

Eric A. Larson
Site Vice President724-682-5234
Fax: 724-643-8069

September 4, 2014

L-14-280

10 CFR 50.90

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001**SUBJECT:**

Beaver Valley Power Station, Unit Nos. 1 and 2

Docket No. 50-334, License No. DPR-66

Docket No. 50-412, License No. NPF-73

License Amendment Request to Modify Emergency Preparedness Plan Regarding the
Emergency Planning Zone Boundary

Pursuant to 10 CFR 50.90, FirstEnergy Nuclear Operating Company (FENOC) is requesting an amendment to the Beaver Valley Power Station, Units No. 1 and No. 2 (BVPS) Emergency Preparedness Plan, Section 2. The proposed amendment is requested to align the 10-mile emergency planning zone boundary with that used by the three counties surrounding BVPS.

An evaluation of the proposed amendment is provided as an enclosure. FENOC is requesting Nuclear Regulatory Commission (NRC) staff approval by September 1, 2015. Implementation of the amendment by FENOC is planned within 90 days of its approval.

There are no regulatory commitments contained in this submittal. If there are any questions or if additional information is required, please contact Mr. Thomas A. Lentz, Manager – Fleet Licensing, at (330) 315-6810.

I declare under penalty of perjury that the foregoing is true and correct. Executed on September 4, 2014.

Sincerely,



Eric A. Larson

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Enclosure:
Evaluation of Proposed Amendment

cc: NRC Region I Administrator
NRC Region III Administrator
NRC Resident Inspector
NRC Project Manager
Director BRP/DEP
Site BRP/DEP Representative
Executive Director, Ohio Emergency Management Agency,
State of Ohio (NRC Liaison)
Utility Radiological Safety Board
Bureau Chief, Division of Plans, Pennsylvania Emergency
Management Agency
Director, West Virginia Division of Homeland Security
Radiological Assistance Committee Chair, Federal Emergency
Management Agency, Region III
Radiological Assistance Committee Chair, Federal Emergency
Management Agency, Region V

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Subject: License Amendment Request to Revise the Emergency Planning Zone in the
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1. Beaver Valley Power Station, Unit Nos. 1 and 2 Proposed Emergency Plan Changes
2. Beaver Valley Power Station, Unit Nos. 1 and 2 Retyped Emergency Plan Pages
(For Information Only)
3. Beaver Valley Power Station Evaluation to Revise the Emergency Planning Zone,
prepared by KLD Engineering, P.C., KLD TR-641

1.0 SUMMARY DESCRIPTION

First Energy Nuclear Operating Company (FENOC) proposes changes to the Beaver Valley Power Station (BVPS) Emergency Preparedness Plan (EPP) that revises the boundary of the 10-mile Emergency Planning Zone (EPZ). The proposed changes will align the BVPS EPZ boundary with the boundary that is currently in use by the emergency management agencies of the three counties that implement public protective actions around BVPS.

The proposed changes to the BVPS EPP are considered a reduction in effectiveness as defined in 10 CFR 50.54(q)(1)(iv) and require prior Nuclear Regulatory Commission (NRC) approval in accordance with 10 CFR 50.54(q)(4). Therefore, FENOC is submitting the proposed changes as a license amendment request pursuant to 10 CFR 50.90.

2.0 DETAILED DESCRIPTION

The proposed changes to the BVPS EPP are:

1. Revision to EPP Section 2.0, "Scope and Applicability," Figure 2.1, "Map of BVPS Emergency Planning Zone (EPZ) 0-10 Miles."

The figure will be revised to reflect seven re-alignments of the EPZ boundary that follow geopolitical lines as follows:

- Three changes in Columbiana County, Ohio,
- Two changes in Hancock County, West Virginia, and
- Two changes in Beaver County, Pennsylvania.

2. Revision to EPP Section 2.0 to incorporate a text description of the BVPS 10-mile EPZ boundary.

The proposed text description for the Columbiana County, Ohio EPZ boundary is provided below.

The EPZ is defined as the area that begins in the middle of the Ohio River where Congo Road (in West Virginia) would intersect the West Virginia/Ohio State Line if it were to continue north. Proceed east on the Ohio River following the Ohio/West Virginia State line to where it would intersect Campground Road (County Highway [Co Hwy] 427) if Campground Road (Co Hwy 427) continued south. Proceed north on Campground Road (Co Hwy 427) to its junction with Annesley Road (Co Hwy 963). Follow Annesley Road

(Co Hwy 963) north until Annesley Road turns into Co Hwy 966. Proceed north on Annesley Road (Co Hwy 966) to its junction with East Liverpool Road (Co Hwy 425). Follow East Liverpool Road (Co Hwy 425) northwest to its junction with Cannon Mills Road (Co Hwy 1004). Follow Cannon Mills Road (Co Hwy 1004) to its junction with Sprucevale Road (Co Hwy 428). Follow Sprucevale Road (Co Hwy 428) north to its junction with Little Beaver Creek. Follow Little Beaver Creek north to its junction with Ohio Route 170. Follow Ohio Route 170 north to its junction with Pancake-Clarkson Road (Co Hwy 1031). Follow Pancake-Clarkson Road (Co Hwy 1031) east to Ohio State Line/Pennsylvania State Line.

The proposed text description for the Hancock County, West Virginia EPZ boundary is provided below.

The EPZ is defined as the area that begins at the intersection of the Pennsylvania/West Virginia State Line and Shreeves Road (County Road [Co Road] 7/8). Follow Shreeves Road (Co Road 7/8) west to its junction with Cameron Hollow (Co Road 7/6). Proceed north on Cameron Hollow (Co Road 7/6) to its junction with Chapman Road (Co Road 9/2). Follow Chapman Road (Co Road 9/2) west to its junction with Wylie Ridge Road (Co Road 9). Proceed north on Wylie Ridge Road (Co Road 9) to its junction with Hardens Run (Co Road 7). Follow Hardens Run (Co Road 7) west to where it meets Mayhew Rd (Co Road 7/1). Proceed north on Mayhew Rd (Co Road 7/1) until its junction with Frankfort Road (Co Road 24). Follow Frankfort Road (Co Road 24) north until its intersection with Archer Street. Follow Archer Street until its junction with Veterans Boulevard (West Virginia State Route 8). Follow Veterans Boulevard (West Virginia State Route 8) west until its junction with Washington School Road (Co Road 3). Proceed north on Washington School Road (Co Road 3) until its junction with Ferndale Road (Co Road 3/5). Proceed west on Ferndale Road (Co Road 3/5) to a point parallel to but 1/4 mile east of Ohio River Boulevard (West Virginia State Route 2) (excludes residences along West Virginia State Route 2). Continue north parallel but 1/4 mile east of Ohio River Boulevard (West Virginia State Route 2) to White Oak Run Road (Co Road 6). Follow White Oak Run Road (Co Road 6) until its junction with Arroyo Road (Co Road 3/6). Continue north on Arroyo Road (Co Road 3/6) until the junction with Ohio River Boulevard (West Virginia State Route 2) and Congo Road. Follow Congo Road to the Ohio River, ending at the West Virginia State Line/Ohio State Line boundary.

The proposed text description for the Beaver County, Pennsylvania EPZ boundary is provided below.

The EPZ is defined as the area that begins at the junction of the Ohio/Pennsylvania State Line and Pennsylvania Route 251. Follow Route 251 east to its junction with Pennsylvania Route 51. Proceed south-east on Route 51 to where it meets the north-west corporate boundary of Patterson Township. Proceed east/northeast on the Patterson Township line to the point where the White Township, Beaver Falls City, and Patterson Township corporate boundaries meet. Proceed south on the Patterson Township/Beaver Falls City corporate boundary to its junction with the Patterson Heights Borough corporate boundary. Continue southeast on the Patterson Heights/Beaver Falls City corporate boundary to the Beaver River. Proceed south on the Beaver River to the junction of the Ohio River. Proceed east, then south on the Ohio River to its intersection with the Beaver County and Allegheny County boundary. Proceed southwest on the Beaver County and Allegheny County boundary to where the Allegheny County, Beaver County, and Washington County corporate boundaries meet. Proceed west on the Beaver County and Washington County boundary to its junction with the Pennsylvania/West Virginia State Line. Proceed north on the Pennsylvania/West Virginia State line to its junction with the Ohio/West Virginia State line. Proceed north on the Ohio/Pennsylvania State line to its junction with Pennsylvania Route 251.

Attachment 1 provides pages marked to show the proposed changes.

Attachment 2 provides typed pages with the proposed changes incorporated for information.

An evaluation of the effect of the proposed BVPS 10-mile EPZ boundary changes with respect to the evacuation time estimate (ETE) for the EPZ was performed. This evaluation is provided in Attachment 3

3.0 TECHNICAL EVALUATION

3.1 Emergency Plan Background

10 CFR 50.47, "Emergency plans," defines emergency planning standards that nuclear power reactors must meet. Planning standard 10 CFR 50.47(c)(2) states, in part:

Generally, the plume exposure pathway EPZ for nuclear power plants shall consist of an area about 10 miles (16 km) in radius and the ingestion pathway EPZ shall consist of an area about 50 miles (80 km) in radius. The exact size

and configuration of the EPZs surrounding a particular nuclear power reactor shall be determined in relation to local emergency response needs and capabilities as they are affected by such conditions as demography, topography, land characteristics, access routes, and jurisdictional boundaries.

10 CFR 50, Appendix E, Section III states, in part:

The plans submitted must include a description of the elements set out in Section IV for the emergency planning zones (EPZs) to an extent sufficient to demonstrate that the plans provide reasonable assurance that adequate protective measures can and will be taken in the event of an emergency.

NUREG-0654/FEM-REP-1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, Section I.D.2 and Table 1 states:

[W]ith regard to the area over which planning efforts should be carried out, "Emergency Planning Zones" (EPZs) about each nuclear facility must be defined . . . the choice of the size of the Emergency Planning Zones represents a judgment on the extent of detailed planning which must be performed to assure an adequate response base. . . . The Task Force selected a radius of about 10 miles for the plume exposure pathway. . . . Although the radius for the EPZ implies a circular area, the actual shape would depend upon the characteristics of a particular site. . . . Judgment should be used in adopting this distance based upon considerations of local conditions such as demography, topography, land characteristics, access routes, and local jurisdictional boundaries.

The Columbiana County, Ohio; Hancock County, West Virginia; and Beaver County, Pennsylvania county emergency management agencies have modified their emergency plans to reflect the geopolitical boundaries for the 10-mile EPZ proposed for BVPS. The proposed 10-mile EPZ boundary was used in an ETE that was developed for BVPS. The ETE, "Beaver Valley Power Station Development of Evacuation Time Estimates," December 2012 (Reference 1) was based on United States Census Bureau data for 2010. As a result of the changes to the county emergency plans, BVPS proposes to make conforming changes to the BVPS 10-mile EPZ boundary currently shown in the BVPS EPP.

The requested revision to the BVPS 10-mile EPZ described in this license amendment request meets the above regulatory criteria as determined by FENOC. The county emergency plans describe actions that would be applicable for events at BVPS that warrant a protective action of sheltering or evacuation. Aligning the BVPS EPP 10-mile EPZ with the EPZs used by the offsite response organizations will ensure clear and consistent communications are used when determining actions to protect the health and safety of the public.

3.2 Background for EPZ Changes

Columbiana County, Ohio

The license amendment request proposes three changes that slightly reduce the BVPS EPP 10-mile EPZ boundary within Columbiana County, Ohio (Attachment 3, Figure 3 provides a map showing the proposed changes). The proposed changes are as follows:

- Area north of Ohio sub-area O-4
- Area northwest of Ohio sub-area O-3
- Area west of Ohio sub-areas O-2 and O-3.

The Alan M. Voorhees & Associates "Study Report for the Beaver Valley Power Station Evacuation and Mass Notification," March 1980 (Reference 2), was used to support the initial combined BVPS, Unit Nos. 1 and 2 EPP approval. The Ohio boundary for the 10-mile EPZ provided in the report was consistent with the 1985 (and current) BVPS 10-mile EPZ figure boundary. This report was used by the NRC during the initial licensing of BVPS, Unit No. 2.

In addition, the "Duquesne Light Company Beaver Valley Nuclear Facility Design Report Emergency Alert Notification System," revised July 31, 1984 (Reference 3) was also used to support the initial licensing of BVPS No. 2. The Ohio boundary for the 10-mile EPZ provided in the report was consistent with the 1985 (and current) BVPS 10-mile EPZ figure boundary.

Prior to the performance of the ETE evaluation for the 2000 census, Columbiana County implemented EPZ boundary changes on the outer portion of the three westerly sub-areas. Some of the area excluded from the new EPZ in Ohio when compared to the prior EPZ area was outside the 10-mile straight radius from the BVPS plant, though some small area reductions did occur inside of a 10-mile straight radius.

In 2003, the ETE evaluation for the 2000 census was completed ("Evacuation Time Estimates for the Beaver Valley Station Plume Exposure Pathway Emergency Planning Zone," October 2003 [Reference 4]). The Ohio EPZ boundaries shown in the 2003 BVPS ETE appear to be close to the 1985 BVPS 10-mile EPZ figure, but involve slight reductions in the EPZ area. The EPZ changes were mentioned, but not highlighted in the ETE report. Columbiana County revised their emergency plan in the early-2000s to coincide with the 10-mile EPZ boundary shown in the 2003 BVPS ETE.

The extent that the Columbiana County EPZ changes were coordinated with BVPS Emergency Response personnel could not be ascertained due to Columbiana County personnel changes and the lack of historical documentation.

The EPZ boundary map contained in the 2012 BVPS ETE aligns with 2003 BVPS ETE map for the EPZ boundary inside of Ohio, which included the reduced EPZ areas. The 2012 BVPS ETE for BVPS was submitted to NRC on December 20, 2012 (Accession No. ML130070160).

Columbiana County currently uses the boundaries contained in the 2012 BVPS ETE. Therefore, no further Columbiana County actions are necessary if the proposed changes described in this BVPS license amendment request are implemented.

Hancock County, West Virginia

The license amendment request proposes two changes that slightly reduce the BVPS EPP 10-mile EPZ within Hancock County, West Virginia (Attachment 3, Figure 3 provides a map showing the proposed changes). The proposed changes are as follows:

- Area west of West Virginia sub-areas W-1 and W-2
- Area west of West Virginia sub-areas W-2 and W-3.

When the BVPS EPZ was originally established in the early 1980s, it was difficult to establish the Hancock County portion of the BVPS EPZ due to a lack of road names for the county road system. Due to the limited roads with names, the EPZ was made larger than necessary in order to establish an identifiable boundary. Since that time, Hancock County initiated and completed a rural addressing program. The purpose of the program was to name the roads within the county, so emergency responders (for example, police and fire) could more easily identify and find locations.

The 1980 BVPS ETE was used to support the initial combined BVPS, Unit Nos. 1 and 2 EPP approval. The ETE showed West Virginia containing the 10-mile EPZ boundary consistent with the 1985 (and current) BVPS EPZ figure boundary.

The West Virginia boundary for the 10-mile EPZ provided in the "Duquesne Light Company Beaver Valley Nuclear Facility Design Report Emergency Alert Notification System," revised July 31, 1984 was consistent with the 1985 (and current) BVPS 10-mile EPZ figure boundary.

The 2003 BVPS ETE continued to show the same 10-mile EPZ boundaries within West Virginia as in the 1985 (and current) BVPS EPZ figure boundary.

In 2010, Hancock County began to re-evaluate their emergency plan. This evaluation determined that more appropriate 10-mile EPZ boundaries were needed on the edge of the westerly sub-areas. The new boundaries would potentially reduce the unnecessary evacuation risk for the population located in these areas. The revised EPZ boundaries are a small reduction in the previously defined 10-mile EPZ boundary, and all are beyond a 10-mile straight line radius from BVPS. The redefined Hancock County sub-area boundaries were used in the 2012 BVPS ETE. The new boundaries were close to the 1985 BVPS 10-mile figure boundary, but involved slight reductions in the EPZ area. The areas excluded from the EPZ, in West Virginia, are outside of a 10-mile straight line radius from the BVPS plant.

Hancock County updated their emergency plan to reflect the revised West Virginia EPZ boundaries shown in the 2012 BVPS ETE. These changes were submitted to the Federal Emergency Management Agency (FEMA) on March 21, 2014 pursuant to the requirements of FEMA "Program Manual Radiological Emergency Preparedness," June 2013.

Hancock County consulted with FENOC regarding their emergency plan re-assessment (approximately 2010) involving the planned changes to the 10-mile EPZ boundary. However, FENOC did not, at that time, recognize the need for BVPS action to revise the BVPS EPP since all West Virginia EPZ changes were outside a 10-mile straight line radius from BVPS.

Beaver County, Pennsylvania

The license amendment request proposes two changes that slightly reduce the BVPS EPP 10-mile EPZ boundary within Beaver County, Pennsylvania (Attachment 3, Figure 3 provides a map showing the proposed changes). The proposed changes are as follows:

- Area northeast of Pennsylvania sub-area P-8
- Area north of Pennsylvania sub-area P-8 and northeast of sub-area P-7.

The first change (area northeast of Pennsylvania sub-area P-8) involves an error in the BVPS 10-mile EPZ boundary map. The EPZ map used in the initial combined 1985 BVPS, Unit Nos. 1 and 2 EPP contained a drawing error. The 10-mile EPZ sketched on the EPZ map incorrectly followed a geographical border (the Beaver River) in the Pennsylvania boundary area when it should have followed a political border (the edge of the city of Beaver Falls). The low-detail sketch incorrectly showed that the city of Beaver Falls, Pennsylvania is within the BVPS 10-mile EPZ boundary. There is no known basis or reference document used in

the licensing of the initial combined 1985 BVPS, Unit Nos. 1 and 2 EPP that showed this area as included within the EPZ. Additionally, there are no Beaver County or Pennsylvania basis documents that show Beaver Falls as within the BVPS EPZ.

This was a drawing error since no BVPS, NRC, FEMA, Beaver County, or Pennsylvania reference document included the Beaver Falls area within the BVPS 10-mile EPZ boundary. Since this area is not included within the Beaver County emergency plan, no further action is necessary from Beaver County if the proposed BVPS 10-mile EPZ boundary change is implemented.

The second Pennsylvania EPZ boundary change involves an area on the northern EPZ boundary (area north of Pennsylvania sub-area P-8 and northeast of Pennsylvania sub-area P-7) for which there was never agreement within the supporting documents associated with the 1985 BVPS 10-mile EPZ boundary. This area is located outside of a 10-mile straight line radius from the BVPS plant.

The 1980 BVPS ETE, which was used to support the initial combined BVPS, Unit Nos. 1 and 2 EPP, specifically showed this Pennsylvania area excluded from the BVPS 10-mile EPZ boundary. The 2003 and 2012 BVPS ETEs follow the 1980 BVPS ETE report by excluding this area within the EPZ.

The "Duquesne Light Company Beaver Valley Nuclear Facility Design Report Emergency Alert Notification System," revised July 31, 1984, showed this area being included within the BVPS 10-mile EPZ boundary. A 2002 supplement to this report continued to show this area as within the BVPS 10-mile EPZ boundary.

The Beaver County emergency plans have included this area. Additionally, the Pennsylvania Emergency Management Agency EPZ maps have also considered this area to be within the 10-mile EPZ boundary.

This small deviation of the northern boundary of the EPZ was not recognized by either FENOC Emergency Response or off-site personnel when the above source documents were used.

Beaver County excluded this area from the BVPS 10-mile EPZ, as previously assumed in the 1980, 2003, and 2012 ETEs for BVPS.

A review of the current BVPS 10-mile EPZ sketch (which has minimal map landmark detail) could potentially show this small area as either within or outside of the EPZ boundary. This license amendment request assumes that the current 10-mile EPZ sketch shows the area as within the BVPS EPZ boundary, for the purpose of seeking NRC review and approval for removal of the area from the BVPS 10-mile EPZ.

Beaver County revised their emergency plan to reflect the 10-mile EPZ boundary as shown in the 2012 BVPS ETE. The last change was submitted to FEMA on March 19, 2014 pursuant to the requirements of FEMA "Program Manual Radiological Emergency Preparedness," June 2013.

3.3 Basis for the Proposed Changes

The current combined BVPS, Unit Nos. 1 and 2 EPP was approved by the NRC in 1987, as described in the NRC Safety Evaluation Report related to the operation of BVPS, Unit No. 2. The BVPS EPP currently depicts the BVPS 10-mile EPZ in a sketch where the geopolitical lines are not well defined. There is no text description, only a sketch with minimal landmark detail as described in Attachment 1, EPP Section 2.0, Figure 2.1.

The proposed changes to the BVPS EPP are considered an improvement since the BVPS 10-mile EPZ will be based on geopolitical boundaries with clear and understandable descriptions that will help to ensure clear and consistent communications with the three county emergency management agencies when determining actions to protect the health and safety of the public. The EPZ changes represents a more effective EPZ boundary for protection of the health and safety of the public as determined by the Columbiana County, Hancock County, and Beaver County emergency management agencies

3.4 Impacts of the Emergency Planning Zone Boundary Realignment

Columbiana County, Hancock County, and Beaver County Interface

The BVPS license amendment request realigns the BVPS 10-mile EPZ boundary defined within the BVPS EPP with the seven revised EPZ boundary areas utilized in the 2012 ETE for BVPS. The realignment is supported by the Columbiana County, Hancock County, and Beaver County Emergency Management Agencies.

ETE Evaluation

KLD Engineering, P.C. performed an evaluation for the areas that are involved with the proposed changes to the BVPS 10-mile EPZ to determine if there is an impact upon the ETEs described in the 2012 ETE for BVPS. This evaluation is provided in Attachment 3. KLD Engineering, P.C. is the same organization that performed the 2012 ETE for BVPS, which assumed that the proposed EPZ changes were already implemented.

The KLD Engineering, P.C. evaluation of the proposed EPZ changes show a permanent resident population reduction of 8,833 people, a transient population reduction of 120 people, and the exclusion of 1,804 schoolchildren at six schools that are within the existing BVPS 10-mile EPZ. The six schools are the only special facilities within the changed EPZ area that are affected.

An ETE was performed for the population reduction, and there was no impact on the 90th percentile ETE for the general population contained in the 2012 ETE for BVPS. The 90th percentile ETE is used in making protective action recommendations and decisions. Though the six schools were not included in the 2012 ETE for BVPS, an ETE was performed for these schools. The ETEs for these schools were on the low range of the ETEs for schools that were included in the 2012 ETE for BVPS.

As such, the proposed changes to the EPZ boundary do not have a significant impact on ETEs for the general population or for the schools.

Emergency Alert Notification System Design Report Evaluation

The “Beaver Valley Nuclear Facility Design Report – Emergency Alert Notification System,” revised July 31, 1984 assumed that the three Ohio areas, two West Virginia areas, and one Pennsylvania area located near the 10-mile EPZ boundary addressed by this BVPS license amendment request were included within the EPZ (this excludes the one Pennsylvania area located northeast of Pennsylvania sub-area P-8 that was not assumed to be within the EPZ). No revisions to the BVPS 10-mile EPZ were identified in a design report change prepared in 2002.

Realigning the EPZ boundary to be consistent with the EPZ boundary used in the 2012 ETE for BVPS, as proposed by this license amendment request, will not adversely affect the siren coverage in the 10-mile EPZ. No new areas are being proposed to be added within the 10-mile EPZ. Three existing sirens (No. 33, 601, and 612) will be located outside the 10-mile EPZ if the proposed changes in this license amendment request are implemented. However, these sirens will continue to provide coverage for areas within the proposed 10-mile EPZ. These three sirens will continue to remain operational and be maintained fully functional in accordance with an approved BVPS procedure. No sirens will be relocated or removed if the proposed changes to the BVPS 10-mile EPZ boundary are implemented.

Emergency Dose Assessment and Protective Action Recommendations

BVPS provides protective action recommendations (PARs) during emergency events, which are typically based upon dose projections at the site boundary, a 2-mile straight line radius, at a 5-mile straight line radius, and at a 10-mile straight line radius from BVPS. The BVPS dose projection methodology contains the ability

to provide dose assessment at any straight line distance from BVPS up to 50 miles. Though the BVPS 10-mile EPZ boundary will follow geopolitical borders near the 10-mile straight line radius, a minor variation, on the edge of the 10-mile EPZ boundary does not alter how BVPS performs dose projections nor how BVPS determines PARs. Thus, the BVPS dose projections and PARs do not directly consider the geopolitical boundaries as defined for the BVPS 10-mile EPZ.

Ingestion Exposure EPZ

This BVPS license amendment request proposes no changes to the BVPS ingestion exposure pathway and no changes to the 0-50 mile ingestion exposure EPZ. The seven boundary areas that are being proposed to be removed from 10-mile EPZ boundary will remain within the current 0-50 mile ingestion exposure EPZ.

Shadow Population

The shadow population are those individuals living outside of an evacuation area extending to 15 miles radially from BVPS who elect to evacuate without having been instructed to do so. Evacuation of the shadow population was considered in the development of the 2012 ETE for BVPS because the additional traffic generated has the potential to impede an evacuation of the EPZ.

The seven areas of the BVPS 10-mile EPZ boundary involved with this license amendment request are less than 15 miles away in radius from BVPS. As such, individuals living in these areas are included within the shadow population surrounding BVPS, as considered in the 2012 ETE for BVPS. Thus, the proposed EPZ boundary changes do not create the potential for a shadow population that has not been previously evaluated in the development of the ETE for BVPS.

4.0 REGULATORY EVALUATION

FirstEnergy Nuclear Operating Company (FENOC) proposes to amend the Beaver Valley Power Station (BVPS), Unit Nos. 1 and 2 Emergency Preparedness Plan (EPP).

The requested amendment involves changing portions of the outer most boundary of the BVPS 10-mile Emergency Planning Zone (EPZ). The proposed revision to the BVPS 10-mile EPZ boundary would align the boundary with the boundary that is currently in use in emergency management agency emergency plans for the three counties that implement public protective actions within the BVPS EPZ.

The proposed changes to the BVPS EPP 10-mile EPZ are considered a reduction in effectiveness as defined in 10 CFR 50.47(q)(1)(iv) and require approval by the Nuclear Regulatory Commission (NRC) in accordance with 10 CFR 50.47(q)(4). Therefore, FENOC is submitting the proposed changes as a license amendment request pursuant to 10 CFR 50.90.

4.1 Significant Hazards Consideration

FENOC has evaluated whether or not a significant hazards consideration is involved with the proposed license amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as described discussed below.

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

This amendment request would alter portions of the outer EPZ boundary defined in the BVPS EPP to align with the EPZ boundaries implemented by the Columbiana County, Hancock County, and Beaver County emergency management agencies. The proposed amendment does not involve any modifications or physical changes to plant systems, structures, or components. The proposed amendment does not change plant operations or maintenance of plant systems, structures, or components. Nor does the proposed amendment alter any BVPS EPP facility or equipment. Changing the EPZ boundaries cannot increase the probability of an accident since emergency plan functions would be implemented after a postulated accident occurs. The proposed amendment does not alter or prevent the ability of the BVPS emergency response organization to perform intended emergency plan functions to mitigate the consequences of and to respond adequately to radiological emergencies.

Therefore, the proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

This amendment request alters the EPZ boundary described in the BVPS EPP. The proposed amendment does not involve any design modifications or physical changes to the plant, does not change plant operation or maintenance

of equipment, and does not alter BVPS EPP facilities or equipment. The proposed amendment to the BVPS EPP does not alter any BVPS emergency actions that would be implemented in response to postulated accident events.

The proposed amendment does not create any credible new failure mechanisms, malfunctions, or accident initiators not previously considered.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No.

This amendment request would alter portions of the EPZ boundary defined in the BVPS EPP. The proposed amendment does not involve any design or licensing basis functions of the plant, no physical changes to the plant are made, does not impact plant operation or maintenance of equipment, and does not alter BVPS EPP facilities or equipment. This change does not alter any BVPS emergency actions that would be implemented in response to postulated accident events. The BVPS EPP continues to meet 10 CFR 50.47 and 10 CFR 50, Appendix E requirements for emergency response.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, FENOC concludes that the proposed amendment does not involve a significant hazards consideration under the criteria set forth in 10 CFR 50.92(c) and, accordingly, a finding of "no significant hazards consideration" is justified.

4.2 Applicable Regulatory Requirements/Criteria

Changes described in the license amendment request would not affect plant design or operation, nor change any BVPS emergency action. FENOC remains in compliance with the following regulations and guidance documents:

10 CFR 50.47(c)(2) states, in part:

The exact size and configuration of the EPZs surrounding a particular nuclear power reactor shall be determined in relation to local emergency response needs and capabilities as they are affected by such conditions as demography, topography, land characteristics, access routes, and jurisdictional boundaries.

10 CFR 50 Appendix E, III states, in part:

The plans submitted must include a description of the elements set out in Section IV for the emergency planning zones (EPZs) to an extent sufficient to demonstrate that the plans provide reasonable assurance that adequate protective measures can and will be taken in the event of an emergency.

10 CFR 50 Appendix E, IV.3 states, in part:

Nuclear power reactor licensees shall use NRC approved evacuation time estimates (ETEs) and updates to the ETEs in the formulation of protective action recommendations and shall provide the ETEs and ETE updates to State and local governmental authorities for use in developing offsite protective action strategies.

Regulatory Guide 1.101, "Emergency Planning and Preparedness for Nuclear Power Reactors," Revision 4, states, in part:

The criteria and recommendations contained in Revision 1 of NUREG-0654/FEMA-REP-1 are considered by the NRC staff to be acceptable methods for complying with the standards in 10 CFR 50.47 that must be met in onsite and offsite emergency response plans.

NUREG-0654/FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," and NUREG-0396, "Planning Basis for the Development of State and Local Government Radiological Emergency Response Plans in support of Light Water Nuclear Power Plants," December 1978, include the following criteria for EPZ:

- The choice of the size of the EPZ represents a judgment on the extent of detailed planning which must be performed to assure an adequate response base.
- The task force selected a radius of about 10 miles for the plume exposure pathway and a radius of 50 miles for the ingestion exposure pathway.
- Although the radius implies a circular area, the actual shape would depend upon the characteristics of the particular site.
- Detailed planning within the 10 miles would provide a substantial base for expansion of response efforts in the event that this proved necessary.

As a result, the proposed changes to the BVPS EPP will continue to meet the requirements of 10 CFR 50, Appendix E, and the planning standards of 10 CFR 50.47(b).

4.3 Conclusions

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

5.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment would not change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would not change an inspection or surveillance requirement. Further, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

6.0 REFERENCES

1. "Beaver Valley Power Station Development of Evacuation Time Estimates," December 2012, Final Report Rev. 2, prepared by KLD Engineering, P.C. (Accession No. ML130070160)
2. "Study Report for the Beaver Valley Power Station Evacuation and Mass Notification," March 1980, prepared by Alan M. Voorhees & Associates.
3. "Duquesne Light Company Beaver Valley Nuclear Facility Design Report Emergency Alert Notification System," revised July 31, 1984.
4. "Evacuation Time Estimates for the Beaver Valley Station Plume Exposure Pathway Emergency Planning Zone," October 2003, prepared by Earth Tech, Inc.