for the Limerick Generating Station license renewal application.

Exelon has a great deal of experience with license renewal, as we have already obtained the renewed licenses for our Peach Bottom and our TMI plants in Pennsylvania, our Oyster Creek plant in New Jersey, and our Dresden and Quad Cities plants in Illinois.

Just briefly about myself. I've been working in the nuclear power industry for 30 years. I was a licensed senior operator and plant manager at Limerick and I worked at two other nuclear plants and our corporate offices.

Mr. Maguire, the site vice president for Limerick spoke about reasons for renewing the license

for Limerick. I'd like to speak briefly about the process for preparing this license renewal application and the amount of work and engineering analysis that was put into preparing the application.

Because the license Generating Station can be operated safely and reliably, Exelon decided to pursue license renewal for Limerick. Limerick is a very clean energy source which produces no greenhouse gas emissions. Limerick is also good for the economy in that it lowers market prices on electricity for the citizens of Pennsylvania to the tune of $880 million per year. 5-1-SR

So in 2009, we announced our intention to seek license renewal for Limerick. Later that year, we started the work necessary to prepare the application. After over two years of work, we submitted the application to the Nuclear Regulatory Commission on June 22, 2011. The application, as Lisa had mentioned, when you print it out it's about 2100 pages. And when you put it in the binders it's three large binders. It's a huge amount of information. But that only represents a small part of the work that was done for the engineering analysis to prepare this application.

The total amount of engineering analysis,

1 if we printed it all out would be about 290 binders of
2 information. We invested over 60,000 manhours of
3 engineering work. Once we completed our engineering
4 work to prepare the application, we brought in experts
5 from outside Exelon to review the application to
6 ensure that it was complete, thorough and accurate.
7 Our total cost to prepare the application and get this
8 application reviewed by the NRC will be about $30
9 million.
10 There are two different parts of our
11 application, the safety review and the environmental
12 review. For the safety review, we took an in-depth
13 look at the history and the condition of the safety
14 equipment in the plant. We did that to determine
15 whether the necessary maintenance was being performed
16 on that equipment and to make sure that the equipment
17 will be able to operate when it's needed, not only for
18 today, but also for an additional 20 years of 5-2-OS
19 operation.
20 When you look back at Limerick, when it
21 was built, all the equipment was new. It was
22 thoroughly tested to make sure it would perform
23 properly, but like anything else equipment does age.
24 That doesn't mean it won't work, but it does age and
25 certain activities need to be done to the equipment.

1 So we perform preventive maintenance. Sometimes we
2 refurbish the equipment. Some equipment is replaced.
3 There may be modifications done to upgrade the
4 equipment in the plant and in fact, as Bill Maguire
5 has stated, Limerick had spent over $200 million in
6 the last couple years alone to improve and modernize
7 the equipment and enhance plant operations and safety.
8 We also then reviewed calculations that 5-2-OS Cont'd
9 were performed as part of the original design of the
10 plant that were done to ensure that the plant could
11 operate safely for 40 years. We analyzed those
12 calculations and were able to confirm that the plant
13 would be able to operate safely for 60 years.
14 Overall, our conclusion from our engineering review
15 was that Limerick could operate safely for up to 60
16 years.
17 We also took a look at the environmental
18 impacts of continuing to operate Limerick. We looked
19 at all the impacts of continued impact of the plant on
20 the environment. Our conclusion is that impacts on
21 the environment are small and I use the term small in
22 the sense that is in the regulation. The regulation
23 defines small as environmental effects are not
24 detectable or are minor.
25 We also reviewed the alternatives if 5-3-AL

1 Limerick would not have its license renewed and
2 another source of electric generation would need to be
3 installed either here on site or someplace else to
4 generate the replacement electricity. We concluded
5 that any other means of generating the replacement
6 electricity would have more of an impact on the
7 environment than continued operation of Limerick. For
8 instance, if Limerick could be replaced by a wind
9 generation facility, the wind form would have to
10 occupy between 10 and 40 percent of all the land in
11 the state of Delaware and that would have a huge
12 impact on the land. If a solar facility could replace
13 Limerick, it would need to cover 32 to 50 percent of
14 the entire land area of Montgomery County.

5-3-AL Cont'd

15 In conclusion, we operate Limerick safely
16 and we can continue to operate it safely for an
17 additional 20 years. Limerick will provide
18 approximately 2340 megawatts of base-load generation
19 that's not only safe, but it's clean, reliable and
20 economical.

5-4-SR

21 Continued operation of Limerick will
22 benefit this community, the Commonwealth of
23 Pennsylvania and our nation. Thanks for giving me the
24 time for this. Thank you.
25 (Applause.)

1 FACILITATOR BARKLEY: Thank you, Mike.
2 Dr. Winter?
3 DR. WINTER: Good afternoon. Thanks for
4 letting me speak. We have heard a lot of pros and
5 cons, haven't we? And it's hard to make a decision
6 that's for sure. But let me get going here.
7 As a physician practicing radiology for
8 over 50 years, I still have strong concern about
9 cancer sensitivities from harmful radiation exposures,
10 naturally. My medical colleagues share the same
11 concerns because we have seen our cancer rates
12 increase since the Limerick power plant started, 6-1-HH
13 especially thyroid cancer. It jumped to 78 percent
14 higher here than the national average. And some of
15 the people I talked to, this is because people are
16 aging more now, getting older, so there are more
17 cancers. But that's not true because in other areas
18 similar to our area in Pottstown, they're not nearly
19 getting the thyroid cancers that we are. This has
20 been well established by the state.
21 You wonder why some of our medical and
22 cancer fundraisers haven't reacted with more
23 responsibility in order to stop this. They're making
24 a lot of money, but not taking much effort to prevent
25 environmental damage.

1 Yes, we are creating our own form of
2 terrorism. Now that sounds kind of funny, doesn't it?
3 But allowing any harmful environmental events to
4 occur, we are allowing our own form of terrorism, just
5 like foreign people would come in here.
6 Having attended a Hiroshima, Japan atom
7 bomb clinic right after World War II, naturally I had
8 a chance to see the worst results of harmful
9 radiation. All those little kids I saw who only lived
10 for a few days, it left me with a very sad memory. Of 6-2-HH
11 course, what is happening here will be taking much
12 longer, but it sure is not good.
13 I don't know whether you've heard that
14 some scientists are already predicting that -- I'm
15 sorry to tell you this, but nuclear energy has the
16 capacity of destroying mankind. It may take about 100
17 years, but our whole world is exposed to the harmful
18 effects, maybe not so much here in the United States,
19 but the whole world can be affected.
20 Of course, what is happening here will be
21 taking much longer, but it is sure not good news. 6-3-PA
22 Besides harmful power plant exposures, we have
23 environmental disasters and a concern about our nearby
24 earthquake fault and others in the eastern U.S.,
25 especially one near New York City. And then there are

1 the radioactive spent fuel deadly waste material 6-4-OS
2 sitting around, supposedly protected. We can't
3 control the use of nuclear power in the rest of the
4 world, but can keep America safer and cleaner here.
5 So please, ask your politicians, reliable 6-5-OR
6 politicians to close the Limerick power plant. Let's
7 save America for our kids and descendants. I hope you
8 will take my concerns seriously. And thank you for
9 listening.
10 (Applause.)
11 FACILITATOR BARKLEY: Okay, thank you, Dr.
12 Winter. The next three people I'd like to call is Tom
13 Neafcy of Limerick Township, followed by Dr. Anita
14 Baly, and then Tim Fenchel of the Schuylkill River
15 Heritage Foundation.
16 MR. NEAFCY: Good afternoon, thank you.
17 My name is Tom Neafcy. I'm the Chairman of Limerick
18 Township Board of Supervisors and I want to thank you
19 for this opportunity to speak at this forum today.
20 As the largest private employer in the
21 region, the Board is thankful for the 860 jobs that
22 Exelon provides, the positive impact of their 7-1-SR
23 operation, the vitality of our local community. The
24 community and local economy are enhanced by the needed
25 services provided by the township, which includes the

1 roadway network maintained by our Limerick Township
2 Public Works, public safety provided by the Limerick
3 and Linfield Fire Companies, and our local emergency
4 medical response, our public parks, our recreation
5 facilities and also the police protection that's
6 provided by Limerick's 21 sworn officers.
7 Because of Limerick Generating Station's
8 location within our borders,the Limerick Township
9 Police Department is the only municipal police
10 department in Pennsylvania with the primary
11 jurisdiction over Tier 1 critical infrastructure. 7-1-SR Cont'sd
12 This Board prides itself on the services provided
13 directly both to the residents and the businesses of
14 this community and the township's ability to maintain
15 those current levels of service during these difficult
16 economic downturns. We are thankful for the
17 generosity of the Limerick generating plant and Exelon
18 for being good corporate neighbors and the assistance
19 they provide to the community. Without their
20 financial assistance that impact to provide those
21 services to the community would fall squarely on the
22 backs of the taxpayers. They assist in our fire
23 companies. They have been corporate sponsors of our
24 Limerick Community Days. And we are confident that
25 Limerick generating facility and Exelon will continue

1 that support in the future and be our good corporate
2 neighbor.
3 We also are in support of the relicensing
4 of the Limerick nuclear plant. Thank you.
5 (Applause.)
6 FACILITATOR BARKLEY: Dr. Baly?
7 DR. BALY: Good afternoon. I'm Anita
8 Baly. I'm a retired Lutheran pastor and my concern
9 today is with the speed at which this application
10 process is going. I mean it seems to me that to
11 predict what environmental factors will be in place 13
12 years hence and 18 years hence, posits a kind of
13 omniscience and prescience that we should attribute to
14 Almighty God, but certainly not to any of us human
15 beings.
16 I would favor a slower process. As we
17 look around, we see that the population in this area
18 is getting denser all the time. The roads are not
19 being improved. And that leaves me with concerns
20 about how we would effect an evacuation were one
21 needed. I suspect strongly that we couldn't perform a
22 good evacuation today. And I also suspect that the
23 population will be increasing and the roads
24 deteriorating. In fact, just this morning in the
25 Pottstown Mercury, they were reporting on the hearing

7-1-SR Cont'd

8-1-LR

8-2-OS

1 that was held on Route 422 which is our main road
2 around here. And Barry Seymour is quoted, he's the
3 Executive Director of the Delaware River Valley
4 Regional Planning Commission, and he told last week's
5 forum audience that population projections anticipate
6 a 50 percent increase in the region and if we don't
7 increase capacity on 422, we will have virtual
8 gridlock all the way to the Berks County line.

8-2-OS Cont'd

9 Maybe we'll improve that situation, but
10 it's way too early to know if that will happen. And
11 so my plea and my concern is can we slow this down so
12 that we know, in fact, what the environmental impacts
13 are going to be closer to a time that the decision is
14 made. Thank you.
15 (Applause.)
16 FACILITATOR BARKLEY: Thank you. Tim?
17 MR. FENCHEL: Good afternoon. My name is
18 Tim Fenchel and I'm on the staff of the Schuylkill
19 River National and State Heritage Area. We are one of
20 49 congressionally-designated Heritage Areas in the
21 country and our mission is to use recreation,
22 conservation, education, cultural and historic
23 preservation and tourism as tools for community
24 revitalization and economic development with the
25 Schuylkill River Valley.

1 The Heritage Area has had the opportunity
2 for almost seven years now to partner with Exelon
3 Nuclear and the Limerick Generating Station on several
4 local and regional projects and programs. These
5 programs have proven to have a positive impact on our
6 local communities, residents, and natural resources.
7 And I would like to take a few moments to highlight
8 those now.
9 In 2005, Exelon Nuclear approached us
10 about the possibility of partnering together on a
11 grant program that would work to restore our area's
12 critical natural resource, the Schuylkill River. The
13 river has been detrimentally impacted by hundreds of
14 years of abuse and neglect, primarily as a result of
15 our nation's history related to the Industrial
16 Revolution. But even more recently, due to
17 deforestation, farming practices, and continued open
18 space development.
19 Beginning in 2006, after the creation of
20 grant program guidelines, an advisory committee and a
21 necessary accounting and reporting structures, Exelon
22 began making annual contributions to the Schuylkill
23 River Restoration Fund. The Schuylkill River Heritage
24 Area acts as the administrator and the manager of this
25 grant program, redistributing Exelon's contributions

1 to local and regional watershed groups, conservation
2 organizations, and local government agencies for
3 projects addressing the quality and quantity of
4 Schuylkill River water. Projects focusing on
5 agricultural remediation, abandoned mine drainage, and
6 stormwater runoff are supported through this program.
7 To date, Exelon has contributed over $1.2
8 million to the restoration fund for watershed-wide
9 projects. Twenty-two grants have been awarded and 11
10 projects have been completed. These projects have
11 made an impact on the water quality and quantity of
12 the Schuylkill River which is a source of drinking
13 water for over 1.75 million people in southeastern
14 Pennsylvania.
15 Exelon's establishment and contribution to
16 the restoration fund has been a model program and is
17 now a uniquely valued public/private partnership as
18 several new partners have joined efforts and made
19 their own contributions to the fund. Both the
20 Philadelphia Water Department and the Partnership for
21 the Delaware Estuary have brought funding to the
22 program and supported regional watershed projects.
23 The contributions made by Exelon have been the
24 catalyst to leverage additional funds well over
25 $600,000 for area restoration.

1 The goal of the Restoration Fund Advisory
2 Committee is to be able to support a sustainable level
3 of half a million dollars annually for the fund and in
4 turn, conservation projects that will continue to
5 ensure the future health of the Schuylkill River.
6 In addition to our work on the restoration
7 fund, we have assisted Exelon Nuclear, East Coventry
8 Township, and Chester County in a planning effort to
9 begin the process of restoration and preservation of
10 the historic Fricks Locks Village. Earlier this year,
11 Exelon Nuclear, the current owners of the village,
12 signed an agreement with East Coventry Township to
13 stabilize, rehabilitate, and protect several of
14 Chester County's oldest buildings. Exelon has agreed
15 to spend $2.5 million to restore the exterior of
16 several buildings as stabilized ruins. A fence will
17 be built around the grounds and the corporation is
18 donating four houses to the township worth an
19 estimated $1 million.
20 In addition, the corporation has agreed to
21 continue to do routine maintenance on the village and
22 work with the local historical society to host guided,
23 historic and educational tours for the public.
24 From our perspective, much of the success
25 of this partnership can be assigned to the hard work,

1 dedication and personal commitment of Exelon staff and
2 management. Based on the very positive community
3 programs and involvement we have experienced and
4 witnessed first hand as a regional organization, we
5 would like to communicate our support for the
6 relicensing and continued operation of Limerick
7 Generating Station. Thank you. 9-1-SR
8 (Applause.)
9 FACILITATOR BARKLEY: Okay, thank you.
10 The next three people I would like to call, Bill
11 Vogel, followed by Eileen Dautrich, is that how you
12 say that?
13 MS. DAUTRICH: Dautrich.
14 FACILITATOR BARKLEY: Dautrich. Okay.
15 And then Bill Albany.
16 MR. VOGEL: Hi, my name is Bill Vogel. I
17 live in Phoenixville. Units 1 and 2 had an initial
18 life expectancy of 40 years. They are now asking to
19 increase that 20 years, a full one third increase.
20 Everything has a life expectancy, machinery, as well
21 as people. Demographically, my life expectancy is 74. 10-1-LR
22 If I was to get a one third extension, like the
23 Limerick plant wants, that would take me to 111. What
24 do you think is going to happen to me between age 74,
25 my life span, my nameplate capacity, and the year when

1 I reach 111? It's going to go down hill. That's
2 lifecycle. Machinery has them. You don't need an
3 engineer to tell you that. Just like human beings
4 have them. We become less effective, less efficient,
5 less competent.
6 The significant difference is my failure
7 will be containable. Limerick's most likely will not. 10-1-LR Cont'd
8 If I drive over you with my car because I no longer
9 see as well or have the reflexes I once had, that's a
10 tragedy for you, your family, for me and my family.
11 The sphere of the tragedy is containable. If Limerick
12 Unit 1 or 2 fails, all hell breaks loose, no
13 disrespect. That's what a nuclear failure is, hell.
14 It affects everybody in this room, everybody in the
15 community, everybody in the tri-state area, not for a
16 week, but for decades. It's very, very last thing we
17 want to happen.
18 And I think we're putting ourselves in
19 harm's way by taking something that had a lifespan of
20 40 years and adding another 20 to it. It doesn't make
21 sense. The only way to rationalize it is through our
22 personal fear of being inconvenienced because we lose
23 a very, very good source of power. It's done a great 10-2-OR
24 job for us. But like me, you get to a point where
25 your ability to provide a great job is at an end and

1 things start deteriorating. Let's not put ourselves
2 in that position. Let's make an intelligent decision
3 now and allow these two units to expire at their
4 nameplate time. Thank you.

10-2-OR Cont'd

5 (Applause.)
6 FACILITATOR BARKLEY: Thank you, Bill.
7 Eileen.
8 MS. DAUTRICH: Good afternoon. My name is
9 Eileen Dautrich. I'm president of the Tri-County Area
10 Chamber of Commerce. I'm happy to be here today to
11 provide examples of how Limerick Generating Station is
12 a valued community and business partner and echo the
13 statements already shared by several others.

11-1-SR

14 They're one of the tri-county area's
15 largest employer, providing professional employment
16 opportunities for local residents. Those local
17 residents employed by Limerick Generating Station are
18 supporting the entire tri-county business community.
19 They're purchasing personal goods and services from
20 local small businesses. The annual outage is a
21 tremendous benefit to the local economy and our local
22 businesses. Limerick encourages their outage
23 employees to visit and purchase from tri-county area,
24 local businesses, and small businesses.
25 In addition to the jobs they provide local

1 residents, they're making a significant investment in
2 our local communities. Municipalities and residents
3 benefit from assistance received from Limerick to
4 start, maintain, expand parks, recreation, and quality
5 of life opportunities.
6 Their corporate culture of giving back to
7 the community is practiced by their hundreds of
8 employees. Nonprofit organizations are supported by
9 Limerick Generating Station and the efforts of their
10 employees. Financial donations, as well as volunteer
11 hours and time are donated, enabling our local
12 nonprofits to provide the much needed services that
13 impact those in need throughout the tri-county area.
14 The Limerick Generating Station is
15 confident in the clean and safe environment they
16 maintain in our community. The community has been
17 invited to experience the generating station
18 firsthand. The chamber hosted a membership breakfast
19 and the site vice president, Bill Maguire provided the
20 keynote presentation. He summarized safety measures
21 and advancements at Limerick and answered questions
22 pertaining to the Limerick plant and its safety in the
23 wake of the tsunami in Japan.
24 In addition, after our breakfast, Chamber
25 members were encouraged to attend the informational

11-1-SR Cont'd

1 see policies and procedures that people talk about and
2 they're put up on a shelf and they're followed at best
3 haphazardly with a wink and a nod and deviation from
4 the policy is not addressed.
5 One of the things that I'm continuously
6 impressed at LGS when I visit is their sound adherence
7 to policy and procedure. They don't deviate from it.
8 I've been to numerous drills at the plant, numerous
9 exercises at the plant, some of which were run by the
10 NRC and I've never seen them fail. They always come
11 out on top. In fact, in 2009, Limerick was selected
12 as a site for the first comprehensive pilot exercise
13 involving federal, state, and local law enforcement
14 SWAT teams to actually go into the power block and
15 conduct tactical operations in there, and that drill
16 was used as a boiler plate to develop policies and
17 procedures for implementation in power plants
18 throughout the country.
19 One of the -- I'm sorry, I don't believe
20 that continued operations of the power plant would 12-1-SR
21 have any detrimental effect on public safety in the
22 southeast region. Thank you.
23 (Applause.)
24 FACILITATOR BARKLEY: Okay, thank you.
25 I'd like to call the final three speakers who have

signed up, John McGowan, Ted Del Gaizo, and Timothy Phillips. John?

MR. McGOWAN: Thank you very much. My name is John McGowan and I am a life-long resident of the Delaware Valley. I have lived half of my -- or I should say the Limerick Nuclear Power Station has been operating for half of my life. I own three manufacturing companies in the Malvern area and employ a number of people in those facilities who rely tremendously on the Limerick Power Generating Station to supply safe, reliable electrical power to keep us operating.

Today, I would like to say that in all of the years that I've lived in this area, I've never worried at all about the safety of the nuclear power plant. I see it every day. And it bothers me not in the least. I have never seen any credible evidence to suggest that there are safety problems with this plant. In terms of reliability, it is the same. It is running 24/7, 365 days a year and it has been doing so for a quarter of a century and I hope it continues to do so for many more years to come. 13-1-SR

As far as its environmental impact, I think it's pretty widely known that nuclear power is one of the cleanest environmental energies that we

1 possess today throughout the world and to dismiss it
2 is I think a foolish notion.
3 The impact of the Limerick plant in our
4 region has been extraordinarily positive. It
5 provides, as we all know and have heard today, lots of
6 jobs, lots of good jobs, tax revenues for schools,
7 local governments and for those who live in the area
8 to enjoy the fruits of public services and it also
9 provides a lot of charitable donations to the
10 community which is very important.
11 I think that to not keep this plant
12 running and not consider a renewal of its license for
13 an extended period would be a tragic mistake for all
14 of us and I would like to end this by saying that the
15 only meltdown that would concern me is the economic
16 one that certainly would happen to this area should
17 this plant not continue to operate.

13-1-SE Cont'd

18 (Applause.)
19 FACILITATOR BARKLEY: Ted, go ahead.
20 MR. DEL GAIZO: Hi, my name is Ted Del
21 Gaizo. I'm a registered professional engineer in the
22 Commonwealth of Pennsylvania. I'm also president and
23 CEO of a small business engineering firm in nearby
24 Exton, Pennsylvania.
25 My experience in nuclear power goes back

1 to the 1960s where I spent 14 years in Navy submarines
2 and I personally operated, maintained, and refueled
3 nuclear power plants during that period.
4 But I'm here today as a private citizen,
5 as a resident of the area and as a member of the
6 Pennsylvania Energy Alliance to go on record and say I
7 strongly favor license renewal for the Limerick
8 Generating Station. I say that because in my personal
9 experience I know in spite of some of the things
10 you've probably heard here today, nuclear power is 14-1-SR
11 safe, reliable, secure and clean. But in addition to
12 that, I would like to go on record, I would like my
13 neighbors to know we are lucky to have the Limerick
14 Generating Station in this area. In the industry, it
15 has a top reputation. It is one of the finest nuclear
16 power plants in America. And Exelon, if not the best,
17 is certainly one of the finest nuclear operators in
18 the world.
19 I have nothing but confidence that Exelon
20 will work together with the NRC, will run through the
21 process and we will come up with the right conclusion
22 here which is license renewal should be granted to the
23 Limerick Generating Station. I think we need to keep
24 Limerick operating as long as we can.
25 In addition, in spite of some other things

openness in the thinking process that goes into place for renewal of any nuclear power plant.

And so from my perspective as a citizen, as a business person who has worked in this community, I understand the value this is to the region. And for me, I applaud the NRC for what they're doing here. I applaud Exelon for the great work that they're doing there and I encourage the renewal process to take place. Thank you. 14-2-SR

(Applause.)

FACILITATOR BARKLEY: Thank you. With that, I have all 15 people who had signed up for this meeting, have been called. Is there anyone else who would like to make a short follow-up remark or would like to still speak at this point?

Okay, if not, I'd like to make two points before we wrap up. One, the NRC does have public meeting feedback forms which give us feedback on how you think this meeting was conducted, so I would greatly appreciate you filling out one of those forms for us so that we can learn how to improve. There is another session of this meeting at 7 o'clock tonight. You're welcome to speak again tonight.

And secondly, what I'd like to say is I facilitate a lot of meetings throughout the Northeast

1 meeting via conference bridge. And due to the
2 arrangements of the audio in this room it wasn't
3 possible to do it any other way than a cell phone. So
4 we're going to go to him and ask him to make a
5 statement for the period and move from there. So our
6 first speaker will be Mr. Thomas Saporito who is a
7 senior consulting associate and he actually lives in
8 Florida. So as soon as we can work having him on the
9 microphone we will have him make his statement. Are
10 we free to give it a try?
11 MS. REGNER: Go ahead. Yes. Go ahead,
12 Mr. Saporito.
13 MR. SAPORITO: Is it my turn to speak?
14 MS. REGNER: Yes.
15 MR. SAPORITO: Okay. Can you hear me
16 okay?
17 FACILITATOR BARKLEY: As best we can, yes.
18 MS. REGNER: Yes, go ahead.
19 MR. SAPORITO: All right. My name is
20 Thomas Saporito. I'm the senior consultant with
21 Saprodani Associates and I'm located in Jupiter,
22 Florida. I would like to comment on the NRC's
23 environmental review but before I do that I want to
24 state that, you know, I'm very upset at the NRC's
25 refusal to honor my enforcement petition filed under

16-1-OS

1 10 CFR 2.206 with respect to the Limerick nuclear
2 plant. The NRC denied that petition on the basis that
3 I would have an opportunity to intervene on this
4 proceeding through the NRC's judicial process. 16-1-OS Cont'd
5 However, that's not available to me. I made that
6 quite clear in the 2206 petition. Now, I don't have
7 standing as a United States citizen because of my
8 physical location in Jupiter to intervene in a
9 proceeding in Pennsylvania where this plant is
10 located. The NRC staff is incorrect in their opinion
11 and they have a legal obligation to honor that
12 enforcement petition and to provide an opportunity for
13 me to address the Petition Review Board. So I want to
14 put that on the record and I'm asking the NRC to look
15 into that issue.
16 With respect to this environmental
17 petition the fellow who spoke earlier from the NRC, I
18 don't recall his name. It was very hard for me to
19 hear through this communication his name. But anyway,
20 one of his comments was exceptionally incorrect and he
21 misinformed the public. And I'd like to correct that
22 statement. He stated that the NRC is extending the 16-2-LR
23 original operating license which was granted by the
24 NRC for a 40-year period of time that that initial 40-
25 year license was not based on safety considerations or

1 technical considerations. But that's absolutely not
2 true and there was recently a year-long investigative
3 report done by the Associated Press who interviewed
4 expert nuclear personnel, engineers, safety engineers
5 in the nuclear industry who told them that the 40-year
6 licenses issued by the NRC for 104 nuclear plants in
7 the United States was based on safety and technical --
8 safety technical analysis. So these proceedings,
9 these license extension proceedings like the one we're
10 currently at are a rubber-stamping of these 20-year
11 license extensions. This is in fact a foot race
12 between the Nuclear Regulatory Commission and the
13 United States Congress where Congress wants to stop
14 this process, put a moratorium on the re-licensing
15 until the Fukushima disasters can be fully understood
16 and the enhancement enacted in August for our power
17 plants here. This particular nuclear plant, these
18 plants, you know, their license is already good till
19 2024. Why are we here now 12 years ahead of time
20 trying to extend this license? And the only reason is
21 because it's a foot race the NRC's in with Congress
22 and nothing more. This has nothing to do with
23 protecting public health and safety, it's the NRC's
24 zeal to continue to rubber-stamp these license
25 extensions without allowing citizens due process like

16-2-LR Cont'd

16-3-LR

16-4-LR

1 I already talked about and without doing a cost-
2 intense and thorough environmental review. 16-4-LR Cont'd
3 And with respect to the NRC's
4 environmental review the NRC in my view failed to
5 properly consider the embrittlement of this nuclear
6 reactor vessel. When these nuclear reactors are
7 operating the neutrons cause the metal in the reactor
8 vessel to become brittle over time. And after
9 numerous years of operation these reactor vessels 16-5-OS
10 could crack because they're so brittle. But the NRC
11 doesn't properly evaluate that and the NRC doesn't
12 require the licensee to do destructive testing and
13 analysis of the reactor's metal vessel prior to
14 rubber-stamping a 20-year extension to these licenses.
15 Twenty years from now, oh actually 20 years from 2024
16 which will be 2044 this reactor is going to be even
17 more critically brittle and the NRC's not going to
18 understand the dynamics of that and the reactor could
19 crack and it's going to melt down because you can't
20 recover from a loss of coolant accident of that
21 magnitude. So that's one point.
22 The other point is the NRC's Commission
23 over there in Rockville, in the White Flint Building, 16-6-OS
24 they recently adopted a new policy with respect to
25 evacuations. They want these licensees to update

1 their evacuation plans. Now, I would hope that the
2 NRC staff has made that requirement to the Limerick
3 licensee so that the people near and around within 15
4 miles of the nuclear plant can properly and timely
5 evacuate the area. Again, the Associated Press's
6 investigation, year-long investigation shows that the
7 populations around these nuclear plants increased
8 tenfold over the years and that the roads and the
9 congestion, you can't timely evacuate these areas.
10 And the NRC keeps pushing these evacuation plans onto
11 the licensee but the NRC doesn't enforce its
12 regulation or properly review if these plans are even
13 effective.

16-6-OS Cont'd

14 The NRC is required under the law in this
15 review, the environmental review to consider renewable
16 energy sources, alternatives. And that means need.
17 Is there really a need for these two nuclear plants to
18 operate and the answer is no. Simply stated if all
19 the customers who receive power from these nuclear
20 plants were to simply remove their hot water heaters
21 and replace them with on-demand electric water heaters
22 you would reduce the electric base load demand by 50
23 to 70 percent. You wouldn't need either one of those
24 nuclear power plants to operate. If you take that
25 further and introduce other energy conservation you

16-7-AL

1 would actually have the licensee shut down more of
2 their other power plants because of you would need a
3 demand. If you take wind energy which is plentiful up
4 there in Pennsylvania and even the new solar panel
5 which can operate when the sun isn't shining on a
6 cloudy day you could replace even more operating power
7 plants. So these renewable energy sources even with
8 respect to wind energy since you have a common grid
9 throughout the United States you can have wind farms
10 generate power to a common grid point and supplying
11 the power that these nuclear plants are now providing.
12 The NRC's required under the law to consider these
13 alternatives to extending this license. And I would
14 hope that the NRC's final evaluation and review shows
15 a complete and thorough analysis of all these
16 renewable energy sources including installing on-
17 demand hot water electric heater and doing an analysis
18 of how many megawatts you're going to take off the
19 grid and based on those evaluations make a licensing
20 determination whether or not this license should be
21 extended. Because 20 years from now all these
22 renewable resources are going to be all that much more
23 advanced and capable of supplying all that much more
24 power than they're currently supplying. So those are
25 my comments and I would hope that the NRC takes them

16-7-AL Cont'd

1 seriously and applies them to this license renewal.
2 And I hope everybody heard me.
3 (Applause)
4 MS. REGNER: Can you hear that? They're
5 clapping.
6 FACILITATOR BARKLEY: Okay, at this point
7 I'll call back Mr. Saporito later and thank him for
8 his remarks and for being succinct in his remarks.
9 It's awfully awkward to provide comments via this
10 avenue.
11 The first three people I would like to
12 call are actually individuals who did not speak this
13 afternoon so I'd like to start with them. Firstly,
14 Jeff Chumnuk, then Daniel Ludewig, and then finally
15 Catherine Allison. So Jeff, if you could lead off.
16 MR. CHUMNUK: Hi, my name is Jeff Chumnuk
17 and I'm a member of Borough Council with Pottstown
18 Borough. And my comments tonight are more I guess
19 from my perspective as a newly elected official with
20 the generating station. About a year ago I had the
21 opportunity to go down to the generating station and
22 meet with Joe Saffron and the first part of my meeting
23 had to do with looking for some support for the
24 Pottstown Soapbox Derby. Through some conversation
25 while we were standing outside you know Joe

17-1-SR

1 enlightened me a little bit on what Exelon and the
2 generating station do for the surrounding communities,
3 whether it's supporting our firefighters, police
4 departments and other civic organizations. You know,
5 from a Pottstown perspective they help us with our
6 yearly borough cleanup, our Salvation Army and now the
7 Soapbox Derby. Thank you.
8 And we were standing outside that day, it
9 was pretty nice out, and our conversation led to the
10 power plant itself. We were standing there looking
11 around, it's a pretty impressive sight. So I asked
12 him about, you know, possibly having a tour for
13 municipal officials. He said he would look into it
14 and see what he could do. A couple of months later he
15 got a group of about 20 of us and gave us a tour of
16 the plant one evening. And I have to say that from
17 the time we walked through the front gates and past
18 the security as our tour progressed, you know,
19 throughout the plant safety was paramount. Whether
20 you were having explained what the different colors
21 are on the different panels and what they mean to
22 different failsafes, why you walk certain areas
23 certain ways and what lines you had to stand behind,
24 you know, safety was paramount with them. You know,
25 from the environment, I'm looking around and this

17-1-SR Cont'd

1 place is spotless. And I asked why and it's because
2 they can't afford to have dirt or lint or fuzz balls
3 around because of static electricity because it could
4 create issues. So from that aspect I thought it was a
5 good tour and it made me feel good about the safety
6 aspects there.
7 To finish our tour we ended up in the
8 control room upstairs. And I'd say maybe a dozen or
9 so individuals up there monitoring you know everything
10 going on within the plant and around the plant. And
11 again, explaining the failsafes and why they're
12 double-, triple-checked to eliminate human error. It
13 was just very impressive and as an elected official to
14 go down and take a tour of the plant and understand
15 how it operates. I know when I left I personally know
16 how to issue a concern with the generating station. I
17 know I felt a lot better and a lot safer going home
18 that night. And it was also good to realize, you
19 know, as one of our region's largest employers now
20 that they are willing to give back to the community
21 and keep safety first. So thank you, I just wanted to
22 make those comments.

17-1-SR Cont'd

23 (Applause)
24 FACILITATOR BARKLEY: Thank you, Jeff.
25 Daniel?

MR. LUDEWIG: I'm Dan Ludewig. Just two questions. One would be what are we going to do with the 20 years of spent rods and how are you going to take care of those. And secondly, if we don't get the license which I doubt but what would -- how would we get electric if the license were canceled? I don't know who answers this.

18-1-RW

18-2-OS

FACILITATOR BARKLEY: I'll ask Lisa to speak.

MS. REGNER: Yes, the spent fuel rods. Limerick is licensed for an individual spent fuel pool facility. They offload the spent fuel. Once they've cooled to a certain level they will put those into dry cask storage and store those onsite. In the environmental review that's looked at generically. Limerick does have storage for the spent fuel rods. That's an ongoing, it's onsite and part of their reactor oversight process as well. So the residents that work at the plant monitor the safe operation of those facilities.

The second question, where would the power come from if Limerick were shut down? There are alternate power facilities in the area. Dave, you want to give that a try?

MR. WRONA: I'm David Wrona, a branch

1 Can everyone hear me in the back row? I am Catherine
2 Allison and I was born and raised in this area so as
3 far as the NRC wanting to know how this impacts the
4 area I know it very well. I've also traveled the
5 world so, Europe, et cetera. So did anyone not be
6 able to hear me, just raise your hand. You're good?
7 Okay.
8 One thing I wanted to say is the NRC
9 tonight is doing a scoping basically for environmental
10 purposes for the re-licensing. What I wanted to say
11 is for years everyone, I'm being general here, but
12 most people have been talking about the effects of
13 like, you know, cancer, you know, the impact on the
14 clean air, clean water which things we are all
15 concerned about and a lot of us just didn't do
16 anything about it even though we were very concerned.
17 Now lately with the -- unfortunately it's
18 a reality now that we have hurricanes, more tornadoes,
19 tsunamis throughout the world. And I hate to say it
20 but it is a reality now that we have terrorist attacks
21 and Limerick is definitely one. I don't want to be 19-1-PA
22 blowing this out of proportion but it's just something
23 that I know that we've all been concerned about, not
24 wanting to say yes, Limerick, and all the people that
25 built the power plant and the company say oh, there's

1 no impact to the air and the water pollution and so
2 forth. So we've kind of just blinded our, you know,
3 selves to that and let's believe then, okay, let's
4 take a minute. Let's really believe that there is no
5 impact in our clean air, clean water and those type of
6 things and cancer, et cetera. Let's just go into the
7 new reality which is terrorist attacks which would
8 happen. Let's just say for example there was human
9 error there with the spent fuel rods and something
10 happened, or a radiation leak. I just drove tonight

19-1-PA Cont'd

11 from King of Prussia. Talk about evacuation when
12 these natural disasters and realities hit us. One
13 accident, two hour backup, almost no exaggeration, one
14 thousand cars. There will be no evacuation. I don't
15 want to be like scare tactics here but like I said,
16 the weather and so forth, natural disasters has really
17 been hitting the whole United States and the world
18 lately so it's a reality.
19 There was flooding after the hurricane
20 that we just had. Five days later there was roads
21 closed in Pottstown, in North Coventry, East Coventry.
22 There were, when I tried to get home from work right
23 on Route 724, no exaggeration again from all the back
24 roads about 500 cars. There will be no evacuation and
25 I certainly hope that people understand I'm not trying

19-2-OS

1 to be scare tactics. I see this. I'm sure a lot of
2 you have seen this and been in these situations. All
3 with a little bit of flooding. What this does to the
4 roads. Again, there will be no evacuation.

19-2-OS Cont'd

5 So from day one I think power plants never
6 should have been built but now that they are here why
7 would we ever want to re-license. And as our
8 gentleman caller just said, I believe his name was

19-3-OR

9 Thomas, he was very eloquent. He was stating the fact
10 why are we re-licensing them, what, 12 years ahead of
11 time. To me that is absurd. Like maybe a year before
12 or they have to do some studies, two years before.
13 Why do they want us, and I love Thomas's words,
14 rubber-stamp something? Twelve years beforehand to go
15 into what, 2024 for Unit 1 was it and 2029 for Unit 2?
16 Why do they need to push this licensing renewal?
17 You've got to stop and think. People, go home, think
18 about that. I'm not an expert like evidently our
19 caller Thomas was but again, I'm concerned about human
20 life. This is what I have at the top here. We are

19-4-LR

21 talking about human life. What's more important, not
22 all this electricity that we need for all our cell
23 phones and everything. In a way we are responsible
24 for the fact that PECO and all these other Exelon
25 companies are building power plants. I myself you

19-5-OS

1 know am guilty of a lot of this but let's just maybe
2 for a solution besides the wind and solar power and
3 everything stop using all this new technology. Yes,
4 you need it for some jobs and businesses, it's good
5 for certain things, but let's not overindulge where we
6 need so much electricity that we are willing to risk
7 our lives. Cancer, polluted water. There's no
8 drinking water anymore. People have to pay to buy
9 water that comes from natural springs. But you're
10 using plastic bottles, you can't even trust that.
11 But this whole world has kind of just 19-5-OS Cont'd
12 changed from you know nature. Let's get back to
13 nature, let the -- instead of having all the young
14 teenagers on their cell phones texting, using more
15 electricity, that again it's going to cause cancer for
16 them. Everybody has to stop and think why do we need
17 the power plants? We really don't and again, Thomas,
18 our wonderful caller mentioned some alternatives like
19 the solar power, wind, but I'm just saying we are
20 using so much electricity and stupid little video
21 games on the computers. People get on the computers
22 for hours at a time doing nonsense. That's taking up
23 electricity where again why do you need all this
24 electricity? It could be causing cancer in your
25 children. I am not that old but I'm not that young, 19-6-HH

1 but I hate to tell you I have so many friends and
2 coworkers and people that are only 35, 40, 50 years
3 old, cancer. And why? We have to stop and think. Go
4 home, don't just always, you know, just go watch TV
5 and get on your computer. Stop and think what we're
6 doing to ourselves, our bodies, our children, our
7 grandchildren.
8 This is again, this licensing renewal is
9 coming down to human lives, the quality of our lives.
10 Again, why all this cancer? Microwaves and
11 electricity. So I won't go on and on, but I just
12 think us as a group can't just all be just complaining
13 about the power companies, we are the ones using the
14 electricity. That's all I'm saying. Maybe we should
15 cut back and we won't need power plants. Thank you.

19-6-HH Cont'd

16 (Applause)
17 FACILITATOR BARKLEY: Thank you,
18 Catherine. The next three people I'd like to call
19 would be Jeffrey Norton of the P. Energy Alliance,
20 then Bill Maguire and then finally Lorraine Ruppe.
21 Mr. Norton?
22 MR. NORTON: Good evening. My name is
23 Jeffrey Norton and I'm here to represent the
24 Pennsylvania Energy Alliance which is an independent
25 grassroots diverse organization made up of community

1 leaders and organizations who promote nuclear power as
2 a clean, safe, reliable and affordable source of
3 power. I'm going to be making essentially five points
4 in support of license renewal for Limerick Generating
5 Stations and they are that, number one, nuclear energy
6 lowers electricity prices, it protects our environment
7 against greenhouse gases, it strengthens our local
8 economies and it is safe.
9 With regard to my first point in lowering
10 electricity prices the Limerick Generating Station has
11 reduced wholesale energy costs in Pennsylvania by $880 20-1-SR
12 million in 2010 thus lowering electricity prices for
13 all consumers. It operates around the clock thereby
14 stabilizing the nation's electricity distribution
15 system and the electricity marketplace. The average
16 electricity production costs at nuclear plants have
17 actually declined more than 30 percent in the past 10
18 years due to various efficiencies. Nuclear power is
19 cheaper to produce than other forms of electricity
20 generation such as coal and natural gas, and helps
21 moderate the price of electricity for consumers.
22 My next point is that Limerick Generating
23 Station and nuclear plants strengthen our local
24 economies and it is a valuable economic driver for the
25 Commonwealth of Pennsylvania. Limerick Generating

1 Station contributes $113 million annually in direct
2 economic contributions to the Pennsylvania economy
3 through various employee wages and salaries, purchase
4 of goods and services from other Pennsylvania
5 businesses and in property tax payments to the local
6 governments. Limerick Generating Station also
7 contributes generously as we've also heard and in fact
8 in 2010 contributed $600,000 to various community
9 organizations. Limerick has over 800 full-time
10 employees and employs more than 1,000 skilled
11 temporary contract employees during annual refueling
12 outages. A significant percentage of the current
13 nuclear plant workforce will reach retirement age in
14 the next 10 years creating a demand for high-paying
15 jobs in the nuclear industry. Yes, Limerick
16 Generating Station is one of Pennsylvania's most
17 valuable economic and energy assets and the
18 commonwealth should embrace it.
19 My third point is that nuclear energy
20 protects our environment from greenhouse gases and
21 reduces the need to generate electricity from fossil
22 fuels. If Limerick Generating Station were retired
23 from service replacing the electricity would require
24 increased natural gas-fired or coal-fired generation.
25 Nuclear energy is the nation's largest source of

20-1-SR Cont'd

1 carbon-free electricity and is critical to our
2 nation's environmental, security and energy goals.
3 My next point is that nuclear energy is
4 safe. It's always on, it's stable, it's a reliable
5 source of electricity and the station here at Limerick
6 has been built with multiple redundant safety layers.
7 And the workforce is committed to best practices and
8 continuous improvement. It is also important for our
9 nation's quest to be energy-independent. According to
10 the Bureau of Labor Statistics it's safer to work at a
11 nuclear plant than in industries such as
12 manufacturing, real estate and finance. And according
13 to the Department of Energy a person receives more
14 radiation exposure flying from Baltimore to Los
15 Angeles than by standing near a nuclear plant 24 hours
16 for a year.
17 On a personal note I've been inside
18 Limerick Generating Station several times. I've also
19 lived within 30 miles with my four boys and wife next
20 to the Limerick Generating Station and also Three Mile
21 Island. I feel safe, secure and comfortable. That is
22 why I'm in support of the re-licensing of the Limerick
23 Generating Station. Thank you very much.
24 (Applause)
25 FACILITATOR BARKLEY: Thank you. Mr.

20-1-SR Cont;'d

1 three people I'll call are Donna Cuthbert, followed by
2 Mike Gallagher and then followed by Dr. Fred Winter.
3 Okay, Donna.
4 MS. CUTHBERT: You know, after hearing
5 some of these gentlemen speak tonight I feel like I'm
6 living in fantasy land. For somebody to get up here
7 and actually say that there's no adverse impacts from
8 Limerick nuclear power plant is insanity. It is
9 unbelievable. I have spent the last 11 years
10 reviewing permits from Limerick nuclear power plant.
11 They are a major air polluter under the Clean Air Act
12 and to say they're not doing it anymore, they just
13 asked for the conditions that would allow an eightfold
14 increase in dangerous air pollution that actually is
15 claimed to kill people, thousands of deaths per year.
16 And they asked for an eightfold increase.
17 As a matter of fact, these are all the air
18 pollution sources and the pollutants they list in
19 their own permit. If you add that to all the
20 radiation emissions there's a broad range of
21 radionuclides. For somebody to just claim that it's
22 only tritium going into the water is insanity. It's
23 unbelievable what they expect people to believe. I
24 encourage everybody to go back to the table we have
25 and take a good look at that Schuylkill River board.

1-22-AM

1 They are destroying the Schuylkill River. There was
2 never enough water in the Schuylkill River to sustain
3 this nuclear plant from the very beginning and now
4 we're seeing the consequences of that and they put
5 more and more pollution in it. They want to pump mine
6 water in to supplement the flow for Limerick. It's
7 contaminated and they don't filter it. And they're
8 actually asking for a huge, four times Safe Drinking
9 Water standard increase in total dissolved solids
10 which carry a lot of toxic pollutants. So they put
11 radiation into the river 24 hours a day, 365 days a
12 year, and now they're asking for these huge increases
13 and people have the nerve to get up here and say that
14 they have no environmental impacts. Frankly I've had
15 enough of this deception at the expense of public
16 health. I am sick of it.

1-23-SW

17 The facts show, when we looked at Exelon's
18 thing for environmental harms they say they were clean
19 energy. The facts show Limerick isn't clean, it is
20 filthy. It's not safe, it's a ticking time bomb. And
21 nuclear power, they say it's always on. That's not
22 true either as evidenced by shutdowns, some for long
23 periods caused by earthquakes, tornadoes, hurricanes,
24 fires, heat and drought and more. It clearly isn't
25 always on in Japan. So when you take all of this

1-24-PA

1 together and you look at all the ways that they
2 pollute our environment with radiation and all the
3 other toxics, every day Limerick operates our children
4 face more risk. And that's what it's all about. It's
5 about the health of our region.
6 The sooner this place closes the better
7 off we'll all be. Even if you look at infant
8 mortality rates we have higher infant mortality rates
9 and neonatal mortality rates far above state averages
10 and even above Philadelphia and Reading, and we've had
11 these for quite awhile. The fact is when babies are 1-25-HH
12 the most vulnerable in the womb what else would we
13 expect? And by the way, for those of you who have
14 been saying that ACE data is anecdotal today I have
15 news for you. This infant mortality report for
16 example is state data reported by EPA in 2003. Every
17 cancer statistic that you see back there is based on
18 Pennsylvania Cancer Registry statistics or CDC
19 statistics. So it is not anecdotal, those are the
20 cancer increases, those are the cancer above the
21 national average that have happened here since
22 Limerick started operating. That is a fact.
23 So it's not anecdotal and the fact of the
24 matter is I thought this was about the environment but
25 apparently it's about money. So I decided that

1 between the sessions I was going to change things
2 around a little bit. I could talk about the
3 environmental impacts of this place for a whole week
4 it's so bad. And I've got all the documents in our
5 office to prove it. Let's talk about, let's take a
6 minute now though and we're going to talk about the
7 cost. What is this place actually costing us? Let's
8 just think about cancer for example. We have so many
9 cancers above the national average. Childhood cancer,
10 92.5 percent higher than the national average. Think
11 about that. We track the cost of one child with 1-26-HH
12 cancer diagnosed at six months to two years and up
13 until that time it was $2.2 million. How many more
14 kids have that above the national average? Cost that
15 out and how many other cancers are above the national
16 average? You do the math. Figure that out.
17 How about the customers that paid -- I
18 hear them talk about how great the costs are for
19 Limerick. We paid for Limerick from 1985 to 2010 in
20 our electric bills. And in fact the electric that was 1-27-OS
21 supposed to be too cheap to meter turned out to be 55
22 percent above the national average by 1997. So that's
23 how cheap Limerick electric is.
24 Then you take the property taxes. They
25 tried to get zero for their property taxes by the end 1-28-SE

1 of the '90s and didn't pay any property taxes until
2 the early 2000s at which time they paid $3 million
3 instead of the $17 million they were supposed to pay. 1-28-SE Con'td
4 So when you think about that no wonder Exelon's
5 willing to throw around a couple million in the
6 community. They owe this community a lot more than
7 what they're giving out.
8 (Applause)
9 MS. RUPPE: So then there's the cost for
10 the pollution they're putting in the river. They're
11 asking for increases in pollution. They want to put
12 more mine water in. They want to increase the total
13 dissolved salts. That's going to cost water treatment
14 systems a lot of money to try to -- for extra 4-10-SW
15 treatment for that. It can even break down their
16 equipment, some of the stuff that's coming out of the
17 mines. And when you think about it who actually
18 ultimately pays that cost? We do. We pay for
19 increased costs for our water because they're having
20 to do that at the water treatment systems. And it
21 seems to me that if you really take a good look at
22 things Limerick has got to be the major cause for the
23 radiation in Philadelphia's water.
24 So all in all taken as a whole this place
25 has unprecedented environmental harms. There is no

1 question about that. Anybody that doesn't believe it
2 come look at the permits with me and I'll show you
3 exactly what's going on. I invite anybody to do that.
4 And the one thing that's really important
5 is that NRC and the nuclear industry are claiming that 4-11-OS
6 age is no issue while at the same time they admit that
7 some parts are too big and too expensive to replace.
8 I frankly am really concerned about NRC accommodating
9 the nuclear industry with weakened regulations, lax
10 enforcement, negligence and unsubstantiated denials. 4-12-OS
11 It's happened right here even with their fire safety
12 regulations that are -- we're on weakened fire safety
13 regulations even though we know that that can
14 eventually lead to a meltdown. I know my time's up.
15 Thank you.
16 (Applause)
17 FACILITATOR BARKLEY: Thank you, Donna.
18 Mike?
19 MR. GALLAGHER: Okay, good evening. My
20 name's Mike Gallagher and I'm vice president of
21 license renewal for Exelon. I have the overall
22 responsibility for the Limerick license renewal
23 application. Exelon has a great deal of experience in
24 license renewal. We've obtained renewed licenses for
25 the Peach Bottom and TMI plants in Pennsylvania, also

1 FACILITATOR BARKLEY: We have an
2 inspection ongoing at that point right now regarding
3 the North Anna facility. So yes, it did experience an
4 earthquake beyond its original design. So far the
5 inspections have revealed no -- minimal damage. I've
6 only heard of one piece of equipment that experienced
7 even visible signs of problems. But the overall
8 analysis, this is continuing and the licensee has to
9 have permission from us to restart after an extensive
10 inspection.
11 MR. ELY: My concern is that this hastened
12 license renewal process is inappropriate for
13 engineering reasons. I worked in a variety of
14 different areas in the construction of that power 21-1-OS
15 plant and there were continual deviations that were
16 provided, whether it was in-storage maintenance
17 monitoring of the condition of the components that
18 were used to the actual construction of that plant. I
19 could cite you several examples.
20 What I would like to ask of the public is
21 that the people that had worked at that nuclear power
22 plant take a look at this licensing renewal and
23 understand that they need to review those failures and
24 those deviations that were provided to go ahead with
25 the construction of that plant with non-conformances

1 that were reviewed, but not reviewed in light of what
2 we understand and know today about earthquakes or
3 other anomalies. We need to have enough time to make
4 the evaluation on those deviations. The cooling
5 pools. The fuel pool girders that are placed there.
6 There are rebar concrete reinforced supports where a
7 quality engineer, he was supposed to be accepting the
8 very highest grade of concrete to be placed in a 36-
9 hour pour there and he didn't pay attention. And the
10 cofferdam was being built down in the river and up
11 comes this sand mix with a very low strength and gets
12 pumped up into those fuel pool girders in a layer and
13 the engineer said well, boy, that was a terrible
14 mistake, but it'll be okay. We need to go back and
15 take a look at all of those mistakes and make sure
16 that they're not written off because a layer in a
17 structure under load caused by an earthquake, that's
18 an issue. It might not be an issue for the strength
19 of the fuel pool girders to support those fuel pools
20 that when we see them in Japan and they catch fire
21 because they're extremely hot and you need to address
22 that. I was on that pour but I wasn't the engineer
23 that made that error, but there's a number of errors
24 that were made. And I don't see or understand that
25 the NRC or the review or the licensing application is

21-1-OS Cont'd

1 taking a look at those failures and those errors and
2 addressing them in light of the knowledge that we have
3 today.

21-1-OS Cont'd

4 Some people don't understand about
5 radiation and I read when the Japanese thing occurred
6 and I heard on the news a radiologist talking about
7 oh, the radiation is such a low amount. It really
8 isn't the low amount of radiation exposure that we get
9 incidentally in standing next to a nuclear power
10 plant. It's three ten-thousandths of a gram of
11 plutonium that is death for you if you breathe that
12 dust particle. It's almost certain death. And the
13 problem becomes you can't have -- and it's not going
14 to be a nuclear bomb. It's going to catch on fire if
15 the fuel pool girders were to fail and you'll have a
16 cloud of a material that in and of itself you might
17 not have radiation exposure to it but that particle
18 when it deposits itself can be an issue much the same
19 as fluoride is what causes thyroid cancer when it's a
20 radioactive fluoride. That's why we're very careful
21 in building a plant with no Teflon and no fluoride
22 components.

21-2-HH

23 So we need to pay attention to some of
24 that engineering and I'm not certain that that's being
25 done. I'd like to see an agency or for somebody to

1 contact me if they know about a variety of different
2 flaws that they saw during the construction. And my
3 email address is asqchair@yahoo.com. Yes, I will be
4 the chair of the Philadelphia section of the American
5 Society for Quality coming up and I've been past chair
6 in the past so yes, I'm very quality-oriented and I'd
7 appreciate any feedback from people that have issues
8 with that construction. Thank you.
9 (Applause)
10 FACILITATOR BARKLEY: Okay. Thank you,
11 Dan. Jim Beckerman?
12 MR. BECKERMAN: Good evening. My name is
13 Jay Beckerman. I'm a resident of Phoenixville. I
14 found out about this meeting because I scan a lot of
15 newspaper websites. I found the notice of the meeting
16 on the West Chester Daily Local website. Didn't find
17 it in the Phoenixville paper, didn't see it in the
18 Philadelphia newspaper, didn't hear about it on any of
19 the local radio stations, didn't hear about it on
20 cable, didn't hear about it on any of the television.
21 Once a month, what is it the first Tuesday
22 about 2:00 I hear the siren that we all hear. What
23 should happen in terms of people getting notice is
24 everybody who's within the plume area should something
25 happen at Limerick should find out about this meeting

22-1-LR

1 and I seriously doubt that that actually happened. I
2 think it was pure accident that I found it. Something
3 as serious as license renewal should get the same kind
4 of outreach that occurs when Limerick does what it
5 should which is to mail out every year or two to all 22-2-LR
6 of the possibly affected homes the maps and the
7 notifications of how do you evacuate. If you're going
8 to renew a plant which happens once every 20 years I
9 don't understand why the NRC doesn't require the same
10 kind of outreach public notification so people get a
11 chance to come to one-time meetings like this. I
12 think that is a basic flaw in the NRC's licensing and
13 re-licensing procedure and I think it should address
14 that.
15 The slide behind me documents exactly two
16 libraries that the documents are going to go in. Why
17 not in my library in Phoenixville? Why not in 22-3-LR
18 Montgomery County and Norristown and all of the other
19 public libraries that are in areas that can be
20 affected by the plume should something happen here?
21 Why are the documents in such a restricted area?
22 I'd like to switch a little bit. I've
23 been researching, I didn't even know about this ACE
24 organization. Glad to find it. I've been researching
25 on my own information about nuclear power plants and

1 their risks for quite awhile. An organization I ran
2 across published this book titled Insurmountable
3 Risks. The organization is called the Institute for
4 Energy and Environmental Research. It's an amazingly
5 well-researched book. I doubt very many people have
6 read it but you should. This organization is at least
7 as interested in alternative energy sources as it is
8 in having put the effort in to document what are the
9 problems with nuclear power engineering-wise. The man
10 who's head of this organization is a nuclear
11 scientist, a guy named Arjun Makhijani. He's a PhD
12 nuclear scientist. These are first-class researchers,
13 this is PhD-level stuff written for popular
14 consumption. So I'll be glad to make more detail
15 about the book available to anybody who wants to know.
16 A few questions I have, one that I've been
17 thinking about for a long time. I wonder how many
18 people here are aware of something called the Price
19 Anderson Nuclear Industries Indemnity Act. Who knows
20 about that? The title alone should give you some 22-4-OS
21 pause. Why do we need a nuclear industries indemnity
22 act? What does it do? What it does is it puts a
23 ceiling of a few hundred million dollars on the
24 liability that nuclear power plant owners have for the
25 damage their plants would cause. It's basically a

1 scheme, they pay into a pool. The problem is that
2 ceiling was set a very long time ago. It's totally
3 unrealistic in terms of the risk in just the value of
4 houses in areas that are covered by a plant like this.
5 When this plant was planned the population in the
6 area that its plume would cover probably wasn't 20
7 percent of what the population is now. That is I
8 think a valid environmental concern. The environment

22-4-OS Cont'd

9 in which this plant operates has changed because of
10 in-migration, population increase for all sorts of
11 reasons. Part of that's been discussed tonight in
12 terms of evacuation routes, would you be able to get
13 people out were there an accident. The roads haven't
14 changed very much, the population has. That I think
15 is a valid environmental concern that surely ought to
16 be addressed.

22-5-OS

17 The question I ask about the money
18 liability is -- let's just go back to the Price
19 Anderson Act. The fact is that the nuclear industry
20 does not pay market rates for insurance to cover it
21 for the liabilities. This congressional act from way
22 back in the 1960s eliminates that need. Back then the
23 insurance industry didn't have the research to put a
24 price on what should the Limericks of the world have
25 to pay for a liability policy. I think there's plenty

22-6-OS

1 of insurance industry experience now. So my question
2 would be if nuclear plants are so safe why do we need
3 the Price Anderson Act?

22-6-OS Cont'd

4 (Applause)
5 MR. BECKERMAN: I listened, I'm going to
6 switch subjects again. I listened to Mr. Gallagher
7 and I heard something I really didn't expect to hear.
8 He said that their studies said that this plant is
9 now safe to run for 60 years. That sounds to me like
10 advanced notice to the public that this isn't the
11 first renewal they're going to ask for on this plant.
12 Mr. Gallagher, are you going to ask for another one
13 20 years from now?
14 FACILITATOR BARKLEY: We haven't had any
15 licensee at this point in time ask for something
16 beyond that.
17 MR. BECKERMAN: You didn't make the
18 statement. Mr. Gallagher did.
19 FACILITATOR BARKLEY: I know and I'm not
20 going to have him address this from the audience.
21 This is a meeting with us.
22 MR. BECKERMAN: And I would like to
23 finally address an issue that the speaker on the cell
24 phone brought up. He talked about embrittlement of
25 concrete over the lifetime so far of the nuclear

22-7-OS

1 reactor containment vessel. That's an internal
2 environmental matter. I don't know if it's quite in
3 the scope of what the NRC plans to talk about or plans
4 to look at, but something that I have not read about
5 at all is an NRC requirement for destructive testing.
6 For instance, if you want to know what a tree looks
7 like on the inside you put a borehole in it and you
8 pull a core sample out and you find out what that tree
9 looks like on the inside. If an engineer wants to
10 know what is the quality of the concrete that was
11 poured for a road -- I used to work for Florida
12 Department of Transportation -- they bore out a sample
13 and then you take a look at it. What I haven't heard
14 anything about except generalizations is has anybody
15 done any destructive even borehole testing of these
16 containment vessels and their support pourings to find
17 out has there been in fact any deterioration of the
18 concrete, the rebar and anything else that went in
19 there. The stuff that's buried in the concrete, the
20 wire, all of those things that are buried in the
21 concrete. If you haven't bothered to open that stuff
22 up since the plant was built how on earth do you know
23 what condition it's in? Shouldn't that be a
24 requirement to do some destructive, open the bottom
25 testing, go all the way through and make sure what you

22-7-OS Con'td

22-8-OS

1 think is there is what's there and in the condition
2 that it should be in to last for another 20 or 40 22-8-OS Cont'd
3 years? So these are questions that I'd like the NRC
4 to go into. I thank you very much for listening.
5 Overall it's been a very informative presentation by
6 both the proponents and people who have questions and
7 I thank you for the opportunity. I would like to see
8 a meeting like this occur at a bigger venue with more
9 notice. An example would be, as I've discussed with
10 Ms. Regner is it?
11 FACILITATOR BARKLEY: Regner, yes.
12 MR. BECKERMAN: I didn't have her name
13 correct. The Philadelphia Expo Center would be more
14 central to where the plume area for this plant is.
15 It's right off 422. This is not hard to get to,
16 that's not hard to get to. It's much more in the
17 center of the population. Thank you very much.
18 (Applause)
19 FACILITATOR BARKLEY: Okay, thank you.
20 Mr. Cuthbert? Again, following Mr. Cuthbert's remarks
21 it'll be Jim Derr to wrap up the evening.
22 DR. CUTHBERT: Good evening. My name is
23 Dr. Lewis Cuthbert. I'm the president of ACE, the
24 Alliance for a Clean Environment. And my comments
25 this evening are going to differ from this afternoon

because they're going to be focusing on as a general topic documented evidence. We've heard a lot of assertions, assumptions and claims throughout the day many of which would be very difficult to substantiate in our experience. Based on an 11-year investigation conducted by the Alliance for a Clean Environment we have formed a conclusion that we are presenting to the Nuclear Regulatory Commission today and that is very simply that Limerick nuclear power plant must be closed by the NRC, not re-licensed until 2049. And that's based on a substantial body of evidence in terms of documented environmental harms, threats and risks that have in fact gotten into our air, our water, our soil, our food, our milk and our children. The evidence is not refutable.

1-29-OR

So I'll be presenting as part of my remarks tonight what I'm calling a short list of 14 reasons why the NRC may feel free to with more than adequate justification deny this permit. And I'm going to categorize each of them very briefly without any further description or analysis. The evidence comes from a variety of permits, official records and reports, and Exelon's own renewal application which is sizable by their own admission and in our experience in taking a look at it.

1 The 14 items any of which in our judgment
2 should be adequate and sufficient to deny this permit
3 renewal include, number 1, radiation into air and 1-30-RW
4 water from routine and accidental emissions. Number
5 2, major air pollution under health-based standards of
6 the Clean Air Act. A Title 5 permit being issued to 1-31-AM
7 this facility means by definition that they are a
8 major air polluter under the federal Clean Air Act.
9 Number 3, Schuylkill River depletion and major
10 drinking water contamination. Keep in mind this is a 1-32-SW
11 vital drinking water source for nearly 2 million
12 people from here to Philadelphia. Number 4,
13 radioactive groundwater contamination. Number 5, 1-33-GW
14 radiation reporting levels increased dramatically
15 after the Fukushima Japan disaster. Number 6, 1-34-RW
16 documented alarming cancer increases especially in our
17 children since Limerick started operating. Number 7, 1-35-HH
18 deadly high-level radioactive wastes that are packed
19 in vulnerable fuel pools on this site and they are in 1-36-RW
20 fact unprotected. They are above ground and
21 unprotected. Number 8, lax fire safety regulations 1-37-OS
22 and multiple violations. Number 9, accidents and
23 leaks from corroding, deteriorating equipment plus
24 miles of buried pipes and cables. Many problems and 1-38-OS
25 shutdowns have already occurred at this facility in

1 its first 26 years of operation. They are a matter of 1-38-OS Cont'd
2 record. Number 10, increased risk of meltdowns from
3 more frequent and stronger earthquakes and other 1-39-OS
4 natural disasters such as tornadoes and floods, not to
5 mention mechanical failures. Number 11, threats from
6 unguarded terrorist attacks with planes and missiles
7 and a new threat, cyber attacks. Fuel pool are 1-40-OS
8 vulnerable to attack.
9 Number 12, one that I think probably
10 should jump to the head of the list for the NRC based
11 on a lot of comments from a lot of other analysts and
12 elected officials, the need for an updated evacuation
13 plan and increased EPZ, a 10-mile radius. This plan
14 is seriously outdated. It is by many expert's 1-41-OS
15 observations fatally flawed. There will be no
16 evacuation in the event of a worst case scenario.
17 Several people spoke to that this evening. The
18 population in this area has increased more than 180
19 percent since 1980 to 2010, U.S. Census data. Updates
20 are obviously needed and they should be reasonable,
21 comprehensive, detailed and accommodate all of the
22 demographics from 1985 to today and from today until
23 as far out as the NRC is willing to license this
24 facility.
25 Number 13, increased cost to the public. 1-42-OS

1 We've heard a little bit about this this evening, more
2 cancers, more illnesses, more emergency room visits,
3 more hospitalization from increased PM-10. Massive
4 research on what particulate matter in terms of PM-10 1-42-OS Cont'd
5 does to human beings. And there are a few other
6 things that contribute to those visits. The costs are
7 astronomical. One case that Donna mentioned, $2.2
8 million for a childhood cancer case. You do the math.
9 And number 14, the last item on my list.
10 We have had 26 years of insults to our environment,
11 and I choose that word purposely, insults to our 1-43-AL
12 environment and costly nuclear power. We can replace
13 it with safe, clean, renewable energy before 2029.
14 That is a matter of scientific fact.
15 It is a scientific certainty that harms,
16 threats and risks to our environment and to our
17 community will increase continuously daily until
18 Limerick's current operating licenses expire in 2029.
19 It would be both unethical and irresponsible for the
20 NRC to cavalierly approve a license renewal without
21 the most rigorous review and justification in the
22 history of this agency. NRC, you have a rare
23 opportunity before you that most people and agencies
24 never are afforded. It's called a do-over, a chance
25 to correct a litany of mistakes and errors associated

1 with this facility and with your agency since 1985.
2 Twentieth century technology and infrastructure are no
3 longer sufficiently reliable for any of you to assure
4 us that there is nothing to fear and nothing about
5 which to be concerned. Denial of documented evidence
6 is no longer an option. We'll be submitting
7 additional packets of research documentation and
8 evidence tonight along with my comments which will
9 compliment what I did earlier today. The major
10 categories that you'll be getting for additional
11 reading and review, meltdown threats, evacuation
12 plans, Exelon's inaccurate and unsubstantiated claims
13 and a criticism of the NRC's oversight track record in
14 this community. Thank you very much and please accept
15 this for review.
16 (Applause)
17 FACILITATOR BARKLEY: Okay, thank you, I
18 will. Thank you. Mr. Derr?
19 MR. DERR: Good evening. I thought I
20 would add some comments just to make sure my
21 understanding is that this is essentially the NRC's
22 opportunity of listening for things specifically to be
23 included in the environmental site review of the re-
24 licensing. And just a few things which are question
25 marks that lots of folks in the community I think will

1 be interested in. Most of these have been touched on.
2 Mine water issue, better defining that
3 quality and flow particularly in light of the likely
4 pending changes in stormwater concerns and regulations 23-1-SW
5 in the area. Adding that flow to the Schuylkill is
6 going to affect all the municipalities around here who
7 have to deal with stormwater.
8 The emergency planning is an area which
9 needs to be seriously looked at. Hard and soft
10 infrastructure on that. Hopefully that's something 23-2-OS
11 which is part of the ongoing operational requirements
12 for periodic review and update since obviously this is
13 not a static environment we live in. That has to be
14 changed on an ongoing basis. And then to -- I'm sure
15 that the generic plan includes a pretty good
16 discussion of fuel storage long-term and short-term 23-3-OS
17 onsite but certainly the site-specific fuel storage
18 considerations. And I want to second the comments by
19 Mr. Ely of review of records of non-conformances and
20 anything that was done is part of the initial 23-4-OS
21 construction record. And basically that's -- those
22 are the things that we're going to be looking for a
23 better understanding of. Thank you.
24 (Applause)
25 FACILITATOR BARKLEY: I did have one last

1 request for an individual to speak. She promises
2 she'll only be two minutes so we'll have her up and
3 then we'll wrap up the meeting. Thank you.
4 MS. CONFER: Hi, my name is Traci Confer.
5 I'm with Energy Justice Network. We support clean
6 energy which we do not believe nuclear is. I would
7 like to put our name behind all of Buzz Cuthbert's
8 comments and I want to add that I want the NRC to look
9 into potential water depletion issues from shale gas 24-1-SW
10 fracking upriver in both rivers. I also think that it
11 would be very prudent to put a lot of attention on 24-2-OS
12 terrorist attacks on the fuel pools. And those are my
13 primary comments. Thank you for your time.
14 (Applause)
15 FACILITATOR BARKLEY: Okay, thank you.
16 With that I'd like to have Lisa Regner come up for a
17 minute and give closing remarks.
18 MS. REGNER: I just wanted to real quickly
19 thank our senior resident inspector who came out
20 tonight out of the goodness of her heart. She does
21 not get paid for this. Jo, would you mind standing
22 up?
23 (Applause)
24 MS. REGNER: Thank you. This is one of
25 the NRC inspectors who works at the plant day in and

Mendiola, Doris

From: Camilla Lange [camillange@verizon.net]
Sent: Monday, September 26, 2011 2:20 AM
To: Regner, Lisa
Subject: NRC Public Meeting Feedback

8/26/2011
76FR53498
(1)

Dear Ms. Regner:

I attended the NRC Limerick Generating Station License Renewal public meeting at Sunnybrook Ballroom on 9/22/11. I listened attentively to comments from all 15 speakers at the evening session and took into account all the pro and con arguments presented. Despite all the reassurances from Exelon representatives about the safety and efficacy of the generating station's nuclear power, I have serious reservations and concerns about these issues.

First of all, considering the impact of the outcome to the many area residents, this forum was not widely publicized for local citizens to be aware of this important matter and offer feedback. Secondly, it does not make sense that Exelon is pursuing renewal for a license that does not expire until 2024. This action seems very premature. 25-1-LR

I will briefly summarize my chief concerns. The scientific statistics citing the dramatic increase in cancer rate, infant mortality, and Schuylkill River water pollution are disturbing. Also, it seems to me that the situation of unprotected above ground casks holding radioactive waste, as well as past safety failures and deviations in operations must be reviewed and addressed. I tend to agree with the fourteen reasons offered by the Alliance For A Clean Environment why Exelon should be denied the renewal license. In my opinion, the long-term negative consequences caused by the Limerick Generating Station far outweigh any possible benefits it may contribute. Other forms of energy can and must be utilized to meet energy consumption demands. 25-3-OS 25-2-HH 25-4-OR 25-5-AI

Thank you for arranging the public meetings to discuss this serious matter. I trust you will take my comments into consideration and urge Exelon to provide other such forums with widespread notification beforehand so that more interested citizens can participate.

Sincerely,
Camilla Lange
616 W. Schuylkill Road Apt. 164
Pottstown, PA 19465
camillange@verizon.net

SUNSI Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = L. Regner (LMR2)

Mendiola, Doris

From: Eric Hamell [stripey7@yahoo.com]
Sent: Wednesday, September 21, 2011 7:38 AM
To: Regner, Lisa
Subject: Limerick

Follow Up Flag: Follow up
Flag Status: Flagged

Please do NOT extend the Limerick licenses! 26-1-OR

Eric Hamell
Philadelphia, PA

8/26/2011
76FR53498
2

SUNSI Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = L. Regner (LMR2)

Mendiola, Doris

From: steve furber [ctevewrx@yahoo.com]
Sent: Tuesday, September 20, 2011 4:17 PM
To: Regner, Lisa
Subject: Limerack Renewal

Follow Up Flag: Follow up
Flag Status: Flagged

8/26/2011
76FR 53498
(3)

I am under the belief that the natural disaster in Japan is enough for Pennsylvania to make a move toward clean energy. It is a matter of thinking ahead to the future generations and protecting quality of life for those who follow. 27-1-AL

Renewing Limerick's license just as controversies are arising with pushes to move from dependence on Nuclear energy is a bold business strategy by them. I don't think this is the right move to make. A long term contract will limit any sort of wiggle room to address future issues that may arise. 27-2-OR

I ask that you please consider the future of our great state. I don't think oil or nuclear energy is the way. I truly believe in heart, that in order to protect the health of our population for the future, we must change our ways today.

Sincerely,

Steven Furber

RECEIVED
2011 SEP 26 AM 10:04
RULES AND DIRECTIVES BRANCH USNRC

SUNSI Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = L. Regner (LMR2)

1

PUBLIC SUBMISSION

As of: September 27, 2011
Received: September 22, 2011
Status: Pending_Post
Tracking No. 80f27eee
Comments Due: October 28, 2011
Submission Type: Web

Docket: NRC-2011-0166
Notice of Receipt and Availability of Application for Renewal of Limerick Generating Station, Units 1 and 2 Facility Operating License

Comment On: NRC-2011-0166-0003
Exelon Generation Company, LLC; Notice of Intent to Prepare an Environmental Impact Statement and Conduct the Scoping Process for Limerick Generating Station, Units 1 and 2

Document: NRC-2011-0166-DRAFT-0002
Comment on FR Doc # 2011-21921

8/26/2011
76FR53498
(4)

Submitter Information

Name: Charlene Padworny
Address:
1117 Oakdale Dr
Pottstown, pennsyvania, 19464-2782

General Comment

I object to being continuously poisoned by the Limerick Nuclear Plant's radiation and other dangerous toxins. Please do not allow for an extension of the Limerick Nuclear Plant's operating license. I support more healthy and efficient sources of energy such as Solar and Wind Power. Please stop ignoring the detrimental effects that this power plant is having on our environment, health and children's health...it's time to move on to better things for all involved!

28-1-OR

28-2-AL

Thanks so much,

Charlene Padworny

SUNSI Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = L. Regner (LMR2)

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

RECEIVED
2011 SEP 23 PM 4:10
RULES AND DIRECTIVES BRANCH

LIMERICK GENERATING STATION
Environmental Scoping Comments
Division of License Renewal
NRC-2011-0166

8/26/2011
76 FR 53498
5

Written Comment Form
Must be received on or before October 28, 2011. Please print clearly.

Name: Sylvia Pollick
Title: Resident of East Coventry
Organization:
Address: 23 EARL DR.
City: Pottstown State: PA Zip Code: 19465

Comment:
I hope Exelon Energy does not get Renewed. I am sure we could find alternative energy that would not be Contaminating the whole area. 29-1-AL

The Reactor time has served its years and should not be renewed. 29-2-OR

Use other side if more space is needed.

Comment Forms may be mailed to:
Chief, Rules, Announcements, and Directives Branch
Mail Stop: TWB-05-B01M
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUNSI Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = L. Regner (LMR2)

Gallagher, Carol

RECEIVED 2011 SEP 30 PM 1:31 RULES AND DIRECTIVES BRANCH USNRC

From: Joe Roberto [joe@robertoandassociates.com]
Sent: Wednesday, September 21, 2011 7:20 PM
To: Regner, Lisa
Cc: Joe Roberto
Subject: LIMERICK

8/26/2011
76 FR 53498 (6)

Dear NRC:

First of all, let me ask why the lack of public notice regarding the public hearing to be held for Limerick Licensing Extension when in fact the current permit is through 2024 and Exelon is asking for another 20 year extension? Your first priority is NOT for the publically traded, for profit company to rush to get this public notice "done" as a requirement to extend the permit another 20 years out which is not due to expire for another 10+ years but to rather really solicit input from the community and folks impacted. The NRC did not do so. There was one article in the local newspapers stating that there would a public session and only saw the actual notice, by virtue of an article in the North Penn Reporter yesterday. This is not proper notice in general and not sure NRC did what is required. What is required and what have you done? And if proper notice was not done, I want another one(s) scheduled please. I, respectfully, am very interested in this answer.

FEEL FREE TO READ THE FOLLOWING AT THE PUBLIC HEARING:

Now, let's get to the big issue at hand. Limerick should NOT be approved for an extension with their permit for the following reasons:

- It is NOT due to expire until 2024 – thus, Exelon has nothing to loss but get an extension sooner than later so they can sit back and relax operating for the next 20+ years. 30-1-LR
- Limerick is designated as one of the TOP THREE nuclear plants in the country based on it's construction (which is similar to the ones in Japan – and we see how they failed) and the fact that it sits on an earthquake fault line.
- The NRC JUST a few weeks ago stated that "more information needs to be done and studied" regarding further fortifying nuclear plants regarding earthquakes. Thus, until you folks know exactly what needs to be done, etc. THERE IS NOTHING TO APPROVE as long as Limerick sits in it's current position. 30-2-GE
- Do NOT think that earthquakes only happen on the West Coast – as we JUST had a 6+ earthquake less than a month ago. BY ONLY luck was there no damage to the plant, environment or community.
- ~~The NRC had NO business allowing this plant to ever be built a) so close to such populated areas like~~ Philadelphia (now, what the 3 largest city in the country?) within less than an hour, and exactly due SE from the site. 30-3-OS
- When Limerick was built, there was no idea that the area would grow in population like it has. For safety reasons, just look on any given day the traffic on Route 422 – stacked and stuck for miles on end. Route 422 is the #1 route for evacuations and does not handle regular commuter traffic let alone entire communities. 30-4-OS
- The NRC and USA Government STILL have not decided on where to store spent nuclear rods and as we speak each spent rod is sitting in baths on the Limerick sit, stacking up – expanding even a greater hazard to the community, environment, etc. SO put simply, there is ABOSLUTELY NO REASON to approve this request for YEARS until the US Government decides how they will handle such rods and such rods and properly stored. 30-5-RW
- There are many other environmental friendly sources of energy and Limerick as anything but that. As a matter of fact, Limerick is a TIME BOMB, placed at the wrong location, on the wrong land, too close to major populations, run by a for profit company who can not even handle the basic maintenance issues of power lines, in an aged building without the newest technology nor able to stand a real earthquake, and on and on. 30-6-OS
- The cooling towers are within basic walking distance from shopping malls and all right aside of it – please explain that – with minimal security from what many of us can see. 30-7-OS

SONSI Review Complete
Template = ADM-013
E-RIDS = ADM-03
Add = L. Regner (LMR2)

1

- Let's also mention a fact that Category I Hurricane Irene, which could have been a Category 3, just zipped less than 100 miles away from the site a few weeks ago and then Hurricane Lee which decided to travel further Eas came close to also causing chaos. Limerick is still TOO close to the disaster of Hurricanes as well. 30-8-AM
- Lastly, some who have a vested interest in working at the plant, etc. are quick to state that it is safe, etc. – not now, nor has it ever been fool proof against disasters, technical glitches, etc. 30-9-OS

Thus, I feel firmly and many in the community feel the exact same way, that there is NO REASON to approve NOW (especially so far in advance, with no answer on usage rods nor what needs to be done to prevent a meltdown due to an earthquake, etc.) or EVER since the population will only increase and the facility age further. It is the wrong timing, wrong plant, wrong place, etc. for Limerick. Maybe Exelon can put in as much effort and "energy" to develop solar fields, wind, etc... They would rather beat the hell out of a high efficiency plant at any and all cost to the environment and community. This is where the NRC does the right thing and says NO until a year before it expires. NRC needs to take a stand as you have the data and know what I have stated above is more than fair and true. 30-10-OR

Thank you for your time and attention.

Regards,

Joe Roberto

8/26/2011
76FR53498

(7)

Delaware Tribe Historic Preservation Office
1420 C of E Drive, Suite 190
Emporia, KS 66801
(620) 340-0111
bobermeyer@delawaretribe.org

September 23, 2011

Chief, Rules, Announcements, and Directives Branch
Division of Administration Services
Office of Administration
Mailstop TWB-05-B01M
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Re: Request for scoping comments concerning the Limerick Generating Station, Units 1 and 2, License Renewal Application Review

Dear Lisa Regner:

Thank you for informing the Delaware Tribe on the proposed construction associated with the above referenced project. Our review indicates that there are no religious or culturally significant sites in the project area. As such, we defer comment to your office as well as to the State Historic Preservation Office and/or the State Archaeologist.

31-1-HA

We wish to continue as a consulting party on this project and look forward to receiving a copy of the cultural resources survey report if one is performed. We also ask that if any human remains are accidentally unearthed during the course of the survey and/or the construction project that you cease development immediately and inform the Delaware Tribe of Indians of the inadvertent discovery.

If you have any questions, please feel free to contact this office by phone at (62) 340-0111 or by e-mail at bobermeyer@delawaretribe.org

Sincerely,

Brice Obermeyer

Brice Obermeyer
Delaware Tribe Historic Preservation Office
1420 C of E Drive, Suite 190
Emporia, KS 66801

RECEIVED
2011 OCT -3 PM 2:27
RULES AND DIRECTIVES BRANCH

SUNSI Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = L. Regner (LMR2)

Stockbridge-Munsee Tribal Historic Preservation Office

Sherry White - Tribal Historic Preservation Officer
W13447 Camp 14 Road
P.O. Box 70
Bowler, WI 54416

8/26/2011
76FR53498

(8)

Date Sept 28-11
Project Number Limerick Generating Station
TCNS Number
Company Name United States Nuclear Reg.

We have received you letter for the above listed project. Before we can process the request we need more information. The additional items needed are checked below.

Additional Information Required:

_____Site visit by Tribal Historic Preservation Officer
_____Archeological survey, Phase 1
_____Literature/record search including colored maps
_____Pictures of the site
_____Any reports the State Historic Preservation Office may have
_____Has the site been previously disturbed
_____ Review fee must be included with letter

RECEIVED
2011 OCT -4 PM 3:47
RULES AND DIRECTIVES BRANCH

If site has been previously disturbed please explain what the use was and when it was disturbed.

Other comments or information needed_____

After reviewing your letter we find that:

_X_ "No Properties" the Tribe concurs with a Federal agency's finding that there are no National Register eligible or listed properties within the Federal undertaking's area of potential effect or APE 36CFR 800.4 (d) (1)

32-1-HA

_____"No Effect" historic or prehistoric properties are present but the Federal undertaking will have no effect on the National Register eligible or listed properties as defined in Sec. 800.16(i)

_____"No Adverse Effect" refers to written opinions provided to a Federal agency as to whether or not the Tribe agrees with (or believes that there should be) a Federal agency finding that its Federal undertaking would have "No Adverse Effect" 36 CFR 800.5(b)

SONSI Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = L. Reyner (LMR2)

NRC FORM 659
(4-2010)

U.S. NUCLEAR REGULATORY COMMISSION

Category
3

NRC PUBLIC MEETING FEEDBACK

Meeting Date: 09/22/2011

Meeting Title: **Limerick Generating Station License Renewal Overview and Environmental Scoping Comments Public Meeting**

In order to better serve the public, we need to hear from the meeting participants. Please take a few minutes to fill out this feedback form and return it to NRC.

1. How did you hear about this meeting?

   [ ] NRC Web Page [ ] NRC Mailing List [✓] Newspaper Pottstown Mercury

   [ ] Radio/TV [ ] Other _____

		Yes	No (Please explain below)	Somewhat
2.	Were you able to find supporting information prior to the meeting?	[ ]	[ ]	[ ] ✓ Didn't Check
3.	Did the meeting achieve its stated purpose?	[✓]	[ ]	[ ]
4.	Has this meeting helped you with your understanding of the topic?	[✓]	[ ]	[ ]
5.	Were the meeting starting time, duration, and location reasonably convenient?	[✓]	[ ]	[ ]
6.	Were you given sufficient opportunity to ask questions or express your views?	[✓]	[ ]	[ ]
7.	Are you satisfied overall with the NRC staff who participated in the meeting?	[✓]	[ ]	[ ]

COMMENTS OR SUGGESTIONS: Thank you for answering these questions.

Why is the request so early - the NRC should get a request closer to expiration date.
Also, the Inspection should done closer to the expiration date. In 2023, not 2013

33-1-LR

Continue Comments on the reverse.

OPTIONAL

Name _____ Organization Resident

Telephone No. _____ E-Mail _____ [ ] *Check here if you would like a member of NRC staff to contact you.*

OMB NO. 3150-0197 Expires: 08/31/2012

Public Protection Notification: If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

Please fold on the dotted lines with Business Reply side out, tape the bottom, and mail back to the NRC.

Mendiola, Doris

Subject: FW: Response from "Comment on NRC Documents"

8/26/2011
76 FR 53498

(10)

RECEIVED
2011 OCT 12 AM 9:42
RULES AND DIRECTIVES BRANCH

-----Original Message-----
From: Richard Kolsch [mailto:Rklsch@aol.com]
Sent: Thursday, September 22, 2011 5:44 PM
To: INFOCOLLECTS Resource
Subject: Response from "Comment on NRC Documents"

Below is the result of your feedback form. It was submitted by

Richard Kolsch (Rklsch@aol.com) on Thursday, September 22, 2011 at 17:44:25

Document_Title: License Renewal Limerick PA

Comments: Comments on Limerick Power Plant License Renewal Limerick, PA September 22, 2011

1. Why is there a rush to renew the license? It is not due until 2024, approval at the earliest should be 2019. This would allow 5 years for the business plan of PECO to either continue or close the plant and make arrangements for additional power to replace the closed plant. 34-1-LR

2. A firm closure plan should be approved before license renewal is accepted. This plan must include what is to be done with the site, where the nuclear waste will be disposed of etc. The disposal area must be at site in operation not some theoretical site like the now defunct Yucca site. The public and our future generation deserves to know what is expected to be done at the site. Radioactive material must not be allowed to remain on the site. 34-2-DC 34-3-RW

3. The government should conduct a survey of various illness in the vicinity of the nuclear plant prior to any renewal of a license. If this would indicate a danger living near the plant then the license should not be renewed. 34-4-HH

4. Developers are required to fund traffic improvements to an area to allow an area to be developed, this should apply to Limerick. The evacuation plan now will not work. When the plant was started there was no traffic out here, now it is grid lock. Limerick should fund new roads and bridge to alleviate traffic jams in order to have an orderly evacuation. 34-5-OS

5. The plant is vulnerable to terrorist attacks. An airport is located next to the facility. A plane could be flown into the reactor building or the emergency power supply for the water circulation system at the same time terrorist could cut all outside power to the plant this would cause a meltdown and render the entire area around and downwind of the area uninhabitable for hundreds of years. 34-6-PA

organization: None

address1: 1694 Kepler Rd.

address2:

SUNSI Review Complete
Template = ADM-013

ERIDS = ADM-03
Add = L. Regner (LMR2)

1

8/26/2011

76FR 53498

(11)

September 24, 2011
2461 E. High St., Unit F-28
Pottstown PA 19464

USNRC
Mailstop: TWB-05-BO1 M
Washington DC 20555

USNRC Lisa Regner:

We wish to add our comments to the NRC record.

We attended one of the NRC hearings concerning Limerick's Environmental Impact (9/22/11 at 2:00 p.m.) and were appalled that local business and community leaders avoided voicing concerns about Limerick's environmental impact, mentioning its economic influence, instead. That doesn't mean that those speakers had no concerns. The NRC would be remiss to consider a "thank you for money and jobs" as part of its evaluation of community-wide nuclear safety issues connected with Limerick's re-licensing request. Nuclear energy production is not an earth-friendly or population-sustaining process. It has had terrible consequences!

Limerick Nuclear's influence is vast and horrific. This industry is a behemoth that has not been honest with the public about its true impact, forming its own "environmental" partnerships that are pure pronuclear propaganda tools. It's economic contributions are miniscule when compared to its enormous profits, while destroying our quality of life. The nuclear process's devastating environmental effect on our community cannot be understated. 35-1-OR

Limerick Nuclear's request for re-licensing is ludicrous, considering its aging and inadequate equipment, its increased air pollution by particulate matter, its horrific destruction of the Schuylkill River and dangerous above-ground spent fuel rod storage. The fact that its request has been made in the wake of Japan's recent triple meltdowns, is mind blowing! Representative Tom Quigley's comments were not at all an accurate assessment of local sentiment! 35-2-OS 35-3-AM 35-4-SW 35-5-RW

The nuclear process is not an enlightened way to generate electrical energy. This plant needs to transition itself into a more intelligent way of generating energy by actually phasing out and safely shutting down the nuclear plant. By retraining its workers and adopting the safer green technologies, it could truly partner with the local community without putting its workers out of jobs. 35-6-AL

Ordinary daily nuclear generation has had devastating community-wide consequences that need to be addressed. Re-licensing should not even be a consideration! The NRC must fully investigate the environmental concerns presented Dr. Lewis and Donna Cuthbert (ACE), Dr. Winter, and each resident who so civilly represented this community's concerns at the September 22, 2011 hearings. The Limerick Nuclear Power Plant should NOT be re-licensed and should, instead, begin to address the pollution issues it has already created as it seriously and carefully shuts down its reactors. 35-7-OR

Sincerely,

Charles and Elizabeth Shank

Charles and Elizabeth Shank
(610-323-6715)

RULES AND DIRECTIVES BRANCH

2011 OCT 12 AM 9:21

RECEIVED

SUNSI Review Complete
Template = ADM-013

ERIDS = ADM-03
Add = L. Regner (LMR2)

Mendiola, Doris

From: naturalcat@comcast.net
Sent: Wednesday, October 12, 2011 5:26 PM
To: Regner, Lisa
Subject: NRC ID DOCKET 2011-0166

Dear Ms Regner
As a business owner in Pottstown and a long time resident of the area I am deeply concerne 36-1-AM
about the Limerick plant. I do not know if this plant is internally "safe" and it may very wel 36-2-SW
I am more concerned about the effects of our surrounding air and water supply and the future of
my children and grandchildren, some of whom are already inflicted with cancer and other 36-3-HH
diseases. I also am concerned about terrorist attacks, natural diseasters and the more common
"human error." I plead with you to not renew this license. I am very fearful. 36-4-OS
Respectfully,
Nancy Leaming
p.s. I did attend the meeting and listen with open mind and ears but my fears were not eased.

8/26/2011
76FR53498
(12)

SUNSI Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = L. Regner (LWR)

1

8/26/2011
76 FR 53498

Mendiola, Doris

(13)

RECEIVED
2011 OCT 13 AM 9:53
RULES AND DIRECTIVES BRANCH

From: Cynthia Gale [cgale@barbergale.com]
Sent: Wednesday, October 12, 2011 4:31 PM
To: Regner, Lisa
Cc: Michael Gale
Subject: DO NOT RELICENSE LIMERICK NUCLEAR PLANT. PERIOD.

Dear Ms. Regner,

On behalf of my family, friends, and neighbors, please do not relicense the Limerick Nuclear Power Plant. We work in Pottstown, live in Elverson, and our young daughter goes to school in Kimberton. All these locations are in harm's way of Limerick. Every day when I drop our child off at school I have a view of the Limerick towers when I travel on Route 724. I pray everyday that nothing happens when our daughter is at school. We no longer feel safe or even drink our tap water, do you?

Limerick Nuclear Plant's License Expires In 2029 - Exelon Wants To Run It Until 2049
Threats and Harms, Already Unacceptable After 26 Years, Are Increasing!

Since 1985, Unprecedented Environmental Harms, Threats, and Risks From Limerick Include:

1. Radiation Into Air and Water From Routine and Accidental Emissions 37-1-RW
2. Major Air Pollution Under Health Based Standards of the Clean Air Act 37-2-AM
3. Schuylkill River Depletion and Major Drinking Water Contamination 37-3-SW; 37-4-GW
4. Radioactive Groundwater Contamination 37-5-GW
5. Radiation Reporting Levels Increased Dramatically After Japan Disaster 37-6-OS
6. Alarming Cancer Increases, Especially In Children, Since Limerick Started Operating 37-7-HH
7. Deadly High Level Radioactive Wastes Packed In Vulnerable Fuel Pools On Site 37-8-RW
8. Lax Fire Safety Regulations 37-9-OS
9. Accidents and Leaks From Corroding, Deteriorating Equipment Plus Miles of Buried Pipes and Cables 37-10-OS
10. Increased Risk of Meltdown From More Frequent and Stronger Earthquakes and Other Natural Disaste 37-11-PA
11. Threats From Unguarded Terrorist Attacks With Planes and Missiles, Cyber Attacks 37-12-OS
12. Need for an Updated Evacuation Plan and Increased EPZ 37-13-OS
13. Increased Costs to the Public - More Cancers and Other Costly Illnesses, More Emergency Room Visits and Hospitalizations from Massive Increases in PM-10 and TDS, Treatment of Public Drinking Water, Environmental Clean-Up 37-14-HH
14. Dangerous, Dirty, Harmful, and Costly Nuclear Power Is Not Needed. It Can And Should Be Replaced With Safe, Clean, Renewable Energy. 37-15-AL

List Compiled By The Alliance For A Clean Environment - September 2011

SUNSI Review Complete
Template = ADM-013

E-RIDS = ADM-03
add = L. Regner (LHR2)

1

(14) 8/26/2011 76 FR 53498

RECEIVED 2011 OCT 13 PM 4:35 RULES AND DIRECTIVES BRANCH USNRC

Mendiola, Doris

From: Schweg [schweg@gmail.com]
Sent: Thursday, October 13, 2011 10:21 AM
To: Regner, Lisa
Subject: Limerick License Renewal - NRC I.D. Docket 2011-0166

Hello Ms. Regner,

I'm writing to you to state my opposition to the relicensing of the Limerick Generating Station in Limerick Township, Pennsylvania. 38-1-OR

I'm worried about Exelon Generation Co., LLC's safety record and I hope you will consider my opinion on this matter. 38-2-OS

Respectfully,
Jude Schwegel
79 South White Horse Road
Phoenixville, Pa 19460
--
If you want to be important—wonderful. If you want to be recognized—wonderful. If you want to be great—wonderful. But recognize that he who is greatest among you shall be your servant. That's a new definition of greatness.

Everybody can be great, because everybody can serve. You don't have to have a college degree to serve. You don't have to make your subject and your verb agree to serve. You don't have to know about Plato and Aristotle to serve. You don't have to know Einstein's theory of relativity to serve. You don't have to know the second theory of thermodynamics in physics to serve. You only need a heart full of grace, a soul generated by love. And you can be that servant.

Excerpted from The Drum Major Instinct sermon of the Rev. Dr. Martin Luther King, Jr.
Delivered at Ebenezer Baptist Church, Atlanta, Georgia, on 4 February 1968

SUNSI Review Complete
Template = ADM-013

E-RIDS = ADM03
Add = L. Regner (LHR2)

1

8/26/2011
76FR53498

Mendiola, Doris

(15)

From: Michael Gale [mgale@barbergale.com]
Sent: Thursday, October 13, 2011 9:26 AM
To: Regner, Lisa
Subject: DO NOT RELICENSE LIMERICK NUCLEAR PLANT. PERIOD.

And, get the US manufacturing again making wind turbines, solar panels, retrofitting older buildings to be energy efficient, not funding this an other budget-busting toxic time bombs. 39-1-AL

Limerick Nuclear Plant's License Expires In 2029 - Exelon Wants To Run It Until 2049
Threats and Harms, Already Unacceptable After 26 Years, Are Increasing!

Since 1985, Unprecedented Environmental Harms, Threats, and Risks From Limerick Include:

1. Radiation Into Air and Water From Routine and Accidental Emissions 39-2-RW
2. Major Air Pollution Under Health Based Standards of the Clean Air Act 39-3-AM
3. Schuylkill River Depletion and Major Drinking Water Contamination 39-4-SW; 39-5-GW
4. Radioactive Groundwater Contamination 39-6-GW
5. Radiation Reporting Levels Increased Dramatically After Japan Disaster 39-7-OS
6. Alarming Cancer Increases, Especially In Children, Since Limerick Started Operating 39-8-HH
7. Deadly High Level Radioactive Wastes Packed In Vulnerable Fuel Pools On Site 39-9-RW
8. Lax Fire Safety Regulations 39-10-OS
9. Accidents and Leaks From Corroding, Deteriorating Equipment Plus Miles of Buried Pipes and Cables 39-11-OS
10. Increased Risk of Meltdown From More Frequent and Stronger Earthquakes and Other Natural Disasters 39-12-PA
11. Threats From Unguarded Terrorist Attacks With Planes and Missiles, Cyber Attacks 39-13-OS
12. Need for an Updated Evacuation Plan and Increased EPZ 39-14-OS
13. Increased Costs to the Public - More Cancers and Other Costly Illnesses, More Emergency Room Visits and Hospitalizations from Massive Increases in PM-10 and TDS, Treatment of Public Drinking Water, Environmental Clean-Up 39-15-HH
14. Dangerous, Dirty, Harmful, and Costly Nuclear Power Is Not Needed. It Can And Should Be Replaced With Safe, Clean, Renewable Energy. 39-16-AL

List Compiled By The Alliance For A Clean Environment - September 2011

We sincerely hope you will act with your fellow citizens' health, and indeed longevity in mind.

Sincerely,

Michael Gale
172 north hanover street
pottstown, pa 19464
610-705-3606 *p*
mgale@barbergale.com
http://www.barbergale.com
designing sustainable brands

SUNSI Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = L. Regner (LHR2)

1

8/26/2011
76FR53498

Mendiola, Doris

Subject: FW: LIMERICK

16

RECEIVED

2011 SEP 13 PM 4:35

RULES AND DIRECTIVES BRANCH USNRC

From: Joe Roberto [mailto:joe@robertoandassociates.com]
Sent: Monday, September 26, 2011 2:46 PM
To: Regner, Lisa
Subject: RE: LIMERICK

Thanks and again, since this reactor has until 2024 – why the rush, and only one public meeting. If you have not heard it, you will. There is a major public outrage over this one meeting and not knowing about until too late. People want public meetings so that people hear that many are against this plant rather than just submitting comments to the NRC which appears to just rubber stamp license requests – which is not comforting to me and many. But I do thank you very much for the courtesy, response and review of points. 30-13-LR

There is also something that I did not comment on before – why was Limerick taken "offline" three times in as many months? Is NRC checking? 30-14-OS

Thanks,
Joe Roberto

SUNSI Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = L. Regner (RMR2)

1

Mendiola, Doris

From: Melissa Antrim [mantrim@boscovs.com]
Sent: Friday, October 14, 2011 2:18 PM
To: Regner, Lisa
Cc: Antrim, Melissa home)
Subject: Docket 2011-0166 - Limerick License Renewal

8/26/2011
76 FR 53498
(17)

RECEIVED
2011 OCT 14 PM 2:56
RULES AND DIRECTIVES BRANCH USNRC

Via email: Lisa.Regner@NRC.gov
U.S. NRC
Ms. Lisa Regner
Mailstop TWB-05-BO1 M
Washington, D.C. 20555

Reference: **Request for Denial of Limerick License Renewal - NRC I.D. Docket 2011-0166**

Dear Ms. Regner:

I attended the recent meeting on the possible renewal of Limerick Nuclear Plant's license for 20 years past its current 2024 and 2029 expiration dates. I strongly believe, as do many of my local friends and family, that the **Limerick Nuclear Plant must** be closed, not relicensed. Approving Limerick Nuclear Plant to be relicensed until 2049 would be jeopardizing the health of thousands and thousands of people in neighboring communities. There is substantial evidence readily available which justifies closing Limerick. Renewing this license could lead to a catastrophic meltdown. 40-1-OR

Limerick was built to last 40 years. The older any facility gets, the more likely breakdowns and equipment failure will occur. When it's a nuclear power plant, meltdown could result from corroding, deteriorating, and aging pipes, cables, and equipment - honestly, a number of things. *Miles* of deteriorating underground buried pipes and cables are a major concern - how and how often are these inspected? **Signs of mechanical damage and breakdown already exist** - three unplanned shutdowns June 2011, preceded by many others since 2007, one with loss of cooling water. While some parts can be replaced, by the nuclear industry's own admission, some equipment is too big and expensive to replace. Limerick is showing signs of stress and no one knows just how bad this will be by the time the current license is up. To add 20 more years to that, without having a clue as to what the condition will be, would be beyond careless. 40-2-OS

Over eight million people live within 50 miles of Limerick Nuclear Plant. Safe evacuation is not possible, even within the seriously flawed and inadequate current 10-mile evacuation plan. Until Limerick closes, NRC should expand the evacuation plan (to 50 miles) and be sure there are enough shelters and supplies available to accommodate the over 8 million people within that radius. Exelon should pay for the supplies. 40-3-OS

It doesn't take an accident or disaster for Limerick to poison the region's residents with radiation. Radiation from Limerick's routine and accidental emissions alone for the past 26 years is reason enough to deny Exelon's request. ***It's not credible for NRC to claim continuous radiation levels are safe for me and my family when there is no safe level of exposure according to the National Academy of Sciences and Physicians for Social Responsibility***.

NRC never did any radiation monitoring or testing at Limerick. Evidence shows testing done by Exelon and DEP cannot be trusted. **Exposure to radiation is known to cause cancer.** It should be obvious to NRC that Limerick played a major role in our tragic, well documented cancer crisis after Limerick started operating in the mid 1980s to the late 1990s. Four cancer studies based on PA Cancer Registry and CDC data showed skyrocketing rates for several cancers far higher than national and state averages, especially in children. Our children had the highest levels of Strontium-90 radiation in their baby teeth of any group near any nuclear plant studied. Limerick Nuclear Plant released SR-90 into our air and water that got into the milk, vegetation, and food since Limerick started operating. 40-4-HH

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E-RIDS = ADM-03
Add = L. Regner (LHR2)

Thyroid cancer increased by 128% from 1985 to 1997 - was a side note, with no family history or other obvious risk factors in my life, I was recently treated for thyroid cancer. Since my diagnosis, I have learned of many other locals like me. It's scary to think the choice of where we live could kill us. 40-5-HH

It would be careless, unethical and immoral for NRC to approve Exelon's requested license extensions for Limerick Nuclear Power Plant. **Limerick Nuclear Plant must be closed by 2029.** 40-6-OR

Sincerely,
Melissa Antrim
1008 Reading Ave
Boyertown, PA 19512

8/26/2011
76 FR 53498

Mendiola, Doris

RECEIVED
2011 OCT 14 PM 2:56
RULES AND DIRECTIVES BRANCH USNRC

(18)

From: Michael Antrim [antrim89@gmail.com]
Sent: Friday, October 14, 2011 2:35 PM
To: Regner, Lisa
Subject: Limerick - NRC I.D. Docket 2011-0166

Reference: **Request for Denial of Limerick License Renewal - NRC I.D. Docket 2011-0166**

Dear Ms. Regner:

The possible renewal of Limerick Nuclear Plant's license for 20 years past its current 2024 and 2029 expiration dates more than 12 years ahead of time, worries me a great deal. It's hard to understand why something this major would be done so far in advance. It's IMPOSSIBLE to know the condition of Limerick 12-19 years ahead of time. Why on earth would this be renewed so early? It's a lengthy process that could begin earlier, but in no way should something this important be rushed through now. Why not wait until closer to the expiration dates, and then seek approval? I understand this is how the original guidelines were set up - but those are long outdated. Approving Limerick Nuclear Plant to be relicensed until 2049 would be jeopardizing the health of millions. Renewing this license could be catastrophic to millions. Someone has to speak up; someone has to step up. 41-1-LR

Earthquakes and other natural disasters are more frequent and stronger than ever before. Limerick is 3rd on the earthquake risk list. Underground pipes and cables can shake and break, which would lead to loss of power, loss of cooling water, and ***meltdown***. Limerick's substandard containment flaw means more radiation would be released. It is simply too dangerous to keep Limerick operating. Would ***you*** want to live within miles of this potential catastrophic disaster? Add the enormous population growth that this area has seen over the past 10 years - with little to no road improvements - and attempting to evacuate the area during a disaster would be futile. It would be virtually impossible to get out of harms way. 41-2-OS

The older any facility gets, the more likely breakdowns and equipment failure will occur. Limerick was built to last 40 years. Limerick is showing signs of stress and no one knows just how bad this will be by the time the current license is up. To add 20 more years to that, without possibly knowing what the condition will be, would be careless. No one can predict what the condition of Limerick will be in 2024 or 2029. Over eight million people live within 50 miles of Limerick Nuclear Plant. Safe evacuation is not an option. Plain and simple. That's a scary thought for those of us who live here!!

Exposure to radiation is known to cause cancer. NRC has not done any radiation monitoring or testing at Limerick. Evidence shows testing done by Exelon and DEP cannot be trusted - it's ridiculous to think they could monitor themselves. It should be obvious to NRC that Limerick played a major role in our cancer crisis after Limerick started operating in the mid 1980s to 2000. Four cancer studies based on Pennsylvania Cancer Registry and the CDC showed skyrocketing rates for several cancers much higher than national and state averages, especially in children - innocent children. Thyroid cancer increased by 128% from 1985 to 1997. I have local friends and family with thyroid cancer and brain cancer - not one, but several. Sadly, it's no longer uncommon in this area to have a personal link to cancer. However, it IS uncommon in other areas of the country. It used to be uncommon here too - prior to Limerick. Would YOU want to live here? Would YOU approve a license renewal so close to home? Your job is to safely review the facts. Don't like the money of these corporations blur the facts. 41-3-HH

Thank you for your time today. Just remember, it would be careless, unethical and immoral for NRC to approve Exelon's requested license extensions for Limerick Nuclear Power Plant. Limerick Nuclear Plant must be closed by 2029. 41-4-OR

Sincerely,

SUNSI Review Complete
Template = ADM-013

E-RIDS= ADM-03
Add= L. Regner (LMR2)

1

8/24/2011

Mendiola, Doris

76FR 53498

(19)

From: joanmcglone@comcast.net
Sent: Sunday, October 16, 2011 10:11 PM
To: Regner, Lisa
Subject: Limerick License Renewal

Dear Ms. Regner: re: Limerick License Renewal - NRC I.D. Docket 2011-0166

I am opposed to the license renewal of the Limerick nuclear plant which was designed to safely operate for 30 yrs. and should now be safely shut down. Statistics regarding nuclear accidents at similar aging structures are well documented. Those two towers are ticking timebombs and the NRC knows this and needs to shut them down. Following the Japanese nuclear disaster our Limerick nuclear plant hit the statistical at risk list again. The increased risk of cancer is well-founded in the literature also. Why does the NRC think they can play God with people's lives? It is no longer debatable, shut it down before our very lives are jeopardized!!! 42-1-OS 42-2-HH

So-called quality of life issues addressed as part of public debate, e.g. "the power is always on" seems irrelevant to us when our families are required to evacuate during a disaster. Limerick must be closed and NOT relicensed at any cost, specifically the cost of life itself! 42-3-OR

Sincerely,
Joan McGlone
Resident of Royersford borough

RECEIVED
2011 OCT 17 PM 4:18
RULES AND DIRECTIVES BRANCH USNRC

SUNSI Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = L. Regner (LMR2)

1

Mary L Smith
1043 S Keim St
Pottstown PA 19465-7737

SOUTHEASTERN PA 193
14 OCT 2011 PM 1 L

USA FIRST-CLASS FOREVER

U.S. NRC, Lisa Regner, License Renewal
Mailstop TWB-05 - B01M
Washington, DC 20555

To: Lisa Regner, License Renewal
NRC I.D. Docket 2011-0166
U.S. NRC

Do not renew Limerick License. It's too dangerous and too old.

Please listen to their neighbors life is.

43-1-OR

Mary Lou, Mark Smith
and neighbors
1043 S. Keim St.
Pottstown, PA 19465

Committed to Community Service

Mendiola, Doris

Subject: FW: *Limerick License Renewal-NRC I.D. Docket 2011-0166
Attachments: Limerick.odt

-----Original Message-----
From: Angelbosley <angelbosley@aol.com>
To: Lisa.Regner <Lisa.Regner@NRC.gov>
Cc: AngelBosley <AngelBosley@aol.com>
Sent: Sun, Oct 23, 2011 12:48 pm
Subject: *Limerick License Renewal-NRC I.D. Docket 2011-0166

Lisa Regner:

Hello, I am attaching a letter to you regarding Limerick Power Plant trying to Re-license until 2049. Please read it. Thank you for your time and attention.

Sincerely,

8/26/2011

76 FR 53498

21

Lisa Smoyer
1027 Farmington Ave.
Pottstown PA 19464
484-945-0246

RECEIVED

2011 OCT 24 AM 9:58

RULES AND DIRECTIVES BRANCH USNRC

SUNSI Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = L. Regner (LMR2)

Sunday, October 23, 2011

Lisa Regner, License Renewal
Mailstop TWB-05-BO1 M
Washington DC 20555

Lisa.Regner@NRC.gov

*Limerick License Renewal-NRC I.D. Docket 2011-0166

Dear NRC/Lisa Regner:

I was unable to attend the public hearing at the time that is occurred. I would like to voice my concern to all of you through this letter. There are so many reasons why you as a group should already know that it would be in the best interest of the men, women, children, babies, fetuses, animals, fish, wildlife in general and the environment for you to refuse/oppose Limerick Power Plant from re-licensing. The problem that always seems to come up at some of these public hearings and sessions where businesses/corporations want to expand and become bigger and run their businesses long past the time that they should truly be allowed in order to keep people safe, always comes back to the issue of money, offerings, bribes, donations, etc. in the end. When these things occur, people and businesses turn a "blind eye" so to speak to the dangers of allowing a business like the Limerick Power Plant to renew its license again. That is unacceptable! I expect and demand better service from you to help protect myself and my family from harm! 44-1-OR

There is no "independent" testing being done at Limerick. The results of testing are provided by their own company, who has a vested interest in the outcome of those results, so how could you ever believe that they would be honest about the results? Seriously?? 44-2-OS

There is concern that should be faced regarding the Schuylkill River and the affects it is going to have on the public if it becomes depleted, and/or toxic due to the contaminates going in it. It is disgusting and heart wrenching to know that officials and organizations are not paying attention to what can happen to the public if Limerick Power Plant continues to operate longer then expected. Ignoring the obvious problems our community is facing and hoping that after they serve their term, it will be someone else s problem to deal with is unacceptable. Now is the time. Step up and do what is morally right for humanity. 44-3-SW 44-4-OR

We as a society need to wake up and start paying attention to the massive harm power plants can cause to the people, animals, water, air, etc. Why does everyone want to pay attention when it is way too late?? There are safer alternative forms of energy available to our country/communities. We should be working on them and training employees, who currently work for the nuclear power plants, how to work with safer forms of energy to help our country move forward in today's society. 44-5-AL

Haven't we already seen some of the damage that a terrorist attack can cause for our country and for others? Do you really need to risk more possible attacks on a power plant that is not fully equipped for that kind of attack or for some other natural disasters that can occur. This plant is not prepared for attacks with planes, missiles, and other threats such as a cyber attack. There should also be a concern for accidents and leaks from corroding and deteriorating equipment at the site from over the years 44-6-PA 44-7-OS

(Page 2 of 3)

which could cause parts of it to be shut down for periods of time, as well as the miles of buried pipes and cables. There are many concerns that should be fully looked at and considered, and just with minimal thought to them, it shouldn't take a "rocket scientists" so to speak to figure out that it is not in the best interest of the public or environment to allow them to re-license. 44-7-OS Cont'd

The most alarming and compelling thing to me as a taxpayer, homeowner, and mother is the overwhelming and alarming cancer increases to the public after Limerick had started operating. The CDC website showed a 92.5% higher than the national average for childhood cancer in six communities close to the Limerick Nuclear Plant which included, Pottstown, West Pottsgrove, Lower Pottsgrove, Upper Pottsgrove, North Coventry, and Douglass Berks Township from cancers diagnosed from 1995-1999. The Pennsylvania State Cancer Registry For Montgomery County- from 1985-86 to 1996-97 also shows cancer rates skyrocketed in Montgomery County where the Limerick Nuclear Plant is located during the Mid 80's to 90's after they opened. Prostate Cancer increased 132%, Thyroid Cancer increased 128%, Kidney cancer increased 96%, Multiple Myeloma increased 91%, Hodgkin's Disease increased 67%, Non-Hodgkin's Lymphoma increased 61%,Breast cancer increased 61%, Pancreas cancer increased 54%, and Leukemia increased 48%. 44-8-HH

Radiation exposure can cause cancer and other serious disease and disability, at any level of exposure according to the National Academy of Sciences and Physicians for Social Responsibility. Permissible radiation levels does not mean that they are safe levels for everyone in the community. Most permissible levels are based on the average healthy adult. They are not levels that were based or researched for fetuses, infants, toddlers and children or pets. Fetuses, infants, children, pets and the elderly and immuned compromised individuals are at most risk of health problems. There is a broad range of dangerous radionuclides routinely released into our air and water from the Limerick Nuclear Plant as well as any accidental releases. Permissible radiation levels does not mean that they are safe radiation levels, it only means that they are allowed. 44-9-HH

I have children as well as other loved ones that have or have had allergies, asthma, learning disabilities, speech disabilities, behavioral disabilities, thyroid conditions, cancers, skin disorders and irritation, etc. I know neighbors and other community members that have suffered from the same and more. We deserve to live in a community where our air and water isn't being contaminated constantly with hazardous chemicals, radiation, etc. when there are other energy alternatives out there that are being used that are safer for the community. 44-10-AL

I expect you to do what is morally right now for me, my family, my neighbors, my community, and the pets, wildlife, air, water, and environment in whole by rejecting, refusing and opposing Limerick Power Plant from re-licensing to run their business longer then originally planned for 2029. Don't turn a "blind eye" now. Do your job knowing that you are doing what is morally right and safe for humanity and for my children and for the future of generations to come. Please help women have a chance to carry a baby full term without complications due to any possible air and water pollution that may have been caused by allowing more radiation into the environment when there are safer alternatives for energy. 44-11-OR 44-12-AL

(Page 3 of 3)

One person/individual can make a huge difference in the life of others whether or not you realize it. It can have a domino effect on others. Please step up and be that one person that we truly need right now to do what is right. Why does it have to take someone to be personally affected by a situation or to have a loved one suffer or die to step forward and do something? Please don't wait. Now is the time. Please be courageous enough to stand up and fight for what is right for this community and for humanity in a whole, no matter how hard or long the task may seem, it will be worth it in the end!!!

I appreciate your time and attention in this matter. Thank you.

Sincerely,

Lisa Smoyer- Upper Pottsgrove Resident
1027 Farmington Ave.
Pottstown PA 19464

CC: Friends, Family and some community members

October 8, 2011

8/26/2011
76FR53498
22

U.S. NRC
Ms. Lisa Regner
Mailstop TWB-05-BO1 M
Washington, D.C. 20555

Lisa.Regner@NRC.gov

Subject: **Deny Limerick License Renewal - NRC I.D. Docket 2011-0166**

Dear Ms. Regner:

I urge NRC to deny Exelon's request to renew Limerick Nuclear Plant's license for 20 years past its current 2024 and 2029 expiration dates. Limerick Nuclear Plant must be closed, not relicensed, for many valid reasons. Approval for Limerick Nuclear Plant to be relicensed until 2049 would be reckless and would show blatant disregard for the health and safety of the public. There is more than sufficient evidence of harms and threats to justify closing Limerick. There are too many things beyond NRC's control that could lead to a catastrophic meltdown. 45-1-OR

Limerick is 3rd on the earthquake risk list. It is too dangerous to keep Limerick operating. Earthquakes and other natural disasters are more frequent and stronger. Underground pipes and cables can shake and break, then lead to loss of power, loss of cooling water, and meltdown. Limerick's substandard containment flaw means more radiation would be released. 45-2-PA

Everything has a life expectancy. Limerick's was 40 years. The older any facility gets, the more likely mechanical breakdowns and equipment failure will occur. When it's a nuclear plant, meltdown could result from corroding, deteriorating, and aging pipes, cables, and equipment. Miles of difficult to inspect corroding, deteriorating underground buried pipes and cables are a major concern. Signs of mechanical damage and breakdown already exist - three unplanned shutdowns June 2011, preceded by many others since 2007, one with loss of cooling water. While some parts can be replaced, by the nuclear industry's own admission, some equipment is too big and expensive to replace. 45-3-OS

Terrorists have made it clear they intend to attack nuclear plants. Exelon has refused to pay to guard Limerick against a 9/11 type terrorist attack with a plane or missile, even though the most deadly targets (Limerick's fuel pools) are vulnerable to such attacks. Limerick is a similar design to nuclear plants in Japan that are melting down and exploding. NRC's own report from 2000 shows people 500 miles away could be impacted by an accident or attack on such fuel pools. Deadly radioactive spent fuel rods are jam packed into Limerick's vulnerable fuel pools five stories high. Cyber attacks, now declared an act of war, could wipe out systems that could lead to meltdown. Hackers have penetrated the Pentagon and other well guarded systems. Exelon's new plan for cyber attacks gives us little comfort. 45-4-OS

No NRC policy, review, or report can make Limerick failsafe from a catastrophic meltdown. Over eight million people live within 50 miles of Limerick Nuclear Plant. Safe 45-5-OS

SUNSI Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = L. Regner (LMR2)

evacuation is merely an illusion, even within the seriously flawed and fundamentally inadequate current 10-mile evacuation plan. Until Limerick closes, NRC should expand the evacuation plan (minimally to 50 miles) and be sure there are enough shelters and supplies available to accommodate the over 8 million people within the 50 miles. Exelon should pay for the supplies. Unless this is done, Limerick should be closed as soon as possible. 45-5-OS Cont'd

But, it doesn't take an accident or disaster for Limerick to poison the region's residents with radiation. Radiation from Limerick's routine and accidental emissions alone for the past 26 years is reason enough to deny Exelon's request. It's not credible for NRC to claim continuous radiation levels are safe for me and my family when there is no safe level of exposure according to the National Academy of Sciences and Physicians for Social Responsibility. 45-6-HH

NRC is failing to acknowledge obvious health harms from Limerick's continuous additive, cumulative, and synergistic radiation releases which get into our water, food, soil, vegetation, milk, and our bodies. NRC has no idea what health harms some of the region's residents experienced from Limerick Nuclear Plant. NRC never did any radiation monitoring or testing at Limerick. Evidence shows testing done by Exelon and DEP cannot be trusted. 45-7-HH

Exposure to radiation is known to cause cancer. It should be obvious to NRC that Limerick played a major role in our tragic, well documented cancer crisis after Limerick started operating in the mid 1980s to the late 1990s. Four cancer studies based on PA Cancer Registry and CDC data showed skyrocketing rates for several cancers far higher than national and state averages, especially in children. Our children had the highest levels of Strontium-90 radiation in their baby teeth of any group near any nuclear plant studied. Limerick Nuclear Plant released SR-90 into our air and water that got into the milk, vegetation, and food since Limerick started operating. Thyroid cancer increased by 128% from 1985 to 1997. Other cancers rose dramatically as well. 45-8-HH

Limerick Nuclear Plant is slowly destroying the vital public drinking water source for almost two million people from Pottstown to Philadelphia. Radioactive and heated wastewater is discharged by Limerick Nuclear Plant into the Schuylkill River 24/7. Limerick's cooling towers are causing significant depletion. To supplement the flow to operate Limerick, Exelon wants to pump more contaminated mine water into the river. No one can credibly assure us if drinking water will remain safe even until 2029 when Limerick's original license expires. 45-9-SW

Limerick contaminated groundwater. Radioactive leaks and spills over the years were never cleaned up. More radioactive leaks can be expected in the future through earthquakes, deterioration, and corrosion. Many residential wells are very close to Limerick. 45-10-GW

It would be both unethical and immoral for NRC to approve Exelon's requested license extensions for Limerick Nuclear Power Plant. All of the unprecedented harms, threats, and risks from Limerick Nuclear Plant will increase if NRC approves an additional 20 year Limerick license extension, until 2049. Limerick Nuclear Plant must be closed by 2029. 45-11-OR

Sincerely,

Charlene Gilchrist

1618 Benjamin Dr.
Ambler, PA 19002

Oct. 21, 2011

Ms. Lisa Regner
Project Manager
NRC Environmental Review Project

Dear Ms. Regner:

I am writing to express my opposition to the re-licensure of Limerick nuclear power generating station, which is located about 20 miles from my home. There are several reasons why this re-licensure is not in the best interests of people living in the surrounding community. 46-1-OR

If this license renewal is granted, this plant will continue operating until 2049, at which time it will be over sixty years old. Cracks in concrete and corrosion in piping will inevitably develop as this facility ages. While some of this "wear and tear" may be evident to visual inspection, some of it will also occur in less accessible places, such as in underground piping systems. The Associated Press has shown that tritium leaks in underground piping systems frequently go undetected—sometimes for years—in aging nuclear power plants.[i] While no leaks of this kind have so far been documented at Limerick, the odds of these sorts of problems developing will only increase with every successive decade of the plant's working life. 46-2-OS

While the problems associated with age will develop in any nuclear power plant over time, there are additional problems with the reactors at Limerick. Limerick's reactors are boiling water reactors similar to those that catastrophically melted down last spring in Japan. Although these reactors have a later containment design, they have the same fundamentally flawed reactor pressure vessel design as those that failed at Fukushima.[ii] In the BWR design, the control rods come up through the bottom of the pressure vessel, instead of dropping down from above as in other reactor designs. While the reactor pressure vessel itself is made of very thick steel, the bottom of the BWR pressure vessel contains 60 holes through which the rods enter the vessel.[iii] In the event of a meltdown, however, these same holes can provide a "path of least resistance" through which the hot molten fuel can escape with relative ease; it then only has to melt through connecting pipes that are much thinner and weaker than the metal of the pressure vessel itself.[iv] This apparently occurred at Fukushima, where authorities now admit that reactor fuel underwent not merely a "melt-down," but a "melt-through," breaching the inner pressure vessel and in the process releasing considerable amounts of radioactive material into the environment.[v] 46-3-OS

One might be tempted to dismiss the comparison with Fukushima on the grounds Limerick in Pennsylvania is unlikely to experience a similar combination tsunami and earthquake. While the tsunami is not an issue, however, recent analysis by the Nuclear Regulatory Commission suggests that earthquakes pose a more significant threat to the Limerick reactors than was recognized at the time of their construction and initial licensure. (Incidentally, it now appears that at least one of Fukushima's reactors was significantly damaged by the earthquake even *before* the tsunami struck.)[vi] According to the NRC's own data, Limerick's two reactors are the *third* and *fourth* most likely in the country to sustain core damage in the event of an earthquake.[vii] There is a fault line called the Ramapo fault line that runs slightly north of Limerick, and two small earthquakes associated with this fault line occurred as recently as February 2009.[viii] The unexpected quake that shook Virginia's North Anna nuclear plant with *over two times the amount of force that it was designed to withstand* should make us take very seriously the NRC's data regarding Limerick's greater than previously recognized vulnerability to earthquake damage.[ix] These concerns are compounded by the fact that the manufacturer of Limerick's control rods, GE Hitachi, 46-4-PA

recently acknowledged concerns that the control rods in its BWRs might not function properly in the event of an earthquake.[x] 46-4- PA Cont'd

Questions about the Limerick reactors' ability to withstand accidents and natural disasters are all the more pressing because so many people could potentially be affected if something catastrophic were to occur. Since 1990, the population within a ten-mile radius of the plant has increased by 45%, from 178,047 to 257,625.[xi] In addition, Philadelphia, with a population of 1,526,006, is only about 28 miles away. How much more might these populations increase by 2049? Bearing in mind that the NRC advised Americans within a *50 mile* radius of Fukushima to evacuate last spring, one can only imagine how difficult it would be to carry out such evacuations if the unthinkable were ever to occur at Limerick. 46-5-OS

Finally, my concerns regarding the impact of this nuclear power plant on my community are not limited to catastrophic scenarios that might potentially occur. There have been some recent studies published in health journals that show a higher incidence of certain illness—particularly among children—in communities surrounding nuclear power plants.[xii] While these studies were conducted in a variety of locations, they seem to be consistent with some of the data that Pottstown's local Alliance for a Clean Environment presents on its website regarding increased cancer and leukemia rates—also especially among children—in the greater Pottstown area.[xiii] 46-6-HH

For all of these reasons, I am asking the Nuclear Regulatory Association to deny Exelon's request to extend Limerick's operating license for an extra twenty years.

Thank you for your time.

Sincerely,

Lori Molinari

Mendiola, Doris

From: Regner, Lisa
Sent: Thursday, October 27, 2011 10:17 AM
To: Gallagher, Carol
Cc: Mendiola, Doris
Subject: Limerick Comment dictated to PM (docket NRC-2011-0166)

8/26/2011
76 FR 53498

24

Environmental Scoping comment dictated to PM (L. Regner) on October 27, 2011:

I'm against it for two reasons:

Limerick Generating Station is old and I don't think it is strong enough to withstand plane impacts, earthquakes, or tornadoes that occur here. 47-1-PA

I am fully aware of the amount of cancer that is prevalent in this area. 47-2-HH

Doris Meyers

Read back to Ms. Meyers twice by PM to ensure accuracy of dictated statement.

Lisa M Regner, Senior Project Manager
Division of License Renewal
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Lisa.Regner@NRC.Gov
Office: O 11 H-23
Mail Stop: O 11 F-1
(301) 415-1906

SUNSI Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = L. Regner (LMR2)

1

Mendiola, Doris

From: quteasz@comcast.net
Sent: Thursday, October 27, 2011 3:03 PM
To: Regner, Lisa
Subject: Limerick Nuclear Plant Relicensing

Hello Ms. Regner:

Just a quick note requesting the NRC to NOT allow the relicensing of the Limerick, Pa., nuclear plant at this time. 48-1-OR

I moved to Pottstown, Pa., some time ago in perfect health. In 2006, I was diagnosed with prostate cancer. Although, I cannot prove it was a direct cause of the nuclear power plant, I feel that much further, unbiased studies and tests need to be done prior to the relicensing of the Limerick plant by reputable sources not by corporate interests groups that can manipulate the statistics in Exelon's favor.
Wouldn't it be in the best interest of our community and surrounding communities if the higher cancer rate was due to the Limerick power plant???? This question is a "no brainer". 48-2-HH
There is plenty of time for testing to be done prior to the relicensing.

Also, why the hurry??? Common sense would indicate that Exelon knows something to which we are not aware.
Why must the license be renewed at this time when they are licensed through 2024 and 2029????
Again, WHY THE HURRY??? 48-3-LR
To relicense now is not in the best interest of everyone in our area.

Prior to the construction of the Limerick power plant, everyone in our surrounding area was told that our electricity would be one of the lowest in the U.S.
THIS WAS A BOLD FACE LIE!!!! IT IS ONE OF THE HIGHEST IN THE U.S.!!!
Excelon lied to us then and they will distort the facts now. 48-4-OS

PLEASE DO NOT BE IN A HURRY TO RELICENSE LIMERICK WITHOUT COMPLETE AND HONEST TESTING BY AN IMPARTIAL COMPANY. There is plenty of time after the test results.

Thank you for reading my e-mail. I hope God guides your agency into making the correct decision.

Ken Sekellick
661 N. Price St.
Pottstown, PA. 19464

quteasz@comcast.net

1

8/26/2011
76FR53498

26

936 Shenkel Road
Pottstown, PA 19465
October 25, 2011

U. S. NRC
C/O Lisa Regner, License Renewal
Mailstop TWB-0505-B01 M
Washington, D. C. 20555

Re: Limerick License
Renewal
NRC I.D. Docket 2011-0166

Dear Lisa, NRC:

As a physician, I am writing to help you understand that nuclear reactors are not safe. I attended the medical clinic in Hiroshima right after the bombing and saw the radiation horrors caused by nuclear bombing. I have kept a close watch on similar problems by nuclear energy in the medical field since then, not only worldwide, but because of our nearby nuclear power plant. Here are some concerns.

According to the National Center for Disease Control, Pennsylvania ranks No. 1 for the highest incidence of Thyroid cancer. This occurred after installation of nuclear power plants in our area as well as in the rest of the State. Medical journals are reporting high rates of cancer near nuclear plants. An earthquake in our area is not too far fetched. And, of course, the threat of terrorism with vulnerable spent fuel are always a concern. 6-6-HH 6-7-PA

Incidentally, baby teeth studies have revealed Strontium 90 radioactive particles which can affect the child's immune system for more illness. 6-8-HH

We can't control the use of nuclear in the rest of the world, but we can keep the U. S. safer by eliminating nuclear energies. Fortunately, many of our European allies including Australia have decided to phase out reactors. We should join them to reduce human suffering. Also this can reduce our increasing costs of health care! 6-9-OR

Please listen to this advice after years of doing my best for America. Rely on more and truly safe and renewable sources like solar, wind and geothermal power. A patriotic duty to protect our kids. 6-10-AL

Limerick Power Plant is ranked in the top 3 riskiest nuclear power plants in the U.S.A. Limerick Power Plant must be closed not relicensed. 6-11-OR

Sincerely yours,

/s/ Fred S, Winter
Fred S. Winter, M. D.

SUNSI Review Complete
Template=ADM-013

E-RIDS=ADM-03
Add=L. Regner (LMR2)

8/26/2011
76FR53498
(28)

Anthony Gonyea
Onondaga Nation
Hemlock Rd. Box 319B
via Nedrow, NY 13120

Oct. 15, 2011

David J Wrona
US Nuclear Regulatory Commission
Washington, DC 20555-0001

RE: Project ID: Limerick Generating Station
Limerick Township of Montgomery County, PA

Dear Mr. Wrona,

Thank you for providing the Onondaga Nation with information about this project. If anything changes are made, I would like to be consulted. I realize that Unit 1 and Unit 2 have licenses that may be renewed in 2024 and 2029 respectively, therefore you may send updates and information until then.

49-1-HA

In the event that during project construction, any archeological resources or remains, including, without limitation, human remains, funerary objects, sacred objects, or objects of cultural patrimony are uncovered, please immediately stop construction and contact me at (315)952-3109, or the Onondaga Nation's General Counsel Mr. Joseph Heath at (315)475-2559.

If you have any comments or questions about this matter, please do not hesitate to let me know. Thank you for your help.

Sincerely,

Anthony Gonyea

Anthony Gonyea
A Faithkeeper for the Onondaga Nation
Onondaga Nation Historic Preservation Office
Section 106 Representative

SUNSI Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = L. Regner (LHR2)

(29) 8/26/2011
76 FR 53498

Mendiola, Doris

RECEIVED 2011 OCT 28 PM 4: 52 RULES AND DIRECTIVES BRANCH USNRC

From: Deb Penrod [deb24532@comcast.net]
Sent: Thursday, October 27, 2011 8:06 PM
To: Regner, Lisa
Subject: greetings from a SUPPORTER of Limerick nuclear plant

Hi,

I wanted to let you know that I am a complete and full supporter of the Limerick Nuclear plant. I am also supportive of the scientific judgement and expertise of those such as yourself who have the job of making the decisions. 50-1-SR

(I saw your name in an article in the Mercury where the writer was requesting that objections be sent to you. I thought I would take advantage of the contact information to state a contrary position.)
I grew up in coal-mining country, and never saw a stream or a creek with clear water uncontaminated by acid mine runoff until I was in my late teens. Opponents to nuclear power have usually never lived near coal truck entrances to mines and coal plants, and have probably never lost family members to mine cave-ins or black lung. Risks should be minimized as much as possible, but the world will always have something that someone objects to. Unscientific or fear-based objections to nuclear power are unproductive and do not advance safe or reasonably priced power.

I work in the pharmaceutical industry (I was first educated as a pharmacist, and then as an attorney; I now help to get new vaccines approved, and to help increase vaccination rates). The parallel I see is with the group of people who see disaster in every prescription drug product, and complain about everything the FDA approves or does. Nothing is ever 'safe' enough for them.

Please renew Limerick, using the best scientific information and risk/benfit analysis available to you. 50-2-SR

Thank you.
Debby Penrod
215 Amanda Smith Drive
PO Box 516
Pottstown, PA 19464

SONSI Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = L. Regner (LMR2)

1

Mendiola, Doris

From: DocKoenig@aol.com
Sent: Thursday, October 27, 2011 8:49 PM
To: Regner, Lisa
Subject: Fwd: Nuclear Limerick

8/26/2011
76 FR 53498

30

From: DocKoenig@aol.com
To: LisaRegner@nrc.gov
Sent: 10/27/2011 7:36:13 P.M. Eastern Daylight Time
Subj: Nuclear Limerick

Hello Lisa Limerick should not .be licensed. or relicensed at this time. They are only doing it because the plant has issues that they are trying to hide. The evacuation plan is a joke because we would not get out of our driveways. It would not have worked 10 years ago and certainly with the population growth it would be much worse. Relicense should not be permitted because all kinds of deterioration has occurred and is occurring and the present licenses do not run out until 2024 and 2029. They are doing this now because they know it would not pass if they waited for 2024 and 2029. This is an old plant and there is much corrosion and concrete deterioration that is going on . There are many miles of buried pipes that cannot checked reliably. Cancer rates are higher than the national average and NRC is going with the status quo. Also Limerick is built on a fault . Please protect our citizens from possible disaster and do not relicense Limerick, Sincerely Charlie Koenig

51-1-OS
51-2-OS
51-3-HH
51-4-GE;
51-5-OR

RECEIVED
2011 OCT 28 PM 4:52
RULES AND DIRECTIVES BRANCH USNRC

SUNSI Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = L. Regner (LHR2)

1

Mendiola, Doris

From: John & Joyce Webber [jbwebberpc@comcast.net]
Sent: Friday, October 28, 2011 2:41 PM
To: Regner, Lisa
Subject: Exlon Limerick Relicensing

As a resident of New Hanover Twp., Montgomery County, PA (less than 5 miles from Exelon's Limerick Nuclear Power Plant), I urge you to vote AGAINST the premature relicensing of that facility. 52-1-OR

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(1) The Limerick plant was built to be used for 25 years. 52-2-OS

(2) It has now gone far beyond its limitations.

(3) The area around the facility has exploded with homes and businesses 52-3-SE

(4) The roads to any safe place are overwhelmed with congestion with normal traffic. (5)The plant can no longer store its used fuel rods and has asked permission to begin transporting them to another facility. 52-4-OS

(5) It is one of the six most dangerous plants in the country because of its proximity to an earthquake fault. 52-5-OS

(6) The surrounding area has abnormally high cancer rates among adults and children. 52-6-HH

For all these reasons and many others too numerous to mention, it would be a truly disastrous mistake to extend Exelon's Limerick license for 20 years beyond the current licenses that do no expire until 2024 & 2029!

Please consider the thousands and thousands of people who would be lost to an accident that could be prevented.

Sincerely,

Joyce B. Webber
2338 Holly Drive
Gilbertsville, PA 19525
610-326-2584

SUNSI Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = L. Regner (LHR2)

1

8/26/2011
76FR 53498

Mendiola, Doris

RECEIVED
2011 OCT 28 PM 4:53
RULES AND DIRECTIVES BRANCH

From: Anita Baly [ajbaly@yahoo.com]
Sent: Friday, October 28, 2011 3:06 PM
To: Regner, Lisa
Subject: Limerick Plant Relicensing Application is Too Early

32

Dear Lisa,

It was good to meet you at the September 22, 2011 hearing the NRC held at Sunnybrook.

As I stated then, I continue to be concerned and puzzled about the very early and pre-mature application of Exelon to extend the licenses of the towers. One of those towers does not come up for renewal until 2024 and the other 2029. I ask the NRC not to work on the relicensing question for this facility for at least ten years. The wait could only ensure better information. The public cannot possibly benefit from a decision to renew the licenses at this time. The best decision will be made based on the best possible information. The NRC does not have that best information this early. Much will happen in the next ten years. I urge the NRC to wait and see how any of it affects the prospect of continuing these plants at that later date. 8-5-LR

What can happen in the next ten years that we can all learn from relevantly could be anything. It may be better information about how natural disasters are affecting nuclear facilities; we may know more about weather patterns that could cause damage. We will certainly know more about the world situation in terms of advances in terrorist technological capabilities and goals. We will know more about how well nuclear plants in general and the Limerick facility are faring as they continue to age. If someone steps forward to fund studies, we will know yet more about cancer rates in the nuclear zone. (We do know something about that now: Joseph Mangano and others have done studies already that I assume he has provided to you, and I urge you to consider carefully.)

One big concern--because of Japan's recent experience and the fact that we had an earthquake here in the Limerick plant's territory--is refurbishing the plants so they can withstand earthquakes. It has been widely reported--by MSNBC and the AP, using NRC data--that the Limerick plant has the nation's third highest risk of being damaged by an earthquake. When the plant was built, no one thought this area would get earthquakes. Now we do. I understand that Congress is now or soon will be considering increasing earthquake preparedness capabilities at the plants. I fear that if you grant Exelon carte blanche now, the NRC would encourage them to do less than they should to make the plants safer. 8-6-PA

There can be no good reasons for relicensing now. Please wait as long as possible to do that. Better information helps everyone who wants an outcome that is right and socially beneficial--not just profitable for Exelon.

Thank you for your consideration.

Anita Baly

SONSI Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = L. Regner (LMR2)

8/24/2011
76 FR 53498

(33)

To: U.S. NRC
Lisa Regner
Mailstop TWB-05-B01M
Washington, D.C. 20555

RECEIVED
2011 SEP 12 AM 9:08
RULES AND DIRECTIVES BRANCH

From: Charlotte Derr
545 Rosedale Drive
Pottstown, PA 19464

Re: Limerick License Renewal - NRC 2011-0166

I implore you to not relicense the Nuclear Power Plant of LIMERICK when its license expires in 2029. If I had my wish, the power plant would be closed years before 2029. 53-1-OR

We need cleaner air and water. We need to decrease radiation. We need CLEAN, SAFE, RENEWABLE ENERGY! 53-2-AL

Thank you for your time and consideration. Future generations are at stake.

ERIDS = ADM-013

Sincerely,
Charlotte Derr

SUNSI Review Complete
Template = ADM-013

Add = L. Regner (LMR2)

MONTGOMERY COUNTY PLANNING COMMISSION

box 311 • norristown • pennsylvania • 19404-0311 • 610-278-3722
office location: suite 201 • one montgomery plaza • swede & airy streets • norristown pa
FAX 610-278-3941 • Website www.planning.montcopa.org

8/06/2011
76 FR 53498
(34)

RECEIVED
2011 OCT -1 PM 2:55
RULES & DIRECTIVES BRANCH

October 25, 2011

Chief, Rules Announcements, and Directives Branch
Mail Stop: TWB-05-B01M
US Nuclear Regulatory Commission
Washington, DC 205550001

RE: Environmental Scoping Comments
Limerick Nuclear Generating Station
Division of License Renewal
NRC-2011-0166

Dear NRC Staff:

We have examined the proposed relicensing review information presented by NRC staff at the Public Hearing held in Pottstown on September 22 and the information posted on the web site operated by the NRC. We feel that it is vital that any decision regarding the relicensing of the Limerick Nuclear Power Station reflect careful consideration of all relevant public health and safety, security, and environmental issues that pertain to nuclear power generation in general and the unique conditions at the nuclear power generating station situated in Limerick Township. It is our understanding that an Environmental Impact Statement will be developed which addresses relevant environmental impacts pertaining to socioeconomics, environmental justice, and noise; cultural resources, archeology, and geological science; atmospheric science, air quality; hydrological sciences; transportation and land use; radiation protection; nuclear safety, fuel cycle, waste, and accident analysis; construction, operation, refurbishment, and decommissioning; regulatory compliance; aquatic ecology; and water quality. Further it is our understanding that a detailed safety review will be conducted to review design assumptions; assess aging management of safety systems; and determine if new monitoring and inspections are needed during the expanded licensing period.

While we implore the NRC to do a full review of both environmental and public safety issues pertaining to the plant- particularly addressing radioactivity exposures during normal operation of the power station and during various types of unusual events and disasters- we additionally feel that the impact review preceding any relicensing decision should also address specific issues pertaining to the plant based upon it's conformity to the Montgomery County Comprehensive Plan and overall county development policies. Below we have itemized issues with respect to land use change and growth around the power plant, transportation and evacuation capacity, Schuylkill River, and county trails that we feel warrant consideration in the environmental impact study.

SONSI Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = L. Regner (LMR2)

Land Use Change and Growth around the Power Plant:
Since the original plant was constructed, the population in the surrounding communities has grown dramatically. Limerick Township and nearby Upper Providence Township have been two of the most rapidly growing communities in the county. This growth largely fueled by access to US Route 422 Expressway and available land with suitable infrastructure, has dramatically changed the character of the area surrounding the Limerick Power Station. In the past few years, the Philadelphia Premium Outlet Mall, a 600,000 square foot retail facility, and the adjoining Costco shopping center opened along US Route 422 about one mile north of the Limerick Power Station property. The land adjoining those facilities is being considered for various types of retail and residential uses. At one time, a large gambling casino had been proposed in this location as well. Other lands in Lower Pottsgrove Township near the Limerick Power Station have also been proposed for similar types of uses.

54-2-OS

While the county planning commission has tried to promote lower densities of growth in proximity to the Limerick Plant, the local communities and the marketplace favor this location for significant development due to its proximity to the US Route 422 interchange at Township Line/ Evergreen Road. The growth that has taken place in the area around the power plant, and in particular the growth taking place in the area immediately adjoining the plant and the primary access to it, as well as the projected growth in the future, could complicate evacuation plans and the movement of appropriate emergency response personnel to the plant in the event of a disaster. Certainly this access could be even more critical in the event of a natural disaster when other roads to the plant may be impassable. The environmental assessment review needs to analyze this growth in the vicinity of the power plant to evaluate what impact it would have on plant operations and whether or not safe evacuation can take place from the newly developed areas.

Transportation and Evacuation Capacity:
The growth in the whole US Route 422 Corridor has raised numerous proposals for expanding the vehicle capacity of the 422 expressway. Current peak commuting traffic tie ups on portions of the expressway serve as evidence that it may have inadequate capacity to continue to serve as a safe evacuation corridor for the region. The county transportation plan recognizes the need for various road improvements along the US 422 Corridor to address current and future traffic demands. The first priority projects in the plan include interchange improvements at the Township Line Road/ Evergreen Road intersection which is also the primary access route to the plant; needed widening and reconstruction of the highway east of the power station between Route 29 and US Route 202 in King of Prussia, reconstruction of US Route 422 in the vicinity of Pottstown, and the reconstruction and widening of the Route 422 Bridge across the Schuylkill River at Betzwood. A passenger train line is also proposed as a first priority in the transportation plan to provide service through the western portion of the county into Norristown. The proposed route for this train line is the existing Norfolk Southern rail line that goes through the Limerick Power Station Property. Other improvements including the widening and expansion of US Route 422 from Pottstown to Route 29 and additional interchange improvements at Township Line/ Evergreen Road are proposed as secondary priorities in the county plan. In addition to these improvements, several other localized improvements that may impact evacuation feasibility are proposed in the county plan.

54-3-OS

Due to funding limitations in Pennsylvania, these projects are not likely to move forward at this time. The environmental impact review should consider the capacity of the roadway facilities to service the Limerick Plant as well as provide sufficient evacuation of the area in the event of a disaster. Possible mitigation strategies to be considered in the environmental assessment review could include the role of Exelon in funding the important road improvements needed in this area to ensure safe evacuation and access to the plant in any type of disaster. 54-3-OS Cont'd

Schuylkill River:
Since the last impact statement was prepared in 1973, the Schuylkill River has been designated as a state scenic river and as a heritage area for both the state and federal government. Due to these designations and the efforts of non- profit organizations and local government, access to the river has been expanded so that the river has become a recreation and heritage tourism destination. Use of the river in the vicinity of the plant will continue to grow. With the return of American Shad made possible through down stream fish ladders, interest in the river could even grow further in the future. 54-4-SW

The Limerick Plant withdraws sizeable portions of river water. During low flow periods, additional quantities of water are released into the river from the Wadesville Mine and Still Creek Reservoir in Schuylkill County to compensate for the water withdrawn at the plant. This process was initially approved by the Delaware River Basin Commission (DRBC) in 2003 and kept active through a series of docket amendments. Future river water use is dependent upon the ability of this water make up system to operate within various water quality and flow parameters set by DRBC. It is important to evaluate the viability of the use of the river water and water make up system to provide needed water through the expanded plant lifetime. Analysis of this aspect of plant operation needs to account for the water quality impact from the total dissolved solids in the Wadesville water among other parameters. If resumed use of the Delaware water diversion is anticipated, an evaluation of that system is required to ensure that the capacity is available in the conveyance system and that water quality objectives can be met for discharge into the East Branch of the Perkiomen Creek.

County Trails and Open Space:
The county has been working hard to develop an interconnected system of open space and trails along the Schuylkill River and within other natural resource areas of the county. In doing this, the county has provided funding to local municipalities and non-profit conservation organizations to purchase open space and park land; acquired county land and agriculture easements; and developed trails. The Limerick Generating Station site contains significant land along the Schuylkill River that has been identified as part of the Schuylkill River Greenway in the county plan. The use and management of these lands relative to the county open space and natural areas inventory plans should be evaluated in the relicensing process. 54-5-LU

The Montgomery County Open Space Plan proposes a trail along the river through the power plant property. This trail is proposed as the Schuylkill East Trail, which would be developed as unpaved trail between Mont Clare and Pottstown. Essentially the proposed route would follow an old road way between the river and Norfolk Southern rail line through the Limerick Power Station site. Though such a trail route would appear to raise significant safety concerns due its proposed proximity to the power 54-6-OS

station, appropriate elements could be designed into any trail system to limit its threat to plant's security. We have found that trails can enhance the overall security of an area since they concentrate users along a defined corridor. Furthermore, trails can provide emergency access routes that could be used during different disaster events to evacuate people and provide access for emergency response. This trail and the management of undeveloped portions of the Limerick Power Station site should be considered in the environmental assessment. 54-6-OS Cont'd

Community Outreach and Education:
As part of the environmental assessment process and the evaluation of the plant safety and long term operational capacity, we think that it is important for the NRC to maintain close communication with the community surrounding the plant. Overall education about the plant and the associated risks presented by its operation should be provided in a variety of ways so that the public is better informed about the plant and the overall evaluation taking place as part of the relicensing. 54-7-LR

If you have any questions, please contact me. Also, we offer our assistance in providing local information that may be helpful to your review.

Sincerely,

Michael M. Stokes
Assistant Director
mstokes @montcopa.org
(610) 278-3729

c. Thomas Sullivan, Public Safety Department

COUNTY OF MONTGOMERY

Commissioners

JAMES R. MATTHEWS
CHAIRMAN

JOSEPH M. HOEFFEL BRUCE L. CASTOR, Jr

THOMAS M. SULLIVAN
DEPARTMENT DIRECTOR

Montgomery County
Department of Public Safety
Operations Center
50 Eagleville Road
Eagleville, PA 19403
(610)631-6500 FAX (610)631-6536
www.dps.montcopa.org

October 25, 2011

8/26/2011
76FR53498
35

RECEIVED
2011 OCT -1 PM 2:54
RULES AND DIRECTIVES

Chief, Rules Announcements, and Directives Branch
Mail Stop: TWB-05-B01M
US Nuclear Regulatory Commission
Washington, DC 205550001

Re: Environmental Scoping Comments
Limerick Nuclear Generating Station
Division of License Renewal
NRC-2011-0166

Dear NRC Staff:

The Montgomery County Department of Public Safety would like to offer the following comments regarding the NRC relicensing review information presented at the Public Hearing held in Pottstown on September 22, 2011.

- The NRC should provide a full review of environmental and public safety issues pertaining to the plant. It is understood that emergency responders providing services to the power plant understand the hazards associated with daily operations of the plant. However, in light of events in Japan and recent seismic activity in this area, the NRC should clarify the risks associated with plant operations in times of unusual activity, outage operations, and during times of natural / man-made events that may pose a risk to the plant in terms that the public will understand in an attempt to quell public concern. 55-1-OS

- We concur that the NRC require Exelon to conform to the Montgomery County Comprehensive Plan to not only ensure cooperation in the community, but also in the region. Additionally, it is also suggested that Exelon be included in pending roadway infrastructure improvements projects as both a stake holder and possible source of funding. 55-2-OS

- It is important to note that the 10 – mile Emergency Planning Zone (EPZ) is the second largest in population in the nation. As a result of recent development and type of development in the area of LGS, it is important to review the Evacuation Time Estimate Study (ETE) on a more timely basis and account for the transient population present in the hotels that have accompanied this development. Additionally, funding should be supplied for either Exelon staff or County staff to act as a transient planning and outreach specialist to assist these transient population locations with emergency planning. 55-3-OS

- It should be noted that the Evacuation Time Estimate is currently being updated. Required highway and roadway infrastructure upgrades should be included as a part of and also as a result of any changes noted in the updated ETE. Special attention for improvement should be given to the local, county and state roads used for evacuation that feed the larger highways, as many of these roadways are no longer suitable for the amount of traffic that an EPZ evacuation could produce. 55-4-OS

SUNSI Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = L. Reyner (LMR2)

- The NRC should consider requiring Exelon to enhance planning for day to day emergency situations that require a response from local emergency services. Often times, Fire and EMS access is delayed due to screening of vehicles and personnel. This can cause delay in patient care to potentially life threatening illnesses. 55-5-OS

- A note should be added regarding the diversion of Delaware River water to the East Bank of the Perkiomen. Due to the residential build-up along the Perkiomen Creek area, additional consideration should be presented and discussed with the Army Corps of Engineers and the National Weather Service regarding potential flooding impact this may have on the area. 55-6-OL

- While recreation utilization is of importance and a major mission within this county, homeland security must be of a concern with any open access within the vicinity of LGS. However, we concur that with support of local law enforcement and a commitment from LGS to control and monitor access, trail throughput may be accomplished. 55-7-OS

- In an attempt to promote and increase community outreach, the NRC should consider requiring Exelon to reopen the LGS Information Visitor Center. As a result of the incident in Fukushima, Japan, the Montgomery County Department of Public Safety has a received a higher than normal volume of inquiries concerning nuclear power generation from the public. The LGS Information Center, although dated, could be upgraded to provide this service to the community to raise awareness and promote education of the nuclear power industry. This center could also be incorporated as an educational stop on the County Trail system. 55-8-OS

If you have any questions please feel free to contact me.

Very truly yours,

Thomas M. Sullivan
Director of Public Safety

CC: R. Graf, C.O.O.
M Stokes, Assistant Director of Planning
S. Mickalonis, Deputy Director for Emergency Mgt.
J. Wilson, Radiological Planning Specialist

NRDC
THE EARTH'S BEST DEFENSE

October 28, 2011

Via Electronic Mail

Ms. Cindy Bladey
Chief, Rules, Announcements, and Directives Branch
Office of Administration
U.S. Nuclear Regulatory Commission
Washington, D.C.20555-0001
Electronic Mail: cindy.bladey@nrc.gov

RE: Natural Resources Defense Council Comments on Limerick EIS Scoping Process
NRC Docket ID: NRC-2011-0166

Dear Ms. Bladey:

The Natural Resources Defense Council (NRDC) comments today on the Nuclear Regulatory Commission's (NRC) *Notice of Intent To Prepare an Environmental Impact Statement and Conduct the Scoping Process for Limerick Generating Station, Units 1 and 2*, (hereinafter "Limerick EIS Scoping Process"). 76 Fed. Reg. 53498 (August 26, 2011).

Summary of Comments

Our comments specifically address the NRC's National Environmental Policy Act ((NEPA) 42 U.S.C. § 4321, *et seq*,) obligations and the need for any environmental analysis the agency conducts to include an up-to-date "Severe Accident Mitigation Alternatives" (SAMA) analysis that fully incorporates current insights into severe nuclear accident causation and mitigation. While we recognize that, as a private entity, the relicensing applicant, Exelon Generation Company, is not directly bound by NEPA, the same is not true for the NRC. Given that the applicant's ER generally serves as the basis for the Commission's eventual Draft Environmental Impact Statement (Draft EIS), and Exelon suggests it need not revise and update its SAMA analysis, we are raising this NEPA concern at this early stage in hopes that this matter may be addressed before the agency moves to relicense a facility based on a legally insufficient NEPA review.

Specific Scoping Comments

The original SAMA analysis for the Limerick Generating Station (LGS) is a 1989 report that was issued as the result of a ruling by the U.S. Court of Appeals for the Third Circuit,[1] which concluded that the NRC had failed to consider a "reasonable set" of Severe Accident Mitigation Design Alternatives ("SAMDAs"). In 1989, the NRC subsequently adopted this SAMDA analysis and agency staff concluded they had "discovered no substantial changes in the proposed action as previously evaluated in the FES [Final Environmental Statement] that are relevant to environmental concerns nor significant new circumstances or information relevant to environmental concerns and bearing on the licensing of [LGS]".

As the original LGS SAMDA effort in 1989 was the first mandated effort to focus on SAMAs,[2] the notion that an updated SAMA analysis need not be completed at the license renewal stage (for the exact reactor site that gave birth to the regulatory requirement) we find highly objectionable, particularly in light of the catastrophic nuclear accident that befell similar Boiling Water Reactor (BWR) units in Japan in March, 2011. It has become clear in the 770 years of combined U.S. BWR operational experience *since* 1989 that domestic and international events provide numerous examples of "new information" and make a strong case for the need to reconsider all that has been learned about newly discovered risks and vulnerabilities of nuclear power plants. 56-1-PA

It has been noted[3] that global core damage events happen at a rate that exceeds NRC's presumptions of what should be considered safe at plants within the U.S., which implies that either the NRC estimates for domestic plants are wrong or that international nuclear plants have a core damage frequency much higher than what the NRC deems safe. Either scenario is troubling and deserves the industry's full attention and effort. Exelon's 1989 effort in response to the Court was, respectfully, less than one would have hoped for in light of the seriousness of the issue. The LGS 1989 SAMDA can in no way claim necessary conservatism with regard to public safety over the total timeframe of a possible sixty year reactor lifetime.

In contrast to the 1989 SAMDA, relatively recent SAMA analyses conducted in other license renewal applications, such as those for sites at Nine Mile Point, Three Mile Island, and the Joseph M. Farley Nuclear Plant, to name a few, were considerably more thorough and addressed a range of detailed alternatives. Pursuant to regulatory analysis techniques supplied by NRC[4] and aided by an industry-supplied guidance document[5], most modern-day SAMA analyses are designed using a fairly prescriptive set of initial assumptions, baseline calculations, and cost-benefit arithmetic recipes that employ the use of sophisticated codes in their evaluation of potential risk and the benefit of removing this risk.

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[1] *Limerick Ecology Action v. NRC*, 869 F.2d 719 (3rd Cir. 1989)
[2] Or SAMDAs in this case, and we use the terms interchangeably for the purposes of these comments.
[3] *Global Implications of the Fukushima Disaster for Nuclear Power*, T. Cochran, M. McKinzie (NRDC). World Federation of Scientists' International Seminars on Planetary Emergencies. Erice, Sicily. Aug 2011.
[4] NUREG/BR-0184 *Regulatory Analysis Technical Evaluation Handbook*, Jan 1997
[5] NEI 05-01 [Rev A] *Severe Accident Mitigation Alternatives (SAMA) Analysis – Guidance Document*, Nov 2005

The most common code used is the MELCOR accident consequence code system (MACCS2)[6], which provides a modeling framework for calculating the off-site consequences of a severe accident. This code accepts an advanced set of input parameters, including population density distributions within 50 miles, detailed regional economic data obtained from multiple sources, nuclide release scenarios accounting for reactor core inventory, emergency response and exposure variables, and meteorological data for plume migration pathways. The current state of knowledge regarding the assumptions and understanding of severe accident events has expanded and improved in the intervening twenty-two years since the initial SAMDA analysis for LGS. 56-1-PA Cont'd

While we acknowledge that this analysis was limited by the knowledge available at the time, the limitations and shortcomings of a previous era in no way disqualify the claim that, in light of numerous advances in modeling capabilities, a library of discovered cost-beneficial SAMAs, and the saliency of severe accident risks following the disaster at Fukushima Daiichi, not only is there new and significant information, there are significant *volumes* of this information acquired since 1989.

In the licensee's current environmental report, the identification and treatment of new and significant information (four items in total) were developed only in the narrow context of how they may affect the dated SAMDA analysis. It should go without saying that this approach does not comprise all of the applicable new and noteworthy severe accident mitigation strategies bearing on the site in question, or serve to remedy gaps and omissions in the original SAMDA analysis.

The entire set of first-stage envisioned alternatives in the initial SAMDA analysis was no more than fifteen options. The "analysis" in the current environmental report consists of perfunctory, "back-of-the-envelope" calculations in lieu of a proper SAMA analysis. The current operator Exelon referred to these considerations as representing an "abundance of caution." We disagree.

One of the largest problems with the calculations offered, aside from only focusing on an arbitrarily limited number of alternatives, is that licensee evaluated each item of new information in isolation of the other factors that would also change the cost-benefit conclusion for a particular alternative. The effects of each changed parameter (e.g., population, offsite economic risk, cost per person-rem averted, and seismic hazards) should be evaluated in a comprehensive model that shows the aggregate benefit, as performed in all current day SAMA analyses. Unfortunately, their analysis barely scraped the surface of how this new information should actually be considered in the context of environmental impacts.

In comparison, a "reasonable set" of alternatives for another recently relicensed plant included an initial consideration of 128 SAMA candidates developed from previous lists at other plants, NRC documents, and documents related to advanced power reactor designs.[7] After screening this initial set for non-applicable or previously implemented designs as well as combining/dropping common-benefit options, the applicant was still left with a set of forty unique SAMA candidates, for which it was required to enter preliminary cost estimates in a so-called "Phase I Analysis." A

[6] NUREG/CR-6613, Vol. 1, *Code Manual for MACCS2, User's Guide*, D. Chanin & M.L. Young, May 1998
[7] Joseph M. Farley Nuclear Plant - *Application for License Renewal, Appendix D. Environmental Report, Attachment F. Severe Accident Mitigation Alternatives*, Sept 2003

total of fifteen SAMA candidates survived this screening to enter more detailed cost consideration in the Phase II analysis, of which none were deemed cost-beneficial. However, in another renewal application,[8] the SAMA analysis found eleven potentially cost-beneficial options from an initial set of thirty-three.

56-1-PA Cont'd

In an NRC report discussing insights on SAMAs in connection with plant license renewals,[9] the agency authors list numerous potentially cost-beneficial SAMAs relating to station blackouts, protection and support systems, procedures and training, and external events such as flood, fire, and seismic hazards. The authors note that "averted onsite costs (AOSC) is a critical factor in cost-benefit analyses and tends to make preventative SAMAs more attractive than mitigative SAMAs." This AOSC factor was not considered in either the original SAMDA or the recently submitted environmental report.

Finally, NRDC believes that in addition to a comprehensively updated SAMA analysis, the licensee or agency must conduct a study that, as part of the supplemental environmental impact statement, presents postulated accident scenarios showing the full range and weight of environmental, economic, and health risks posed by these accidents. This type of study should model site-specific severe accidents and illustrate the full consequences of a range of severe accident scenarios so that the public and their policy makers can make informed decisions whether to continue plant operations after the existing licenses expire, thereby continuing to run the risk of a severe nuclear accident, invest in additional accident mitigation capabilities, or alternatively, avoid these risks altogether by relying on a portfolio of low carbon electricity generation alternatives that could meet future electricity service needs over the license extension period.

The SAMA analyses are inadequate in this regard because they only address isolated issues in a cost-benefit analysis that discounts the cumulative impacts on displaced populations, regional economic losses, and environmental cleanup. These types of calculations do not present a clear picture of the potential hazards or costs experienced in the event of a severe accident. Instead they tend to mask the full range of accident consequences that policy makers may wish to avoid. Recently, NRDC produced an analysis, of the type we believe should be included in the Limerick NEPA analysis, to inform ongoing relicensing efforts at the Indian Point nuclear plant site.[10]

In order to illustrate the full extent of a major accident, the NRDC study used the U.S. Department of Defense computer model HPAC (Hazard Prediction and Assessment Capability)[11] to calculate site-specific release radiological source-terms, resulting fallout plumes, and data on the effects on nearby populations. The results were compared to similar modeling of the Fukushima disaster to provide a sense of scale, and to estimate the rough magnitude of financial

[8] Three Mile Island Nuclear Station Unit 1 – *License Renewal Application, Environmental Report, Appendix E. SAMA ANALYSIS*

[9] *Perspectives on Severe Accident Mitigation Alternatives for U.S. Plant License Renewal*, T. Gosh, R. Palla, D. Helton, U.S NRC, Sept 2009 (Accession No.: ML092750488)

[10] *Nuclear Accident at Indian Point: Consequences and Costs*, M. McKinzie, Oct 2011 (http://www.nrdc.org/nuclear/indianpoint/files/NRDC-1336_Indian_Point_FSr8medium.pdf)

[11] Hazard Prediction and Assessment Capability (HPAC), version 4.0.4. Washington, D.C.: Defense Threat Reduction Agency, Apr 2004

and economic damages that would be incurred if a severe accident were to occur at Indian Point. This is not a hypothetical issue. Policy makers in several countries, including Germany and Switzerland, have made decisions not to grant nuclear plant license extensions to avoid having to endure the continuing risk of severe nuclear plant accidents.

Regardless of Exelon's own corporate understanding of its legal obligations, NEPA is clear in its well-established mandates and what it requires of the NRC. NEPA requires that federal agencies characterize environmental impacts broadly to include not only ecological effects, such as physical, chemical, radiological and biological effects, but also aesthetic, historic, cultural, economic, and social effects.[12] NEPA requires an agency to consider both the direct effects caused by an action and any indirect effects that are reasonably foreseeable. Effects include direct effects caused by the action and occurring at the same time and place and indirect effects caused by the action, but later in time or farther removed in distance, but still reasonably foreseeable.

56-1-PA

Most specifically, NEPA directs that NRC take a "hard look" at the environmental impacts of its proposed action, in this instance the relicensing of two BWR Mark 2 units for an additional 20 years, and compare them to a full range of reasonable alternatives. "What constitutes a 'hard look' cannot be outlined with rule-like precision, but it at least encompasses a thorough investigation into the environmental impacts of an agency's action and *a candid acknowledgement of the risks that those impacts entail*." *Nat'l Audubon Soc. v. Dept of the Navy* 422 F.3d 174, 185 (4th Cir. 2005) (emphasis added). As a stalking horse for the NRC's draft EIS, the applicant's ER does not meet this standard. In taking the "hard look" required by law, the NRC must therefore address the potential environmental impacts of a range of severe accidents—and accident mitigation strategies—especially in light of the new information provided by the Fukushima nuclear disaster on the performance of BWR radiological containment in a prolonged loss-of-coolant, core-damage scenario.

For the reasons stated above, NRDC urges that NRC direct that a thorough and lawful SAMA analysis be conducted as part of (or supplement to) the required supplemental environmental impact statement, the draft of which is currently scheduled for August 2012 and the final SEIS currently scheduled for February 2013. Additionally, the full cumulative effect of severe accidents must be studied and presented as part of these documents. These analyses must make every effort to meet the current expectations of what these studies should encompass and use the necessary guidance and tools commonly utilized by the industry and NRC. The NRC's legal obligation to consider new information and determine its nuclear safety significance exists independently of whether a SAMA has or has not been prepared previously: in the event a SAMA has not been prepared, then new and potentially significant nuclear safety information must be included in the initial SAMA; if a previous SAMA exists, then it must be updated to reflect this new information, and the resulting costs and benefits of the full spectrum of reasonable accident mitigation alternatives must be considered as part of the Draft Supplemental Environmental Impact Statement, and issued for public comment.

Finally, we have grave misgivings regarding the future time-dependence, accuracy, and relevance of the licensee's current ER, as presumptively incorporated in the NRC's planned 56-2-LR

[12] 40 C.F.R. § 1508.8

SEIS for LGS license extension, given that such license extension will not become effective until the current unit operating licenses expire in 2024 (for Unit 1) and 2029 for Unit 2. We submit that any decision to relicense these units must be supported by the most timely NEPA and SAMA analysis obtainable within a reasonable interval (e.g. five years) prior to actual expiration of the existing licenses.

56-2-LR Cont'd

Intervals of 12 and 17 years are not required for corporate planning purposes and are far too long to credibly sustain the accuracy and relevance of NEPA analyses, or for the NRC to accurately project both the future condition of the plant, the future state of nuclear safety knowledge, trends in local resource use, population, and the affected environment, and the future range of reasonable electricity supply alternatives to LGS license extension. By comparison, major government owned nuclear installations, such as nuclear laboratories and weapon production sites, are required to conduct site-wide NEPA reviews of their operations and facility plans every five years. Using this federal standard for timeliness, the NRC's NEPA analysis for LGS relicensing should not commence before 2019, for Unit 1, and before 2024 for Unit 2, or should be subjected to mandatory reassessment and supplementation after those dates.

We further note, given the extended timeframes for expiration of the existing LGS operating licenses, that they easily encompass the five year timeframe that the Commission has set out for formulation and implementation of NRC staff safety recommendations to be undertaken "without unnecessary delay" in the wake of the Fukushima accident. In light of these important nuclear safety developments, we seek no reason why this proposed NEPA analysis, and hence the entire licensing proceeding that it is required to support, could not be deferred for at least five years, until the Commission has completed its decision-making and schedule for implementation of post-Fukushima safety upgrades. As noted above, to ensure the timeliness and accuracy of the NEPA analysis, the deferral could be even longer (on the order of 7 years for Unit 1), to allow for the inclusion of the results of the extended rulemakings contemplated under the Commission's regulatory response to the Fukushima accident.

56-3-OS

Preparation of the applicant's ER, and the NRC's subsequent SEIS, could then take account of these required safety modifications and enhanced severe accident coping strategies, and these would be reflected in a significantly revised SAMA analysis. In these comments, we are not formally advocating such a deferred pathway for the LGS relicensing proceeding, but merely note its plausibility and inherent advantages for all parties to the proceeding. Without such a deferral, the only sensible alternative course is to ensure the incorporation of the most up-to-date nuclear safety knowledge – "new and significant information" – regarding BWR Mark 2 reactors and severe accident mitigation into the current licensing proceeding.

Thank you for your consideration of these comments. Please do not hesitate to contact us at (202) 289-6868 if you have any questions.

Sincerely,

Geoffrey H. Fettus
Senior Project Attorney

Christopher E. Paine
Director, Nuclear Program

C. Jordan Weaver, Ph.D.
Program Scientist

Mendiola, Doris

From: lorraineruppe@aol.com
Sent: Friday, October 28, 2011 6:33 PM
To: Regner, Lisa
Subject: Fwd:Faultlines close to Limerick Nuclear Plant

RECEIVED
2011 NOV -1 PM 3:20
RULES AND DIRECTIVES BRANCH USNRC

Ms.Regner,

Please include this for the record concerning relicensing of Limerick Power Plant.

8/26/2011
76 FR 53498
37

-----Original Message-----
From: lorraineruppe <lorraineruppe@aol.com>
To: letters <letters@pottsmerc.com>
Sent: Mon, Oct 24, 2011 9:09 pm

Letter to Editor

Exelon is rushing the timeline to reissue a license(18 years ahead of time) to run Limerick Nuclear Plant into the unknown, yet it took more than 5 months for the NRC to get back to me concerning an already known survey of fault lines. 4-13-LR

It took five months for the Nuclear Regulatory Commission to answer my question concerning how close the nearest fault line is to Limerick Nuclear Plant. No wonder! Two faults are dangerously close. Chalfont Fault is only 9 miles East. Ramapo Fault is 17 miles Northwest. This is alarming! 4-14-GE

The 9-21-11 Mercury article said" whether or not earthquake risk is a factor in the current relicensing request for Limerick remains to be seen". It would be grossly unacceptable for the NRC to ignore Limerick's extreme vulnerability to earthquake damage..

Earthquake risk should be on the top of of NRC's relicensing concerns for Limerick. Earthquake risks are far greater for Limerick than previously realized-increased by 141%. We now know Limerick is 3rd on nation's earthquake risk list .Plus,evidence shows earthquakes in the East can be far stronger than Limerick's " design basis" can withstand. 4-15-PA

There's a good chance that an earthquake can exceed Limerick's design basis, causing a severe nuclear accident, jeopardizing the health, safety and financial well being of our entire region.

The Virginia 8-24-11 earthquake caused shaking in PA at Limerick Nuclear Plant .Since January there have been 2 small earthquakes in Philadelphia, only 21 miles from Limerick.

Shaking and breaking in miles of Limerick's buried underground pipes and cables can lead to nuclear disaster. It's disquieting that NRC uses a "visual inspection" to determine damage on buried pipes. Problems may not be identified until it's too late.

For years the NRC allowed Exelon to do its own studies, to stall and avoid responsible action on fires and earthquakes. To save money, Exelon typically concludes Limerick is "safe enough". This is unacceptable!

10-5-11, the Mercury reported a flaw was found in the mechanism to shut down the nuclear plant. The warning was tied to renewed focus on earthquake risk. It's difficult to see how Limerick's design flaws can be fixed, even if Exelon WOULD spend the money.

There is no proof whatsoever Limerick's design can withstand other threats ranging from hurricanes, tornadoes, floods, or terrorist attacks to an impact from a jet airliner.

We need precaution before there is a catastrophe. NRC should close Limerick as soon as possible.

Lorraine Ruppe

SUNSI Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = L. Regner (LHR2)

1

Mendiola, Doris

From: sunbeamsky [sunbeamsky@aol.com]
Sent: Monday, October 31, 2011 2:28 PM
To: Regner, Lisa
Subject: power plant renewal

57-1-OR

Just wanted to voice my opinion for a no vote to renew the license for the Limerick power plant. It's in an area with high population - we could never all evacuate if necessary. I also feel it's presence has led to and increase of cancer in our area. 57-2-OS 57-3-HH
Sharon Yohn

8/24/2011
76FR 53498
38

RECEIVED
2011 NOV -1 AM 8:20
RULES AND DIRECTIVES BRANCH USNRC

SUNSI Review Complete
Template = ADM-013

ERIDS = ADM-03
Add = L. Regner (LMR2)

Mendiola, Doris

From: Smokowicz, April [April.Smokowicz@graphicpkg.com]
Sent: Wednesday, November 02, 2011 8:49 AM
To: Regner, Lisa
Cc: msworkdog@verizon.net
Subject: Pottstown Mercury article 10/27/11

Good Morning

I know this is late according to your article, but I wanted to still send you some information.

I feel that there is a lot of people that had not known to report anything because of not knowing who to go to. I don't understand why the hospitals don't give statistical information based on areas?

58-1-HH

Anyway my daughter Tracey had Leukemia at the age of 2 1/2. Was a patient at Children's Hospital until she was 5. With several years of chemotherapy she is now 18 and in remission. We had lived on Limerick Center Road for most of our young lives and now with our kids. I don't know what other information you would need but I would be happy to get you whatever you might need.

Thank you,

Michael Smokowicz

676 King Road

Royersford PA 19468

610-792-3270

8/24/2011

76FR53498

39

SONSI Review Complete
Template = ADM-013

E-RFDS = ADM-03
Add = L. Regner (LMR2)

8/26/2011
76FR53498

(41)

Sir or Madam

In Pottstown about 1/2 mile from the Limerick Power Plant we have four bridges. One they are not going to fix, one just was fixed, one has been in progress of being fixed for months now, last one is a 1/3 of the way of being fixed. To get out of town the only other way is toward Allentown if anything should happen. Not many people could get out on the one road. Please don't extend the license for Limerick.

59-1-OS

Barbara Miller
701 N. Hanover St
Pottstown, Pa
19464

P.S. After they fixed the bridges. Still what about know we had that earthquake in Virginia. With changes in weather all over the world I think its a sign of things to come.

RECEIVED
2011 AUG 25 PM 2:48
RULES AND DIRECTIVES BRANCH

SUNSI Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = L. Regner (LHR2)

U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

LIMERICK GENERATING STATION
Environmental Scoping Comments
Division of License Renewal
NRC-2011-0166

Written Comment Form
Must be received on or before October 28, 2011. Please print clearly.

Name: Debra Schneider
Title: Citizen
Organization: United States of America
Address: 585 MANATAWNY St.
City: Pottstown State: PA Zip Code: 19464

Comment:
- No way to Evacuate Area 60-1-OS
Earthquake fault 60-2-GE
Do not Extend - Plenty of Safe 60-3-AL
alternatives - water - solar - wind - Geothermal
60-4-RW Spent fuel - Storage - Uranium Mining - Dirty
12 years Ahead of time - ~~Cement~~ 60-5-LR
Certently no way to guarentee Safety
Too Expensive 60-6-OS 60-7-OS
- Deterioration of Cement + Rebar - Crumbles over Time
- They want increase emmission's - Pollutants 60-8-AM
- Dirty polleted mine water 60-9-SW
- High infant mortality rate + neonatal
- Cancer increases 60-10-HH
- Thyroid Cancer rate 70% higher
- Nuclear Waste - Nothing Clean 60-11-RW

Use other side if more space is needed.
- Go back + look at Structural Error's when plant was being buil 60-12-OS

Comment Forms may be mailed to:
Chief, Rules, Announcements, and Directives Branch
Mail Stop: TWB-05-B01M
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

- NRC Should not be Considering this so far in advance - no way to assure safety - Shut it Down - 60-13-LR

Do you want to live near Limerick
The Is suppose to be protecting
the people's interests —

Comment (Continued):

- Radiation in air + water
- Radioactive ground water — 60-14-RW
- Cancer increase esp children — 60-15-HH
- Deadly waste - above ground + unprotected
- Accidents + leaks - many shut down
- Risk of meltdown Earthquake, flood, hurricane - Aging equipment — 60-16-OS
- Updated Evacuation plan — 60-17-OS
- ~~increase~~ increased population
- increase costs - medical problems — 60-18-OS
- Can Replace with Clean, renewable energy before current license expires — 60-19-AL
- Should have been more public notice of hearing - Mail notices so people have an opportunity to attend — 60-20-LR
- Deplete water due to fracking up river. — 60-21-SW
- Nuclear Energy is Dirty + Expensive Since Limerick was built we have had some of the most Expensive Energy - Higher Rates — 60-22-OS
- ? After Fukushima - Limerick listed as one of top 10 to have very serious problem when we have an Earthquake — 60-23-OS

If needed, use additional sheets.

- ? Storage of spent fuels - Look at Fukushima similar system — 60-24-OS
- ? Mining + Enriching of Uranium + Plutonium - Filthy — 60-25-OS