PMC-ND
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U.S. DEPARTMENT OF ENERGY
OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY
NEPA DETERMINATION

RECIPIENT: Exelon Generation Company, LLC **STATE:** NY

PROJECT TITLE: Demonstration of electrolyzer operation at a nuclear plant to allow for dynamic participation in an organized electricity market and in-house hydrogen supply

Funding Opportunity Announcement Number	Procurement Instrument Number	NEPA Control Number	CID Number
DE-FOA-0002022	DE-EE0008849	GFO-0008849-002	GO8849

Based on my review of the information concerning the proposed action, as NEPA Compliance Officer (authorized under DOE Policy 451.1), I have made the following determination:

CX, EA, EIS APPENDIX AND NUMBER:
Description:

A9 Information gathering, analysis, and dissemination	Information gathering (including, but not limited to, literature surveys, inventories, site visits, and audits), data analysis (including, but not limited to, computer modeling), document preparation (including, but not limited to, conceptual design, feasibility studies, and analytical energy supply and demand studies), and information dissemination (including, but not limited to, document publication and distribution, and classroom training and informational programs), but not including site characterization or environmental monitoring. (See also B3.1 of appendix B to this subpart.)
B5.1 Actions to conserve energy or water	(a) Actions to conserve energy or water, demonstrate potential energy or water conservation, and promote energy efficiency that would not have the potential to cause significant changes in the indoor or outdoor concentrations of potentially harmful substances. These actions may involve financial and technical assistance to individuals (such as builders, owners, consultants, manufacturers, and designers), organizations (such as utilities), and governments (such as state, local, and tribal). Covered actions include, but are not limited to weatherization (such as insulation and replacing windows and doors); programmed lowering of thermostat settings; placement of timers on hot water heaters; installation or replacement of energy efficient lighting, low-flow plumbing fixtures (such as faucets, toilets, and showerheads), heating, ventilation, and air conditioning systems, and appliances; installation of drip-irrigation systems; improvements in generator efficiency and appliance efficiency ratings; efficiency improvements for vehicles and transportation (such as fleet changeout); power storage (such as flywheels and batteries, generally less than 10 megawatt equivalent); transportation management systems (such as traffic signal control systems, car navigation, speed cameras, and automatic plate number recognition); development of energy-efficient manufacturing, industrial, or building practices; and small-scale energy efficiency and conservation research and development and small-scale pilot projects. Covered actions include building renovations or new structures, provided that they occur in a previously disturbed or developed area. Covered actions could involve commercial, residential, agricultural, academic, institutional, or industrial sectors. Covered actions do not include rulemakings, standard-settings, or proposed DOE legislation, except for those actions listed in B5.1(b) of this appendix. (b) Covered actions include rulemakings that establish energy conservation standards for consumer products and industrial equipment, provided that the actions would not: (1) have the potential to cause a significant change in manufacturing infrastructure (such as construction of new manufacturing plants with considerable associated ground disturbance); (2) involve significant unresolved conflicts concerning alternative uses of available resources (such as rare or limited raw materials); (3) have the potential to result in a significant increase in the disposal of materials posing significant risks to human health and the environment (such as RCRA hazardous wastes); or (4) have the potential to cause a significant increase in energy consumption in a state or region.

Rationale for determination:

The U.S. Department of Energy (DOE) is proposing to provide federal funding to Exelon Corporation for the demonstration of an end-to-end integrated grid-scale carbon-free hydrogen production, storage, and utilization pilot plant at a nuclear generating facility. The project would also evaluate market opportunities and regulatory requirements related to the participation of integrated hydrogen production and nuclear plant facilities in organized power markets, by demonstrating dynamic control and operation of the electrolyzer and assessing the economics of dynamic participation combined with the revenue streams from hydrogen production. Tasks within the approved Statement of Project Objectives that helped to inform the location, design, and details of the pilot plant installation (Budget Period 1) were previously reviewed by GFO-0008849-001 (A9, B3.6, and B3.15) on 12/26/19. This NEPA review is for all remaining tasks of the project (Budget Period 2).

A 30% conceptual design has been completed and an installation location has been selected. Remaining activities include the final design, fabrication, installation, testing and operation of a Nel Hydrogen supplied 1 MW electrolyzer at the Nine Mile Nuclear Plant (NMP) in Oswego, NY. Exelon would complete the 100% engineering design and

planning/regulatory approval activities, install and demonstrate operation of the 1 MW electrolyzer, and simulate 1 MW, 200 MW, and 500 MW electrolyzer operation. A project specific assessment of cyber security issues would also be completed.

Physical modifications of existing systems and ground disturbing activities would be performed to support the installation and use of the electrolyzer and supporting equipment. The electrolyzer and supporting equipment would eliminate the need for regular deliveries of hydrogen gas by truck. The anticipated installation area is less than one acre. Hydrogen produced would be for consumption by NMP Units 1 & 2 for use in the plant hydrogen water chemistry and turbine generator operations. The plant's hydrogen demand is currently supplied from gas storage tanks or tube-trailers. The electrolyzer system would be connected to the existing plant hydrogen systems' supply piping. The design hydrogen consumption rates of the NMP systems would result in a demand of 15% capacity from the installed electrolyzer system. Hydrogen storage for the system would be provided by a system of tube trailers, which would provide reserve capacity. The volume of gas stored would remain within the currently analyzed and approved quantities. The electrolyzer is designed to follow demand so that when demand falls, it reduces output and goes to standby as needed so no excess hydrogen is produced. Tube trailer connection points would be available as a contingency for offsite hydrogen delivery.

National Fire Protection Association (NFPA) requirements for separating different combustible fluids would be maintained by building a firewall to separate the existing liquid oxygen storage to this system. Access for liquid oxygen deliveries would be maintained by extending the fill and access point, modifying the fence, and installing a concrete pad such that the fill operator can park the trailer on the concrete, while maintaining visibility of the liquid oxygen tanks, since the fill point is within 12 feet of the trailer. Fire detection would be tied into the existing site fire detection system at an adjacent building.

Water supply for the electrolyzer would be from the existing potable water source and would be tied into the system in an adjacent building. A backup 480V power source would be supplied to ensure conditions for freeze-sensitive equipment are maintained in the event of a complete loss of normal primary power to the equipment. This power source would be a standby diesel generator that would have an auto-start function; therefore, no operator actions are required. This equipment would be supplied from a 13.8 kV switchgear located inside of the nuclear plant power block. The power supply cabling would be routed both above and below ground from the power source to the equipment location. The below ground cable routing would be under existing roads and fencing.

The project's installation and construction activities would occur within previously disturbed areas at NMP and may involve use of hazardous materials including fuels, solvents and refrigerants. All activities would be controlled, and risks mitigated through the use of existing processes and procedures which ensure compliance with all corporate health and safety policies. Compliance measures include employee training, proper protective equipment, engineering controls, monitoring, and internal assessments. All activities performed during this project would be completed in compliance with OSHA, New York State and Federal requirements. The project may also require disturbance and rework of existing ground surfaces to install the hydrogen generation and supporting equipment. If any hazardous materials are found during excavation, the mitigation would be managed in accordance with Site procedures and Federal, State, and local environmental regulations. Effluent wastewater generated would be discharged into the existing monitored sanitary sewer system within existing permit limitations. Generated waste from the project that is required to be hauled off-site would be managed under existing waste contracts held by the facility. All interim or permanent emissions of hydrogen and oxygen would be maintained within local and State requirements. Noise levels are not expected to be any greater than currently exists for normal plant operation. Noise generation would be monitored per existing plant procedures and hearing protection would be worn as required.

U.S. Nuclear Regulatory Commission (NRC) prior review and approval for changes in a facility as described in the Updated Final Safety Analysis Report (UFSAR) or for conducting tests or experiments not described in the UFSAR is governed by 10 CFR 50.59. A 10 CFR 50.59 Screening was performed internally for the 30% design and it was determined that a 10 CFR 50.59 Evaluation was not required. The installation of the electrolyzer and support systems do not alter descriptions of the hydrogen uses contained in the NMP Unit 1 & 2 UFSAR. Activities would not involve a change to a structure, system, or component (SSC) that adversely affects the UFSAR described design function. There would not be a change to a procedure that adversely affects how UFSAR described SSC design functions are performed or controlled and there would be no adverse change to an element of a UFSAR described evaluation methodology, or use of an alternative evaluation methodology, that is used in establishing the design bases or used in the safety analyses. Activities do not involve a test or experiment not described in the UFSAR where an SSC is utilized or controlled in a manner that is outside the reference bounds of the design for that SSC or is inconsistent with analyses or descriptions in the UFSAR. None of the proposed activities would require a change to the Technical Specifications or Facility Operating License. The 10 CFR 50.59 Screening would be updated for the 100% design but NRC approval via license amendment under 10 CFR 50.90 is not expected to be required prior to project implementation.

The installation location is located within the coastal zone along the shore of Lake Ontario but because the project is located within a previously disturbed paved area that is not within a designated high erosion hazard area DOE has

determined that the activity would have no effects on any coastal use or resource, therefore a negative determination under 15 CFR 930.35 is not required. DOE also conducted a review of potential issues relating to other resources of concern and found that no effects would be expected to result from the proposed project activities.

NEPA PROVISION

DOE has made a final NEPA determination.

Notes:

Fuel Cell Technologies Office
This NEPA determination does not require a tailored NEPA provision.

FOR CATEGORICAL EXCLUSION DETERMINATIONS

The proposed action (or the part of the proposal defined in the Rationale above) fits within a class of actions that is listed in Appendix A or B to 10 CFR Part 1021, Subpart D. To fit within the classes of actions listed in 10 CFR Part 1021, Subpart D, Appendix B, a proposal must be one that would not: (1) threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health, or similar requirements of DOE or Executive Orders; (2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities (including incinerators), but the proposal may include categorically excluded waste storage, disposal, recovery, or treatment actions or facilities; (3) disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that preexist in the environment such that there would be uncontrolled or unpermitted releases; (4) have the potential to cause significant impacts on environmentally sensitive resources, including, but not limited to, those listed in paragraph B(4) of 10 CFR Part 1021, Subpart D, Appendix B; (5) involve genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species, unless the proposed activity would be contained or confined in a manner designed and operated to prevent unauthorized release into the environment and conducted in accordance with applicable requirements, such as those listed in paragraph B(5) of 10 CFR Part 1021, Subpart D, Appendix B.

There are no extraordinary circumstances related to the proposed action that may affect the significance of the environmental effects of the proposal.

The proposed action has not been segmented to meet the definition of a categorical exclusion. This proposal is not connected to other actions with potentially significant impacts (40 CFR 1508.25(a)(1)), is not related to other actions with individually insignificant but cumulatively significant impacts (40 CFR 1508.27(b)(7)), and is not precluded by 40 CFR 1506.1 or 10 CFR 1021.211 concerning limitations on actions during preparation of an environmental impact statement.

The proposed action is categorically excluded from further NEPA review.

SIGNATURE OF THIS MEMORANDUM CONSTITUTES A RECORD OF THIS DECISION.

NEPA Compliance Officer Signature: Electronically Signed By: Casey Strickland Date: 7/27/2021
NEPA Compliance Officer

FIELD OFFICE MANAGER DETERMINATION

☑ Field Office Manager review not required
☐ Field Office Manager review required

BASED ON MY REVIEW I CONCUR WITH THE DETERMINATION OF THE NCO :

Field Office Manager's Signature: _____ Date: _____
Field Office Manager