September 9, 2024

TP-LIC-LET-0345
Docket Number 50-613

U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
ATTN: Document Control Desk

Subject: Exemption Request Associated with Construction of the Natrium™ Energy Island

Reference: 1. TerraPower, LLC, "Submittal of Approved TerraPower, LLC Topical Report: Regulatory Management of Natrium Nuclear Island and Energy Island Design Interfaces," NATD-LIC-RPRT-0001-A, Revision 0, January 11, 2024 (ML24011A321)

2. U.S. NRC, "TerraPower, LLC – Final Safety Evaluation of Topical Report NATD-LIC-RPRT-0001, 'Regulatory Management Of Natrium Nuclear Island And Energy Island Design Interfaces,'" (EPID: L-2022-TOP-0045), Revision 0, October 4, 2023, ML23257A258.

TerraPower, LLC, on behalf of US SFR Owner, LLC (USO), a wholly owned subsidiary of TerraPower, requests exemption from certain requirements of 10 CFR 50.10(a) and 10 CFR 51.4 as they apply to the Natrium™ Energy Island (EI)[1]. This exemption request was discussed in the TerraPower Topical Report NATD-LIC-RPRT-0001 (Reference 1) and the NRC Safety Evaluation of Topical Report NATD-LIC-RPRT-0001 (Reference 2). The Natrium design incorporates independence of operation between the structures, systems, and components (SSCs) of the nuclear island (NI) and the SSCs of the EI. The enclosed exemption request allows for independence of EI SSCs as applied to the definition of construction associated with 10 CFR 50.10 limited work authorizations (LWAs) and 10 CFR 51 environmental protection regulations.

The enclosure provides the basis for the exemptions requested from the definitions of construction in 10 CFR 50.10(a) and 10 CFR 51.4, in accordance with 10 CFR 50.12 and 10 CFR 51.6. USO is requesting that the NRC staff grant the exemptions as stated in the enclosure by March 31, 2025. The less than 12 month approval request is to support timely construction of the Natrium EI and successful completion of the Natrium Demonstration Project.

This letter and enclosure make one new regulatory commitment as shown in Table 1.

[1] Natrium is a TerraPower and GE-Hitachi technology.

Table 1

Commitment #	Description	Expected Completion Date
REG-2024-01-00	Digital components or control systems identified as critical digital assets will not be installed or activated at the Kemmerer Unit 1 site prior to receipt of a construction permit.	Date of Kemmerer construction permit issuance

If you have any questions regarding this submittal, please contact Ryan Sprengel at rsprengel@terrapower.com or (425) 324-2888.

Sincerely,

George Wilson

George Wilson
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Enclosure: Exemption Request Associated with Construction of the Natrium Energy Island

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ENCLOSURE

Exemption Request Associated with Construction of the Natrium Energy Island

Energy Island Construction Exemption Request

Introduction

The Natrium design incorporates independence of operation between the SSCs of the NI and the SSCs of the EI as described in the Topical Report NATD-LIC-RPRT-0001 (Reference 1). This separation of functional areas allows the power production systems of the EI to be separate and independent from the NI with respect to site design and quality standards. This exemption request allows for independence of EI SSCs as applied to limited work authorizations (LWAs) and the definition of construction in 10 CFR 51 environmental protection regulations. This exemption request does not alter the underlying purpose of 10 CFR 50.10(a) or 10 CFR 51.4.

Regulatory Requirements

The requirements of 10 CFR 50.10(a) define the scope of construction activities in the context of LWAs:

> *10 CFR 50.10(a) Definitions. As used in this section, construction means the activities in paragraph (a)(1) of this section, and does not mean the activities in paragraph (a)(2) of this section.*
>
> *(1) Activities constituting construction are the driving of piles, subsurface preparation, placement of backfill, concrete, or permanent retaining walls within an excavation, installation of foundations, or in-place assembly, erection, fabrication, or testing, which are for:*
>
> *(i) Safety-related structures, systems, or components (SSCs) of a facility, as defined in 10 CFR 50.2;*
>
> *(ii) SSCs relied upon to mitigate accidents or transients or used in plant emergency operating procedures;*
>
> *(iii) SSCs whose failure could prevent safety-related SSCs from fulfilling their safety-related function;*
>
> *(iv) SSCs whose failure could cause a reactor scram or actuation of a safety-related system;*
>
> *(v) SSCs necessary to comply with 10 CFR part 73;*
>
> *(vi) SSCs necessary to comply with 10 CFR 50.48 and criterion 3 of 10 CFR part 50, appendix A; and*
>
> *(vii) Onsite emergency facilities necessary to comply with either § 50.160 or § 50.47 and appendix E to this part, as applicable.*

The regulations of 10 CFR 51.4 define the scope of construction activities in the context of environmental protection regulations:

> *Construction means:*
> *(1) For production and utilization facilities, the activities in paragraph (1)(i) of this definition, and does not mean the activities in paragraph (1)(ii) of this definition.*
>
> *(i) Activities constituting construction are the driving of piles, subsurface preparation, placement of backfill, concrete, or permanent retaining walls within an excavation, installation of foundations, or in-place assembly, erection, fabrication, or testing, which are for:*
>
> *(A) Safety-related structures, systems, or components (SSCs) of a facility, as defined in 10 CFR 50.2;*

(B) SSCs relied upon to mitigate accidents or transients or used in plant emergency operating procedures;
(C) SSCs whose failure could prevent safety-related SSCs from fulfilling their safety-related function;
(D) SSCs whose failure could cause a reactor scram or actuation of a safety-related system;
(E) SSCs necessary to comply with 10 CFR part 73;
(F) SSCs necessary to comply with 10 CFR 50.48 and criterion 3 of 10 CFR part 50, appendix A; and
(G) Onsite emergency facilities (i.e., technical support and operations support centers), necessary to comply with 10 CFR 50.47 and 10 CFR part 50, appendix E.

Exemption Request

Pursuant to 10 CFR 50.12, USO requests an exemption to exclude EI SSCs from the scope of the requirements of 10 CFR 50.10. The requested exemption would result in the following 10 CFR 50.10(a) requirements for the Natrium design within the LWA rule:

> *10 CFR 50.10(a) Definitions. As used in this section, construction means the activities in paragraph (a)(1) of this section excluding activities associated with Natrium Energy Island SSCs classified as non-safety-related with no special treatment (NST), and does not mean the activities in paragraph (a)(2) of this section.[…]*

Pursuant to 10 CFR 51.6, USO requests an exemption to exclude EI SSCs from the scope of the definition of construction in 10 CFR 51.4. The requested exemption would result in the following requirement of 10 CFR 51.4 under the definition of construction:

> *10 CFR 51.4 Construction means: (1) For production and utilization facilities, the activities in paragraph (1)(i) of this definition excluding activities associated with Natrium Energy Island SSCs classified as non-safety-related with no special treatment (NST), and does not mean the activities in paragraph (1)(ii) of this definition. […]*

Basis for Exemption

Consistent with the evaluation presented in the "Final Safety Evaluation of Topical Report NATD-LIC-RPRT-0001, 'Regulatory Management Of Natrium Nuclear Island And Energy Island Design Interfaces,'" (Reference 2), the LWA rule is applicable to certain EI SSCs.

The basis for requesting an exemption from 10 CFR 50.10(a) is the same as that for requesting an exemption from the 10 CFR 51.4 definition of construction. Discussion in the "Limited Work Authorizations for Nuclear Power Plants Final Rule" (Reference 3) states that the NRC chose to specifically align the 10 CFR 51.4 construction definition with 10 CFR 50.10(a) definition of construction:

> "Section 51.4 is revised by adding a new definition of 'construction.' This makes applicable throughout Part 51 the definition of construction in proposed § 50.10(a) and has the effect of excluding from an EIS for any ESP, construction permit, combined license or an LWA, any discussion, evaluation or consideration of the environmental impacts or benefits associated with non-construction activities as set forth in § 50.10(a). This also removes the need for the NRC decision maker, including a presiding officer, to

> make a NEPA finding with respect to the environmental impacts or benefits associated with those non-construction activities."

Therefore, aligning the exemption requested for 10 CFR 50.10(a) with the exemption requested for 10 CFR 51.4 also aligns with the intention of the regulations as stated in the LWA Final Rule (Reference 3).

Independence of NI and EI Systems

TerraPower, on behalf of USO, submitted a Construction Permit Application (CPA) in March 2024 (Reference 6). CPA Enclosure 2, Preliminary Safety Analysis Report (PSAR), Sections 1.1.3 and 1.1.4.4.9, describe the overall configuration of Kemmerer Unit 1 and the independence of the NI and EI in the Natrium design used. The EI is physically separate from the NI as shown in PSAR Figure 1.2-1. The interface between the NI and EI occurs via the sodium-salt heat exchangers that transfer heat from the intermediate heat transport system to the thermal salt system. The isolation point for the thermal salt storage system (EI to NI isolation) is at the inlet valve (input from the cold salt storage tank) and outlet valve (output to the hot salt storage tank) of the sodium to salt heat exchangers.

The Natrium reactor design incorporates several features that support independence of the NI and EI. The fuel and core are designed to have substantial margin to safety limits, minimizing the probability of fuel failure and radiological releases. The primary and intermediate heat transport systems are designed such that adequate heat removal is achieved for various plant conditions and transients. Both sodium systems contain enough thermal inertia to reduce the effects of EI transients. The EI is not relied on for heat removal during NI transients. The intermediate air cooling system under force-flow mode is used for normal shutdown cooling via the sodium-air heat exchangers. Should the intermediate air cooling system be unavailable, the reactor air cooling system is capable of passively removing all decay heat. In addition, the sensors and SSCs as part of the reactor control and protection systems relied on to shutdown the reactor are not located on the EI. Additional information on these systems is contained in PSAR Chapter 7.

Key aspects fundamental to the independence of the NI and EI include the licensing basis events (LBE) that may occur, the Natrium design's response to LBEs, and the SSC safety classification for those relied on to prevent and mitigate LBEs. Details on the LBEs considered and SSC response are described in PSAR Sections 3.5 through 3.9. EI transients are evaluated and determined not to be risk-significant. In addition, no radiological release occurs for EI transients as fuel integrity is maintained for the postulated events. The process used for classification of SSCs is described in PSAR Chapter 5.

10 CFR 50.10(a)(1)(i), (iii), and (iv) and 10 CFR 51.4(1)(i)(A), (C), and (D)

The underlying purpose for the scoping requirements of 10 CFR 50.10(a)(1) is described in the LWA Final Rule as those SSCs "that have a reasonable nexus to radiological health and safety and/or common defense and security." The requirements of 10 CFR 50.10(a)(1) deterministically define which SSCs have a reasonable nexus to radiological health and safety. In contrast, the SSC classification process identified in Nuclear Energy Institute (NEI) 18-04 (Reference 4) and endorsed via Regulatory Guide 1.233 (Reference 5) uses a risk-informed performance-based process to determine the safety significance of SSCs. NEI 18-04 incorporates deterministic and PRA insights to classify which SSCs have a reasonable nexus to radiological health and safety (i.e., to classify which SSCs are safety-significant).

The USO CPA is based on the Natrium design and the methodology described in NEI 18-04 and Regulatory Guide 1.233 as described in CPA Enclosure 2, PSAR, Section 5.1. When applied to the Natrium design, the NEI 18-04 safety-related (SR) SSC classifications encompass the 10 CFR 50.2 SR SSC definition (i.e., all Natrium SSCs that are defined as SR in accordance with 10 CFR 50.2 are classified as SR via NEI 18-04 classifications). As stated in the Topical Report NATD-LIC-RPRT-0001, all EI SSCs are classified as non-safety-related with no special treatment (NST). The NEI 18-04 SSC classification categories are defined as follows:

> Safety-Related (SR):
> - SSCs selected by the designer from the SSCs that are available to perform the required safety functions (RSFs) to mitigate the consequences of design basis events (DBEs) to within the license basis event (LBE) frequency-consequence (F-C) Target, and to mitigate design basis accidents (DBAs) that only rely on the SR SSCs to meet the dose limits of 10 CFR 50.34 using conservative assumptions.
> - SSCs selected by the designer and relied on to perform RSFs to prevent the frequency of beyond design basis events (BDBEs) with consequences greater than the 10 CFR 50.34 dose limits from increasing into the DBE region and beyond the F-C Target.
>
> Non-Safety-Related with Special Treatment (NSRST):
> - Non-safety-related SSCs relied on to perform risk-significant functions. Risk-significant SSCs are those that perform functions that prevent or mitigate any LBE from exceeding the F-C Target or make significant contributions to the cumulative risk metrics selected for evaluating the total risk from all analyzed LBEs.
> - Non-safety-related SSCs relied on to perform functions requiring special treatment for defense in depth (DID) adequacy.
>
> Non-Safety-Related with No Special Treatment (NST):
> - All other SSCs (with no special treatment required).

Safety-significant SSCs include all those SSCs classified as SR or NSRST. None of the NST SSCs are classified as safety-significant.

To further define safety-significant SSCs, NEI 18-04 states:

> The meaning of safety-significant SSC in this process is the same as that used in NRC regulations. The NRC glossary provides the following definition: “When used to qualify an object, such as a system, structure, component, or accident sequence, this term identifies that object as having an impact on safety, whether determined through risk analysis or other means, that exceeds a predetermined significance criterion.”

Based on this description, it can be concluded that SSCs which are classified as safety-significant via NEI 18-04 are those SSCs which have a reasonable nexus to radiological health and safety. Because all EI SSCs are classified as NST, EI SSCs do not have a reasonable nexus to radiological health and safety. Therefore, USO can meet the underlying purpose of 10 CFR 50.10(a)(1) without including EI SSCs within the scope of this regulation.

Removing EI SSCs from the scope of construction is consistent with the exemption request for 10 CFR 50.65(b) submitted by TerraPower, on behalf of USO, as CPA Enclosure 4, Regulatory Exemptions, (Reference 6) as it relates to the scope of SSCs falling within the definition of construction. As stated in Regulatory Guide 1.206, Revision 1, "Applications for Nuclear Power Plants," Supplement to C.2.18, the LWA rule and maintenance rule both define a scope of SSCs that have some nexus to radiological health and safety. Based on the testing of already established guidance for selection of SSCs scoped into the maintenance rule, NRC decided the same definition can be applied to construction. Therefore, aligning the SSCs scoped for the definition of construction to the scope of SSCs that are included in the program for monitoring the effectiveness of maintenance at nuclear power plants defined in 10 CFR 50.65(b), is acceptable.

Eliminating EI NST SSCs from the scope of SSCs that have a reasonable nexus to radiological health and safety is consistent with the 10 CFR Part 53 proposed rule (Reference 7 and Reference 8). Specifically, proposed 10 CFR 53.020 "Definitions" construction definition, proposed 10 CFR 53.610 "Construction," proposed 10 CFR 53.1130 "Limited work authorizations," and proposed 10 CFR 53.715 "Maintenance, repair, and inspection programs," as follows:

- The proposed 10 CFR 53.020 definitions do not include non-safety-significant (NSS) SSCs within the scope of the "construction" definition (Note that proposed Part 53 classifications of SR, non-safety-related but safety-significant (NSRSS) and NSS are analogous to the NEI 18-04 classifications of SR, NSRST, and NST, respectively.) As such, NSS SSCs are not included in the proposed 10 CFR 53.610 construction scope, or the proposed 10 CFR 53.1130 limited work authorization scope. Therefore, under the 10 CFR Part 53 proposed rule, EI SSCs are not included in the scope of SSCs for which LWAs are applicable.
- The proposed 10 CFR 53.715 requirements limit the scope of the Part 53 maintenance rule program to SR and NSRSS SSCs. As such, under the 10 CFR Part 53 proposed rule, NSS SSCs are not included in the scope of the maintenance rule. (Note that discussion in the LWA Final Rule states that the NRC chose to base the criteria in 10 CFR 50.10(a)(1)(i) through (iv) on the scoping criteria used in 10 CFR 50.65(b) which defines the Part 50 maintenance rule scope.)

The Kemmerer Unit 1 PSAR Chapter 7 (Reference 6) describes all safety-significant SSCs identified using the methodology described in PSAR Section 5.1. No EI SSCs are described in Chapter 7. In addition, PSAR Section 6.1.3 establishes design basis hazard level related requirements for non-SR SSCs and specifies that NST SSCs are designed such that they will not adversely impact the ability of an SR SSC to perform an SR function. The EI SSCs are designed such that their failure does not prevent SR SSCs from fulfilling a SR function.

<u>10 CFR 50.10(a)(1)(ii) and 10 CFR 51.4(1)(i)(B)</u>

Removing EI SSCs from the scope of construction is consistent with the exemption request for 10 CFR 50.65(b) submitted by TerraPower, on behalf of USO, as CPA Enclosure 4, Regulatory Exemptions, (Reference 6) as it relates to accident mitigation and use of EI SSCs in emergency operating procedures (EOP).

NUREG-0899, “Guidelines for the Preparation of Emergency Operating Procedures,” Section 2.2, defines EOPs as:

> *“EOPs are plant procedures that direct operators' actions necessary to mitigate the consequences of transients and accidents that have caused plant parameters to exceed reactor protection system set points or engineered safety feature set points, or other established limits.”*

In addition, Regulatory Guide 1.206, Revision 1, “Applications for Nuclear Power Plants,” Section C.I.17, further clarifies the definition for SSCs used in EOPs within the context of 10 CFR 50.65(b) as:

> *“SSCs used in the EOPs that are required to be in the scope of the Maintenance Rule program are those that are directly used to mitigate the accident or transient (explicitly mentioned in the EOPs or in steps of referenced procedures needed to accomplish the EOP step) and those whose use is implied and that provide a significant portion of the mitigating function. For the purposes of this definition, significant proportion of the mitigating function means that the implied-use SSC is essential to the performance of one or more EOP steps and there are no reliable and consistently readily available (under EOP conditions) alternatives. SSCs that do not provide or support a mitigating function, but are included in the EOPs for other reasons, for example, operator convenience or simplifying EOP compliance, equipment protection, etc., are not necessarily required to be in the Maintenance Rule scope under 10 CFR 50.65(b)(2)(i).”*

As discussed previously, all EI SSCs are classified as NST consistent with the SSC classification methodology described in NEI 18-04. As such, SSCs on the EI are not directly relied upon to mitigate accidents or transients and do not have a reasonable nexus to radiological health and safety. Therefore, EI SSCs do not provide a significant proportion of the mitigating function and would not be used in plant EOPs for direct accident mitigation.

10 CFR 50.10(a)(1)(v) and 10 CFR 51.4(1)(i)(E)

The EI does not contain SSCs necessary to comply with the physical security program of 10 CFR 73, including physical barriers and structures and associated hardware and detection systems. The EI will contain critical digital assets (CDAs) to support the cyber security program of 10 CFR 73. As such, no digital components or control systems identified as CDAs will be installed or activated at the Kemmerer Unit 1 site prior to receipt of a construction permit. This commitment is made to address Limitation and Condition 6 of “Final Safety Evaluation of Topical Report NATD-LIC-RPRT-0001, ‘Regulatory Management Of Natrium Nuclear Island And Energy Island Design Interfaces’” (Reference 2).

10 CFR 50.10(a)(1)(vi) and 10 CFR 51.4(1)(i)(F)

The Kemmerer Unit 1 PSAR Section 5.3 (Reference 6) describes the Principal Design Criteria (PDC) developed based on the sodium fast reactor design criteria (SFR-DC) in Regulatory Guide 1.232, Revision 0, “Guidance for Developing Principal Design Criteria for Non-Light-Water Reactors.” The PDC were submitted to NRC as Topical Report NATD-LIC-RPRT-0002, “Principal Design Criteria for the Natrium Advanced Reactor” (Reference 9). PDC 3, Fire Protection, includes provisions for safety-significant SSCs to be designed to minimize the probability and effects of fires and explosions and for fire protection SSCs to minimize the adverse effects of fires and explosions. As discussed above, all EI SSCs

are classified as NST and are not relied upon to achieve and maintain safe shutdown of the reactor. In addition, potential fires on the EI would not prevent the ability to achieve and maintain safe shutdown of the reactor.

Topical Report NATD-LIC-RPRT-0001 (Reference 1) states that SSCs necessary to comply with 10 CFR 50.48 and Advanced Reactor Design Criterion (ARDC) 3 (identical to SFR-DC 3) of Regulatory Guide 1.232, Revision 0, are not located on the EI. Kemmerer Unit 1 PSAR Figure 1.1-2 and Figure 1.2-1 show firewater SSCs. Firewater is not part of the fire protection strategy for the NI to achieve and maintain safe shutdown due to the presence of sodium in the design. Based on this assessment, criterion vi of 10 CFR 50.10(a)(1) and criterion F of 10 CFR 51.4(1) do not apply to SSCs on the EI nor the firewater SSCs.

10 CFR 50.10(a)(1)(vii) and 10 CFR 51.4(1)(i)(G)

The Kemmerer Unit 1 PSAR Section 11.3 (Reference 6) describes preliminary plans for coping with emergencies. The emergency preparedness program will be developed using the requirements in 10 CFR 50.160 and the guidance in Regulatory Guide 1.242, “Performance Based Emergency Preparedness for Small Modular Reactors, Non-Light-Water Reactors, and Non-Power Production or Utilization Facilities,” Revision 0. Kemmerer Unit 1 PSAR Figure 1.2-1 shows the buildings on the EI consist of the Turbine Facility Building, Steam Generator Building, and Water Treatment Building. No buildings containing onsite emergency facilities to meet the requirements of 10 CFR 50.160 are located on the EI.

Environmental Assessment Considerations

The scope of the 10 CFR 50.10(a) and 10 CFR 51.4 exemption requests specifically address EI SSCs instead of addressing all NST SSCs to apply the criteria of 10 CFR 50.12(b) and associated environmental assessments to the relevant scope of interest. The Department of Energy (DOE) is conducting a National Environmental Policy Act (NEPA) review of activities proposed at the Kemmerer Unit 1 site prior to issuance of the construction permit. Bechtel Power Corporation, on behalf of TerraPower, submitted a letter to DOE Office of Clean Energy Demonstrations (Reference 10) detailing the scope of work to support the DOE environmental assessment. Activities would include excavation and backfill for various areas of the EI and construction of several EI buildings and foundations. Backfill and construction of the EI salt tanks is not included in the scope of work. Additional activities to ready the site for construction (e.g., temporary parking areas, portable bathroom facilities, etc.) are also within the DOE environmental assessment review. Therefore, the environmental assessment for this exemption is bounded by the DOE environmental assessment.

Criteria of 10 CFR 50.12(a)

The exemption is authorized by law. The exemption would not violate the Atomic Energy Act of 1954 as amended or the Energy Reorganization Act of 1974 as amended. The language of the regulation was adopted at the discretion of the Nuclear Regulatory Commission, consistent with its statutory authority, and was not mandated by statute. The NRC has authority under 10 CFR 50.12 to grant exemptions from the requirements of this regulation.

The exemption will not present an undue risk to the public health and safety. NST SSCs do not have a reasonable nexus to radiological health and safety, therefore, eliminating the NST SSCs from the scope of 10 CFR 50.10(a) and 10 CFR 51.4 does not present an undue risk to the public health and safety.

The requested exemption is consistent with the common defense and security. The requested exemption allows USO to begin work on EI NST SSCs prior to issuance of a construction permit, as such, the exemption does not affect the design, function, or operation of structures or plant equipment that are necessary to maintain the secure status of the plant. The proposed exemption has no impact on plant security or safeguards procedures because:

- The requested exemption does not impact the design, function, or operation of NI or EI SSCs,
- The requested exemption does not impact USO compliance with the requirements of 10 CFR 73 or 10 CFR 26,
- A fitness for duty program will be implemented prior to the commencement of construction of SR and security-related SSCs consistent with the requirements of 10 CFR 26 as described in the USO CPA, and
- A physical security plan, training and qualification plan, cyber security plan, and safeguards contingency plan will be provided with the application for an OL consistent with the requirements of 10 CFR 50.34(c) and 10 CFR 50.34(d) as described in the USO CPA.

Special circumstances are present in that application of the regulation is not necessary to achieve the underlying purpose of the rule. The underlying purpose for the scoping requirements of 10 CFR 50.10(a) is described in the LWA Final Rule (Reference 3) as those SSCs "that have a reasonable nexus to radiological health and safety and/or common defense and security." As stated above, the requested exemption is consistent with the common defense and security. Additionally, NST SSCs do not have a reasonable nexus to radiological health and safety. Therefore, the Natrium design can meet the underlying purpose of 10 CFR 50.10(a) without including NST SSCs within the scope of these regulations.

Criteria of 10 CFR 50.12(b)

USO has considered whether conduct of the proposed activities will give rise to a significant adverse impact on the environment and the nature and extent of such impact. The exemption requested will not give rise to any adverse impact of large significance.

The USO CPA includes an Environmental Report (ER) in accordance with 10 CFR 51. The nature and extent of the environmental impacts associated with the construction of Kemmerer Unit 1, including the EI, is described in the CPA Enclosure 3, Environmental Report. Consistent with the assessment presented in the ER and the summary in ER Chapter 10, only adverse impacts of small or moderate significance have been identified for activities that may be associated with the early construction of the EI, no adverse impacts of large significance have been identified which are attributable to the early construction of the EI.

The planned EI construction activities include, but are not limited to, excavation and backfill, laying foundations for SSCs used in electricity generation, and erecting support buildings. These activities do not prevent any anticipated future uses of the Kemmerer Unit 1 site. Removal of EI SSCs could be done using conventional construction methods for those not abandoned in place. Therefore, redress of any adverse environmental impact due to construction of the EI can be reasonably effected, and no anticipated future use of the site will be prevented.

The alternatives considered in ER Chapter 9 would not require any different use of the subsurface in the vicinity of the EI. Other sources of electricity generation could use the EI SSCs scoped into this exemption once constructed. Consequently, construction of the EI will not foreclose adoption of any alternatives.

Delay of EI construction until issuance of the Kemmerer Unit 1 construction permit would impose significant costs and schedule delays for the Natrium Demonstration Project. The added costs and construction delays would not be in the public interest. In addition, the benefits, such as the need for power and reduced carbon emissions as described in the ER would not be realized.

The requested exemption would not preclude USO from obtaining the necessary approvals and permits from the state and local governments for the construction activities of the EI. These approvals and permits would be in place prior to construction or disturbance activities to ensure protection of the environment. The Wyoming Statute in Title 35, Chapter 12, Industrial Development and Siting, requires that USO obtain an industrial siting permit prior to “commence to construct” which is defined as:

> Any clearing of land, excavation, construction, or other action that would affect the environment of the site of any facility, but does not include changes needed for temporary use of sites for less than ninety (90) days, changes required to conduct required studies and tests under this chapter, or any other state or federal act or regulation, or access roads and services associated with utilities, or routes for nonutility purposes or for uses in securing geological data but not limited to necessary borings or drillings to ascertain foundation conditions.

Under this statute, environmental impacts would be assessed, and an industrial siting permit would need to be issued in conformance with Wyoming Department of Environmental Quality rules. Construction would not begin on the EI until an industrial siting permit was obtained from the state identifying the potential environmental impacts and mitigation for the project area.

Activities associated with this exemption request will be carried out in such a manner as will minimize their environmental impact. USO plans to construct Kemmerer Unit 1 through a public-private partnership with the Department of Energy (DOE) Advanced Reactor Demonstration Program. The DOE requires that a completed National Environmental Policy Act (NEPA) review occur prior to initiating the project. The project will not begin prior to receipt of necessary approvals, including the receipt of the DOE environmental assessment (EA). To support this, the DOE has begun preparation of an EA for those activities that are planned to occur prior to issuance of NRC EIS for the USO CPA. The DOE EA requirements, as identified in 10 CFR 1021, address compliance with section 102(2) of the National Environmental Policy Act of 1969, as amended. The criteria of 10 CFR 50.12(b) also address NEPA requirements, as such, the DOE EA addresses the criteria of 10 CFR 50.12(b).

Criteria of 10 CFR 51.6, Specific Exemptions

As described in the LWA Final Rule (Reference 3), the 10 CFR 51.4 definition was intentionally aligned with the LWA rule:

> Section 51.4 is revised by adding a new definition of ‘‘construction.’’ This makes applicable throughout Part 51 the definition of construction in proposed § 50.10(a) and has the effect of excluding from an EIS for any ESP, construction permit, combined license or an LWA, any discussion, evaluation or consideration of the environmental impacts or benefits associated with non-construction activities as set forth in § 50.10(a). This also removes the need for the NRC decision maker, including a presiding officer, to make a NEPA finding with respect to the environmental impacts or benefits associated with those non-construction activities.

Therefore, aligning the exemption requested for 10 CFR 50.10(a) with the exemption requested for 10 CFR 51.4 also aligns with the intention of the regulations as stated in the LWA Final Rule.

The exemption is authorized by law. The language of the regulation was adopted at the discretion of the Nuclear Regulatory Commission, consistent with its statutory authority, and was not mandated by statute. The NRC has authority under 10 CFR 51.6 to grant exemptions from the requirements of this regulation.

The exemption is in the public interest. As stated in ER Chapter 1 and Chapter 8, the purpose and need for Kemmerer Unit 1 is to demonstrate the Natrium advanced reactor design while replacing electricity generation capacity following planned retirement of existing coal-fired facilities. The Natrium design supports the goals of the United States government for achieving a net-zero or net-negative carbon emission goal, adding operational flexibility through energy storage that is ideal to support the Kemmerer Unit 1 region which has a high penetration of renewable energy assets. Timely construction of Kemmerer Unit 1 supports the public interest by minimizing construction costs and by supporting a schedule amenable to the DOE Advanced Reactor Demonstration Program timeline. Beginning construction early, specifically beginning construction of EI SSCs prior to receipt of a construction permit, allows USO flexibility to optimize construction timelines, which supports adherence to the challenging DOE Advanced Reactor Demonstration Program schedule. Delay of construction activities of the EI and Kemmerer Unit 1, including potential delay costs, would not be in the public interest.

Conclusion

The Natrium design can meet the underlying purpose of 10 CFR 50.10(a) without incorporating NST SSCs into the scope of this regulation because NST SSCs are not safety-significant and do not have a reasonable nexus to radiological health and safety. Aligning the exemption requested for 10 CFR 50.10(a) with the exemption requested for 10 CFR 51.4 is consistent with the intention of the regulations. On this basis, and the details discussed above, USO requests an exemption from portions of 10 CFR 50.10(a) and 10 CFR 51.4 to remove EI SSCs from the scope of the definition of construction.

References

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