



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

November 21, 2013

Mr. Michael P. Gallagher  
Vice President, License Renewal Projects  
Exelon Generation Company, LLC  
200 Exelon Way  
Kennett Square, PA 19348

SUBJECT: REQUESTS FOR ADDITIONAL INFORMATION FOR THE ENVIRONMENTAL  
REVIEW OF THE BYRON NUCLEAR STATION, UNITS 1 AND 2, LICENSE  
RENEWAL APPLICATION

Dear Mr. Gallagher:

By letter dated May 29, 2013, Exelon Generation Company, LLC (Exelon), submitted an application pursuant to Title 10 of the *Code of Federal Regulations* (CFR) Part 54, to renew the operating licenses NPF-37 and NPF-66 for Byron Nuclear Station (Byron), Unit 1 and 2, respectively, for review by the U.S. Nuclear Regulatory Commission (NRC) staff. The NRC staff is reviewing the information contained in the license renewal application and has identified areas where additional information is needed to complete the review. The enclosure lists the environmental requests for additional information (RAIs).

These RAIs were discussed with Ms. Nancy Ranek, and a mutually agreeable date for the response is December 20, 2013 for the environmental RAIs. If you have any questions, please contact me at 301-415-3306 or by e-mail at [lois.james@nrc.gov](mailto:lois.james@nrc.gov).

Sincerely,

A handwritten signature in cursive script, reading "Lois M. James", is positioned above the typed name.

Lois M. James, Project Manager  
Projects Branch 2  
Division of License Renewal  
Office of Nuclear Reactor Regulation

Docket Nos. 50-454 and 50-455

Enclosure:  
Requests for Additional Information

cc: Listserv

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Vice President, License Renewal Projects  
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These RAIs were discussed with Ms. Nancy Ranek, and a mutually agreeable date for the response is 30 days from the date of this letter for the environmental RAIs. If you have any questions, please contact me at 301-415-3306 or by e-mail at [lois.james@nrc.gov](mailto:lois.james@nrc.gov).

Sincerely,

**/RA/**

Lois M. James, Project Manager  
Projects Branch 2  
Division of License Renewal  
Office of Nuclear Reactor Regulation

Docket Nos. 50-454 and 50-455

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Requests for Additional Information

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DATE	10/30/2013	10/30/2013	10/30/2013	10/30/2013	11/21/2013

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Letter to M. Gallagher from L. James dated November 21, 2013

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REVIEW OF THE BYRON NUCLEAR STATION, UNITS 1 AND 2, LICENSE  
RENEWAL APPLICATION

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BYRON NUCLEAR STATION, UNIT 1 AND 2  
LICENSE RENEWAL APPLICATION  
ENVIRONMENTAL REQUESTS FOR ADDITIONAL INFORMATION

**Requests for Additional Information:**

Aquatic

1. Provide the following information:
  - a. (EA Engineering 2012) EA Engineering, Science, and Technology. 2012. Byron Station 2011. Fish and Benthos Monitoring and Historical Fish and Benthos Comparisons. July 2012.
  - b. (ESI 2011) Ecological Specialist, Inc. (ESI) 2011. Unionid Communities near Byron Station, Rock River. ESI Project No. 11-003a. O'Fallon, Missouri. November 2011.
  - c. (Exelon Nuclear 2003a) Exelon Nuclear. 2003. Storm Water Pollution Prevention Plan - Byron Nuclear Power Station. June 2003.
  - d. (Exelon Nuclear 2011c) Exelon Nuclear. 2011. WHC Wildlife Management Plan - Byron Generating Station. Byron, IL.
2. The ER (Section 3.1.3.1, Page 3-6) states, "Byron has an agreement with the Illinois DNR [[Illinois] Department of Natural Resources] to limit consumption of water from the Rock River for makeup to the Byron cooling systems to no more than 9 percent of total river flow during times when the river flow rate drops below 19,200 Lisee (679 cfs)." Is this a condition of the National Pollutant Discharge Elimination System (NPDES) permit? If not, when was this agreement made and where is it documented?
3. The ER (Section 3.1.3.1, Page 3-7) states that the river screen house is equipped with bar grills, traveling screens, and trash racks and that debris is collected in a trash basket and disposed of offsite.
  - a. During the environmental audit conducted in September 2013, a written description of the flow path from when water enters the river screen house to the point at which it enters the pipelines that carry the water to the Byron site was provided and included details such as the spacing of the bar grills, size of traveling screen mesh, and periodicity of traveling screen and trash rack operation.
  - b. Does the Byron intake include a fish return system? If not, are impinged fish disposed of offsite along with the debris collected in the trash basket?

Environmental Justice

1. To help address the provisions of Section 4-4 "Subsistence Consumption of Fish and Wildlife" in Executive Order 12898, the following information is needed to assist the NRC in its environmental justice review:
  - a. Information about current or past wildlife sampling and testing of game animals such as deer, squirrel, turkey, pheasant, duck, fish and other game birds and animals that may have been conducted in the vicinity of Byron. Wildlife sampling and testing may have

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been conducted before, during, and after plant construction and in the early days of plant operation, but was discontinued after determining that tissue samples consistently showed no significant or measurable radiological impact on the environment from plant operations.

2. Provide copies of any interviews or reports related to investigation of subsistence consumption near Byron conducted by Exelon.

#### Historical and Cultural Resources

1. Provide a series of aerial photographs of the entire plant site and associated transmission line(s) (during pre-construction, construction, and post-construction periods) looking at levels of disturbance that occurred during construction or since operation, whether any historic structures or possible sites are present on the property, and identifying any recent projects that will require a review of additional documentation.
2. Provide a copy of the avoidance measures recommended by the Illinois State Historic Preservation Officers (IL SHPO) for construction of Byron as referenced in Section 2.11.2 of the ER.
3. Provide any maintenance or avoidance measures currently in place for site 1106153, or any other site within Byron site boundaries.
4. Provide a description of how historic and cultural resources are considering in land disturbing activities.
5. Provide a description of the process for inadvertent discovery of historic and cultural resources.
6. Provide a description of ComEd's transmission line management plan, including: timing of activities, danger tree removal and other clearing, inspections and repair activities conducted by ground vehicles, standard operating procedures or guidelines for the applicant and any contractors; erosion control procedures, technician training programs, and any regulations that restrict maintenance activities (e.g., looking for activities that could affect depth of disturbance, if any disturbance is necessary along the corridor).
7. Provide information on management around less-developed areas of the plant site, especially near known historic and cultural resources or near unsurveyed areas, if applicable.
8. Provide documentation of construction projects that have occurred on the property since the construction of Byron to determine how historic and cultural resources were considered. Any documentation demonstrating compliance with existing environmental procedures would be useful. What materials are used by the staff to determine whether the SHPO should be consulted?
9. Provide a percentage of disturbed and undisturbed land within the Byron site.

10. Provide information about the percent of leased land within the Byron site; how much of the land within the Byron site is directly owner-controlled?
11. Is there any formal cultural resource training for Byron staff?

#### Human Health—Microbiological Organisms

1. Provide NPDES monthly discharge monitoring reports for the past 5 years.
2. The ER (Page 4-30) states, "The highest daily blowdown temperature reported in recent years was 36°C (97°F), in August 2009 (Byron Station Monthly Discharge Monitoring Report for August 2009)." Does this statement remain true since the submission of the license renewal application?
3. Provide a description of the procedures or protocol that Exelon maintains to ensure that workers performing maintenance and cleaning of cooling towers are not exposed to *Legionella* spp. or other potentially harmful thermophilic microorganisms.
4. The ER (Page 4-30) states that Exelon chlorinates Rock River water used in the circulating and service water systems to control the survival and growth of thermophilic microorganisms. Briefly describe the chlorination process (i.e., concentration, periodicity, etc.)
5. Does Exelon monitor for any thermophilic microorganisms in Byron's cooling system, cooling towers, or in the Rock River near the Byron thermal discharge? If so, describe the monitoring methods, periodicity, and results.

#### Meteorology, Air Quality, and Noise

1. Provide a copy of Byron's Federally enforceable state operating permit for stationary emission sources (standby emergency diesel generators, auxiliary boilers, auxiliary feedwater pumps, essential service water makeup water pumps, a fire pump, and cooling towers).
2. Provide copies of Byron's annual air emission reports for the most recent 5 years.
3. Identify combustion sources of hazardous air pollutants (HAPs) at Byron and amount released for the most recent 5 years.
4. Are there expected upgrade/replacement activities for equipment/operation that could increase or decrease air emissions over the license renewal period?
5. The ER provides carbon dioxide (CO<sub>2</sub>) emissions from stationary combustion sources at Byron. Provide available site-wide emission inventory data (annual) for greenhouse gases (GHG) for the most recent 5 years. Emissions should include stationary combustion sources, mobile sources (commuters, visitors, delivery vehicle, etc.) and other sources (refrigerant leakage, emissions from switchyard). Address the following:
  - a. Identify and discuss the GHG emission sources;

- b. Provide information (e.g., operating hours per year, fuel consumption and rates, and energy rating as applicable for each source) used to support the GHG emission values provided; and
  - c. Provide a description of procedure EN-AA-201-2020.
- 6. Provide the following meteorological information from the data recorded at Byron's meteorological facility. The meteorological data should include the most recent 5 years for which data is available; along with the documentation for data file formats and units. Provide the following information:
  - a. Mean monthly and annual temperatures.
  - b. Mean monthly precipitation and annual precipitation.
  - c. Seasonal and annual summary of wind statistics in the form of wind direction and speed frequency distribution tables and wind roses. Discuss predominant wind direction and speed by season and annual average, local terrain features affecting wind direction and speed, and provide a value for annual average wind speed.
- 7. Provide general aspects of meteorological data acquisition and management:
  - a. Type of instruments and instrument heights along with schematic diagrams of primary and backup monitoring system from towers to computer display.
  - b. Provide a description of procedures for calibration and maintenance of meteorological instruments.
  - c. Provide a description of procedures for collection, evaluation, validation, and management of meteorological data, including quality assurance/quality control (QA/QC).
- 8. Provide noise emissions studies conducted at Byron, if any.
- 9. Provide ambient noise survey in and around the site, if any.
- 10. Provide information about any noise complaints for the most recent 5 years, resulting from plant operation.
- 11. Identify primary noise sources at Byron and in the vicinity of Byron. Please identify if the noise sources are located outdoors or in enclosures.
- 12. Identify nearby noise-sensitive receptors (e.g., residences, school, nursing home, childcare facility).
- 13. Provide the staff Interview Form New and Significant Information Identification Process (issue and discussion: 58. "Noise," page 81 of 149) reviewed during the environmental audit conducted in September 2013. Clarify the timeline/dates the noise complaints that are mentioned in the Interview Form were raised and measures taken as a result of the complaints.

14. In support of NRC's greenhouse gas, climate change, and cumulative impacts analysis, address the following:
  - a. Has an atmospheric warming trend been observed in Rock River Hill County during the period of plant operations? Provide available data to support the conclusions reached (e.g., mean daily maximum annual temperatures, mean daily minimum annual temperatures, or mean annual temperature for the available period of record from Byron's meteorological station).
  - b. Has a river warming trend been observed in the Rock River during the period of plant operations? Provide any study(ies) or data that support the conclusions reached (e.g., mean annual, seasonal, and/or monthly water temperature trend for the period of record).

#### Refurbishment

1. Chapter 3 of the ER states that Exelon has no plans for refurbishment or replacement activities at Byron and hypothetically assumes that replacement of the Unit 2 steam generators may occur prior to the end of the 40-year initial license term (page 3-18 of the ER). However, for the air quality refurbishment issue presented in Chapter 4, Exelon assumes that replacement of the Unit 2 steam generators may occur "during the license renewal term" (page 4-26 of the ER). Please clarify the expected timeframe (year) that the Unit 2 steam generator replacement would occur and whether this hypothetical activity should be considered refurbishment. Will steam generator replacement occur prior to the end of the current license or during the period of extended operation?
2. In support of NRC's analysis of the impacts of Unit 2 steam generator replacement, please address the following questions:
  - a. How many temporary or permanent buildings will be constructed to support steam generator replacement activities?
  - b. What is the estimated footprint (ft<sup>2</sup>) of new buildings to be constructed? What is the estimated depth of excavation?

#### Socioeconomic

1. Provide updated permanent workforce data, preferably a residential distribution of permanent workforce by county in Table format.
2. Provide updated property tax information, similar to the data provided in Tables 2.7-2 and 2.7-3 of the ER. Include data for the years 2011 and 2012, if available.
3. Byron's last tax settlement agreement was signed on November 8, 2008, and covered tax years 2005 through 2011. What is the status of the latest settlement agreement for current and future tax years?
4. In accordance with the 2008 settlement agreement, Exelon agreed to make payments in addition to taxes (PIATs) to specific tax recipients. Under the agreement, Exelon made two PIAT payments of \$2,302,000 each; one in 2008 and the other, in 2010. Will there be



additional PIATs in the future? If so, will there be any changes to the list of recipients in ER Table 2.7-1? Provide any relevant information.

5. Exelon pays annual property taxes to a number of taxing entities within, and including, Ogle County. The Ogle County Treasurer collects Byron's property tax payment and disperses it to the various taxing entities to partially fund their respective operating budgets. Provide additional information about tax payments to Ogle County (after tax triggers and not including PIAT payments) and the portion of the county tax monies allocated to "the Byron Forest Preserve, the Oregon Park District, the Rock Valley Community College 511, the Byron Unit 226 School District, the Byron Fire District, the Byron Library District, Ogle County, and Rockvale Township." A brief explanation of how these payments are allocated would be helpful. A table showing the amount of distribution (or percentage) of the Byron property tax payment and each entity's total revenue (or percent of total revenue) would also be helpful. It's important to know how dependent some of these entities may be on the revenue received from the Byron property tax payment via Ogle County.
6. In addition to property tax payments and PIAT information presented in Section 2.7 of the ER, describe any other major annual support payments, one time payments, and other forms of non-tax compensation (if any) provided to local organizations, communities, and jurisdictions (e.g., county, municipality, townships, villages, incorporated places, and school districts) on behalf of Byron.
7. Provide information about any anticipated changes in State and local tax laws, rates, and assessed property value or any other recent or anticipated tax payment adjustments that could result in notable future increases or decreases in property taxes or other payments.

#### Special Status Species and Habitats

1. The June 20, 2013, final rule that amended 10 CFR Part 51 revised the scope of the transmission line review for license renewal to be those "transmission lines that connect the nuclear power plant to the substation where electricity is fed into the regional power distribution system and transmission lines that supply power to the nuclear plant from the grid" (see 10 CFR 51, Appendix B to Subpart A, Table B 1, Footnote 4). Accordingly, the NRC staff will only consider those transmission lines that meet this definition in its environmental review.
  - a. Identify the name and location of the substation that connects Byron to the regional grid.
  - b. Clarify which portions of the four 345-kV lines described in Section 3.1.6 of the ER are in scope for the license renewal review according to the 2013 definition.
  - c. Confirm that the following statement regarding transmission lines that supply power to Byron remains true under the 2013 transmission line scope (Section 3.1.6, Page 3-13, Paragraph 2, of the ER): "No separate transmission lines exist for the purpose of supplying power to Byron from the grid (off-site power)."
2. Provide all reports of "unusual or important environmental events" reportable under Appendix B, Section 4.1 to the Byron Operating Licenses (NPF-37 and NPF-66) that have occurred within the past 10 years (2003-2013). As stated in Section 4.1 of the ER, this would include events such as excessive bird impactation events, onsite plant or animal disease outbreaks, mortality or unusual occurrence of any species protected by the

Endangered Species Act of 1973, fish kills, increase in nuisance organisms or conditions, and unanticipated or emergency discharge of waste water or chemical substances.

#### Terrestrial Ecology

1. Byron appears to be located in the vicinity of the Castle Rock State Park and Lowden-Miller State Forest Important Bird Area (IBA) described here: <http://netapp.audubon.org/IBA/Site/1698>. Based on the NRC staff's initial review, the Byron site boundaries and the in-scope transmission line corridors do not appear to cross any designated IBAs. Confirm whether these statements are true.
2. In Section 2.4 (Page 2-25), the ER states that "bat houses have been erected and are monitored" on the Byron site as part of wildlife habitat enhancement and conservation education activities. Provide any monitoring information available on these bat houses, including their locations and any information on what species of bat inhabit them, if any.
3. Section 4.9, Page 4-22, of the ER states that, "All refurbishment activities would occur on previously-disturbed or developed areas that are devoid of natural habitat...." Describe the specific records or information reviewed to determine that the potentially affected areas are devoid of natural habitat, including whether any surveys were conducted.
4. Section 4.9, Page 4-22, of the ER states that, "Some songbirds could be temporarily displaced by noise, machinery, and personnel associated with refurbishment activities, but such disturbances would be temporary and minor." Provide a reference, or describe how this conclusion was reached.
5. Section 3.1.6, Page 3-14, of the ER states, "The intention is for these transmission lines to remain a permanent part of the transmission system even after Byron is decommissioned." Provide a written source from ComEd to support this statement.

#### Water Resources – Groundwater

1. Provide copies of the following ER references:
  - a. (Exelon Nuclear 2011b) Exelon Nuclear, 2011, "Hydrogeologic Investigation Report, May 2011." As discussed during the environmental audit conducted in September 2013.
  - b. The last 5 years of annual reports submitted to the Illinois State Water Survey reporting the pumping rates of high-capacity wells at the plant.
2. Provide groundwater water quality monitoring data (including radiological constituents) for the period from the last submittal to the NRC up to the present.

#### Water Resources – Surface Water

1. Provide copies of the following ER references:
  - a. Agreement with Illinois Environmental Protection Agency (IEPA) limiting Byron's consumptive use of surface water.
  - b. Byron Storm Water Pollution Prevention Plan.

- c. A large scale map or maps depicting NPDES outfall locations.
  - d. Application for Clean Water Act Section 401 Certification referenced in Exelon's July 2, 2012, letter to the IEPA.
  - e. Copy of Illinois DNR/Office of Water Resources (OWR) permit 15001 issued April 1977, to Commonwealth Edison (as referenced in IDNR letter to Exelon dated July 10, 2012).
  - f. Copies of any Notices of Violation (NOVs), nonconformance notifications, or related infractions received from regulatory agencies associated with NPDES permitted discharges, sanitary sewage systems, groundwater or soil contamination, including spills, leaks, and other inadvertent releases of fuel solvents, chemicals, or radionuclides (covering past 5 years). Include correspondence of self-reported violations to responsible agencies.
  - g. Copy of IEPA Water Pollution Control Permit No. 2011-EP-1250 (Hauling of Sanitary Wastewater Tributary to the City of Oregon [wastewater treatment plant] WWTP) and IEPA Permit No. 2009-SC-2169-1 (Land Application of Sludge).
  - h. Provide a description of the methodology/procedure used to ensure compliance with instream flow requirements (i.e., adjusting cooling water system (CWS) makeup and blowdown).
2. Provide all non-radiological monitoring reports from the last 5 years, including NPDES Discharge Monitoring Reports and surface water withdrawal records/reports. For discharge monitoring reports (DMR), provide data for 2010, 2011, 2012, and 2013 year to date.
3. Regarding dredging near the River Screen House:
- a. Provide the following information regarding dredging near River Screen House, including a description of the last time dredging was done (about 8 or 9 years ago):
    - (1) Schedule (frequency)
    - (2) Volume withdrawn
    - (3) Methods used
    - (4) How spoils were/are managed.
  - b. Provide copies of any responses/authorizations from Army Corp of Engineers.
  - c. Provide the results of any sampling of dredge spoils.
4. Per NPDES permit, special condition #12, provides a discussion on the methodology or procedure employed to calculate temperature at the edge of the river mixing zone.
5. Water Quality Standard demonstration required by NPDES permit special condition #12 - Over the last 10 years, how many times has the change in temperature (delta-T) at the edge of the mixing zone or the maximum observed in-stream temperature (T-max) been approached (i.e., with 5°F) or exceeded and when? Where such instances have occurred, please provide dates of occurrence and supporting observations for river temperature, river flow, blowdown discharge temperature, and discharge flow.
6. When was the last time metal cleaning waste was discharged from any of the plant NPDES outfalls? Please provide a description of the nature of the discharge including volume discharged and chemical quality.