

T. L. Harpster
VP-Bell Bend Project-Development

PPL Bell Bend, LLC
38 Bomboy Lane, Suite 2
Berwick, PA 18603
Tel. 570.802.8111 FAX 570.802.8119
tlharpster@pplweb.com



October 9, 2009

Project Review Coordinator
Susquehanna River Basin Commission
1721 North Front Street
Harrisburg, PA 17102-2391

ATTN: Paula B. Ballaron, Regulatory Program Director

**BELL BEND NUCLEAR POWER PLANT
SUPPLEMENTAL INFORMATION FOR
APPLICATION FOR SURFACE WATER WITHDRAWAL
APPLICATION FOR CONSUMPTIVE WATER USE
BNP-2009-307**

Dear Ms. Ballaron:

Enclosed for the Susquehanna River Basin Commission's review please find supplemental application documents for the proposed Bell Bend Nuclear Power Plant (BBNPP), to be located in Salem Township, Luzerne County, PA. These materials are submitted in support of the application for surface water withdrawal and the application for consumptive water use for the project that were submitted to the Commission on May 13, 2009.

Representatives of PPL and the SRBC met on July 8, 2009 at the Commission's office to discuss the applications for the project. Based on our discussions, the Commission requested additional information to support the application review. This information is in response to that request.

The documents included in this supplemental application are mostly excerpts from or reports attached to the Combined Construction and Operating License Application (COLA) submitted to the Nuclear Regulatory Commission (NRC) for the project and can be found in that document. Additional information, such as letters from other agencies, are included also.

Should you or your staff have any questions, please contact Tinku Khanwalkar at 610-774-5466 or akhanwalkar@pplweb.com.

Respectfully,

A handwritten signature in black ink, appearing to read "T. Harpster", is written over the word "Respectfully," and extends across the line.

Terry L. Harpster

TLH/kw

Attachment: Supplemental Application Documents

cc: (w/o attachment)

Mr. Thomas W. Beauduy
Deputy Director
Susquehanna River Basin Commission
1721 North Front Street
Harrisburg, PA 17102-2391

Mr. Michael G. Brownell
Chief, Water Resources Management
Susquehanna River Basin Commission
1721 North Front Street
Harrisburg, PA 17102-2391

Mr. Paul O. Swartz
Executive Director
Susquehanna River Basin Commission
1721 North Front Street
Harrisburg, PA 17102-2391

Attachment 1

Supplemental Application Documents

806.14(c)

Refer to attached reports associated with the project:

Walker Run Survey: Wild Trout Habitat Assessment, LandStudies, May, 2009.

Walker Run Geomorphic Assessment, LandStudies, April, 2009.

A Field Survey of Terrestrial Fauna at the Proposed Bell Bend Nuclear Power Plant, Site, Luzerne County, Pennsylvania, Normandeau Associates, September, 2008.

A Field Survey of Plant Communities at the Proposed Bell Bend Nuclear Power Plant Site, Luzerne County, Pennsylvania, September, 2008.

A Field Survey of Fish and Aquatic Macroinvertebrates at the Proposed Bell Bend Nuclear Power Plant Site, Luzerne County, Pennsylvania, Normandeau Associates, September, 2008.

Preliminary Mussel Survey in the Susquehanna River in the Vicinity of the Proposed Bell Bend Nuclear Power Plant Site, Luzerne County, Pennsylvania, Normandeau Associates, September, 2008.

Impingement and Entrainment Sampling for the Proposed Bell Bend Nuclear Power Plant at the SSES Circulating water Supply System Intake Structure, Luzerne County, Pennsylvania, Normandeau Associates, September, 2008.

806.14(a)(1) Identification of project sponsor

Refer to attached BBNPP Combined Construction and Operating License Application Sections:

1.0 General Information

1.1 Applicant

1.2 Description of Business or Occupation

1.3 Organization and Management

1.3.1 PPL Bell Bend, LLC

1.3.2 PPL Bell Bend Holdings, LLC

1.3.3 PPL Nuclear Development, LLC

1.3.4 PPL Generation, LLC

1.3.5 PPL Energy Supply, LLC

1.3.6 PPL Energy Funding Corporation

1.3.7 PPL Corporation

1.3.8 Financial Relationship Between PPL Bell Bend, LLC and Its Owners

Figure 1.0-1

806.14(a)(2)(i) Project location

Refer to attached BBNPP Combined Construction and Operating License Application Sections:

2.0 Environmental Description

2.1 Station Location – includes location coordinates

Figure 2.1-2

Figure 2.1-3

Figure 2.1-4

Note: Cooling water intake structure coordinates:

North 339563.04 (Latitude 41 05 13.91276)

East 2414655.16 (Longitude 76 07 53.11175)

806.14(a)(2)(ii) Project purpose

Refer to attached BBNPP Combined Construction and Operating License Application Sections:

8.0 Need for Power

8.1 Description of Power System

8.2 Power Demand

8.3 Power Supply

8.4 Assessment of Need for Power

806.14(a)(2)(iii) Proposed quantity of water to be withdrawn

See surface water withdrawal application form.

806.14(a)(2)(iv) Proposed quantity of water to be consumed

See consumptive use application form.

806.14((a)(2)(ix) – Plans for avoiding or mitigating for consumptive use.

Attached BBNPP Environmental Report Section 9.4.1.1, Evaluation of Alternative Heat Dissipation Systems, provides a summary of heat dissipation system alternatives and their evaluation.

806.14(a)(2)(v) Constant-rate aquifer tests

Not applicable to surface water withdrawal and consumptive use applications.

806.14(a)(2)(vi) Water use and availability:

From Environmental Report Section 9.2.3.3.1

“The BBNPP will operate as a baseload, merchant independent power producer. The power produced will be sold on the wholesale market without specific consideration to supplying a traditional service area or satisfying a reserve margin objective. The ability to generate baseload power in a consistent, predictable manner meets the business objectives for the BBNPP.”

From Environmental Report Section 3.4.1.3.1

“The U.S. EPR is designed to operate with a capacity factor of 95% (annualized), considering scheduled outages and other plant maintenance.”

From Environmental Report Section 5.2.1.2

“... refueling outages occur approximately every eighteen months and last approximately 1 month ...”

806.14(a)(2)(vii) All water sources

The Susquehanna River will be the source of water for the project. Testing and preparation for commercial operation is expected to begin in 2018. This would be the initiation of surface water use.

806.14(a)(2)(viii) – Supporting Studies, reports, and other information upon which assumptions and assertions have been based.

See attached reports:

1. Report Documenting the Withdrawal and Consumptive Use values in the Bell Bend Nuclear Power Plant Combined Application to the Susquehanna River Basin Commission, Revision 0
2. S&L Report No. 009655, Construction Dewatering Design, Revision 1
3. Evaporation Curve from SPX Cooling Tower Co.
4. S&L Calculation 2008-08550, Bell Bend Water Balance Calculation, Revision 2
5. S&L Report No. SL-009498, Conceptual Design of the Circulating Water System, Revision 3
6. S&L Calculation No. 2008-07916, RWSS Pump and Piping Sizing, Revision 1
7. B&V Calculation 161642.51.2001, ESWEMS Retention pond Sizing, Revision 0
8. S&L Calculation No. SL-009446, Conceptual Design of Storm water management system, Revision 2

806.14(a)(2)(x) Copies of correspondence with member jurisdiction agencies

- November 20, 2008 letter from the Federal Emergency Management Agency to US Nuclear Regulatory Commission concerning the Radiological Emergency Preparedness Program.
- August 27, 2008 letter from the Pennsylvania Emergency Management Agency to UniStar on the proposed emergency plans for the project.
- January 27, 2009 letter from New Jersey Department of Environmental Protection to US Nuclear Regulatory Commission concerning alternative site.
- July 9, 2008 letter from the Luzerne County, Pennsylvania to UniStar concerning the proposed project.
- Six (6) letters to Michael Canova, US Nuclear Regulatory Commission in support of the PPL Bell Bend project.
- October 8, 2008 letter from Congressman Paul Kanjorski to US Nuclear Regulatory Commission in support of the project.
- January 29, 2009 statement from Pennsylvania Energy Alliance in support of the project.
- February 19, 2009 letter from Governor Edward G. Rendell to Department of Energy in support of the project.
- February 12, 2009 letter from the Pennsylvania Department of Conservation and Natural Resources to US Nuclear Regulatory Commission on the Pennsylvania Natural Diversity Inventory Review for the Bell Bend Site.
- March 5, 2009 letter from the Pennsylvania Fish & Boat Commission to US Nuclear Regulatory Commission concerning Pennsylvania Natural Diversity Inventory for the Bell Bend site.

- March 2, 2009 letter from the PA Historical and Museum Commission to UniStar approving the Phase Ib Cultural Resources Investigation report and recommendations.
- March 23, 2009 letter from the PA Historical and Museum Commission to PPL Bell Bend approving the Supplemental Phase Ib Cultural Resources Investigation report.
- May 26, 2009 letter from PPL Bell Bend to Pennsylvania Historic and Museum Commission submitting the work scope for Phase II National Register Evaluations of Archaeological Sites.
- June 11, 2009 letter from the PA Historical and Museum Commission to PPL Bell Bend approving the scope of work proposal for Phase II Archaeological Evaluations and Assessment of Effects to Historic Resources.
- March 13, 2009 letter from the US Department of the Interior to US Nuclear Regulatory Commission with comments on an alternative site.
- July 10, 2009 letter from the US Department of the Interior to US Nuclear Regulatory Commission concerning their input to the environmental impact statement for the project.
- April 9, 2009 letter from US Army Corps of Engineers to US Nuclear Regulatory Commission
- April 29, 2009 letter from PPL Bell Bend to US Army Corps of Engineers requesting Preliminary Jurisdictional Determination and transmitting the Wetlands Delineation and Exceptional Value Wetlands Analysis Report, dated February 2009.
- All NRC correspondence can be found at:

<http://www.nrc.gov/reactors/new-reactors/col/bell-bend/documents/app-2008.html>

806.14(a)(2)(xi): Evidence of compliance with applicable water registration requirements of the member jurisdiction in which the project is located.

The Water Resources Planning Act, Act 220, requires the Department of Environmental Protection (DEP) to conduct a statewide water withdrawal and use registration and reporting program. The regulation, which establishes water withdrawal and use registration, monitoring, record-keeping and reporting requirements at 25 Pa. Code Chapter 110, became effective upon its publication in the Pennsylvania Bulletin on November 15, 2008.

Chapter 110 applies to public water supply agencies (defined as community water systems) and hydropower facilities, irrespective of the amount of withdrawal, and any person whose total withdrawal from one or more points of withdrawal within a watershed operated as a system either concurrently or sequentially exceeds an average rate of 10,000 gallons per day (gpd) of water in any 30-day period. Those persons who obtain their water through an interconnection with another person in an amount that exceeds an average rate of 100,000 gpd in any 30-day period also must register. Registrants must annually report their water usage and other information and retain records for at least 5 years.

Specifically, § 110.202, Submission of registrations, states, "Registration shall be submitted to the Department by March 16, 2004, or 30 days following initiation of a water withdrawal or withdrawal use subject to § 110.201 (relating to the registration requirement), whichever is later."

The registration of water withdrawal for the Bell Bend project will be made by submitting the proper registration forms to the Pennsylvania Department of Environmental Protection no later than 30 days following initiation of water withdrawal for the facility.

806.14(a)(3)(i) Surface water characteristics (quality, quantity, flow regimen, other hydrological characteristics).

Refer to attached BBNPP Environmental Report Sections:

- 4.2 Water-related Impacts
- 4.3.2.2 Impacts to the Susquehanna River and Offsite Streams
- 5.2 Water Related Impacts
- 5.3.3 Heat Discharge System

Report: Susquehanna River Thermal Plume and Dilution Modeling BBNPP, ERM, June, 2008.

806.14(a)(3)(ii) Threatened or endangered species and their habitats.

Refer to attached BBNPP Environmental Report Sections:

4.3 Ecological Impacts

5.4.4 Impacts to Biota Other Than Members of the Public

See also: 806.14(a)(2)(x) Copies of correspondence with member jurisdiction agencies.

806.14(a)(3)(iii) – Existing water withdrawals.

Refer to attached BBNPP Environmental Report Sections:

2.3.2.1.2 Consumptive Surface Water Use

4.2 Water-related Impacts

5.2 Water Related Impacts

5.3 Cooling System Impacts

806.14(a)(4) Project estimated completion date and estimated construction schedule

Refer to attached PPL Bell Bend NPP Level 2 Schedule

806.14(b)(1)(i) Engineering feasibility

This project is a single-unit US Evolutionary Power Reactor (EPR).

Refer to attached Bell Bend Nuclear Power Plant-Specific System Design parameters.

Refer to the Final Safety Analysis Report (FSAR) in Part 02 of the Combined Construction and Operating License Application (COLA) for a detailed explanation of the project.

806.14(b)(1)(ii) Ability of project sponsor to fund the project or action

Refer to the attached BBNPP Combined Construction and Operating License Applications Sections:

1.5 Financial Qualifications

1.6 Decommissioning Funding Assurance

1.6.1 Decommissioning Cost Estimate

1.6.2 Decommissioning Funding Mechanism

1.6.3 Decommissioning Costs and Funding – Status Reporting

1.6.4 Recordkeeping Plans Related to Decommissioning Funding

1.7 Foreign Ownership, Control, or Domination

1.8 Restricted Data and classified National Security Information

1.9 References

Tables 1.9-1 through 1.9-10

Appendix A

806.14(b)(1)(iii) Identification and description of reasonable alternatives

Refer to attached Bell Bend Nuclear Power Plant, Alternative Site
Evaluation, Revision 0, September 2009, Luzerne County, Pennsylvania

806.14(b)(1)(iv) Compatibility of proposed project with existing and anticipated uses

Refer to the attached BBNPP Combined Construction and Operating License Applications Sections:

Part 2: Final Safety Analysis Report

2.2 Nearby Industrial, Transportation and Military Facilities

This project is a single-unit US Evolutionary Power Reactor (EPR) that will be located adjacent to the existing Susquehanna Steam Electric Station nuclear plant.

806.14(b)(1)(v)(A) Flood damage potential considering the location of the project with respect to the flood plain and flood hazard zones.

Refer to attached BBNPP Final Safety Analysis Report Sections:

2.4 Hydrologic Engineering

3.4 Water Level (Flood) Design

A FEMA flood analysis of the project site is being performed as part of the actions needed for the Joint Permit Application, US Army Corps of Engineers/Pennsylvania Department of Environmental Protection.
(See 806.14(b)(2)(iii))

806.14(b)(1)(v)(B) – Recreational potential.

Refer to attached BBNPP Environmental Report Sections:

- 2.2 Land
- 2.2.2.1.3 Non-Consumptive Surface Water Use
- 2.5.2.6 Area Recreational Opportunities
- 4.2.2.7 Potential Changes to Surface Water and Groundwater Quality
- 4.2.2.10 Measures to Control Construction Related Impacts
- 4.4.1 Physical Impacts
- 4.4.2.9 Public Facilities
- 5.8.1.2 Distribution of Community Populations, Buildings, Roads and
Recreational Facilities
- 5.8.2.6.2 Area-Wide and Recreational Aesthetics

806.14(b)(1)(v)(C) Fish and wildlife (habitat quality, kind and number of species).

Refer to attached BBNPP Environmental Report Sections:

- 2.4.1.2 Important Terrestrial Species and Habitats
- 2.4.1.3 Habitat Importance
- 4.3 Ecological Impact
- 5.3.1.2 Aquatic Ecosystems
- 5.3.2.2 Aquatic Ecosystems
- 5.3.3.2 Terrestrial Ecosystems

Note: On October 6, 2009, the Pennsylvania Fish & Boat Commission designated Walker Run as a Wild Trout Stream.

806.14(b)(1)(v)(D) – Natural environmental uses (scenic vistas, natural and manmade corridors, wild and wilderness areas, wild, scenic and recreation rivers.

Refer to BBNPP Environmental Report Sections identified for 806.14(b)(1)(v)(B).

806.14(b)(1)(v)(E) – Site development considerations (geology, topography, soil characteristics, adjoining and nearby land uses, adequacy of site facilities).

Refer to attached BBNPP Environmental Report Sections:

2.2 Land

4.1.1 The Site and Vicinity

5.1.1 The Site and Vicinity

806.14(b)(1)(v)(F) Historical, cultural and archaeological impacts.

Refer to attached BBNPP Environmental Report Sections:

2.5.3 Historical Properties

4.1.3 Historical Properties

5.1.3 Historical Properties and Cultural Resources

See also: 806.14(a)(2)(x) Copies of correspondence with member jurisdiction agencies.

806.14(b)(2)(i) Need for government services or finances

and

806.14(b)(2)(ii) Commitment of government to provide services or finances

The Federal Energy Policy Act of 2005 provides two important government incentives, which may be perceived as “services or finances.” This Act clearly demonstrates the federal government’s commitment to provide such services or finances.

The first incentive under the Act is the eligibility of new nuclear plants for Production Tax Credits, as long as the following schedule milestones are achieved:

COLA filed with NRC by 12/31/2008
First “safety related” concrete pour by 12/31/13
Commercial operations by 12/31/2020

The Production Tax Credits can amount to as much as \$125 million per 1,000 megawatts (MW) of production, for each of the first eight years of operation. The Production Tax Credits are more fully described immediately below.

Production Tax Credits For New Plants

The legislation provides a production tax credit of 1.8 cents per kilowatt-hour for 6,000 MW of capacity from new nuclear power plants for the first eight years of operation.

A qualifying advanced nuclear facility is a nuclear facility for which a company (or companies) has received an allocation of megawatt capacity and which is placed in service before 2021.

The 6,000 MW of capacity eligible for the credit is allocated by the Secretary of the Treasury (in consultation with the Secretary of Energy). If more than 6,000 MW of new nuclear generating capacity is operating in any given year and is eligible for the production tax credit, the Treasury Secretary will presumably apportion the 6,000-MW allocation on a pro rata basis among the nuclear plants in operation.

The aggregate amount of credit that a taxpayer may claim in any year during the eight-year period is subject to two limitations, based on allocated capacity and an annual limitation:

(1) The company may claim credit only for production of electricity equal to the ratio of the allocated capacity that the taxpayer receives from the Secretary to the rated nameplate capacity of the company's facility. For example, if the company receives an allocation of 750 MW of capacity from the 6,000 MW, and the company's facility has a rated nameplate capacity of 1,000 MW, then the company may claim three-quarters of the allowable credit, or 1.35 cents per kilowatt-hour, for each kilowatt-hour of electricity produced at the facility (subject to the annual limitation described below).

(2) A company operating a qualified facility may claim no more than \$125 million in tax credits per 1,000 MW of allocated capacity in any one year of the eight-year credit period. If the company operates a 1,350-MW plant and has received an allocation for 1,350 MW of capacity eligible for the credit, the company's annual limitation on credits that may be claimed is equal to 1.35 times \$125 million, or \$168.75 million.

If the company operates a facility with a nameplate rated capacity of 1,000 MW but has received an allocation from the Secretary for 750 MW of credit-eligible capacity, then the two limitations apply such that the company may claim a credit equal to 1.35 cents per kilowatt-hour of electricity produced (as described above), subject to an annual credit limitation of \$93.75 million in credits (three-quarters of \$125 million).

The production tax credit places nuclear energy on equal footing with other sources of emission-free power, including wind and closed-loop biomass. These other sources have received a production tax credit since 1992.

The Energy Policy Act of 2005 also provides access to Department of Energy (DOE) Loan Guarantees that can cover up to 80% of the construction costs of a project. The DOE Loan Guarantees are described immediately below, followed by an explanation of the need for such incentives.

Loan Guarantees for New Nuclear Plants

The bill authorizes the Energy Secretary to provide loan guarantees to support the development of innovative energy technologies “that avoid, reduce or sequester air pollutants or anthropogenic emissions of greenhouse gases.”

These technologies include nuclear energy facilities, renewable energy, coal gasification and hydrogen fuel-cell technology. The loan guarantee can be up to 80 percent of the project cost. The Secretary sets the rate, and full payment must be made within 30 years or 90 percent of the project’s life.

The legislation creates a self-financing Energy Loan Guarantee Fund that minimizes the potential costs to the federal government. The legislation provides two alternatives to finance the cost of a loan guarantee:

- The project developer can pay the cost of the loan guarantee into the fund.
- The Secretary of Energy can request an appropriation for that amount, and the project developer pays back that amount over time.

The cost of a loan guarantee is a small percentage of the face value of the amount being guaranteed, much like the loan origination fee charged by a bank when it provides a home mortgage.

The incentives provided pursuant to the Energy Policy Act of 2005, particularly the DOE Loan Guarantees, are absolutely essential to the success of a new nuclear project. Financing of new nuclear power plants poses unique challenges for projects and their sponsors. PPL, in consultation with its financial advisors, believes that, absent a long-term, guaranteed loan similar to the DOE Loan Guarantee, a project financing market for the project would not exist.

Several factors negatively affect the ability to raise non-recourse, project debt financing for a new nuclear facility, namely:

- Long lead-time construction with no interim cash flows available for debt service;

- New technology risk involved in building the superior technology of Generation III+ nuclear plants;
- Complexity in the construction of nuclear power plants and the financing risks associated with potential delays and cost overruns;
- Potential regulatory delays despite an overhauled and streamlined licensing process;
- Limited domestic construction experience in building new nuclear power plants given the hiatus of several decades since last build-out;
- Magnitude of costs associated with these large projects relative to the size of U.S. power/utility companies and to the depth of the project financing markets;
- Absence of a power contracting market with flexibility and depth necessary to support adequate long term financing on commercially reasonable terms.
- 20+ year tenor to secure adequate financing on commercially reasonable terms.

The alternative to financing with the DOE Loan Guarantee Program would be to finance in the commercial markets on terms and conditions that would likely be challenging for power and utility companies to accept – shorter term debt, higher equity component, incremental on balance sheet debt attribution, and higher asset concentration. For these reasons, the DOE Loan Guarantee Program provides benefits to the applicants in the following key areas:

1. Debt tenor: DOE provides for 30-year financing. Given the high capital costs of a new nuclear facility, the longer debt maturity is required to ensure adequate debt serviceability and reduce refinancing risk. A 30-year debt maturity is not excessive given the 60-year expected lives of the assets.
2. Absolute leverage: The DOE Loan Guarantee is available for up to 80% of the Eligible Project Costs. The increase in leverage makes the required cost of electricity on a cost per kilowatt basis more affordable to the end customer. If a loan were financed with the project sponsor's capital structure of approximately 56% debt and 44% equity, the costs would be less economic for customers. The DOE Loan Guarantee ensures that the policy objectives are met with the least cost alternative.

3. Preservation of Corporate Credit: The absolute leverage necessary to make the project economic to both the project sponsor and the consumer would severely challenge the creditworthiness of the project sponsor. Structured correctly, the guaranteed and nonrecourse nature of a project's financing will afford off-credit treatment of a significant portion of the debt and would preserve the creditworthiness and credit rating of the sponsor. Such risk segregation would enable the project sponsor to undertake the project without risking the entire enterprise.

4. Reduces Asset Concentration Risk: In the absence of a guarantee and resulting off-credit treatment, the project would constitute 61% of the current property, plant and equipment, and 45% of the total asset balances of the project sponsor. PPL believes that investors would be challenged with that level of asset concentration without the risk sharing mechanism of the DOE Loan Guarantee. PPL believes that with the DOE Loan Guarantee, the project would be able to raise adequate debt financing from the Federal Financing Bank (FFB) and other sources of credit (such as export credit agencies), so long as such other credit providers can be secured by the assets on a *pari passu* basis with the FFB/DOE Loan.

806.14(b)(2)(iii) Status of application with other governmental regulatory bodies.

Refer to attached Bell Bend Permit matrix, Rev. 0, 7/6/2009

Status of applications to date:

- Joint Permit Application, US Army Corps of Engineers/Pennsylvania Department of Environmental Protection
PPL Bell Bend is working with the US ACOE and PADEP in preparation of the JPA for submission in October, 2010.
- Loan Application, US Department of Energy
Part I and Part II of the application have been submitted. The application is being updated with current information quarterly.