

DOE-ID NEPA CX DETERMINATION

SECTION A. Project Title: LWR Integrated Energy Systems Interface Technology Development and Demonstration – FirstEnergy Solutions Corp – Davis-Besse Nuclear Power Station

SECTION B. Project Description

FirstEnergy Solutions Corp – Davis-Besse Nuclear Power Station (DBNPS), in collaboration with Idaho National Laboratory (INL), Arizona Public Service (APS), and Xcel Energy Inc, proposes to investigate integrating nuclear power stations with hybrid hydrogen systems to avoid output curtailment during seasonal grid imbalances when renewable sources have high production. The principal objective of this project is to address electrical, thermal, monitoring, electrolysis unit response rate, and control interfaces that are required for scalable hydrogen generation pilot plants connected to light water reactor (LWR) power plants. The project will be divided into activities covered by two parallel program tracks. Track I will develop location-specific technical and economic assessments (TEAs) of LWR hybrid electricity/hydrogen plants including hydrogen storage for peak demand power generation. Track II will integrate and test a low-temperature electrolysis (LTE) pilot plant at DBNPS. Existing equipment and plant/laboratory facilities will be used.

SECTION C. Environmental Aspects / Potential Sources of Impact

Industrial Waste Generation – Filters, grease, oils from air compressors, dryers, pumps, and other equipment will be used in the process. This is typical of other standard operating equipment at DBNPS and will be handled in accordance with existing site procedures.

Water/Well Use – Domestic water from Carroll Township is the proposed water source for the project. The proposed project will utilize roughly 100 gallons per hour of domestic water (tap water). This is well within the capacity of the system and does not pose an issue to the project. DBNPS also maintains a demineralized water system onsite for use in normal power operations. If the demineralized water from DBNPS is utilized, the relatively low demand (>100 gph) is within the capabilities of the Demineralized Water Storage and Supply system capacity.

Discharge of Wastewater – The reverse osmosis unit that is part of the proposed hydrogen generation skid will utilize roughly 100 gph and discharge approximately 30 gph. The contaminants present in the discharge stream will be the same as those coming into the system (i.e. tap water), just at a higher concentration. The water being discharged will likely be required to be referenced/approved by the Ohio EPA prior to use and could be required to be listed in the NPDES permit. This will be managed through an existing site procedure.

SECTION D. Determine the Level of Environmental Review (or Documentation) and Reference(s): Identify the applicable categorical exclusion from 10 CFR 1021, Appendix B, give the appropriate justification, and the approval date.

Note: For Categorical Exclusions (CXs) the proposed action must not: 1) threaten a violation of applicable statutory, regulatory, or permit requirements for environmental, safety, and health, including requirements of DOE orders; 2) require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities; 3) disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that pre-exist in the environment such that there would be uncontrolled or unpermitted releases; 4) adversely affect environmentally sensitive resources. In addition, no extraordinary circumstances related to the proposal exist which would affect the significance of the action, and the action is not “connected” nor “related” (40 CFR 1508.25(a)(1) and (2), respectively) to other actions with potentially or cumulatively significant impacts.

References: B3.6 Siting, construction, modification, operation, and decommissioning of facilities for small-scale research and development projects; conventional laboratory operations (such as preparation of chemical standards and sample analysis); and small-scale pilot projects (generally less than 2 years) frequently conducted to verify a concept before demonstration actions, provided that construction or modification would be within or contiguous to a previously disturbed or developed area (where active utilities and currently used roads are readily accessible). Not included in this category are demonstration actions, meaning actions that are undertaken at a scale to show whether a technology would be viable on a larger scale and suitable for commercial development.

Justification: The activity consists of research activities to investigate the feasibility of hydrogen cogeneration by nuclear power plants.

Is the project funded by the American Recovery and Reinvestment Act of 2009 (Recovery Act) Yes No

Approved by Jason Sturm, DOE-ID NEPA Compliance Officer on 09/26/2019