

removing the requirement for a licensed senior operator to approve the suspension of security measures in an emergency or during severe weather, to allow suspension of security measures to be authorized by a CFH, does not adversely affect public health and safety issues or the assurance of the common defense and security.

#### *C. Is Otherwise in the Public Interest*

Entergy's proposed exemption would allow a CFH, following permanent cessation of operation and permanent removal of fuel from the reactor vessel, to approve suspension of security measures in an emergency when "immediately needed to protect the public health and safety" or during severe weather when "immediately needed to protect the personal health and safety of security force personnel." Without the exemption, the licensee cannot implement changes to its security plan to authorize a CFH to approve the temporary suspension of security regulations during an emergency or severe weather, comparable to the authority given to the CFH by the NRC when it published § 50.54(y). Instead, the regulations would continue to require that a licensed senior operator be available to make decisions for a permanently shutdown plant, even though JAF would no longer require a licensed senior operator. However, it is unclear how the licensee would implement emergency or severe weather suspensions of security measures without a licensed senior operator. This exemption is in the public interest for two reasons. First, without the exemption, there is uncertainty on how the licensee will invoke temporary suspension of security matters that may be needed for protecting public health and safety or the safety of the security force during emergencies and severe weather. The exemption would allow the licensee to make decisions pursuant to § 73.55(p)(1)(i) and (ii) without having to maintain a staff of licensed senior operators. The exemption would also allow the licensee to have an established procedure in place to allow a trained CFH to suspend security measures in the event of an emergency or severe weather. Second, the consistent and efficient regulation of nuclear power plants serves the public interest. This exemption would assure consistency between the security regulations in 10 CFR part 73 and the operating reactor regulations in 10 CFR part 50, and the requirements concerning licensed operators in 10 CFR part 55. The NRC staff has determined that granting the licensee's proposed

exemption would allow the licensee to designate an alternative position, with qualifications appropriate for a permanently shutdown and defueled reactor, to approve the suspension of security measures during an emergency to protect the public health and safety, and during severe weather to protect the safety of the security force, consistent with the similar authority provided by § 50.54(y). Therefore, the exemption is in the public interest.

#### *D. Environmental Considerations*

The NRC's approval of the exemption to security requirements belongs to a category of actions that the Commission, by rule or regulation, has declared to be a categorical exclusion, after first finding that the category of actions does not individually or cumulatively have a significant effect on the human environment. Specifically, the exemption is categorically excluded from further analysis under § 51.22(c)(25).

Under § 51.22(c)(25), the granting of an exemption from the requirements of any regulation of Chapter I to 10 CFR is a categorical exclusion provided that: (i) There is no significant hazards consideration; (ii) there is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite; (iii) there is no significant increase in individual or cumulative public or occupational radiation exposure; (iv) there is no significant construction impact; (v) there is no significant increase in the potential for or consequences from radiological accidents; and (vi) the requirements from which an exemption is sought involve: Safeguard plans, and materials control and accounting inventory scheduling requirements; or involve other requirements of an administrative, managerial, or organizational nature.

The Director, Division of Operating Reactor Licensing, Office of Nuclear Reactor Regulation, has determined that approval of the exemption request involves no significant hazards consideration because expanding the requirement to allow a CFH to approve the security suspension at a defueled shutdown power plant does not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety. The exempted security regulation is unrelated to any operational restriction. Accordingly, there is no significant change in the

types or significant increase in the amounts of any effluents that may be released offsite; and no significant increase in individual or cumulative public or occupational radiation exposure. The exempted regulation is not associated with construction, so there is no significant construction impact. The exempted regulation does not concern the source term (*i.e.*, potential amount of radiation in an accident), nor mitigation. Thus, there is no significant increase in the potential for, or consequences of, a radiological accident. The requirement to have a licensed senior operator approve departure from security actions may be viewed as involving either safeguards, materials control, or managerial matters.

Therefore, pursuant to § 51.22(b) and (c)(25), no environmental impact statement or environmental assessment need be prepared in connection with the approval of this exemption request.

#### **IV. Conclusions**

Accordingly, the Commission has determined that, pursuant to 10 CFR 73.5, the exemption is authorized by law and will not endanger life or property or the common defense and security, and is otherwise in the public interest. Therefore, the Commission hereby grants the licensee's request for an exemption from the requirements of 10 CFR 73.55(p)(1)(i) and (ii), which otherwise would require suspension of security measures during emergencies and severe weather, respectively, to be approved by a licensed senior operator following permanent cessation of operations and permanent removal of fuel from the reactor vessel. The exemption is effective upon the docketing of the certification of permanent removal of fuel in accordance with 10 CFR 50.82(a)(1)(ii).

Dated at Rockville, Maryland, this 20th day of October 2016.

For the Nuclear Regulatory Commission.

**George A. Wilson,**

*Deputy Director, Division of Operating Reactor Licensing, Office of Nuclear Reactor Regulation.*

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#### **NUCLEAR REGULATORY COMMISSION**

[Docket No. 50-182; NRC-2011-0186]

#### **Purdue University Reactor**

**AGENCY:** Nuclear Regulatory Commission.

**ACTION:** Environmental assessment and finding of no significant impact; issuance.

**SUMMARY:** The U.S. Nuclear Regulatory Commission (NRC) is considering renewal of Facility Operating License No. R-87, held by Purdue University (the applicant), for the continued operation of the Purdue University Reactor (PUR-1), located in West Lafayette, Tippecanoe County, Indiana for an additional 20 years. In connection with the renewed license, the applicant is also seeking a power increase from 1 kilowatt thermal (kW(t)) to a licensed power level of 12 kW(t). The NRC is issuing an environmental assessment (EA) and finding of no significant impact (FONSI) associated with the renewal of the license.

**DATES:** The EA and FONSI referenced in this document is available on October 27, 2016.

**ADDRESSES:** Please refer to Docket ID NRC-2011-0186 when contacting the NRC about the availability of information regarding this document. You may obtain publicly-available information related to this document using any of the following methods:

- *Federal Rulemaking Web site:* Go to <http://www.regulations.gov> and search for Docket ID NRC-2011-0186. Address questions about NRC dockets to Carol Gallagher; telephone: 301-415-3463; email: [Carol.Gallagher@nrc.gov](mailto:Carol.Gallagher@nrc.gov). For technical questions, contact the individual listed in the **FOR FURTHER INFORMATION CONTACT** section of this document.

- *NRC's Agencywide Documents Access and Management System (ADAMS):* You may obtain publicly-available documents online in the ADAMS Public Documents collection at <http://www.nrc.gov/reading-rm/adams.html>. To begin the search, select "ADAMS Public Documents" and then select "Begin Web-based ADAMS Search." For problems with ADAMS, please contact the NRC's Public Document Room (PDR) reference staff at 1-800-397-4209, 301-415-4737, or by email to [pdr.resource@nrc.gov](mailto:pdr.resource@nrc.gov). For the convenience of the reader, the ADAMS accession numbers are provided in a table in the "Availability of Documents" section of this document.

- *NRC's PDR:* You may examine and purchase copies of public documents at the NRC's PDR, Room O1-F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852.

**FOR FURTHER INFORMATION CONTACT:** Cindy K. Montgomery, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington,

DC 20555-0001; telephone: 301-415-3398; email: [Cindy.Montgomery@nrc.gov](mailto:Cindy.Montgomery@nrc.gov).

#### **SUPPLEMENTARY INFORMATION:**

##### **I. Introduction**

The NRC is considering issuance of a renewed Facility Operating License No. R-87, held by Purdue University, which would authorize continued operation of PUR-1, located in West Lafayette, Tippecanoe County, Indiana, for an additional 20 years. In connection with the renewed license, the applicant is also seeking a power increase from 1 kW(t) to 12 kW(t). As required by section 51.21 of title 10 of the *Code of Federal Regulations* (10 CFR), "Criteria for and identification of licensing and regulatory actions requiring environmental assessments," the NRC performed an EA. Based on the results of the EA that follows, the NRC has determined not to prepare an environmental impact statement for the proposed action and is issuing a FONSI.

##### **II. Environmental Assessment**

###### *Description of the Proposed Action*

The proposed action would renew Facility Operating License No. R-87 for a period of 20 years from the date of issuance of the renewed license. The proposed action would also authorize a power increase from 1 kW(t) to 12 kW(t). The proposed action is in accordance with Purdue University's application dated July 7, 2008, as supplemented by letters dated June 30, 2008; June 3, and June 4, 2010; November 15, 2011; January 4, January 30, January 31, June 1, June 15, June 29, July 13, and August 11, 2012; April 10, 2013; July 24, 2015; and January 29, February 26, March 31, May 9, July 7, July 19, September 19, and September 29, 2016 (collectively referred to as "the renewal application"). In accordance with § 2.109, "Effect of timely renewal application," the existing license remains in effect until the NRC takes final action on the renewal application.

###### *Need for the Proposed Action*

The proposed action is needed to allow the continued operation of the PUR-1, which is used for teaching and research to support the mission of Purdue University, for a period of 20 years. Operation of the PUR-1 at the requested higher power level would expand the educational and research uses of the facility.

###### *Environmental Impacts of the Proposed Action*

Separate from the environmental assessment referenced in this document,

the NRC is writing a safety evaluation (SE) of the proposed action to issue renewed Facility Operating License No. R-87 to allow continued operation of the PUR-1 for a period of 20 years. The details of the NRC's SE will be provided with the renewed license, if approved. This document contains the EA of the proposed action.

The applicant has requested a power increase from 1 kW(t) to 12 kW(t) maximum allowed licensed power. The applicant performed analyses at 18 kW(t) to bound the requested power increase. The applicant's required annual reports from 2011 through 2015 indicate that no measurable amount of radioactive effluent was released from the PUR-1 to the environment.

###### *Facility Site and Environs*

The PUR-1 is a heterogeneous, pool-type non-power reactor that has been in operation since 1962 for teaching and research purposes. The PUR-1 is located in the Duncan Annex of the Electrical Engineering Building on the eastern edge of the Purdue University campus. The building was originally designed as a high voltage laboratory, and the space was later converted into classrooms, laboratories, and offices. The building is constructed of brick, concrete block, and reinforced concrete. Within the Duncan Annex, the PUR-1 is located within a 6,400-gallon cylindrical water tank that is 17 feet deep and 8 feet in diameter. The tank is enclosed by a concrete shielding structure.

The PUR-1 operates about 90 times per year on average. The reactor is fueled with standard low-enriched uranium plate-type fuel and is cooled by natural convection of light water. The reactor coolant system includes a process system, which controls the pool water temperature, and a purification system, which is designed to maintain pool water quality by limiting corrosion and coolant activation by the use of microfilters and ion exchange resins. Water from the pool is drawn out from the scupper drain or suction line via polyvinyl chloride piping leading to the circulating pump; a second source of water for the pump is a water supply tank supplied with city service water and controlled by a float valve. Ball valves for water shutoff and a vacuum cleaning connection are provided in the pump supply line. From the pump, a pipe with a ball valve installed leads first to the filter and then to a demineralizer. An adjustable by-pass or throttling valve is inserted in the system to regulate water flow through the demineralizer. A flow indicator and a conductivity indicator are installed as a check on flow rate and water purity

from the demineralizer. The water next flows through a stainless steel heat exchanger. The water from the heat exchanger is then returned to the reactor pool. A magnetrol water-level control is located in the reactor pool; this unit controls a solenoid valve in the line from the water supply tank to ensure that the prescribed pool water level is maintained. However, this system is manually controlled by the PUR-1 staff to allow makeup water to be inventoried. Makeup pool water is provided by the city public water supply.

A detailed description of the reactor can be found in the PUR-1 Safety Analysis Report (SAR) submitted by the applicant with its renewal application.

#### A. Radiological Impacts

##### Environmental Effects of Reactor Operations

During normal operations at the PUR-1 facility, the two primary airborne sources of radiation are argon-41 (Ar-41) and nitrogen-16 (N-16). N-16 is produced when oxygen in the pool water is irradiated in the reactor core, and must then diffuse to the pool surface before it is released to the atmosphere. The applicant estimates that, due to its short half-life (about 7 seconds), any N-16 produced by the reactor at the bounding power level of 18 kW(t) would decay before reaching the surface of the pool. The primary source of Ar-41 at the PUR-1 is from irradiation of air containing argon dissolved in the reactor pool. At the current 1 kW(t) steady-state operation, effluent samples in the reactor room have not contained detectable traces of Ar-41. At the bounding power level of 18 kW(t), the applicant estimates that steady-state operation of the reactor would produce an equilibrium concentration of  $2.08 \times 10^{-7}$   $\mu\text{Ci}/\text{cm}^3$  of Ar-41 in the exhaust air and the reactor room, which is lower than the  $3.0 \times 10^{-6}$   $\mu\text{Ci}/\text{cm}^3$  Derived Air Concentration (DAC) limit for occupational workers found in 10 CFR part 20. Due to the DAC being below regulatory limits, the estimated occupational radioactivity exposure levels will also be below the 10 CFR part 20 limit of 5 reontgen equivalent man (rem). The estimated dose rate to a worker at the bounding power level of 18 kW(t) was calculated by the applicant to be 0.167 milli roentgen equivalent man per hour (mrem/hr) (0.00167 millisievert/hour (mSv/hr)). Using the calculated dose rate, the total effective dose equivalent to a worker in the reactor room for an entire year would be less than 334 mrem (3.34

mSv), assuming a hypothetical 2,000-hour steady state, full power operation, since the reactor license contains no restriction on operating hours. The reactor normally operates for much less than the assumed 8 hours per day and the conservatively calculated dose is still well below the 5,000-mrem (50 mSv) limit established in § 20.1201, "Occupational dose limits for adults." The applicant also calculated, at the bounding 18 kW(t) power level, an environmental public dose rate from normal operations to a person in the unrestricted area due to Ar-41 released from the building ventilation opening. The release point is on the roof vent on the top of the building 15 meters above ground. Assuming a hypothetical continuous steady state, full power operation for a year, the applicant calculated the public dose rate to be  $3.17 \times 10^{-4}$  mrem/hr ( $3.17 \times 10^{-6}$  mSv/hr) or 2.8 mrem/yr (0.28 mSv/yr), which is well below the limit in § 20.1301 of 100 mrem/yr (1 mSv/yr). This calculated public dose rate would also meet the as low as is reasonably achievable (ALARA) dose constraint of 10 mrem/yr (0.1 mSv/yr) found in § 20.1101(d).

Purdue University has a structured radiation safety program. Policies for the program are determined by the University Radiation Safety Committee, which has the mission to ensure the safety of the University and community in the utilization of all radioactive materials and radiation-producing devices at the University by faculty, staff, or students. The program is administered by the Radiation Safety Officer and his staff, as part of Radiological and Environmental Management. The staff is equipped with radiation detection instrumentation to determine, control, and document occupational radiation exposures at the reactor facility under the broad scope byproduct materials license held by Purdue University.

Only very limited contaminated materials are generated by PUR-1. Any contaminated material is disposed of under the Purdue University broad scope license. No wastes have been released to the environment in an uncontrolled manner. During the past 5-year period from 2011 through 2015, the applicant reported no routine releases of liquid radioactive waste by any disposal method. The NRC assumes that any changes due to the requested power increase from 1 kW(t) to 12 kW(t) are expected to be minimal and capable of being handled by the existing systems and procedures.

As described in Chapter 11 of the PUR-1 SAR, personnel exposures are

well within the limits set by § 20.1201, "Occupational dose limits for adults," and the ALARA dose criteria in § 20.1101(b). The University is committed to the principle of ALARA and it makes every effort to keep doses to a minimum. All unanticipated or unusual exposures are investigated. According to annual reports for the past 5 years of operation from 2011 through 2015, there were no radiation exposures greater than 25 percent of limits set forth in § 20.1201. The change in occupational dose from the proposed power uprate from 1 kW(t) to 12 kW(t) is discussed previously in this notice.

The applicant monitors dose to the public by placing thermoluminescent dosimeters (TLD) at the boundaries of the facility. The TLDs are checked for exposure every other month. Doses measured from the TLDs at the current operating power level of 1 kW(t) have been at background levels, therefore, the applicant concludes that the public has not received exposures greater than the limits set forth in § 20.1301, "Dose limits for individual members of the public." As stated previously, this should not change for the proposed power increase of 12 kW(t).

Additionally, the potential radiation dose from current operations at 1kW(t) also demonstrates compliance with the ALARA dose constraints specified in § 20.1101(d), "Radiation protection programs." As stated previously, this should not change for the proposed power increase of 12 kW(t).

Over the past 5 years of operation from 2011 through 2015, results from the applicant's survey program indicate that radiation exposures at the current operating power level of 1 kW(t) at the monitoring locations were not significantly higher than those measured at the control locations. This should not change for the proposed power increase of 12 kW(t). Therefore, the NRC concludes that the proposed action would not have a significant radiological impact.

##### Environmental Effects of Accidents

The maximum hypothetical accident (MHA) is an event involving the cladding failure of an irradiated fuel element in air. The MHA is considered the worst-case fuel failure scenario for PUR-1 that would lead to the maximum potential radiation hazard to facility personnel and to members of the public. The results of the MHA are used by the NRC to evaluate the ability of the applicant to respond and mitigate the consequences of this postulated radioactive release.

The applicant conservatively calculated doses to facility personnel

during evacuation and the maximum potential doses to members of the public at various locations around the PUR-1 facility. The license estimated an occupational dose of 317 mrem (3.17 mSv), for a one minute (evacuation) duration, and 47 mrem (0.47 mSv) for the maximum exposed member of the public. The NRC performed independent calculations to verify that the applicant's calculated doses represented conservative estimates for the MHA. The NRC, using conservative assumptions, estimated a dose to a worker of 294 mrem (2.94 mSv) for a one minute duration, and 4 mrem (0.04 mSv) for the maximum exposed member of the public. The details of these calculations are provided in the NRC's SER that will be issued with the renewed license. The occupational radiation doses resulting from the postulated MHA would be well below the 10 CFR 20.1201 limit of 5,000 mrem (50 mSv). The maximum calculated radiation doses for members of the public resulting from the postulated MHA would be below the 10 CFR 20.1301 limit of 100 mrem (1 mSv).

Because the NRC concludes in the SE that the radiological consequences of the MHA are within the NRC's 10 CFR part 20 dose limits, the proposed action will not have a significant impact with respect to the radiological consequences of the MHA.

#### Conclusions—Radiological Impacts

As discussed previously in this notice, the applicant has requested a power increase from 1kW to 12 kW maximum allowed licensed power. In addition, as previously described, while there is a potential increase in routine occupational and public radiation exposure as a result of license renewal at the higher power level, all exposure rates and doses would be within regulatory limits. There would be no changes in the types of effluents that may be released off site, and any potential increase in their quantities would be within regulatory limits. The applicant has systems in place for controlling the release of radiological effluents and implements a radiation protection program to monitor personnel exposures and releases of radioactive effluents, and the systems and radiation protection program are appropriate for the types and quantities of effluents expected to be generated by continued operation of the reactor. The proposed action will not significantly increase the probability or consequences of accidents. Therefore, license renewal and the proposed power increase would not change the environmental impact of facility operation. The NRC evaluated

information contained in the renewal application and data reported to the NRC by the applicant for the last 5 years of operation to determine the projected radiological impact of the facility on the environment during the period of the renewed license. The NRC found that releases of radioactive material and personnel exposures were all well within applicable regulatory limits. Based on this evaluation, the NRC concludes that the proposed action would not have a significant environmental impact.

#### B. Non-Radiological Impacts

The proposed action would not result in any land use changes, visual resource impacts, or increases in noise. No significant changes in air emissions would occur as a result of the proposed license renewal and power increase. Because water is supplied through the city, the proposed action would not affect surface water or groundwater resources. There is no potential for the proposed action to affect aquatic or terrestrial resources. Therefore, the NRC concludes that the proposed action would have no significant non-radiological impacts.

#### Other Applicable Environmental Laws

In addition to the National Environmental Policy Act (NEPA), the NRC has responsibilities that are derived from other environmental laws, which include the Endangered Species Act (ESA), Coastal Zone Management Act, National Historic Preservation Act (NHPA), Fish and Wildlife Coordination Act, and Executive Order 12898 Environmental Justice. Preparing this EA satisfies the agency's obligations under NEPA. The following presents a brief discussion of impacts associated with resources protected by these laws.

#### Endangered Species Act

The NRC staff conducted a search of Federally listed species and critical habitats that have the potential to occur in the vicinity of the PUR-1 using the U.S. Fish and Wildlife Service's (FWS) Environmental Conservation Online System Information for Planning and Conservation (IPaC) system. Five Federally-listed mussels—clubshell (*Pleurobema clava*), fanshell (*Cyprogenia stegaria*), snuffbox (*Epioblasma triquetra*), rabbitsfoot (*Quadrula cylindrical cylindrical*), and sheepnose (*Plethobasus cyphus*)—and the Indiana bat (*Myotis sodalis*) occur in Tippecanoe County. However, none of these species are likely to occur near the PUR-1 because the facility is located on the Purdue University Campus, which has been developed since the 1960s and

does not provide suitable habitat for Federally-listed species. Additionally, operation of PUR-1 has no direct nexus to the natural environment that would affect Federally-listed species. Accordingly, the NRC concludes that the proposed license renewal of the PUR-1 would have no effect on Federally-listed species or critical habitats. Federal agencies are not required to consult with the FWS if they determine that an action will not affect listed species or critical habitats (ADAMS Accession No. ML16120A505). Thus, the ESA does not require consultation for the proposed PUR-1 license renewal and proposed power uprate, and the NRC considers its obligations under ESA section 7 to be fulfilled for the proposed action.

#### Coastal Zone Management Act

Tippecanoe County, Indiana does not contain any coastal zones. Because the PUR-1 is not located within or near any managed coastal zones, the proposed action would not affect any coastal zones and Coastal Zone Management Act consistency certification does not apply.

#### National Historic Preservation Act

The NHPA requires Federal agencies to consider the effects of their undertakings on historic properties. As stated in the Act, historic properties are any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in the National Register of Historic Places (NRHP). The NRHP lists several historic districts and properties within 0.5 miles of PUR-1 in the Duncan Annex of the Electrical Engineering Building on the campus of Purdue University. Operation of PUR-1 has not likely had any impact on these districts and properties. Based on this information, the NRC staff finds that the potential impacts of license renewal and the continued operation of PUR-1 would have no adverse effect on historic properties located near PUR-1.

#### Fish and Wildlife Coordination Act

The proposed action does not involve any water resource development projects, including any of the modifications relating to impounding a body of water, damming, diverting a stream or river, deepening a channel, irrigation, or altering a body of water for navigation or drainage. Therefore, no coordination with FWS pursuant to the Fish and Wildlife Coordination Act is required for the proposed action.

Executive Order 12898—Environmental Justice

The environmental justice impact analysis evaluates the potential for disproportionately high and adverse human health and environmental effects on minority and low-income populations that could result from the relicensing and the continued operation of PUR-1. Such effects may include human health, biological, cultural, economic, or social impacts.

**Minority Populations in the Vicinity of PUR-1.** According to U.S. Census Bureau’s 2010 Census, approximately 21 percent of the total population (approximately 164,000 individuals) residing within a 10-mile radius of PUR-1 identified themselves as minorities. The largest minority population were Hispanic, Latino, or Spanish origin of any race at (approximately 12,800 or 8 percent), followed by Asian (approximately 10,700 persons or 7 percent). According to the 2010 Census, about 20 percent of the Tippecanoe County population identified themselves as minorities, with persons of Hispanic, Latino, or Spanish origin and Asians comprising the largest minority populations (approximately 8 and 7 percent, respectively). According to the U.S. Census Bureau’s 2014 American Community Survey 1-year Estimates, the minority population of Tippecanoe County, as a percent of the total population, had increased to about 22 percent.

**Low-income Populations in the Vicinity of PUR-1.** According to the U.S. Census Bureau’s 2010–2014 American Community Survey 5-Year Estimates, approximately 36,000 persons and 4,000 families (approximately 22.7 and 11.7 percent, respectively) residing within a 10-mile radius of PUR-1 were identified as living below the Federal poverty threshold. The 2014 Federal poverty threshold was \$24,230 for a family of four.

According to the U.S. Census Bureau’s 2014 American Community Survey Census 1-Year Estimates, the median household income for Indiana was \$49,446, while 11 percent of

families and 15.2 percent of the state population were found to be living below the Federal poverty threshold. Tippecanoe County had a lower median household income average (\$45,771) and a higher percent of families and people living below the poverty level (12.2 and 23.6 percent, respectively).

**Impact Analysis.** Potential impacts to minority and low-income populations would mostly consist of radiological effects, however, radiation doses from continued operations associated with the license renewal and the proposed power increase are expected to continue at current levels, and would be well below regulatory limits.

Based on this information and the analysis of human health and environmental impacts presented in this EA, the proposed action would not have disproportionately high and adverse human health and environmental effects on minority and low-income populations residing in the vicinity of PUR-1.

**Environmental Impacts of the Alternatives to the Proposed Action**

As an alternative to license renewal, the NRC considered denying the proposed action (*i.e.*, the “no-action” alternative). If the NRC denied the request for license renewal, reactor operations would cease and decommissioning would be required. The NRC notes that, even with a renewed license, PUR-1 will eventually be decommissioned, at which time the environmental effects of decommissioning would occur. Decommissioning would be conducted in accordance with an NRC-approved decommissioning plan, which would require a separate environmental review under § 51.21. Cessation of reactor operations would reduce or eliminate radioactive effluents. However, as previously discussed in this EA, radioactive effluents from reactor operations constitute a small fraction of the applicable regulatory limits. Therefore, the environmental impacts of license renewal, including the proposed power uprate, and the denial of the request for license renewal would be

similar. In addition, denying the request for license renewal would eliminate the benefits of teaching, research, and services provided by the PUR-1 facility.

**Alternative Use of Resources**

The proposed action does not involve the use of any different resources or significant quantities of resources beyond those previously considered in the issuance of Facility Operating License No. R-87 for the PUR-1 in August 1988, which renewed the Facility Operating License for a period of 20 years.

**Agencies and Persons Consulted**

The NRC did not enter into consultation with any other Federal agencies or with the State of Indiana regarding the environmental impact of the proposed action. However, on October 21, 2016, the NRC notified the Indiana State official, Ms. Laura Dresen, Radiation Programs Director, of the Indiana Department of Homeland Security of the proposed action. The State official had no comments.

**III. Finding of No Significant Impact**

The NRC is considering issuance of a renewed Facility Operating License No. R-87, held by Purdue University, which would authorize the continued operation of PUR-1 for an additional 20 years.

On the basis of the EA included in Section II of this notice and incorporated by reference in this finding, the NRC concludes that the proposed action would not have significant effects on the quality of the human environment. Section IV lists the environmental documents related to the proposed action and includes information on the availability of these documents. Based on its findings, the NRC has decided not to prepare an environmental impact statement for the proposed action.

**IV. Availability of Documents**

The documents identified in the following tables are available to interested persons as indicated.

Document	ADAMS accession No.
Purdue University, School of Nuclear Engineering. Application for relicense of License Number R-87 with Power Uprate, July 7, 2008 .....	ML083040443
Purdue University Safety Analysis Report, June 30, 2008 [Redacted Version] .....	ML111890201
Purdue University—Request for Additional Information (RAI) Regarding License Renewal, [Decommissioning Funding Statement of Intent], June 3, 2010 .....	ML101620125
Purdue University—Request For Additional Information Regarding the Purdue University Reactor License Renewal (Tac No. Me 1594), Responses to RAIs Dated 24 March 2010, [Responses To ML100820019, financial assurance, statement of intent, signature authority, financial report], June 4, 2010 .....	ML101620184
Response to Request for Additional Information Regarding the Purdue University Reactor License Renewal (TAC ME1594), Response to RAIs Dated 6 July 2011 (ML101460429), November 15, 2011 .....	ML11320A287

Document	ADAMS accession No.
Purdue University—Request for Additional Information Regarding the License Renewal, Responses to RAIs Dated 6 July 2011, [Responses 11, 12, 13, 15, 16, 18, 21, 23, 25, 27, 28, 30, 31, 33, 35, 36, and 37], January 4, 2012 .....	ML12006A193
Purdue University—Responses to the Request for Additional Information Regarding the Purdue University Reactor License Renewal dated July 6, 2011, [Responses 3, 4, 7, 10, 17, 19, 20, 22, 24, 29, 34, and 40], January 30, 2012 .....	ML12031A223
Purdue University—Request for Additional Information Regarding the Purdue University Reactor License Renewal (TAC No. ME 1594), Responses to RAIS (ML103400115 and ML103400250) (Redacted Version), [Responses 45, 55, 62, 65, 66, 67, 68, 70, and 73], January 31, 2012 .....	ML14234A109
Request for Additional Information Regarding the Purdue University Reactor License Renewal (TAC ME1594), Responses to RAIs (ML103400115 and ML103400250), [Responses 43, 51, 56, 60, and 61], June 1, 2012 .....	ML12156A364
Purdue University—Request for Additional Information Regarding the Purdue University Reactor License Renewal (TAC No. ME1594), Responses to RAIs (ML103400115 and ML103400250), [Response 46, 47, 52, 57, and 59], June 15, 2012 .....	ML12170B018
Purdue University—Request for Additional Information Regarding the Purdue University Reactor License Renewal, Responses to RAIs (ML103400115 and ML103400250), [Response 48, 58, 96, 97 and 98], June 29, 2012 .....	ML12170B018
Purdue University—Request for Additional Information Regarding the Purdue University Reactor License Renewal, Response to RAI, [Response 49, 50, 53, 64, and 72], July 13, 2012 .....	ML12201A070
Purdue University—Response to Request for Additional Information Regarding Purdue University Reactor License Renewal (TAC No. ME1594, Responses to RAIs (ML103400115 and ML103400250), [Responses 54, 69, 77, 78, and 92], August 11, 2012 .....	ML12226A400
Purdue University—Response to Request Request for Additional Information Regarding the Purdue University Reactor License Renewal (TAC ME1594), [Responses 54, 69, 77, 78, and 92], April 10, 2013 .....	ML13101A044
U.S. Fish and Wildlife Service, Endangered Species Consultations Frequently Asked Questions, July 15, 2013 .....	ML16120A505
Purdue University Research Reactor, Report on Reactor Operations For the Period January 1, 2011 to December 31, 2011, July 18, 2013 .....	ML13203A081
Purdue University Research Reactor, Report on Reactor Operations For the Period January 1, 2012 to December 31, 2012, July 18, 2013 .....	ML13203A082
Purdue University Research Reactor, Report on Reactor Operations For the Period January 1, 2013 to December 31, 2013, May 22, 2014 .....	ML14154A123
Purdue University Research Reactor, Report on Reactor Operations For the Period January 1, 2014 to December 31, 2014, March 30, 2015 .....	ML15092A160
Purdue University—Request for Additional Information Regarding the Purdue University Reactor License Renewal Application (TAC No. ME1594), Responses to Letter Dated August 29, 2014 (ML14115A221), [RAI cover letter for responses to August 29, 2015 NRC letter], July 24, 2015 .....	ML15210A280
Purdue University—Request for Additional Information Regarding the Purdue University Reactor License Renewal Application (TAC No. ME1594), Responses to Letter Dated August 29, 2014 (ML14115A221), Part 1 of 5, [RAI Responses part 1 of 5: responses (1–29), TS (30–64), d/c cost estimate (65–68), Requal (69–73), SAR Chs. 1–5 (70–162)], July 24, 2015 .....	ML15210A282
Purdue University—Request for Additional Information Regarding the Purdue University Reactor License Renewal Application (TAC No. ME1594), Responses to Letter Dated August 29, 2014 (ML14115A221), Part 2 of 5, [RAI Responses part 2 of 5 (SAR Chs. 6–15)], July 24, 2015 .....	ML15210A283
Purdue University—Request for Additional Information Regarding the Purdue University Reactor License Renewal Application (TAC No. ME1594), Responses to Letter Dated August 29, 2014 (ML14115A221), Part 3 of 5, [RAI Responses Part 3 of 5 (drawings)], July 24, 2015 .....	ML15210A285
Purdue University—Request for Additional Information Regarding the Purdue University Reactor License Renewal Application (TAC No. ME1594), Responses to Letter Dated August 29, 2014 (ML14115A221), Part 4 of 5, [RAI Responses Part 4 of 5 (drawings)], July 24, 2015 .....	ML15210A287
Purdue University—Request for Additional Information Regarding the Purdue University Reactor License Renewal Application (TAC No. ME1594), Responses to Letter Dated August 29, 2014 (ML14115A221), Part 5 of 5, [RAI Responses part 5 of 5 (NATCON, Procedures, Drawings)], July 24, 2015 .....	ML15210A288
Purdue University—Response to NRC Request for Additional Information Regarding Physical Security Plan Review for License Renewal, January 29, 2016 .....	ML16047A382
Purdue University—Re-Submittal Response to NRC Request for Additional Information Regarding Physical Security Plan Review for License Renewal, February 26, 2016 .....	ML16083A219
Purdue University—Response to NRC Request for Additional Information Re: Physical Security Plan Review for License Renewal, March 31, 2016 .....	ML16102A123
Purdue University Research Reactor, Report on Reactor Operations For the Period January 1, 2015 to December 31, 2015, March 31, 2016 .....	ML16102A119
Purdue University—Second Re-Submittal of Response to NRC Request for Additional Information Regarding Physical Security Plan Review for License Renewal, May 9, 2016 .....	ML16134A143
Purdue University School of Nuclear Engineering Notice of ADAMS Document Correction, PUR–1, Docket 50–182, ML16187A371, Technical Specifications, Proposed Amendment 13 Enclosed, [Correction of the TSs, originally submitted under ML16187A371], July 7, 2016 .....	ML16193A681
Purdue University Responses to Request for Additional Information re PUR–1 License Renewal and Power Uprate, [Responses to RAIs ML15328A314], July 19, 2016 .....	ML16207A426
Purdue University—Response to Request for Additional Information Regarding the Reactor License Renewal Application, Responses to Letter dated July 25, 2016, September 19, 2016 .....	ML16267A465
Purdue University—Explanation of Technical Specification Changes and Emergency Operator Action, September 29, 2016 .....	ML16277A165

Dated at Rockville, Maryland, this 21st day October, 2016.

For the Nuclear Regulatory Commission.

**Alexander Adams, Jr.,**  
Chief, Research and Test Reactors Branch,  
Division of Policy and Rulemaking, Office  
of Nuclear Reactor Regulation.

[FR Doc. 2016-25993 Filed 10-26-16; 8:45 am]

BILLING CODE 7590-01-P

## NUCLEAR REGULATORY COMMISSION

[Docket Nos. 50-373 and 50-374; NRC-  
2014-0268]

### Exelon Generation Company, LLC.; LaSalle County Station, Units 1 and 2; License Renewal

**AGENCY:** Nuclear Regulatory  
Commission.

**ACTION:** License renewal and record of  
decision; issuance.

**SUMMARY:** The U.S. Nuclear Regulatory  
Commission (NRC) has issued renewed  
facility operating license Nos. NPF-11  
and NPF-18 to Exelon Generation  
Company, LLC (Exelon or the licensee),  
the operator of LaSalle County Station,  
Units 1 and 2. Renewed facility  
operating license Nos. NPF-11 and  
NPF-18 authorize the operation of  
LaSalle County Station, Units 1 and 2 by  
the licensee at reactor core power levels  
not in excess of 3546 megawatts thermal  
in accordance with the provisions of the  
renewed licenses and technical  
specifications until April 17, 2042 and  
December 16, 2043, respectively. The  
NRC prepared a safety evaluation report,  
a final supplemental environmental  
impact statement (FSEIS), and a record  
of decision (ROD) that support its  
decision to issue renewed facility  
operating license Nos. NPF-11 and  
NPF-18.

**DATES:** Renewed facility operating  
license Nos. NPF-11 and NPF-18 were  
issued and effective on October 19,  
2016.

**ADDRESSES:** Please refer to Docket ID  
NRC-2014-0268 when contacting the  
NRC about the availability of  
information regarding this document.  
You may obtain publicly-available  
information related to this document  
using any of the following methods:

- *Federal Rulemaking Web site:* Go to <http://www.regulations.gov> and search for Docket ID NRC-2014-0268. Address questions about NRC dockets to Carol Gallagher; telephone: 301-415-3463; email: [Carol.Gallagher@nrc.gov](mailto:Carol.Gallagher@nrc.gov). For technical questions, contact the individual listed in the **FOR FURTHER INFORMATION CONTACT** section of this document.

- *NRC's Agencywide Documents Access and Management System (ADAMS):* You may obtain publicly-available documents online in the ADAMS Public Documents collection at <http://www.nrc.gov/reading-rm/adams.html>. To begin the search, select "ADAMS Public Documents" and then select "Begin Web-based ADAMS Search." For problems with ADAMS, please contact the NRC's Public Document Room (PDR) reference staff at 1-800-397-4209, 301-415-4737, or by email to [pdr.resource@nrc.gov](mailto:pdr.resource@nrc.gov). The ADAMS accession number for each document referenced (if it is available in ADAMS) is provided the first time that it is mentioned in this document.

- *NRC's PDR:* You may examine and purchase copies of public documents at the NRC's PDR, Room O1-F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852.

**FOR FURTHER INFORMATION CONTACT:**  
Jeffrey Mitchell, Office of Nuclear  
Reactor Regulation, U.S. Nuclear  
Regulatory Commission, Washington,  
DC 20555-0001; telephone: 301-415-  
3019; email: [Jeffrey.Mitchell2@nrc.gov](mailto:Jeffrey.Mitchell2@nrc.gov).

**SUPPLEMENTARY INFORMATION:** Notice is  
hereby given that the NRC has issued  
renewed facility operating license Nos.  
NPF-11 and NPF-18 to Exelon  
Generation Company, LLC, the operator of  
LaSalle County Station, Units 1 and  
2. Renewed facility operating license  
Nos. NPF-11 and NPF-18 authorize the  
operation of LaSalle County Station,  
Units 1 and 2 by the licensee at reactor  
core power levels not in excess of 3546  
megawatts thermal in accordance with  
the provisions of the renewed licenses  
and technical specifications until April  
17, 2042 and December 16, 2043,  
respectively.

LaSalle County Station, Units 1 and 2,  
are boiling-water reactors located in  
Brookfield Township, LaSalle County,  
Illinois. The NRC determined that the  
application for the renewed licenses,  
"License Renewal Application, LaSalle  
County Station, Units 1 and 2, Facility  
Operating License Nos. NPF-11 and  
NPF-18," dated December 9, 2014  
(ADAMS Accession No. ML14343A849),  
as supplemented by letters dated  
through June 8, 2016, complied with the  
standards and requirements of the  
Atomic Energy Act of 1954, as amended  
(the Act), and the NRC's regulations set  
forth in Chapter I of title 10 of the *Code  
of Federal Regulations* (10 CFR). As  
required by the Act and the NRC's  
regulations, the NRC has made the  
appropriate findings, which are set forth  
in the renewed licenses. A public notice  
of the proposed issuance of the renewed  
licenses and an opportunity to request

a hearing was published in the **Federal  
Register** on February 3, 2015 (80 FR  
5822).

The NRC's FSEIS, NUREG-1437,  
Supplement 57, "Generic  
Environmental Impact Statement for  
License Renewal of Nuclear Plants  
Regarding LaSalle County Station, Units  
1 and 2," and ROD that support the  
NRC's issuance of renewed facility  
operating license Nos. NPF-11 and  
NPF-18 are available in ADAMS under  
Accession Nos. ML16264A222 and  
ML16238A029, respectively. As  
discussed in the FSEIS and ROD, the  
NRC considered a range of reasonable  
alternatives to the issuance of the  
renewed licenses that included new  
nuclear power generation, coal-  
integrated gasification combined-cycle,  
natural gas combined-cycle (NGCC), a  
combination of wind, solar, and NGCC,  
purchased power, and the no-action  
alternative. The FSEIS and ROD  
document the NRC's decision with  
respect to its environmental review that  
the adverse environmental impacts of  
issuing the renewed licenses are not so  
great that preserving the option of  
license renewal for energy-planning  
decisionmakers would be unreasonable.

For further details with respect to this  
action, see: (1) The Exelon Generation  
Company, LLC license renewal  
application for LaSalle County Station,  
Units 1 and 2, dated December 9, 2014,  
as supplemented by letters dated  
through June 8, 2016; (2) the NRC safety  
evaluation report dated September 2016  
(ADAMS Accession No. ML16271A039);  
(3) the NRC FSEIS dated August 2016;  
and (4) the NRC ROD dated October  
2016.

Dated at Rockville, Maryland, this 19th day  
of October, 2016.

For the Nuclear Regulatory Commission.

**Jane E. Marshall,**

Acting Director, Division of License Renewal,  
Office of Nuclear Reactor Regulation.

[FR Doc. 2016-25988 Filed 10-26-16; 8:45 am]

BILLING CODE 7590-01-P

## SECURITIES AND EXCHANGE COMMISSION

[Release No. 34-79133; File No. SR-CBOE-  
2016-071]

### Self-Regulatory Organizations; Chicago Board Options Exchange, Incorporated; Notice of Filing of a Proposed Rule Change Relating to Opening and Closing Rotations Under the HOSS System

October 21, 2016.

Pursuant to Section 19(b)(1) of the  
Securities Exchange Act of 1934