NRR-PMDAPEm Resource

From: James, Lois
Sent: Wednesday, November 25, 2015 7:51 AM
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Subject: Publication of Byron Renewed License Federal Register Notice and Record of Decision
Attachments: Byron Renewed License FRN.pdf; Byron Renewed License Record of Decision.pdf

To All:

Attached you will find two documents:

1. The *Federal Register* Notice announcing the issuance of the Byron Renewed License and Record of Decision
2. The Byron Renewed License Record of Decision (ADAMS Accession No. ML15187A304)

Respectfully,

Lois James, Senior Project Manager
U.S. Nuclear Regulatory Commission

Hearing Identifier: NRR_PMDA
Email Number: 2511

Mail Envelope Properties (Lois.James@nrc.gov20151125075100)

Subject: Publication of Byron Renewed License Federal Register Notice and Record of Decision
Sent Date: 11/25/2015 7:51:24 AM
Received Date: 11/25/2015 7:51:00 AM
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Files	**Size**	**Date & Time**
MESSAGE	338	11/25/2015 7:51:00 AM
Byron Renewed License FRN.pdf	199210	
Byron Renewed License Record of Decision.pdf	127034	

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

NUCLEAR REGULATORY COMMISSION

[Docket Nos. 50–454 and 50–455; NRC–2013–0169]

License Renewal for Byron Station, Units 1 and 2

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–37 and NPF–66 to Exelon Generation Company, LLC (Exelon or the licensee), the operator of Byron Station, Units 1 and 2 (Byron), respectively. Renewed facility operating license Nos. NPF–37 and NPF–66 authorize operation of Byron Units 1 and 2 by the licensee at reactor core power levels not in excess of 3645 megawatts thermal each, in accordance with the provisions of the Byron Units 1 and 2 renewed licenses and technical specifications. In addition, the NRC has prepared a record of decision (ROD) that supports the NRC's decision to renew facility operating license Nos. NPF–37 and NPF–66.

DATES: The license renewal of facility operating license Nos. NPF–37 and NPF–66 were effective on November 19, 2015.

ADDRESSES: Please refer to Docket ID NRC–2013–0169 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–2013–0169. Address questions about NRC dockets to Carol Gallagher; telephone: 301–415–3463; email: *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.* The ADAMS accession number for each document referenced (if that document is available in ADAMS) is provided the first time that a document is referenced.
- 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: John Daily, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission, Washington, DC 20555–0001; telephone: 301–415–3873; email: *John.Daily@nrc.gov.*

SUPPLEMENTARY INFORMATION:

Notice is hereby given that the NRC has issued renewed facility operating license Nos. NPF–37 and NPF–66 to Exelon Generation Company, LLC, the operator of Byron. Renewed facility operating license Nos. NPF–37 and NPF–66 authorize operation of Byron Units 1 and 2 by the licensee at reactor core power levels not in excess of 3645 megawatts thermal each, in accordance with the provisions of the Byron, Units 1 and 2 renewed licenses and technical specifications. The NRC's ROD that supports the NRC's decision to renew facility operating license Nos. NPF–37 and NPF–66 is available in ADAMS under Accession No. ML15187A304. As discussed in the ROD and the final supplemental environmental impact statement (FSEIS) for Byron Station, Supplement 54 to NUREG–1437, ''Generic Environmental Impact Statement for License Renewal of Nuclear Plants Regarding Byron Station, Units 1 and 2,'' dated July 2015 (ADAMS Accession No. ML15196A263), the NRC has considered a range of reasonable alternatives that included new nuclear generation, coal-integrated gasification combined cycle, natural gas combined-cycle (NGCC), combination (NGCC, wind, and solar generation), replacement power, and the no-action alternative. The ROD and FSEIS document the NRC determination that the adverse environmental impacts of license renewal for Byron are not so great that preserving the option of license renewal for energy planning decision makers would be unreasonable.

Byron Station, Units 1 and 2 has two pressurized water reactors and is located in Ogle County, Illinois. The application for the renewed licenses, ''License Renewal Application, Byron and Braidwood Stations, Units 1 and 2,'' dated May 29, 2013 (ADAMS Accession Nos. ML13155A420 and ML13155A421, respectively), as supplemented by letters dated through April 13, 2015, with respect to Byron Station, complied with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the NRC's regulations. As required by the Act and the NRC's regulations in Chapter I of title 10 of the *Code of Federal Regulations,* the NRC has made appropriate findings, which are set forth in each of the licenses. A public notice of the proposed issuance of the renewed licenses and an opportunity for a hearing was published in the **Federal Register** on July 24, 2013 (78 FR 44603).

For further details with respect to this action, see: (1) Exelon Generation Company, LLC's (Exelon) license renewal application for Byron Station, Units 1 and 2, and Braidwood Station, Units 1 and 2, dated May 29, 2013, as supplemented by letters dated through April 13, 2015; (2) the NRC's safety evaluation report dated July 2015 (ADAMS Accession No. ML15182A051); (3) the NRC's final environmental impact statement (NUREG–1437, Supplement 54), for Byron, Units 1 and 2, published in July 2015; and (4) the NRC's ROD.

Dated at Rockville, Maryland, this 19th day of November, 2015.

For the Nuclear Regulatory Commission.

Christopher G. Miller,

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

[FR Doc. 2015–30021 Filed 11–24–15; 8:45 am]

BILLING CODE 7590–01–P

NUCLEAR REGULATORY COMMISSION

[NRC–2015–0245]

Performance Review Boards for Senior Executive Service

AGENCY: Nuclear Regulatory Commission.

ACTION: Appointments.

SUMMARY: On October 27, 2015, the U.S. Nuclear Regulatory Commission (NRC) announced its appointments to the NRC Performance Review Board (PRB) responsible for making recommendations on performance appraisal ratings and performance awards for the NRC Senior Executives and Senior Level System employees, and appointments to the NRC PRB Panel responsible for making recommendations to the appointing and awarding authorities for the NRC PRB members. This notice announces a change in the membership of the Senior Executive Service PRB for the NRC.

DATES: November 25, 2015.

ADDRESSES: Please refer to Docket ID NRC–2015–0245 when contacting the NRC about the availability of

RECORD OF DECISION
U.S. NUCLEAR REGULATORY COMMISSION
DOCKET NOS. 50-454 AND 50-455
LICENSE RENEWAL APPLICATION FOR
BYRON STATION, UNITS 1 AND 2

BACKGROUND:

The U.S. Nuclear Regulatory Commission (NRC or Commission) received an application, dated May 29, 2013, from Exelon Generation Company, LLC (Exelon), filed pursuant to Section 103 of the Atomic Energy Act of 1954, as amended (AEA), and Title 10 of the *Code of Federal Regulation* (CFR) Parts 51 and 54, to renew the operating licenses for the Byron Station, Units 1 and 2 (Byron). Renewal of the license would authorize the applicant to operate Byron for an additional 20 year period beyond that specified in the respective current operating licenses.

Byron is a two-unit nuclear power plant located in Ogle County, Illinois. The nuclear reactor for each of the Byron units is a Westinghouse pressurized-water reactor, producing a reactor core rated thermal power of 3,645 megawatts (MWt). The combined net electrical output from both Byron units is approximately 2,394 megawatts-electric (MWe). Byron uses a closed-cycle cooling tower-based heat dissipation system. In closed-cycle systems, water travels through the system to cool plant condensers and other system components and is then routed to cooling towers, which dissipate excess heat through evaporation. Makeup water is withdrawn from the Rock River through an intake structure on the east bank of the river. Byron began commercial operation in September 1985 (Unit 1) and August 1987 (Unit 2). The current operating licenses for Byron, Units 1 (NPF-37) and 2 (NPF-66), expire on October 31, 2024, and November 6, 2026, respectively.

The NRC accepted Exelon's application and began the environmental review on July 24, 2013 (78 *Federal Register* (FR) 44603). Section 102 of the National Environmental Policy Act of 1969, as amended (NEPA), directs that a detailed statement be prepared for major Federal actions significantly affecting the quality of the human environment. By Commission policy, the NRC prepares an environmental impact statement (EIS) for all license renewal applications, regardless of the action's environmental impact significance (10 CFR 51.20(b)(2)). The NRC's major Federal action is to decide whether to renew the Byron operating licenses for an additional 20 years.

Consistent with 10 CFR Part 51, the NRC staff published a Notice of Intent to prepare an EIS and conduct scoping in the *Federal Register* (78 FR 47800) on August 6, 2013. In addition, Federal, State, and local agencies as well as Tribal governments were notified and asked to provide comment on and to participate in the environmental review. On August 20, 2013, the NRC staff held two public meetings in Byron, Illinois, to obtain public input on the scope of the

environmental review related to the Byron license renewal application. All oral and written comments received during the scoping period were reviewed to identify individual comments. A Scoping Summary Report of this review was issued on May 28, 2014 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML13269A006).

The NRC's environmental review involves the preparation of a site-specific EIS, which is a supplement to the Commission's NUREG-1437, "Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants" (GEIS), in accordance with 10 CFR 51.95(c). The GEIS documents the results of a systematic approach to evaluate the environmental consequences of renewing the operating licenses of nuclear power plants for an additional 20 years.

The GEIS serves to facilitate NRC's environmental review process by identifying and evaluating environmental impacts that are considered generic (Category 1) issues, which are common to all nuclear power plants. Plant-specific impact (Category 2) issues are addressed in supplemental EISs (SEISs) to the GEIS. Generic impacts will be reconsidered in SEISs only if there is new and significant information that would change the conclusions in the GEIS.

A standard of significance was established for each NEPA issue evaluated in the GEIS based on the Council on Environmental Quality (CEQ) terminology for "significantly" (see 40 CFR 1508.27). Since the significance and severity of an impact can vary with the setting of the proposed action, both "context" and "intensity," as defined in CEQ regulations 40 CFR 1508.27, were considered. Context is the geographic, biophysical, and social context in which the effects will occur. In the case of license renewal, the context is the environment surrounding the nuclear power plant. Intensity refers to the severity of the impact in whatever context it occurs. Based on this, the NRC established three levels of significance for potential impacts, SMALL, MODERATE, and LARGE, as defined below.

> SMALL: Environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource.
>
> MODERATE: Environmental effects are sufficient to alter noticeably, but not to destabilize, important attributes of the resource.
>
> LARGE: Environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.

The NRC staff did not identify any new and significant information related to Category 1 issues that would call into question the conclusions in the GEIS. This conclusion is supported by

- the NRC staff's review of the applicant's environmental report and other documentation relevant to Exelon's activities at Byron,
- consideration of comments received during scoping and the public comment period on the draft SEIS,
- consultation with Federal, State, and local agencies, and
- the environmental site audit conducted by NRC staff.

The NRC issued a draft site-specific SEIS for public comment on December 23, 2014 (ADAMS Accession No. ML14357A042). A 45-day comment period began on the date the U.S. Environmental Protection Agency published a Notice of Availability of the filing of the draft SEIS. This allowed members of the public and agencies time to comment on the environmental review. On February 3, 2015, the NRC conducted two public meetings in Byron, Illinois, to describe the results of the environmental review, respond to questions, and accept public comments.

The NRC issued the final SEIS for the Byron license renewal application in July 2015 (ADAMS Accession No. ML15196A263). All comments received during the comment period are included in Appendix A of the final SEIS. In the final SEIS, the NRC staff concluded that the environmental impacts of renewing the Byron operating license are not so great that preserving the option of license renewal for energy-planning decision-makers would be unreasonable.

Pursuant to 10 CFR 51.102(b) and 51.103(a)(1)-(5), the NRC staff has prepared this record of decision (ROD) to document its action on the Byron license renewal application. In accordance with 10 CFR 51.103(c), this ROD incorporates by reference the material contained in the final SEIS.

DECISION:

The NRC decides to approve the license renewal application based on whether the applicant has demonstrated that the environmental and safety requirements in the agency's regulations will be met during the period of extended operation. The results of the NRC's safety review of the Byron license renewal application are documented in the safety evaluation report (ADAMS Accession No. ML15182A051). By letter dated September 21, 2015, the Advisory Committee of Reactor Safeguards (ACRS) notified the Commission of its recommendation to approve the application for renewal of Byron's operating license (ADAMS Accession No. ML15264A955).

This ROD and the final SEIS, which are incorporated by reference herein, document the NRC's decision for the environmental review that the adverse environmental impacts of license renewal for Byron are not so great that preserving the option of license renewal for energy planning decision-makers would be unreasonable. See 10 CFR 51.103(a)(5). Under its renewed licenses, Exelon is authorized to continue operating Byron, Units 1 and 2, for an additional 20 years beyond the expiration of the current operating licenses, as requested in the license renewal application.

PURPOSE AND NEED:

As identified in Section 1.2, "Purpose and Need for the Proposed Action," of the final SEIS, the purpose and need for the proposed action (issuance of renewed licenses) is to provide an option that allows for power generation capability beyond the term of a current nuclear power plant operating license to meet future system generating needs, as such needs may be determined by energy-planning decision-makers, such as State, utility, and, where authorized, Federal agencies (other than NRC). This definition of purpose and need reflects the Commission's recognition that, unless there are findings in the safety review required by the AEA or findings in the NEPA environmental analysis that would lead the NRC to reject a license

renewal application, the NRC does not have a role in the energy-planning decisions as to whether a particular nuclear power plant should continue to operate.

A renewed license is just one of a number of conditions that licensees must meet to operate its nuclear plant during the license renewal term. State regulators, system operators, the licensee (Exelon), and other agencies, ultimately decide whether Byron will continue to operate based on factors such as the need for power or other factors within the state's jurisdiction or owner's control.

NRC EVALUATON OF ALTERNATIVES:

In license renewal environmental reviews, the NRC considers the environmental consequences of the proposed action, the no-action alternative (i.e., not renewing the operating licenses), and the environmental consequences of various alternatives for replacing the nuclear power plant's generating capacity. Section 102(2)(C)(iii) of NEPA and NRC regulations require the consideration of alternatives to the proposed action in the EIS. In this case, the proposed action is whether to issue renewed licenses for the continued operation of Byron, which would allow the plant to operate for 20 years beyond the current expiration dates of its licenses. Chapter 2 of the SEIS, "Alternatives Including the Proposed Action," presents alternatives to the proposed action (license renewal) that were considered in detail and those alternatives that were eliminated from detailed study. Chapter 4, "Environmental Consequences and Mitigating Actions," compares the impacts of renewing the Byron operating licenses and continued plant operations to the environmental impacts of alternatives. The evaluation considered environmental impacts of each alternative across the following impact areas: land use and visual resources, air quality and noise, geologic environment, surface water use and quality, groundwater use and quality, terrestrial ecology, aquatic ecology, special status species and habitats, historic and cultural resources, socioeconomics, human health, environmental justice, and waste management.

In evaluating alternatives to license renewal, the NRC considered energy technologies in commercial operation, as well as technologies not in commercial operation but likely to become commercially available by the time the current Byron operating licenses expire. The current operating licenses for Byron, Units 1 and 2, will expire on October 31, 2024, and November 6, 2026, respectively, and, therefore, reasonable power alternatives must be available (i.e., constructed, permitted, and connected to the grid) by the time the current Byron licenses expire to be considered in this evaluation.

The NRC staff initially considered 17 alternatives; 12 of these were eliminated from detailed study because of existing technical, resource availability, or commercial limitations. These limitations are likely to continue when the Byron operating licenses expire, rendering these alternatives not feasible or commercially viable. The no-action alternative (i.e., not renewing the Byron operating licenses) was also considered. Alternatives considered, but eliminated from detailed study were as follows:

- energy conservation and energy efficiency,
- solar power,
- wind power,
- biomass power,

- hydroelectric power,
- wave and ocean energy,
- fuel cells,
- delayed retirement,
- geothermal power,
- municipal solid waste,
- petroleum, and
- supercritical pulverized coal.

The basis for the elimination of each alternative is explained in Chapter 2 of the final SEIS.

The five remaining alternatives were analyzed in detail in the final SEIS. Replacement power alternatives were:

- new nuclear alternative
- integrated gasification combined cycle (IGCC) coal alternative
- natural gas combined-cycle (NGCC) alternative
- combination alternative (NGCC, wind, solar)
- purchased power alternative

Impacts of each replacement power alternative are summarized in Table 2-2 of the final SEIS.

ALTERNATIVE EVALUATION:

i. No-Action Alternative

The No-Action alternative refers to a scenario in which the NRC denies the renewed operating licenses for Byron and the licenses expire at the end of the current license terms, 2024 and 2026. The environmental consequences of this alternative are the impacts from the termination of nuclear power plant operations and the impacts of a range of energy sources that might be used if a nuclear power plant operating license were not renewed. After shut down, the licensee would begin the decommissioning process in accordance with 10 CFR 50.82.

Assuming that there is a need for the electric power generated by Byron, the No-Action alternative would create a situation where energy planning decision-makers (not NRC) would have to choose an alternative to replace the electric power previously provided by Byron. These alternatives could include energy conservation, purchased power, or some combination of measures to offset the loss and replace the electric power previously provided by Byron. The environmental review includes a comparison of the environmental impacts of license renewal with impacts of the range of energy sources that may be chosen in the case of not renewing the Byron operating licenses.

ii. Alternative Energy Sources

This section summarizes the impact analysis of five replacement power alternatives considered in detail in the final SEIS.

New Nuclear

For the new nuclear alternative, the NRC staff assumes that two new nuclear reactors would be constructed and operated on an existing nuclear or coal power plant site, allowing for the maximum use of existing ancillary facilities at those locations, such as support buildings and transmission infrastructure. In 1987, Illinois enacted a moratorium preventing the construction of new nuclear power plants within the State. Until the moratorium is lifted, a new nuclear alternative would require siting elsewhere in the region of influence (ROI), defined as the confines of the States of Illinois, Indiana, Iowa, Kentucky, Michigan, Missouri, or Wisconsin. This analysis assumes two Westinghouse AP1000 reactors with a net electrical output of 2,240 MWe would replace Byron's current reactors for this alternative. The new reactors may require a new cooling system (including natural draft cooling towers and intake and discharge structures). The NRC staff assumes that water requirements for the new nuclear alternative would be similar to current water use at Byron. New onsite transmission lines and drinking water wells may be required if insufficient infrastructure occurs on the site. The NRC staff estimated that 324 acres (ac) (131 hectares (ha)) of land would be required on a long-term basis because of permanent facilities, and an additional 232 ac (94 ha) would be disturbed for temporary facilities, a laydown area, and storage of dredge material.

IGCC

For the IGCC alternative, the NRC staff evaluated the construction and operation of four IGCC units, each with a net capacity of 618 MWe. An IGCC power plant consists of coal gasification and combined-cycle power generation. Coal gasifiers convert coal into a gas (synthesis gas, also referred to as syngas) which fuels the combined-cycle power generating units. The combined-cycle system for a 618-MWe IGCC power plant includes two combustion turbines, two heat recovery steam generators, and a steam turbine. The IGCC alternative would be located at an existing site (such as an existing power plant site) to maximize availability of infrastructure and reduce other environmental impacts. The NRC staff assumes the cooling system would use a closed-cycle system with mechanical draft cooling towers. Cooling water withdrawal would be approximately 25 million gallons per day (mgd) and consumptive water use would be approximately 20 mgd. The NRC staff estimated that 2,000 ac (800 ha) would be required for the major permanent facilities and 1,100 ac (450 ha) would be needed each year for mining.

NGCC

For the NGCC alternative, the NRC staff evaluated the construction and operation of five NGCC units, each with a net capacity of 560 MWe. An NGCC system consists of a turbine that burns natural gas. This 2,800-MWe NGCC plant would consume 124 billion cubic feet (ft^3) (3,500 million cubic meters (m^3)) of natural gas annually, assuming an average heat content of 1,021 British thermal units per cubic foot (BTU/ft^3). The NGCC alternative would be located at an existing power plant site to maximize availability of infrastructure and reduce other environmental impacts. Depending on the specific site location, there might be a need to construct new intake and discharge facilities and a new cooling system. Because NGCC power plants generate much of their power from a gas-turbine combined-cycle plant, and the overall thermal efficiency of this type of plant is high, an NGCC alternative would require less cooling water than Byron would. The NRC staff assumes the cooling system would use a closed-cycle

system with mechanical draft cooling towers. Cooling water withdrawal would be approximately 17 mgd and consumptive water use would be approximately 13 mgd. The NRC staff estimated that 94 ac (38 ha) would be required for the plant, including pipelines and another 10,080 ac (4,079 ha) for gas extraction and collection.

Combination (NGCC, wind, solar)

For the combination alternative (NGCC, wind, solar), the NRC staff evaluated the combination of an NGCC facility constructed at an existing power plant site, operating in conjunction with land-based wind farms as well as solar energy facilities, all of which would be located within the ROI. For the NGCC portion of the combination alternative, NRC staff assumes that one new NGCC unit of the type previously described would be constructed and installed at an existing power plant site with a total net capacity of 360 MWe. The appearance and impacts of an NGCC unit would be similar to that of the full NGCC alternative considered previously, although only one unit would be constructed. The NRC staff assumes that the NGCC portion of this alternative, which is assumed to be located at an existing power plant site, would utilize existing electrical switchyards, substations, and transmission lines. The NRC staff assumed the cooling system for the NGCC portion would use closed-cycle with mechanical draft cooling towers. The cooling water for the combination alternative would be 15% of that required for NGCC alternative. The NRC staff estimated that the land use for the NGCC portion would remain the approximately the same as the NGCC alternative at 94 ac (38 ha).

For the wind portion of the combination alternative, the NRC staff assumes that the wind-generated power would come from land-based wind farms which would be located in the ROI. The NRC staff assumed a capacity factor of 30 percent, resulting in an estimated total net capacity of 1,813 MWe. Wind turbines must be well-separated from each other to avoid interferences to wind flowing through the wind farm, resulting in wind farms requiring substantial amounts of land. Each wind turbines may require as much as 1 to 3 ac (0.4 to 1.2 ha) of land. Based on the size of the turbines and amount of land required between each turbine, approximately 3,376 turbines and up to 10,127 ac (1,366 to 4,098 ha) would be required for the wind portion of the combination alternative. The water use for the wind portion would be minimal.

For the solar portion of the combination alternative, the NRC staff assumes solar photovoltaic facilities with a capacity factor of 19 percent and would require approximately 7,397 ac (2,993 ha) to support an installed net capacity of 227 MWe. In this analysis, the NRC staff does not speculate on the number and size of individual solar facilities, nor their locations within the ROI. Solar photovoltaic systems do not require water for cooling purposes, but a small amount of water is needed to clean the panels and for potable water for the workforce.

Purchase Power

Purchased power would likely come from the most common types of electricity generation within the ROI: coal, natural gas, nuclear, and wind. All of these power sources are discussed as alternatives to license renewal of Byron. Purchased power may require new transmission lines (which may require new construction) and may also rely on older and less-efficient power plants operating at higher capacities than they currently operate or new facilities that would be constructed. During operations, impacts from nuclear, coal-fired, and natural gas-fired plants,

wind, and solar energy projects would be similar to that described under the new nuclear, coal, natural gas, and combination alternatives.

iii. Summary

The environmental impacts of license renewal and alternatives to license renewal, including other methods of power generation, and not renewing the Byron operating licenses (the no-action alternative) were evaluated in the final SEIS. The NRC staff concluded that the continued operation of Byron during the license renewal term would have SMALL environmental impacts for all resource areas. The NRC staff also concluded that the environmental impacts of renewal of the operating licenses for Byron would be smaller than those of replacement power alternatives. In addition, NRC staff concluded that under the no-action alternative, the act of shutting down Byron would have SMALL impacts.

A summary of the environmental impacts associated with the license renewal and alternatives, by resource areas, is provided in the table below.

Summary of Environmental Impacts of Proposed Action and Alternatives

Impact Area (Resource)	Byron License Renewal (Proposed Action)	No-Action	New Nuclear Alternative	IGCC Alternative	NGCC Alternative	Combination Alternative (NGCC, Wind, Solar)	Purchased Power
Land Use and Visual Resources							
Land Use	SMALL	SMALL	SMALL	SMALL TO MODERATE	SMALL	SMALL TO MODERATE	SMALL
Visual Resources	SMALL	SMALL	SMALL TO MODERATE	SMALL TO MODERATE	SMALL TO MODERATE	SMALL TO LARGE	SMALL
Air Quality and Noise							
Air Quality	SMALL	SMALL	SMALL	MODERATE	MODERATE	SMALL TO MODERATE	SMALL TO MODERATE
Noise	SMALL	SMALL	SMALL	SMALL TO MODERATE	SMALL	SMALL TO MODERATE	SMALL TO MODERATE
Geologic Environment	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Water Resources							
Surface Water Resources	SMALL	SMALL	SMALL TO MODERATE	SMALL TO MODERATE	SMALL	SMALL	SMALL TO MODERATE
Groundwater Resources	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Terrestrial Resources	SMALL	SMALL	SMALL TO MODERATE	MODERATE	SMALL TO MODERATE	SMALL TO MODERATE	SMALL
Aquatic Resources	SMALL	SMALL	SMALL	SMALL TO MODERATE	SMALL TO MODERATE	SMALL	SMALL

Impact Area (Resource)	Byron License Renewal (Proposed Action)	No-Action	New Nuclear Alternative	IGCC Alternative	NGCC Alternative	Combination Alternative (NGCC, Wind, Solar)	Purchased Power
Special Status Species and Habitats[1]	NO EFFECT	SEE NOTE[2]	SEE NOTE[2]	SEE NOTE[2]	SEE NOTE[2]	SEE NOTE[2]	SEE NOTE[2]
Historic and Cultural Resources	SEE NOTE[3]	SMALL TO LARGE	SMALL	SMALL	SMALL TO MODERATE	SMALL TO LARGE	SMALL TO LARGE
Socioeconomics							
Socioeconomics	SMALL	SMALL TO LARGE	SMALL TO MODERATE	SMALL TO MODERATE	SMALL TO MODERATE	SMALL	SMALL TO LARGE
Transportation	SMALL	SMALL	SMALL TO MODERATE	SMALL TO MODERATE	MODERATE TO LARGE	SMALL TO MODERATE	SMALL TO LARGE
Human Health	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL	SMALL
Environmental Justice[4]	SEE NOTE[5]	SEE NOTE[6]	SEE NOTE[7]	SEE NOTE[8]	SEE NOTE[9]	SEE NOTE[10]	SEE NOTE[11]
Waste Management and Pollution Prevention	SMALL	SMALL	SMALL	SMALL TO MODERATE	SMALL	SMALL	SMALL TO MODERATE

Impact Area (Resource)	Byron License Renewal (Proposed Action)	No-Action	New Nuclear Alternative	IGCC Alternative	NGCC Alternative	Combination Alternative (NGCC, Wind, Solar)	Purchased Power

Notes:

[1] For Federally protected species, the NRC reports the effects in terms of its Endangered Species Act (ESA) findings of "no effect," "may effect, but not likely to adversely effect," or "may affect, and is likely to adversely affect."

[2] The magnitude of impacts could vary widely based on site selection and the presence or absence of special status species and habitats when the alternative is implemented; thus, the NRC staff cannot forecast a level of impact for this alternative.

[3] Based on (1) there being currently no National Historic Preservation Act of 1966, as amended (NHPA)-eligible historic properties in the area of potential effect, (2) tribal input, (3) Exelon's draft Cultural Resource Management Plan (CRMP), (4) the fact that no license renewal-related physical changes or ground-disturbing activities would occur, (5) Illinois Historic Preservation Agency (IHPA) input, and (6) cultural resource assessment, license renewal would not affect any known historic properties (36 CFR Section 800.4(d)(1)).

[4] The CEQ, in *Environmental Justice: Guidance Under the National Environmental Policy Act*, defines "Disproportionately High and Adverse Human Health Effects" and "Disproportionately High and Adverse Environmental Effects" on minority and low-income populations.

[5] Continued operation of Byron would not have disproportionately high and adverse human health and environmental effects on minority and low-income populations.

[6] The No-Action Alternative could disproportionately affect minority and low-income populations.

[7] The new nuclear alternative would not have disproportionately high and adverse human health and environmental effects on minority and low-income populations.

[8] The IGCC Alternative would not have disproportionately high and adverse human health and environmental effects on minority and low-income populations.

[9] The NGCC Alternative would not have disproportionately high and adverse human health and environmental effects on minority and low-income populations.

[10] The Combination Alternative would not have disproportionately high and adverse human health and environmental effects on minority and low-income populations.

[11] The Purchased Power Alternative could disproportionately affect low-income populations because of increased utility bills resulting from the cost of purchased power. However, programs, such as the low income home energy assistance program in Illinois, are available to assist low-income families in paying for increased electrical costs.

MITIGATION MEASURES:

The NRC has taken all practicable measures within its jurisdiction to avoid or minimize environmental harm from the proposed action (license renewal). Continued operation of Byron would have SMALL environmental impacts in all resources areas. While the NRC is not requiring any mitigation measures for the continued operation of Byron, the National Pollutant Discharge Elimination System (NPDES) permits do impose effluent limitations and monitoring requirements as well as best management practices to ensure that the impacts to water quality and aquatic life are minimal. The NRC is not imposing any license conditions involving mitigation measures. Additionally, the NRC is not requiring any new environmental monitoring programs outside what is required for the NPDES permits.

DETERMINATION:

Based on the NRC staff's independent review, analysis, and evaluation contained in the license renewal final SEIS; careful consideration of all the identified social, economic, and environmental factors, as well as input received from other agencies, organizations and the public; and the consideration of mitigation measures outlined above, the NRC has determined that the standards for the issuance of a renewed operating licenses, as described in 10 CFR 54.29 have been met and the requirements of Section 102 of NEPA have been satisfied.

APPROVED BY:

/***RA***/

Christopher G. Miller, Director
Division of License Renewal
Office of Nuclear Reactor Regulation

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APPROVED BY:

/RA/

Christopher G. Miller, Director
Division of License Renewal
Office of Nuclear Reactor Regulation

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