7590-01-P

UNITED STATES NUCLEAR REGULATORY COMMISSION

PPL SUSQUEHANNA, LLC

DOCKET NOS. 50-387 AND 50-388

SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2

DRAFT ENVIRONMENTAL ASSESSMENT AND

FINDING OF NO SIGNIFICANT IMPACT

RELATED TO THE PROPOSED LICENSE AMENDMENT

TO INCREASE THE MAXIMUM REACTOR POWER LEVEL

AGENCY: U.S. Nuclear Regulatory Commission (NRC)

ACTION: Notice of Opportunity for Public Comment

SUMMARY: The NRC has prepared a Draft Environmental Assessment as its evaluation of a request by PPL Susquehanna, LLC for a license amendment to increase the maximum thermal power at Susquehanna Steam Electric Station, Units 1 and 2 (SSES 1 and 2), from 3,489 megawatts-thermal (MWt) to 3,952 MWt at each unit. This represents a power increase of approximately 13 percent thermal power. As stated in the NRC staff's position paper dated February 8, 1996, on the Boiling-Water Reactor Extended Power Uprate (EPU) Program, the NRC staff (the staff) will prepare an environmental impact statement if it believes a power uprate would have a significant impact on the human environment. The staff did not identify any significant impact from the information provided in the licensee's EPU application for Susquehanna Steam Electric Station, Units 1 and 2, or the staff's independent review; therefore, the staff is documenting its environmental review in an Environmental Assessment. Also, in accordance with the position paper, the Draft Environmental Assessment and Finding of No Significant Impact is being published in the *Federal Register* with a 30-day public comment period.

Enclosure

ENVIRONMENTAL ASSESSMENT

Plant Site and Environs:

SSES is located just west of the Susquehanna River approximately 5 miles northeast of Berwick, in Luzerne County, Pennsylvania. In total, SSES majority owner and licensed operator, PPL Susquehanna, LLC (PPL, the licensee), owns 2,355 acres of land on both sides of the Susquehanna River. Generally, this land is characterized by open deciduous woodlands interspersed with grasslands and orchards. Approximately 487 acres are used for generation facilities and associated maintenance facilities, laydown areas, parking lots, and roads. Approximately 130 acres are leased to local farmers. PPL maintains a 401-acre nature preserve, referred to as the Susquehanna Riverlands, which is located between SSES and the river; US Route 11 separates the Susquehanna Riverlands from the plant site. West of the Susquehanna River, PPL and Allegheny Electric Cooperative jointly own 717 acres of mostly undeveloped land, which includes natural, recreational, and wildlife areas. Additionally, PPL and Allegheny Electric Cooperative own Gould Island, a 65-acre island just north of SSES on the Susquehanna River (Reference 10).

SSES is a two-unit plant with General Electric boiling-water reactors and generators. NRC approved the Unit 1 operating license on July 17, 1982, and commercial operation began June 8, 1983. The Unit 2 operating license was issued on March 3, 1984, and commercial operation began February 12, 1985. Units 1 and 2 both currently operate at 3,489 MWt (Reference 8). The units share a common control room, refueling floor, turbine operating deck, radwaste system, and other auxiliary systems (Reference 9).

SSES uses a closed-cycle heat dissipation system (two natural-draft cooling towers) to transfer waste heat from the circulating water system to the atmosphere. The circulating water and the service water systems draw water from, and discharge to, the Susquehanna River.

The river intake structure is located on the western bank of the river and consists of two water entrance chambers with 1-inch, on-center vertical trash bars and 3/8-inch-mesh traveling screens. A low-pressure screen-wash system periodically operates to release aquatic organisms and debris impinged on the traveling screens to a pit with debris removal equipment that collects material into a dumpster for offsite disposal. Cooling tower blowdown, spray pond overflow, and other permitted effluents are discharged to the Susquehanna River through a buried pipe leading to a submerged discharge diffuser structure, approximately 600 feet downstream of the river intake structure. The diffuser pipe is 200-feet long, with the last 120 feet containing 72 four-inch portals that direct the discharge at a 45-degree angle upwards and downstream. Warm circulating water from the cooling towers can be diverted to the river intake structure to prevent icing; this usually occurs from November through March on an as-needed basis (Reference 10).

For the specific purpose of connecting SSES to the regional transmission system, there are approximately 150 miles of transmission line corridors that occupy 3,341 acres of land. The corridors pass through land that is primarily agricultural and forested with low population densities. Two 500-kilovolt (kV) lines and one 230-kV line connect SSES to the electric grid, with approximately 2.3 miles of short ties in the immediate plant vicinity to connect SSES to the 230-kV system. The Stanton-Susquehanna #2 230-kV transmission line corridor runs northeast from the plant for approximately 30 miles and ranges from 100-400 feet wide. The Susquehanna-Wescosville-Alburtis 500-kV transmission line corridor ranges from 100 to 350 feet wide and runs generally southeast from the plant for approximately 76 miles; the Sunbury-Susquehanna #2 500-kV transmission line corridor is approximately 325 feet wide and runs 44 miles west-southwest from the plant. The transmission line corridors cross the following Pennsylvania counties: Luzerne (the location of SSES), Carbon, Columbia, Lehigh, Northampton, Northumberland, Montour, and Snyder. These transmission lines are owned by

PPL Electric Utilities and are integral to the larger transmission system, and as such, PPL Electric Utilities plans to maintain these lines indefinitely. Except for the short ties on the plant site, the lines would likely remain a permanent part of the transmission system even after SSES is decommissioned (Reference 10).

Identification of the Proposed Action:

By letter dated October 11, 2006, PPL proposed amendments to the operating licenses for SSES Units 1 and 2 to increase the maximum thermal power level of both units by approximately 13 percent thermal power, from 3,489 MWt to 3,952 MWt (Reference 8). The change is considered an EPU because it would raise the reactor core power level more than 7 percent above the original licensed maximum power level. This amendment would allow the heat output of the reactor to increase, which would increase the flow of steam to the turbine. This would result in the increase in production of electricity and the amount of waste heat delivered to the condenser, and an increase in the temperature of the water being discharged to the Susquehanna River.

PPL plans to implement the proposed EPU in two phases to obtain optimal fuel utilization and to ensure that manageable core thermal limits are maintained. The core thermal power level of Unit 2 would be increased by approximately 7 percent during the spring 2007 refueling outage and the remaining 7 percent during the spring 2009 refueling outage. Unit 1's core thermal power level would also be increased in two stages of about 7 percent each during the spring 2008 and spring 2010 refueling outages (Reference 8).

The original operating licenses for Units 1 and 2 authorized operation up to a maximum power level of 3,293 MWt per unit. Since the units went online, SSES has implemented two power uprates. Stretch uprates (4.5 percent each) were implemented in 1994 (Unit 2) and 1995 (Unit 1), increasing the licensed thermal power levels of SSES Units 1 and 2 from 3,293 MWt to 3,441 MWt. Two separate NRC environmental assessments each resulted in a finding of no

significant impact and determined that these actions "...would have no significant impact on the quality of the human environment." These decisions were published in the *Federal Register*, Vol. 59, No. 53, pp. 12990-12992 and Vol. 60, No. 9, pp. 3278-3280 (Reference 12, 13). In 2001, a Measurement Uncertainty Recapture (MUR) uprate of 1.4 percent increased the licensed thermal power levels of SSES Units 1 and 2 to 3,489 MWt. The NRC environmental assessment for this action also resulted in a finding of no significant impact and was published in the *Federal Register*, Vol. 66, No. 122, pp. 33716-33717 (Reference 14).

The Need for the Proposed Action:

SSES is within the transmission area controlled by PJM Interconnection, L.L.C. (PJM). PJM operates the largest regional transmission territory in the U.S., currently serving a 164,260-square-mile area in all or parts of 13 states and the District of Columbia, representing approximately 163,806 megawatts electrical (MWe) of generating capacity. PJM has forecasted that the summer unrestricted peak load in the Mid-Atlantic geographic zone where SSES is located would grow at an annual average rate of 1.8 percent for the next 10 years. This represents an increase in peak load of almost 6,000 MWe from 2005 to 2010, when the proposed SSES EPU is scheduled to be completed. The proposed EPU would add an average of 205 MWe of base load generation to the grid from both Units 1 and 2. This added electricity is projected to be enough to meet the power needs of approximately 195,000 homes and is forecasted to be produced for the PJM grid at a cost lower than the projected market price (Reference 9).

PJM uses a queue system to manage requests to add or remove generation from the regional transmission system. SSES submitted an application to PJM for the EPU additional generation on May 19, 2004. The PJM Interconnection Service Agreements and Construction Service Agreements were signed for Unit 2 on July 7, 2005, and for Unit 1 on January 20, 2006 (Reference 9).

Environmental Impacts of the Proposed Action:

At the time of issuance of the operating licenses for SSES, the staff noted that any activity authorized by the licenses would be encompassed by the overall action evaluated in the Final Environmental Statement (FES) for the operation of SSES, which was issued by the NRC in June 1981. This Environmental Assessment summarizes the radiological and non-radiological impacts in the environment that may result from the proposed action.

NON-RADIOLOGICAL IMPACTS

Land Use Impacts:

Potential land use impacts due to the proposed EPU include impacts from construction and plant modifications at SSES. While some plant components would be modified, most plant changes related to the proposed EPU would occur within existing structures, buildings, and fenced equipment yards housing major components within the developed part of the site. No new construction would occur outside of existing facilities, and no expansion of buildings, roads, parking lots, equipment storage areas, or transmission facilities would be required to support the proposed EPU with the following exceptions.

The 230-kV switchyard located on PPL property across the river from the station, and the 500-kV switchyard located on the plant site would both be expanded to house additional capacitor banks. The site road adjacent to the 500-kV switchyard would be moved to accommodate this expansion. Both switchyard modifications would require no land disturbance outside the power block area. Relocation of the road adjacent to the 500-kV switchyard would occur in a previously developed area of the plant site, resulting in no or little impact to land use. In addition, the turbine building may be expanded to allow for the installation of condensate filters, and additional aboveground storage tanks may be required to support cooling tower basin acid injection. If required, storage tank installation and turbine building expansion would be located in the developed part of the site (Reference 8, 9).

Existing parking lots, road access, lay-down areas, offices, workshops, warehouses, and restrooms would be used during construction and plant modifications. Therefore, land use conditions would not change at SSES. Also, there would be no land use changes along transmission lines (no new lines would be required for the proposed EPU), transmission corridors, switch yards, or substations. Because land use conditions would not change at SSES and because any disturbance would occur within previously disturbed areas within the plant site, there would be little or no impact to aesthetic resources (except during outside construction) and historic and archeological resources in the vicinity of SSES.

The impacts of continued operation of SSES Units 1 and 2 combined with the proposed EPU would be bounded by the scope of the original FES for operation, "Final Environmental Statement Related to the Operation of Susquehanna Steam Electric Station, Units 1 and 2," dated 1981, and therefore, the staff concludes that there would be no significant impacts to land use, aesthetics, and historic and archaeological resources from the proposed EPU.

Non-Radiological Waste:

SSES generates both hazardous and non-hazardous waste. Under the Resource Conservation and Recovery Act (RCRA) Subtitle C, SSES is classified as a Large Quantity Generator of hazardous waste, including spent batteries, solvents, corrosives, and paint thinners. According to the Environmental Protection Agency's *Envirofacts Warehouse* database, there are no RCRA violations listed for SSES related to the management of these hazardous wastes (Reference 11). Non-hazardous waste is managed by SSES's current program and includes municipal waste, maintenance waste, wood, and non-friable asbestos. Plant modifications necessary for the proposed EPU may result in additional hazardous and non-hazardous waste generation; however, all wastes would continue to be managed by the waste management program currently in place at SSES, which is designed to minimize hazardous waste generation and promote recycling of waste whenever possible (Reference 9)

and subject to state (commonwealth) and Federal oversight. As such, the staff concludes there would be no impacts from additional non-radiological waste generated as a result of the proposed EPU.

Cooling Tower Impacts:

SSES operates two natural draft cooling towers to transfer waste heat from the circulating water system (which cools the main condensers) to the atmosphere. No additional cooling tower capacity is planned to accommodate the proposed EPU. However, additional aboveground storage tanks could be required to support cooling tower basin acid injection. If built, these tanks would be located in the developed part of the plant site (Reference 9).

Aesthetic impacts associated with cooling tower operation following implementation of the proposed action would be similar to those associated with current operating conditions and include noise and visual impacts from the plume such as fogging and icing.

No significant increase in noise is anticipated for cooling tower operation following the proposed EPU. The FES for operation evaluated the potential noise impacts of operation of SSES and determined that pump and motor noise from the cooling water system would not exceed ambient (baseline) levels in offsite areas and that cooling tower noise would be audible for no more than a mile offsite to the west, southwest, and southeast of the station. PPL conducted an initial noise survey in 1985 after commercial operation of both units began, and again in 1995 following the stretch uprate. The 1995 noise measurements were similar to those recorded in 1985, and PPL received no noise complaints following implementation of the stretch uprate. The staff concludes that the proposed EPU, like the stretch uprate, would not produce measurable changes in the character, sources, or intensity of noises generated by the station's cooling water system or cooling towers (Reference 9).

Conclusions reached in NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Plants (GEIS)," Volumes 1 and 2, dated 1996, apply to the

proposed action regarding cooling tower impacts on crops, ornamental vegetation, and native plants. The GEIS concluded that natural-draft cooling towers release drift and moisture high into the atmosphere where they are dispersed over long distances, and increased fogging, cloud cover, salt drift, and relative humidity have little potential to affect crops, ornamental vegetation, and native plants.

Impacts associated with continued cooling tower operation at SSES following the proposed EPU, including noise, fogging, cloud cover, salt drift, and icing would not change significantly from current impacts. Therefore, the staff concludes there would be no significant impacts associated with cooling tower operation for the proposed action.

Transmission Facility Impacts:

The potential impacts associated with transmission facilities for the proposed action include changes in transmission line corridor maintenance and electric shock hazards due to increased current. The proposed EPU would not require any new transmission lines and would not require changes in the maintenance and operation of existing transmission lines or substations. Corridor maintenance practices (including vegetative management) would not be affected by the proposed EPU.

The proposed EPU would require the installation of additional capacitor banks in the 500- and 230-kV switchyards, and PPL plans to conduct a power delivery environmental risk identification evaluation prior to these installations. The capacitor bank installations are the only modification of transmission facilities that would accompany the proposed EPU. The only operational change to transmission lines resulting from the proposed EPU would be increased current; voltage would remain unchanged. As PPL states in its October 11, 2006, application, page 7-2, “increased current may cause transmission lines to sag more, but there would still be adequate clearance between energized conductors and the ground to prevent electrical shock.”

Additionally, PPL has evaluated all related transmission facilities and found these facilities to be within acceptable design parameters (Reference 9).

The National Electric Safety Code (NESC) provides design criteria that limit hazards from steady-state currents. The NESC limits the short-circuit current to ground to less than 5 milliamps. As stated above, there would be an increase in current passing through the transmission lines associated with the increased power level of the proposed EPU. The higher electrical current passing through the transmission lines would cause an increase in electromagnetic field strength. However, with the proposed increase in power level, the impact of exposure to electromagnetic fields from the offsite transmission lines would not be expected to increase significantly over the current impact. The transmission lines meet the applicable shock prevention provisions of the NESC. Therefore, even with the small increase in current attributable to the proposed EPU, adequate protection is provided against hazards from electric shock.

The impacts associated with transmission facilities for the proposed action would not change significantly from the impacts associated with current plant operation. There would be no physical modifications to the transmission lines, transmission line corridor maintenance practices would not change, there would be no changes to transmission line corridors or vertical clearances, electric current passing through the transmission lines would increase only slightly, and capacitor bank modifications would occur only within the existing power blocks. Therefore, the staff concludes that there would be no significant impacts associated with transmission facilities for the proposed action.

Water Use Impacts:

Potential water use impacts from the proposed action include hydrological alterations to the Susquehanna River and changes to plant water supply. SSES uses cooling water from the Susquehanna River and discharges water back to the river at a point approximately 600 feet

downstream of the intake structure. River water enters the plant cooling system via cooling tower basins and provides water to the circulating water and service water systems. SSES uses a closed-cycle, natural-draft cooling tower heat dissipation system to remove waste heat from the main condensers; cooling tower blowdown is discharged back to the Susquehanna River (Reference 9).

No changes to the cooling water intake system are expected during the proposed action. While the volume of intake embayments would not change, the intake flow rate would increase from an average of 58.3 million gallons per day (gpd) to an average of 60.9 million gpd, as the amount of time all four river intake pumps operate would increase. This represents a 4.5-percent increase in intake water withdrawn from the Susquehanna River and is not expected to alter the hydrology of the river significantly (Reference 9). The maximum withdrawal rate possible as a result of the proposed EPU is 65.4 million gpd, which was calculated using worst-case meteorological conditions (NRC 2006). This represents a 12.2-percent increase in intake water withdrawn from the river and is not expected to alter the hydrology of the river significantly.

The amount of consumptive water usage due to evaporation and drift of cooling water through the cooling towers is expected to increase from a monthly average of 38 million gpd to 44 million gpd. This represents a 15.7-percent increase over current usage. Based on the Susquehanna River's average annual flow rate of 9,427 million gpd, the proposed EPU would result in an average annual loss of 0.5 percent of river water at that location. During low-flow conditions, which usually occur in late August, the average evaporative loss at SSES may approach 1 percent of the low-flow river value (Reference 9). The staff concludes that the amount of water consumed by SSES under the proposed EPU conditions would not result in significant alterations to Susquehanna River flow patterns at this location.

Consumptive water usage at SSES is regulated by the Susquehanna River Basin Commission (SRBC), an independent agency that manages water usage along the entire length of the Susquehanna River. The current permit granted for SSES operation by SRBC is for average monthly consumptive water usage up to 40 million gpd (permit #19950301 EPUL-0578). In December 2006, PPL submitted an application to SRBC to eliminate the 40 million gpd average monthly limit and to approve a maximum daily river water withdrawal of 66 million gpd (Reference 15). SRBC is currently reviewing PPL's application and will make a decision independent of the NRC whether to allow the increased consumptive water usage required to implement the proposed EPU. The SRBC permit is required for plant operation, and PPL must adhere to the prescribed water usage limits and any applicable mitigative measures.

No changes to the cooling water intake system and the volume of intake embayment are expected for the proposed EPU, but the average intake flow would increase by 4.5 percent. The staff concludes this increase would not alter significantly the hydrology of the Susquehanna River. The proposed EPU would result in a small increase in the amount of Susquehanna River consumptive water usage due to evaporative losses. However, the increased loss would be insignificant relative to the flow of the Susquehanna River, and SRBC would continue to regulate SSES's consumptive water usage. With respect to the proposed action, the staff concludes there would be no significant impact to the hydrological pattern on the Susquehanna River, and there would be no significant impact to the plant’s consumptive water supply.

Discharge Impacts:

Potential impacts to the Susquehanna River from the SSES discharge include increased turbidity, scouring, erosion, and sedimentation. These discharge-related impacts apply to the region near the discharge structure due to the large volume of cooling water released to the river. However, since the proposed EPU would result in no significant changes in discharge

volume or velocity, there would be no expected changes in turbidity, scouring, erosion or sedimentation related to the proposed EPU.

Surface and wastewater discharges at SSES are regulated through the National Pollutant Discharge Elimination System (NPDES) permit (No. PA0047325), which is issued and enforced by the Pennsylvania Department of Environmental Protection (DEP) Bureau of Water Supply and Wastewater Management. The DEP periodically reviews and renews the NPDES permit; SSES's current NPDES permit was effective beginning September 1, 2005, and is valid through August 31, 2010. The NPDES permit sets water quality standards for all plant discharges to the Susquehanna River, including limits on free available chlorine, total zinc, and total chromium in cooling tower blowdown. According to Pennsylvania's Environmental Facility Application Compliance Tracking System (eFACTS), there are no past or current NPDES violations listed for SSES (Reference 4).

While the proposed EPU would increase the amount of cooling tower blowdown to the Susquehanna River, there is no expected increase in associated biocides, solvents, or dissolved solids entering the river, and SSES would continue to adhere to the water quality standards set within the NPDES permit. The NPDES permit does not contain thermal discharge temperature limits, but SSES must adhere to Susquehanna River temperature limits prescribed by Pennsylvania Code water quality standards (Reference 1). Thermal discharge effects and applicable Pennsylvania Code water quality standards will be discussed further in the Impacts on Aquatic Biota section.

No expected changes in turbidity, scouring, erosion or sedimentation are expected as a result of the proposed EPU. Surface and wastewater discharges to the Susquehanna River would continue to be regulated by the Pennsylvania DEP. Any discharge-related impacts for the proposed action would be similar to current impacts from plant operation, and therefore, the

staff concludes the proposed action would not result in significant impacts on the Susquehanna River from cooling water discharge.

Impacts on Aquatic Biota:

The potential impacts to aquatic biota from the proposed EPU include impingement, entrainment, thermal discharge effects, and impacts due to transmission line right-of-way maintenance. The aquatic species evaluated in this draft Environmental Assessment are those in the vicinity of the SSES cooling water intake and discharge structures along the Susquehanna River, and those that occur in water bodies crossed by transmission lines associated with SSES.

The licensee has conducted aquatic biota studies of the Susquehanna River upstream and downstream of SSES since 1971. The studies assessed water quality, algae (periphyton and photoplankton), macroinvertebrates, and fish from 1971 to 1994, with annual fish studies beginning in 1976. The Susquehanna River in the vicinity of SSES has both coolwater and warmwater fishes, primarily consisting of minnows (*Cyprinidae*), suckers (*Catastomidae*), catfish (*Icaluridae*), sunfish (*Centrarchidae*), and darters and perch (*Percidae*). There are also records of smallmouth bass (*Micropterus dolomieu*), walleye (*Sander vitreus*), and channel catfish (*Ictalurus punctatus*) found in proximity to SSES. Monitoring of benthic macroinvertebrates and biofouling mollusks was also included in the studies. No zebra mussels (*Dreissena polymorpha*) have been recorded at SSES or in the vicinity of the North Branch of the Susquehanna River; however, Asiatic clams (*Corbicula fluminea*) have been found in the North Branch of the Susquehanna River for several years and were collected by scuba divers in the SSES engineered safeguard service water spray pond in July 2005.

No sensitive aquatic species are known to occur at or near SSES (Reference 9); however, the 1981 FES for operation indicated that two endangered and two rare fish listed by the Pennsylvania Fish Commission (now the Pennsylvania Fish & Boat Commission) have

ranges that fall within SSES transmission line corridors (NRC 1981). PPL has provided the staff with a vegetative management program for its transmission line corridors that states no herbicides shall be applied within 50 feet of any water body, except stump treatments and herbicides approved for watershed/aquatic use. Additionally, the transmission line corridor maintenance activities in the vicinity of stream and river crossings employ procedures to minimize erosion and shoreline disturbance while encouraging vegetative cover (Reference 7).

In addition to setting water quality parameters for surface and wastewater discharges, the SSES NPDES permit (PA-0047325) also regulates entrainment and impingement of aquatic species at SSES. Because SSES uses a closed-cycle, recirculating cooling water system, entrainment and impingement impacts on aquatic biota resulting from the proposed EPU are not expected to be significant.

The proposed EPU would require additional water withdrawal from the Susquehanna River for increased cooling tower evaporative losses and other plant needs. The average increase in daily water withdrawal from the Susquehanna River would be approximately 4.4 percent, from 58.3 million gpd to 60.9 million gpd. PPL also reported a maximum daily water withdrawal estimate of 65.4 million gpd (an 11.2 percent increase), which would only occur during worst-case meteorological conditions (Reference 15). Under the proposed EPU conditions, the average increase in water withdrawal would result in the impingement of approximately one additional fish per day (from 21 to 22) and entrainment of approximately 15,972 additional larvae per day (from 363,000 to 378,000) during spawning season. These small increases in entrainment and impingement related to the proposed EPU would result in no significant impact to the Susquehanna River aquatic community (Reference 9).

Effective July 9, 2007, the EPA suspended the Phase II rule (NRC 2007b). As a result, all permits for Phase II facilities should include conditions under Section 316(b) of the Clean

Water Act that are developed on a Best Professional Judgment basis, rather than best technology available. Best Professional Judgment is used by National Pollutant Discharge Elimination System (NPDES) permit writers to develop technology-based permit conditions on a case-by-case basis using all reasonably available and relevant data. Any site-specific mitigation required under the NPDES permitting process would result in a reduction in the impacts of continued plant operations.

The NPDES permit issued by the Pennsylvania DEP does not specify thermal discharge limits; however, the amount and temperature of heated effluent discharged to the Susquehanna River is governed by Section 93.7 of Pennsylvania Code, which places restrictions on waters designated "Warm Water Fisheries." During the July 1-August 31 time frame, the highest river water temperature allowable is 87 degrees Fahrenheit (°F), with lower temperature limits during other parts of the year (Reference 1). In the 1981 FES for operation, the NRC performed an analysis of SSES blowdown plume characteristics. The analysis concluded that blowdown temperatures during all four seasons were lower than the maximum river temperatures set by Section 93.7. The location and design of the SSES cooling water discharge structure and the high flow rate of the Susquehanna River allow for sufficient mixing and cooling of heated effluent. Using conservative assumptions similar to those used in the original FES thermal plume analysis, PPL calculated that after implementation of the proposed EPU, blowdown temperatures would increase by 2 °F. This would result in a 0.6 °F increase in the maximum expected temperature at the edge of the thermal plume mixing zone (maximum temperature 86.5 °F). The staff concludes that the increase in thermal discharge temperature and volume resulting from the proposed EPU would still fall within the guidelines prescribed by the original FES for operation (NRC 1981).

Liquid effluents discharged to the Susquehanna River include cooling tower blowdown, spray pond overflow, liquid rad waste treatment effluents, and surface and wastewater

discharges. The Commonwealth of Pennsylvania regulates these discharges through SSES's NPDES permit, which sets water quality standards for all plant discharges to the Susquehanna River. Ecological studies of the Susquehanna River conducted for the licensee indicate that river water quality in the vicinity of SSES continues to improve. From 1973 through 2002, there was a significant decreasing trend in turbidity, sulfate, total iron, and total suspended solids; and a significant increasing trend in river temperature, pH, total alkalinity, and dissolved oxygen. A reduction in acid-mine drainage pollutants and improvements in upstream waste-water treatment have likely contributed to the overall-improved river ecosystem health (Ecology III 2003).

SSES operates a closed-cycle cooling water system, and as such, the staff concludes that impacts to aquatic biota in the Susquehanna River from entrainment, impingement, and thermal discharge resulting from the proposed EPU would not be significant. The Pennsylvania DEP will continue to regulate the performance of the SSES cooling water system and surface and wastewater discharges through the NPDES permit and Pennsylvania Code designed to protect warm water fisheries. Furthermore, SSES transmission line corridor maintenance practices would not change upon implementation of the proposed EPU; thus, the staff concludes there would be no significant impacts to aquatic species associated with transmission line corridor maintenance.

Impacts on Terrestrial Biota:

Potential impacts to terrestrial biota from the proposed EPU include impacts due to transmission line corridor maintenance and any planned new construction. The natural communities at SSES and in the surrounding areas consist of river floodplain forest, upland forest, marshes, and wetlands. The river floodplain forest at SSES is dominated by silver maple (*Acer saccharinum*), river birch (*Betula nigra*), and Northern red oak (*Quercus rubra*). The upland forest is dominated by Virginia pine *(Pinus virginiana*), sweet birch (*Betula lenta*),

flowering dogwood (*Cornaceae cornus*), white oak (*Fagaceae quercus*), Northern red oak, black oak (*Q. velutina*), and yellow poplar (*Liriodendron tulipifera*). The marshes are dominated by a variety of emergent vegetation such as sedges (Cyperaceae), bulrush and cattail (Typhaceae), and cutgrass (Poaceae) (Reference 9). Although wetlands do occur at the SSES site, none of the wetlands would be affected by the proposed action.

As stated in the Cooling Tower Impacts section, no significant increase in noise is anticipated for cooling tower operation following the proposed EPU, and as such, biota would not be impacted. The staff agrees with the conclusions reached in the GEIS regarding bird collisions with cooling towers: avian mortality due to collisions with cooling towers is considered to be of small significance if the losses do not destabilize local populations of any species and there is no noticeable impairment of its function with the local ecosystem (NRC 1996).

The proposed action would not involve new land disturbance outside of the existing power block or developed areas, and as discussed in the Transmission Facilities Impacts section, there would be no changes to transmission line corridor maintenance practices. Thus, the staff concludes that there would be no significant impacts to terrestrial species or their habitat associated with the proposed action, including transmission line right-of-way maintenance.

Impacts on Threatened and Endangered Species:

Potential impacts to threatened and endangered species from the proposed action include the impacts assessed in the aquatic and terrestrial biota sections of this Environmental Assessment. These impacts include impingement, entrainment, thermal discharge effects, and impacts from transmission line right-of-way maintenance for aquatic and terrestrial species. A review of databases maintained by the U.S. Fish and Wildlife Service (FWS) and the Pennsylvania Natural Heritage Program indicate that several animal and plant species that are Federally or Commonwealth-listed as threatened or endangered occur in the vicinity of SSES

and its associated transmission line corridors. Informal consultation with FWS Pennsylvania Field Office regarding the proposed EPU's potential impact on threatened or endangered species is ongoing.

Four species listed as threatened or endangered under the Endangered Species Act and 24 species that are listed by the Commonwealth of Pennsylvania as threatened or endangered occur within the counties where SSES and its associated transmission line corridors are located. These species are listed below in Table 1.

Table 1. Endangered and Threatened Species That Could Occur in the Vicinity of SSES or in Counties Crossed by SSES Transmission Lines

Scientific Name	Common Name	Federal Status*	State Status*
Mammals			
Neotoma magister	Allegheny woodrat	-	T
Myotis sodalis	Indiana bat	E	E
Myotis leibii	Small-footed myotis	-	T
Sciurus niger	Eastern fox squirrel	-	T
Birds			
Ardia alba	Great egret	-	E
Asio flammeus	Short-eared owl	-	E
Bartramia longicauda	Upland sandpiper	-	T
Botaurus lentiginosus	American bittern	-	E
Chlidonias niger	Black tern	-	E
Cistothorus platensis	Sedge wren	-	T
Falco peregrinus	Peregrine falcon	-	E
Haliaeetus leucocephalus	Bald eagle	T	E
Ixobrychus exilis	Least bittern	-	E
Pandion haliaetus	Osprey	-	T
Reptiles			
Clemmys muhlenbergii	Bog Turtle	T	E
Invertebrates			

Enodia anthedon	Northern peary-eye	-	VS
Euphydryas phaeton	Baltimore checkerspot	-	VS
Poanes massasoit	Mulberry wing	-	V
Polites mystic	Long dash	-	V
Speyeria idalia	Regal fritillary	-	E
Speyeria aphrodite	Aphrodite fritillary	-	VS

* T = Threatened, E = Endangered, V = Vulnerable, VS = Vulnerable to Apparently Secure
- = Not Listed

(Sources: References 3, 5, 6, 16).

The proposed EPU would involve no new land disturbance, and any construction necessary would be minimal and would only occur in previously developed areas of SSES. Additionally, no changes would be made to the transmission line corridor maintenance program, including vegetative maintenance. As such, the staff concludes that the proposed action would have no significant impact on Federally or Commonwealth-listed species in the vicinity of SSES and its transmission line corridors.

Social and Economic Impacts:

Potential socioeconomic impacts due to the proposed EPU include changes in the payments in lieu of taxes for Luzerne County and changes in the size of the workforce at SSES. Currently SSES employs approximately 1,200 full-time staff, 89 percent of whom live in Luzerne or Columbia Counties, and approximately 260 contract employees. During outages, approximately 1,400 personnel provide additional support (Reference 9).

The proposed EPU is not expected to increase the size of the permanent SSES workforce, since proposed plant modifications would be phased in during planned outages when SSES has the support of 1,400 additional workers. In addition, the proposed EPU would not require an increase in the size of the SSES workforce during future refueling outages. Accordingly, the proposed EPU would not have any measurable effect on annual earnings and

income in Luzerne and Columbia Counties or on community services (Reference 9).

According to the 2000 Census, Luzerne and Columbia County populations were about 2.9 and 2.0 percent minority, respectively, which is well below the Commonwealth minority population of 13.2 percent. The poverty rates in 1999 for individuals living in Luzerne and Columbia Counties are 11.1 percent and 13.1 percent, respectively, which are slightly higher than the Commonwealth's average of 11.0 percent. Due to the lack of significant environmental impacts resulting from the proposed action, the proposed EPU would not have any disproportionately high and adverse impacts to minority or low-income populations (Reference 9).

In the past, PPL paid real estate taxes to the Commonwealth of Pennsylvania for power generation, transmission, and distribution facilities. Under authority of the Pennsylvania Utility Realty Tax Act (PURTA), real estate taxes collected from all utilities (water, telephone, electric, and railroads) were redistributed to the taxing jurisdictions within the Commonwealth. In Pennsylvania, these jurisdictions include counties, cities, townships, boroughs, and school districts. The distribution of PURTA funds was determined by formula and was not necessarily based on the individual utility's effect on a particular government entity (Reference 9).

In 1996, Electricity Generation Customer Choice and Competition Act became law, which allows consumers to choose among competitive suppliers of electrical power. As a result of utility restructuring, Act 4 of 1999 revised the tax base assessment methodology for utilities from the depreciated book value to the market value of utility property. Additionally, as of January 1, 2000, PPL was required to begin paying real estate taxes directly to local jurisdictions, ceasing payments to the Commonwealth's PURTA fund. PPL currently pays annual real estate taxes to the Berwick Area School District, Luzerne County, and Salem Township (Reference 9).

The proposed EPU could affect the in-lieu-of-tax payments because the total amount of tax money to be distributed would increase as power generation increases and because the proposed EPU would increase SSES's value, thus resulting in a larger allocation of the payment to the Berwick Area School District, Luzerne County, and Salem Township. Because the proposed EPU would increase the economic viability of SSES, the probability of early plant retirement would be reduced. Early plant retirement would be expected to have negative impacts on the local economy and the community by reducing in-lieu-of-tax payments and limiting local employment opportunities for the long term (Reference 9).

Since the proposed EPU would not have any measurable effect on the annual earnings and income in Luzerne and Columbia Counties or on community services and due to the lack of significant environmental impacts on minority or low-income populations, there would be no significant socioeconomic or environmental justice impacts associated with the proposed EPU. Conversely, the proposed EPU could have a positive effect on the regional economy because of the potential increase in the in-lieu-of-tax payments received by the Berwick Area School District, Luzerne County, and Salem Township, due to the potential increase in the book value of SSES, and the increased long-term viability of SSES.

Summary:

The proposed EPU would not result in a significant change in non-radiological impacts in the areas of land use, water use, cooling tower operation, terrestrial and aquatic biota, transmission facility operation, or social and economic factors. No other non-radiological impacts were identified or would be expected. Table 2 summarizes the non-radiological environmental impacts of the proposed EPU at SSES.

Table 2: Summary of Non-Radiological Environmental Impacts

Land Use	No significant land-use modifications.
Non-Radiological Waste	Any additional hazardous and non-hazardous waste as a result of the proposed EPU would continue to be regulated by RCRA and managed by SSES's waste management program.
Cooling Tower	Impacts associated with continued cooling tower operation following the proposed EPU, including noise, fogging, cloud cover, salt drift, and icing would not change significantly from current impacts.
Transmission Facilities	No physical modifications to transmission lines; lines meet electrical shock safety requirements; no changes to transmission line corridor maintenance; small increase in electrical current would cause small increase in electromagnetic field around transmission lines; no changes to voltage.
Water Use	No configuration change to intake structure; increase in cooling water flow rate; increase in consumptive use due to evaporation; SRBC would continue to regulate consumptive water usage at SSES.
Discharge	Small increase in discharge temperature and volume; no increases in other effluents; discharge would remain within Pennsylvania water quality limits, and SSES would continue to operate under NPDES permit regulations.
Aquatic Biota	Small increases in entrainment and impingement are not expected to affect the Susquehanna River aquatic biota; increase in volume and temperature of thermal discharge would remain within original FES guidelines and below Pennsylvania Code Section 93.7 temperature limits; SSES would continue to operate under NPDES permit regulations with regard to entrainment and impingement.
Terrestrial Biota	No land disturbance or changes to transmission line corridor maintenance are expected; therefore, there would be no significant effects on terrestrial species or their habitat.
Threatened and Endangered Species	As evaluated for aquatic and terrestrial biota, no significant impacts are expected on protected species or their habitat.
Social and Economic	No change in size of SSES labor force required for plant operation or for planned outages; proposed EPU could increase in-lieu-of-tax payments to Luzerne County and book value of SSES; there would be no disproportionately high and adverse impact on minority and low-income populations.

RADIOLOGICAL IMPACTS

Radioactive Waste Stream Impacts:

SSES uses waste treatment systems designed to collect, process, and dispose of gaseous, liquid, and solid wastes that might contain radioactive material in a safe and controlled manner such that the discharges are in accordance with the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 20, and the design objectives of Appendix I to 10 CFR Part 50 (Reference 9).

Minimal changes will be made to the waste treatment systems to handle the additional waste expected to be generated by the proposed EPU; the installation of an additional condensate filter and demineralizer. The gaseous, liquid, and solid radioactive wastes are discussed individually (Reference 9).

Gaseous Radioactive Waste and Offsite Doses:

During normal operation, the gaseous effluent treatment system processes and controls the release of small quantities of radioactive noble gases, halogens, tritium, and particulate materials to the environment. The gaseous waste management system includes the offgas system and various building ventilation systems. The single year highest annual releases of radioactive material, for the time period 2000-2005 were; 2002 for noble gases with 9.68 Curies, 2001 for particulates and iodines with 0.0074 Curies, and 2004 for tritium with 160 Curies (Reference 9).

The licensee has estimated that the amount of radioactive material released in gaseous effluents would increase in proportion to the increase in power level (20 percent) (Reference 9). Based on experience from EPUs at other plants, the staff concludes that this is an acceptable estimate. The offsite dose to a member of the public, including the additional radioactive material that would be released from the proposed EPU, is calculated to still be well within the radiation standards of 10 CFR Part 20 and the design objectives of Appendix I to 10 CFR

Part 50. Therefore, the staff concludes the increase in offsite dose due to gaseous effluent release following implementation of the proposed EPU would not be significant.

Liquid Radioactive Waste and Offsite Doses:

During normal operation, the liquid effluent treatment system processes and controls the release of radioactive liquid effluents to the environment, such that the dose to individuals offsite are maintained within the limits of 10 CFR Part 20 and the design objectives of Appendix I to 10 CFR Part 50. The liquid radioactive waste system is designed to process and purify the waste and then recycle it for use within the plant, or to discharge it to the environment as radioactive liquid waste effluent in accordance with facility procedures which comply with Commonwealth of Pennsylvania and Federal regulations. The single year highest radioactive liquid releases, for the time period 2000-2005 were: 2005 at 1,470,000 gallons, 2003 with 70.25 Curies of tritium, 2000 with 36.95 Curies of fission and activation products, and 2002 with 0.0002 Curies of dissolved and entrained gases (Reference 9).

Even though the EPU would produce a larger amount of radioactive fission and activation products and a larger volume of liquid to be processed, the licensee performed an evaluation which shows that the liquid radwaste treatment system would remove all but a small amount of the increased radioactive material. The licensee estimated that the volume of radioactive liquid effluents released to the environment and the amount of radioactive material in the liquid effluents would increase slightly (less than 1 percent) due to the proposed EPU. Based on experience from EPUs at other plants, the staff concludes that this is an acceptable estimate. The dose to a member of the public from the radioactive releases described above, increased by 1 percent, would still be well within the radiation standards of 10 CFR Part 20 and the design objectives of Appendix I to 10 CFR Part 50. Therefore, the staff concludes that there would not be a significant environmental impact from the additional amount of radioactive material generated following implementation of the proposed EPU.

Solid Radioactive Wastes:

The solid radioactive waste system collects, processes, packages, and temporarily stores radioactive dry and wet solid wastes prior to shipment offsite for permanent disposal. The volume of solid radioactive waste generated varied from about 2500 to almost 8000 cubic feet (ft^3) per year in the time period 2000-2005; the largest volume generated was 7980 ft^3 in 2003. The amount annual of radioactive material in the waste generated varied from 2500 to almost 190,000 Curies during that same period. The largest amount of radioactive material generated in the solid waste was 189,995 Curies in 2000 (Reference 9).

The proposed EPU would produce a larger amount of radioactive fission and activation products which would require more frequent replacement or regeneration of radwaste treatment system filters and demineralizer resins. The licensee has estimated that the volume of solid radioactive waste would increase by approximately 11 percent due to the proposed EPU (Reference 9). Based on experience from EPUs at other plants, the staff concludes that this is an acceptable estimate. The increased volume of the solid waste would still be bounded by the estimate of 10,400 ft^3 in the 1981 FES for operation. Therefore, the staff concludes that the impact from the increased volume of solid radwaste generated due to the proposed EPU would not be significant.

The licensee did not provide an estimate of the increase in the amount of radioactive solid waste in terms of Curies. However, for 4 of the 6 years between 2000 and 2005, the annual amount of radioactive material in the solid waste generated varied from 2500 to 5779 Curies (Reference 9). Based on experience from EPUs at other plants, the staff estimated that the amount of radioactive material in the solid waste would increase by 20 percent, proportional to the proposed EPU power increase. In 2000 and 2003, work was done that generated large amounts of used irradiated components, accounting for 98 percent and 92 percent,

respectively, of the radioactive material generated in solid radwaste. Such work and the solid radwaste generated by that work occasionally occurs at SSES, but the range of 2500 to 5779 Curies is more typical (Reference 9). The annual average of radioactive material generated after the proposed EPU would still be bounded by the estimate of 5500 Curies in the 1981 FES for operation. In addition, the licensee must continue to meet all NRC and Department of Transportation regulations for transportation of solid radioactive waste. Therefore, the staff concludes that the impact from the increased amount of radioactive material in the solid radwaste due to the proposed EPU would not be significant.

The licensee estimates that the EPU would require replacement of 10 percent more fuel assemblies at each refueling. This increase in the amount of spent fuel being generated would require an increase in the number of dry fuel storage casks used to store spent fuel. The current dry fuel storage facility at SSES has been evaluated and can accommodate the increase (Reference 9). Therefore, the staff concludes that there would be no significant environmental impacts resulting from storage of the additional fuel assemblies.

In-Plant Radiation Doses:

The proposed EPU would result in the production of more radioactive material and higher radiation dose rates in the restricted areas at SSES. SSES's radiation protection staff will continue monitoring dose rates and would make adjustments in shielding, access requirements, decontamination methods, and procedures as necessary to minimize the dose to workers. In addition, occupational dose to individual workers must be maintained within the limits of 10 CFR Part 20 and as low as reasonably achievable (Reference 9).

The licensee has estimated that the work necessary to implement the proposed EPU at the plant would also increase the collective occupational radiation dose at the plant to approximately 230 person-rem per year until the implementation is completed in 2009. After the implementation is completed, the licensee estimates that the annual collective occupational

dose would be in the range of 200 person-rem, roughly 20 percent higher than the current dose of 182 person-rem in 2005 and 184 person-rem in 2006 (Reference 9). Based on experience from EPUs at other plants, the staff concludes that these estimates are acceptable. The staff notes that SSES is allowed a maximum of 3,200 person-rem per year as provided in the 1981 Final Environmental Statement - Operating Stage. Therefore, the staff concludes that the increase in occupational exposure would not be significant.

Direct Radiation Doses Offsite:

Offsite radiation dose consists of three components: gaseous, liquid, and direct gamma radiation. As previously discussed under the Gaseous Radiological Waste and Liquid Radiological Waste sections, the estimated doses to a member of the public from radioactive gaseous and liquid effluents after the proposed EPU is implemented, would be well within the dose limits of 10 CFR Part 20 and the design objectives of Appendix I to 10 CFR Part 50.

The final component of offsite dose is from direct gamma radiation from radioactive waste stored temporarily onsite, including spent fuel in dry cask storage, and radionuclides (mainly nitrogen-16) in the steam from the reactor passing through the turbine system. The high energy radiation from nitrogen-16 is scattered or reflected by the air above the facility and represents an additional public radiation dose pathway known as “skyshine.” The licensee estimated that the offsite radiation dose from skyshine would increase linearly with the increase in power level from the proposed EPU (20 percent); more nitrogen-16 is produced at the higher EPU power, and less of the nitrogen-16 decays before it reaches the turbine system because of the higher rate of steam flow due to the EPU. The licensee’s radiological environmental monitoring program measures radiation dose at the site boundary and in the area around the facility with an array of thermoluminescent dosimeters. The licensee reported doses ranging from 0.2 to 1.3 mrem per year for the time period 2000-2005. The licensee estimated that the

dose would increase approximately in proportion to the EPU power increase (20 percent) (Reference 9). Based on experience from EPUs at other plants, the staff concludes that this is an acceptable estimate. EPA regulation 40 CFR Part 190 and NRC regulation 10 CFR Part 20 limit the annual dose to any member of the public to 25 mrem to the whole body from the nuclear fuel cycle. The offsite dose from all sources, including radioactive gaseous and liquid effluents and direct radiation, would still be well within this limit after the proposed EPU is implemented. Therefore, the staff concludes that the increase in offsite radiation dose would not be significant.

Postulated Accident Doses:

As a result of implementation of the proposed EPU, there would be an increase in the inventory of radionuclides in the reactor core; the core inventory of radionuclides would increase as power level increases. The concentration of radionuclides in the reactor coolant may also increase; however, this concentration is limited by the SSES Technical Specifications. Therefore, the reactor coolant concentration of radionuclides would not be expected to increase significantly. Some of the radioactive waste streams and storage systems may also contain slightly higher quantities of radioactive material. The calculated doses from design basis postulated accidents for SSES are currently well below the criteria of 10 CFR 50.67; this was confirmed by the NRC staff in the Safety Evaluation Report supporting a license amendment for SSES dated January 31, 2007. The licensee has estimated that the radiological consequences of postulated accidents would increase approximately in proportion to the increase in power level from the proposed EPU (20 percent) (Reference 9). Based on experience from EPUs at other plants, the NRC staff concludes that this is an acceptable estimate. The calculated doses from design basis postulated accidents are based on conservative assumption and would still be well within the criteria of 10 CFR 50.67 after the increase due to the implementation of the proposed EPU.

The staff has reviewed the licensee's analyses and performed confirmatory calculations to verify the acceptability of the licensee's calculated doses under accident conditions. The staff's independent review of dose calculations under postulated accident conditions determined that dose would be within regulatory limits. Therefore, the staff concludes that the EPU would not significantly increase the consequences of accidents and would not result in a significant increase in the radiological environmental impact of SSES 1 and 2 from postulated accidents.

Fuel Cycle and Transportation Impacts:

Tables S-3 and S-4 in 10 CFR Part 51 specify the environmental impacts due to the uranium fuel cycle and transportation of fuel and wastes, respectively. SSES's EPU would increase the power level to 3952 mega-watt thermal (Mwt), which is 3.3 percent above the reference power level for Table S-4. The increased power level of 3952 Mwt corresponds to 1300 mega-watt electric (Mwe), which is 30 percent above the reference power level for Table S-3. Part of the increase is due to a more efficient turbine design; this increase in efficiency does not affect the impacts of the fuel cycle and transportation of wastes. However, more fuel will be used in the reactor (more fuel assemblies will be replaced at each refueling outage), and that will potentially affect the impacts of the fuel cycle and transportation of wastes. The fuel enrichment and burn-up rate criteria of Tables S-3 and S-4 will still be met because fuel enrichment will be maintained no greater than 5 percent, and the fuel burn-up rate will be maintained within 60 giga-watt-days/metric ton uranium (Gwd/MTU). The staff concludes that after adjusting for the effects of the more efficient turbine, the potential increases in the impact due to the uranium fuel cycle and the transportation of fuel and wastes from the larger amount of fuel used would be small and would not be significant.

Summary:

Based on staff review of licensee submissions and the 1981 FES for operation, it is concluded that the proposed EPU would not significantly increase the consequences of accidents, would not result in a significant increase in occupational or public radiation exposure, and would not result in significant additional fuel cycle environmental impacts. Accordingly, the staff concludes that there would be no significant radiological environmental impacts associated with the proposed action. Table 3 summarizes the radiological environmental impacts of the proposed EPU at SSES.

Table 3: Summary of Radiological Environmental Impacts

Gaseous Radiological Effluents	Increased gaseous effluents (20 percent) would remain within NRC limits and dose design objectives.
Liquid Radiological Effluents	Increased liquid effluents (1 percent) would remain within NRC limits and dose design objectives.
Solid Radioactive Waste	Increased amount of solid radioactive waste generated (11 percent by volume and 20 percent by radioactivity) would remain bounded by evaluation in the FES.
Occupational Radiation Doses	Occupational dose would increase by approximately 20 percent. Doses would be maintained within NRC limits and as low as is reasonably achievable.
Offsite Radiation Doses	Radiation doses to members of the public would continue to be very small, well within NRC and EPA regulations.
Postulated Accident Doses	Calculated doses for postulated design basis accidents would remain within NRC limits.
Fuel Cycle and Transportation Impacts	Fuel enrichment and burn-up rate criteria of Tables S-3 and S-4 are met because fuel enrichment will be maintained no greater than 5 percent, and the fuel burn-up rate will be maintained within 60 Gwd/MTU. After adjusting for the effects of the more efficient turbine, the potential increases in impacts due to the fuel cycle and transportation of fuel and wastes would not be significant.

Alternatives to Proposed Action:

As an alternative to the proposed action, the staff considered denial of the proposed EPU (i.e., the "no-action" alternative). Denial of the application would result in no change in the current environmental impacts. However, if the proposed EPU were not approved, other agencies and electric power organizations may be required to pursue alternative means of providing electric generation capacity to offset the increased power demand forecasted for the PJM regional transmission territory.

A reasonable alternative to the proposed EPU would be to purchase power from other generators in the PJM network. In 2003, generating capacity in PJM consisted primarily of fossil fuel-fired generators: coal generated 36.2 percent of PJM capacity, oil 14.3 percent, and natural gas 6.8 percent (Reference 10). This indicates that purchased power in the PJM territory would likely be generated by a fossil-fuel-fired facility. Construction (if new generation is needed) and operation of a fossil fuel plant would create impacts in air quality, land use, and waste management significantly greater than those identified for the proposed EPU at SSES. SSES's nuclear units do not emit sulfur dioxide, nitrogen oxides, carbon dioxide, or other atmospheric pollutants that are commonly associated with fossil fuel plants. Conservation programs such as demand-side management could feasibly replace the proposed EPU's additional power output. However, forecasted future energy demand in the PJM territory may exceed conservation savings and still require additional generating capacity (Reference 9). The proposed EPU does not involve environmental impacts that are significantly different from those originally identified in the 1981 SSES FES for operation.

Alternative Use of Resources:

This action does not involve the use of any resources not previously considered in the original FES for construction.

Agencies and Persons Consulted:

In accordance with its stated policy, on July 2, 2007, the staff consulted with the Pennsylvania State official, Brad Fuller, of the Pennsylvania Department of Environmental Protection, regarding the environmental impact of the proposed action. The State official had no comments.

FINDING OF NO SIGNIFICANT IMPACT

On the basis of the Environmental Assessment, the Commission concludes that the proposed action would not have a significant effect on the quality of the human environment. Accordingly, the Commission has determined not to prepare an environmental impact statement for the proposed action.

For further details with respect to the proposed action, see the licensee's application dated October 11, 2006. Documents may be examined, and/or copied for a fee, at the NRC's Public Document Room (PDR), located at One White Flint North, 11555 Rockville Pike (first floor), Rockville, Maryland. Publicly available records will be accessible electronically from the Agencywide Documents Access and Management System (ADAMS) Public Electronic Reading Room on the NRC Web site, http://www.nrc.gov/reading-rm/adams.html. Persons who do not have access to ADAMS or who encounter problems in accessing the documents located in ADAMS should contact the NRC PDR Reference staff at 1-800-397-4209, or 301-415-4737, or send an e-mail to pdr@nrc.gov.

DATES: The comment period expires **[30 days after publication]**. Comments received after this date will be considered if it is practical to do so, but the Commission is only able to assure consideration of comments received on or before **[30 days after publication]**.

ADDRESSES: Submit written comments to Chief, Rules and Directives Branch, Office of Administration, U.S. Nuclear Regulatory Commission, Mail Stop T-6D59, Washington, DC

20555-0001. Written comments may also be delivered to 11545 Rockville Pike, Room T-6D59, Rockville, Maryland 20852 from 7:30 a.m. to 4:15 p.m. on Federal workdays. Copies of written comments received will be electronically available at the NRC's Public Electronic Reading Room (PERR) link, http://www.nrc.gov/reading-rm/adams.html, on the NRC Web site or at the NRC's Public Document Room located at One White Flint North, 11555 Rockville Pike (first floor), Rockville, Maryland. Persons who do not have access to ADAMS or who encounter problems in accessing the documents located in ADAMS should contact the NRC PDR Reference staff at 1-800-397-4209, or 301-415-4737, or by e-mail to pdr@nrc.gov.

SUPPLEMENTARY INFORMATION: The NRC is considering issuance of amendments to Facility Operating License Nos. NPF-014 (Unit 1) and NPF-022 (Unit 2) issued to PPL Susquehanna, LLC for operation of Susquehanna Steam Electric Station, Units 1 and 2, located in Luzerne County, Pennsylvania.

FOR FURTHER INFORMATION CONTACT: Richard V. Guzman, Office of Nuclear Reactor Regulation, Mail Stop O8-C2, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, by telephone at (301) 415-1030, or by email at RVG@nrc.gov.

Dated at Rockville, Maryland, this 15th day of August 2007.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Richard V. Guzman, Senior Project Manager
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

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9. PPL Susquehanna, LLC (PPL). *Susquehanna Steam Electric Station Proposed License Amendment Numbers 285 For Unit 1 Operating License No. NPF-14 and 253 For Unit 2 Operating License No. NPF-22 Constant Power Uprate PLA-6076, Attachment 3, Supplemental Environmental Report.* Allentown, Pennsylvania. (ML062900161)

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