March 5, 2025 AEP-SMR-NRC-2025-002

Project No.: 99902129

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

Subject: Notice of Intent to Pursue an Early Site Permit for Potential Reactor Siting at the Joshua Falls, Virginia Site with associated Regulatory Engagement Plan and Response to Regulatory Issue Summary 2020-02

This letter provides notification that Appalachian Power Company (APCo), intends to submit an early site permit (ESP) application for the Joshua Falls site in Campbell County, Virginia. APCo is a fully owned subsidiary of American Electric Power Company, Inc. (AEP). APCo intends to submit the ESP application to the U.S. Nuclear Regulatory Commission (NRC) in 1st quarter (January to March) 2027.

The ESP will include one or more small modular reactors (SMRs) using the plant parameter envelope concept. APCo will keep the NRC informed of any changes to the anticipated schedule for filing the ESP application to facilitate NRC efforts to plan for processing of the permit application.

This letter also transmits the APCo SMR Regulatory Engagement Plan. The plan is provided for information and outlines proposed interactions with the NRC associated with the SMR ESP APCo is pursuing under 10 CFR 52 Subpart A. Enclosure 1 provides the Regulatory Engagement Plan for the APCo SMR.

Additionally, this letter transmits the APCo response pursuant to NRC Regulatory Issue Summary (RIS) 2020-02 “Process for Scheduling and Allocating Resources for Fiscal Years 2023–2025 for the Review of New Licensing Applications for Light-Water Reactors and Non-Light-Water Reactors,” August 31, 2020 (ML2020A496). AEP recognizes that this response is voluntary and is submitting this response with the goal of assisting the NRC as it develops the schedule and resources for the review of applications for advanced reactors and SMRs. Enclosure 2 provides the licensing responses to the questions in RIS 2020-02.

There are no regulatory commitments contained in this letter. Should you have any questions, please contact Mr. Timothy C. Siefer at (269) 466-2573.

Sincerely,

Signed by:
Q. Shane Lies
23B07F262EC9440...

Q. Shane Lies
Executive Vice President, Projects and Services

TCS

Enclosure 1: AEP-SMR-NRC-001 American Electric Power (AEP) / Appalachian Power Company (APCo) Small Modular Reactor (SMR) Regulatory Engagement Plan Revision 0 (Non-Proprietary)
Enclosure 2: AEP-SMR-NRC-002 American Electric Power (AEP) / Appalachian Power Company (APCo) Response Pursuant to U.S Nuclear Regulatory Commission RIS 2020-02 Revision 0 (Non-Proprietary)

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ENCLOSURE 1 TO AEP-SMR-NRC-2025-002

AEP-SMR-NRC-001
American Electric Power (AEP) / Appalachian Power Company (APCo) Small Modular Reactor (SMR) Regulatory Engagement Plan
Revision 0 (Non-Proprietary)

American Electric Power (AEP) / Appalachian Power Company (APCo) Small Modular Reactor (SMR) Regulatory Engagement Plan

Revision 0 – Initial Issue

Preparation & Review			
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Date:	2025-02-28	2025-02-28	3/4/2025 | 11:32 AM EST

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1.0 INTRODUCTION / PURPOSE OF REP

The purpose of this regulatory engagement plan (REP) is to guide interactions and enhance communication between the American Electric Power (AEP) Small Modular Reactor (SMR) / Advanced Reactor (AR) project and the Nuclear Regulatory Commission (NRC) throughout the licensing process. This plan identifies the planned regulatory approach and defines interactions and roles and responsibilities in order to enhance communication and reduce regulatory uncertainty.

The REP is intended to provide information on future interactions and submittals to assist in NRC staff planning. Engagement with the NRC staff will inform expected outcomes from early interactions. If a particular outcome (e.g., conditional staff finding) is needed, the REP and associated NRC staff planning may be adjusted with that outcome in mind. The NRC staff will be worked with to establish a mutually agreeable review plan that includes a defined scope and level of review, desired outcomes in terms of regulatory observations, and particular areas of focus, review costs, and review schedules.

The REP includes anticipated future dates for interactions or submittals (See Section 9.0 Schedule), changes will be communicated to the NRC in advance. The dates provided are anticipated months for interactions to be held or submittals to be provided to the NRC.

1.1 Contact Information

The following are points of contact for all correspondence:

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1.2 Company / Project Structure

AEP is one of the largest electric energy companies in the United States, powering millions of homes and businesses, while looking to redefine the future of energy and develop innovative solutions that power communities and improve lives. As part of this vision, AEP is working to provide a next generation nuclear SMR or AR.

Appalachian Power Company (APCo) is an electric utility subsidiary of AEP, serving portions of West Virigina and Virigina. As part of AEP's SMR/AR program, APCo is the AEP entity that will apply for and hold the operating license for a prospective new SMR power plant in Virigina.

Indiana Michigan Power Company (I&M) is an electric utility subsidiary of AEP, serving portions of Indiana and Michigan. I&M is the current owner and operator of the Donald C. Cook Nuclear Power Plant. AEP may initially utilize nuclear quality-related processes and personnel from I&M and D.C. Cook to support the AEP SMR / AR project until an approved Quality Assurance Program is approved for the SMR project.

1.3 Summary of Strategic Project Approach / Goals

Since the power generation nuclear technology to be deployed at AEP's site has not been selected, AEP intends to use the early site permit (ESP) application process per 10 CFR 52 Subpart A (Reference 10.1) to receive NRC approval on one site for a nuclear power facility independent of an application for a construction permit or combined license.

AEP conducted a comprehensive site selection process that resulted in the identification of a site approximately 6 miles east from Lynchburg, Virginia near the James River. This site currently hosts the AEP Joshua Falls Substation. The prospective SMR site will be referred to as the Joshua Falls site.

Prior to starting development of the ESPA for Joshua Falls, AEP submitted a Quality Assurance Program Description (QAPD) for NRC review. Utilizing the Nuclear Energy Institute (NEI) 11-04A "Nuclear Generation Quality Assurance Program Description" template as a guide, the QAPD was developed based on ASME NQA-1 requirements.

1.4 Background

AEP via I&M has owned and operated Donald C. Cook Nuclear Power Plant in southwestern Michigan since Unit 1 first became operational in 1975. AEP is leveraging this experience in pursuing several SMR technology options to provide clean and affordable energy for decades to come. As all of these technologies are still in the initial stages of development, AEP will utilize the ESP process to obtain site(s) approval in parallel with evaluating and finalizing the decision on the appropriate reactor technology.

1.5 REP Approach

This REP is based on the Nuclear Energy Institute (NEI) 18-06, "Guidelines for Development of a Regulatory Engagement Plan" (Reference 10.4). AEP will maintain this REP as a living document and will

update as necessary to capture the necessary and latest information. AEP will maintain and control this REP and will interface with the NRC staff to acquire input and direction for consideration. This information will be incorporated into the REP as applicable.

The REP will describe and document agreements between AEP and the NRC staff regarding the licensing approach, the agreed upon direction and resolution of issues, schedule expectations, and interaction protocol.

2.0 TECHNOLOGY SUMMARY

The licensing approach is to initially obtain a technology agnostic ESP, which does not require a technology to be selected. SMR technologies are under evaluation and the final technology selected will be determined at a later time. AEP is targeting a site capacity that maintains current and future area demand while remaining economical, with the exact output and number of units dependent on the technology and site(s) selected.

3.0 REGULATORY STRATEGY

3.1 Application Type

Early Site Permit – Joshua Falls, VA

The AEP SMR project is first pursuing an ESP under 10 CFR 52 Subpart A (Reference 10.1) for the Joshua Falls site. Specifically, the general and technical content requirements are located in §§52.16 and 52.17. The regulation requires the application to contain:

- a site safety analysis report (SSAR);
- an Environmental Report (ER) as required by 10 CFR 51.50(b);
- a “major features” (i.e., partial) Emergency Plan (EP) or complete and integrated EP, including applicable EP-related Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC); and
- additional applicable parts as described in Regulatory Guide (RG) 1.206 (Reference 10.17).

The ESP will utilize a Plant Parameter Envelope (PPE) approach to develop a list of parameters that will bound the design of a reactor or reactors that might be later deployed at the site. The guidance in NEI 10-01, “Industry Guideline for Developing a Plant Parameter Envelope in Support of an Early Site Permit (Reference 10.5),” will be used for the development of the PPE.

Quality Assurance Program Description

Prior to the start of ESPA development, the AEP SMR project submitted a QAPD per 10 CFR 50, Appendix B, and 10 CFR 52 for NRC review, and utilizes the NEI 11-04A template as a guide. While this NRC review will be conducted during development of the ESPA, it will be incumbent on AEP to leverage Contractor(s) QA Programs to cover those aspects of the safety-related activities performed prior to the AEP QAPD being approved by the NRC and made active. These responsibilities shall be delegated to responsible Contractors by AEP for control of early project activities. The AEP QAPD is expected to be in place to support the implementation of the owner acceptance review process.

3.2 National Environmental Policy Act

The NRC staff's obligations under the National Environmental Policy Act (NEPA) are described in 10 CFR 51 (Reference 10.7). AEP will provide input, in the form of an ER, to the NRC staff for their review and preparation of the NRC staff's NEPA documentation. Content requirements in support of NEPA are described in the various parts of regulation associated with the application types discussed in 3.1 above.

The general requirements for the ER are addressed in 10 CFR 51.45 with specific requirements provided in 10 CFR 51.50. RG 4.2, "Preparation of Environmental Reports for Nuclear Power Plants" (Reference 10.8), describes an acceptable method to satisfy ER requirements. RG 4.7, "General Site Suitability Criteria for Nuclear Power Stations" (Reference 10.9), describes an acceptable method to implement site suitability requirements and provides guidelines for determining the suitability of a candidate site for nuclear power stations. NUREG-1555, "Standard Review Plans for Environmental Reviews for Nuclear Power Plants – Environmental Standard Review Plan (ESRP)" (Reference 10.10), contains guidance for NRC staff review of an ER. AEP will utilize these NRC guiding documents for preparation of the ER.

Site acceptability will be based on a detailed evaluation of the proposed site and a cost-benefit analysis comparing it with alternative sites. AEP will follow evaluation guidance found in the Electric Power Research Institute (EPRI) Advanced Nuclear Technology: Site Selection and Evaluation Criteria for New Nuclear Energy Generation Facilities (Siting Guide Report 3002023910, Reference 10.11).

3.3 Principal Design Criteria

This section is currently not used. Information will be added as necessary upon selection of the SMR technology.

3.4 Selection of Applicable Guidance

NUREG-1555 (referenced in Section 3.2 above) provides guidance for the NRC staff for environmental reviews. The ESRP guides staff environmental review for the early site permit approach AEP is undertaking.

RG 1.206, “Applications for Nuclear Power Plants,” RG 4.2, “Preparation of Environmental Reports for Nuclear Power Stations,” and RG 4.7, “General Site Suitability Criteria for Nuclear Power Stations,” are also discussed in Section 3.2 above.

NUREG-0800, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition” (Reference 10.20), provides the guidance used by NRC staff to perform safety reviews of early site permits per 10 CFR Part 52.

Additional applicable guidance will be added to this section upon determination of the licensing approach following ESP. Since the NRC staff has not completed many reviews for SMRs, it is acknowledged that existing guidance may have limitations or not be directly applicable in all cases. Further discussion will be provided upon selection of SMR technology.

3.5 Use of Standards and Industry Guidance

Industry standards including consensus standards, NEI guidance, and EPRI guidance will be utilized when appropriate during the application process.

Consensus standards refer to those developed by standards development organizations (SDOs) such as American Nuclear Society (ANS), American Society of Mechanical Engineers (ASME), American Society for Testing and Materials (ASTM), and Institute of Electrical and Electronics Engineers (IEEE), among others, accredited by the American National Standards Institute (ANSI). Consensus standards references in regulatory guidance will be followed as applicable.

Specific NEI and EPRI guidance documents have been referred to in this REP as applicable.

3.6 Assessing Alignments / Gaps

As part of the licensing application development, it may be necessary to resolve conflicts between existing regulatory infrastructure and new features in the selected SMR technology. AEP may identify needed exemptions from NRC regulations and deviations from guidance. For significant gaps, pre-application interactions will be conducted with NRC staff to outline the strategy and approach.

The NRC staff has published a white paper on the importance of pre-application engagement during advanced reactor application reviews (Reference 10.12). This has been referenced in the preparation of this REP to ensure alignment between NRC staff, AEP, and the selected SMR/AR vendor.

3.7 Key Issues

Generic Issues

The NRC has identified certain issues in the Generic Issues Program (GIP). The GIP routinely reports generic issue status and resolutions. The Generic Issue Management Control System (GIMCS) is maintained exclusively online and generic issues are identified in quarterly GIMCS reports. Identification of potential issues related to the GIP and issues addressed in the GIMCS can be captured in this REP, as applicable, once the SMR technology is selected.

New Reactor Issues

NRC staff and industry (via NEI) typically track generic issues related to new reactors and update progress in addressing/resolving such issues. These will be addressed, as applicable, once the SMR technology is selected. Many of the representative issues listed in the next section below are included on the NRC staff and/or NEI lists.

Selected Specific Issues

This is a preliminary list only, and issues will vary based on the selected SMR/AR technology:

- Emergency Planning
- Seismic
- Flooding
- Quality Assurance
- Concept of Operations
- ITAAC and Design Acceptance Criteria
- Ownership and Financial Assurance

3.8 NRC Review Timeframes

The NRC generic milestone schedule for an early site permit is 24 months with a period of approximately 6 months for public hearings. Refer to Section 9.1 below for an overview of AEP's strategic milestone goals.

4.0 PRE-APPLICATION ENGAGEMENT

4.1 Identification of Topics

The regulatory strategy is described in Section 3.1 above. Novel regulatory approaches (if any) and deviations from regulation and key guidance (e.g., exemptions from regulation, departures from certified design, exceptions and clarifications to guidance) will be described here upon selection of the SMR technology.

Applicable Generic, Industry, and design-specific issues are discussed in Section 3.8 above. Site specific issues are discussed in Section 3.2 above.

Topics for pre-application interaction may be prioritized based on complexity, anticipated lead time as regards development and licensing timelines, and applicant/NRC staff resource availability. Early interaction with NRC staff and management will contribute significantly to the selection of appropriate topics.

4.2 Types and Frequency of Interactions

AEP will facilitate pre-application meetings (teleconferences, videoconferences, and face-to-face) with NRC staff to identify, assess, and mitigate regulatory risks associated with the licensing application. The primary benefit planned for this engagement is alignment on the risk-informed content of the application, and scope and depth of the NRC review. AEP will engage in frequent open and closed meetings with NRC staff until application submittal. These meetings will ensure that NRC staff has timely and accurate information to complete regulatory responsibilities in making their safety determination with respect to agency resource availability. AEP understands the need to notify the public of agency meetings and will support efforts for early meeting notification. AEP will work with NRC staff to coordinate an appropriate schedule of meetings taking into consideration the multiple time zones of attendees.

The types and frequency of interactions will depend on the complexity of the issue to be discussed, the stage in the development of the application, and the availability of NRC staff resources. Examples of interactions include:

- Routine Project Management Discussions – routine and frequent interaction with the assigned NRC staff project manager(s) to maintain consistent understanding of the status of issue identification resolution.
- Project Management “Drop-Ins” – periodic, non-public meetings between the applicant and project management team, which may include participation by various levels of NRC staff management.

- Technical Discussions – direct engagement with NRC staff reviewers in specific subject areas, frequently including reviewers and management
- NRC Staff Familiarization – provide background information via meetings, conferences, visits to site, visits to other locales, and/or formal training
- Topical Reports – stand-alone documents with an associated safety evaluation report that typically addresses a technical issue, methodology or process submitted for review and approval which when approved is useable by other licensees in the licensing process
- Technical Reports – reports generated in support of an application typically reviewed by NRC staff and considered only in support of information formally submitted for review and approval in an application
- White Papers – report that presents information or describes a position on a specific issue with the objective of increasing understanding, solving a problem or making a decision

4.3 NRC Feedback

Conclusions from meetings or other interactions may be provided via an NRC staff trip report, audit report, etc. When the subject of an interaction is proprietary or otherwise sensitive, NRC staff will summarize discussions in a form appropriate for public disclosure that does not divulge the sensitive information.

Establishing agreement in advance with NRC staff on the requested and expected type and extent of feedback will be essential to ensuring a predictable level of issue resolution. An “electronic reading room” will be set up to allow AEP and the NRC to track meeting summaries, feedback, and action items.

Correspondence with the NRC will include: project status information, presentations, topical reports, white papers, and responses to Requests for Additional Information (RAI) on submitted documents.

4.4 Schedule Considerations

Pre-application engagements will establish a schedule of meetings and submittals, and the timing/duration of NRC staff reviews. Additionally, the expectations for communicating changes to the schedule and/or scope will also be established. Refer to Section 9.1 below for an overview of AEP’s strategic milestone goals.

4.5 Relation to Other Proceedings / Reviews

AEP will ensure alignment on the relationship of the licensing application to other ongoing or expected NRC activities, depending on SMR technology selection. Conferring with NRC staff will help anticipate potential impacts of which AEP may not be aware.

During preparation of the ER, AEP will describe consultations with certain federal, state, and local authorities as applicable. Such consultations may be associated with issuance of collateral permits, or with agency input to assessment of environmental impact. Typical consultations include US Fish and Wildlife Agency, state environmental agencies, and American Indian Tribes, if applicable. Other review bodies, such as US Department of Energy (DOE), US Army Corps of Engineers (USACE), and Federal Emergency Management Agency (FEMA) will be involved in reviews if required, depending on the specific site and technology selection.

4.6 Pre-Application Site Visits, Audits, and Inspections

Audits and inspections will be coordinated with the NRC-designated project manager and subject matter experts.

NRC staff may audit QA program implementation during application development, in the interest of identifying issues that should be addressed prior to completion of the application.

When development of an application includes or relies on testing, those test activities may be reviewed by NRC staff during pre-application interactions. Such reviews may take the form of simple site visits (e.g., for NRC staff familiarization of the test facilities and methods) or may be the subject of a pre-application audit, particularly where testing is being used to demonstrate or qualify first-of-a-kind technologies.

It is common for NRC staff to visit the location proposed for siting a new reactor. A site visit may include evaluation/assessment by the US Department of Homeland Security (DHS) of the site's protection from (or vulnerability to) terrorist attack in the context of critical infrastructure protection.

The NRC staff also may conduct audits or inspection of key suppliers. A portion of pre-application audits may be conducted in concert with (or in the offices of) a contractor providing related services. Similarly, a supplier providing key safety-related services as part of the facility's design may be subject to an NRC inspection.

5.0 APPLICATION PROCESS

5.1 Readiness Assessment Audit

AEP will request the NRC staff conduct a readiness assessment audit of the ESP application prior to submittal for NRC review. This review is comprehensive and will help identify and resolve issues that may hinder acceptance of the ESP for docketing and review.

Similarly, a readiness assessment audit will be performed for the subsequent license application, dependent on strategy and technology choices.

These audits must occur with sufficient time to resolve identified issues before scheduled submittals to avoid schedule and cost impacts to the project. This process will take place in accordance with NRC Office of Nuclear Reactor Regulation (NRR) Office Instructions (OI) NRR-LIC-116, “Preapplication Readiness Assessment” (Reference 10.13), and NRR-LIC-117, “Acceptance Review Process for New Nuclear Facility Licensing Applications” (Reference 10.14).

5.2 Application Submittal

Refer to Section 9.1 below for an overview of AEP’s strategic milestone goals.

AEP will follow the NRC electronic submission process by using the Electronic Information Exchange (EIE) System, with the expectation that the application documents can be broken into a manageable number of files (e.g., around twenty-five files or less) and the total size for the combined files is also manageable (around 1GB or less). AEP will utilize the Guidance for Electronic Submissions to the NRC (Reference 10.15).

5.3 Acceptance Review and Docketing

After the ESP application submittal, the NRC will acknowledge receipt of the application and conduct an acceptance review (Reference 10.14). During the acceptance review process, regular meetings with the NRC project managers will be held to continue to ensure alignment with NRC staff.

A similar process will be followed for any subsequent licensing application.

5.4 NRC Processes

AEP will communicate the anticipated submittal date of the ESP application so that the NRC can initiate various actions required prior to

submittal. After ESP application acceptance, the NRC staff will develop a review schedule, which will be found on the NRC staff website.

A similar process will be followed for any subsequent licensing application (e.g., Construction Permit Application).

6.0 POST-APPLICATION ENGAGEMENT

6.1 Technical Meetings

Technical meetings will be coordinated with the NRC-designated project manager and typically will be open to the public. The NRC will provide notice ten working days in advance and will include whether the meeting is open or closed to the public.

6.2 Audits and Inspections

Post-application audits and inspections will be coordinated with the NRC-designated project manager and subject matter experts.

6.3 Submittal of Additional Information

Supplemental Information

During the NRC approval process, information in the application may require an update. Notification of pending supplemental information and the associated schedule will be communicated to the NRC during routine interactions.

Requests for Additional Information

RAIs will be processed in accordance with NRO-REG-101, “Processing Requests for Additional Information”. When issues or questions arise during the approval process, AEP prefers to utilize the NRC’s eRAI process to clarify the request and identify proprietary information that should be withheld from the formal RAI.

Any impacts to the content of the application will be identified as part of the RAI response. A description of the impact and markups of affected application text will be included in the response.

Application Revisions/Updates

The application will be updated periodically as required by NRC regulations. This will be dependent on the licensing approach following the ESP.

6.4 Frequency of Interactions

This section will be updated as plans evolve. A routine interaction schedule will be proposed to ensure alignment between AEP and the NRC during application review.

6.5 Review Phases and Schedules

Refer to Section 3.1 for the application approach. More detail will be provided on review phases for the licensing application following the ESP.

6.6 Relation to Other Proceedings / Reviews

This section is currently not used. Information will be added as necessary upon selection of the SMR technology.

7.0 WITHHELD INFORMATION

AEP will comply with the Code of Federal Regulations and use existing AEP procedures and processes as they relate to withheld information.

8.0 PARTNERSHIPS AND INDUSTRY PARTICIPATION

8.1 Design-Centered Work Group

N/A at this time.

8.2 Nuclear Energy Institute

NEI has published guidance documents to assist applicants in addressing various topics. NEI 18-06, “Guidelines for Development of a Regulatory Engagement Plan”, was used to develop this document (Reference 10.4). Other relevant NEI documents will be utilized during the application process, as indicated in this REP or otherwise applicable.

8.3 Standard Development Organization

N/A at this time.

8.4 Department of Energy

The DOE does not currently have a bearing on siting, budget and schedule, or other aspects of AEP’s development plan.

8.5 Other Organizations

Other organizations do not currently address technical or policy issues that need to be included in this REP.

8.6 International Considerations

There are no international considerations at this time.

9.0 OTHER TOPICS

9.1 Schedule

Quality Assurance Program Description (QAPD)

Submittal Date:

- January 28, 2025 (ML25028A159)

Early Site Permit Application (ESPA)

Anticipated Submittal Date:

- Q1 2027

9.2 Budget

Budgeting discussions will be held with the NRC if they become necessary. Estimates of NRC review hours would be useful to AEP for budgeting purposes.

10.0 REFERENCES

10.1 U.S. Code of Federal Regulations, “Early Site Permits,” Subpart A, Part 52, Chapter I, Title 10 (10 CFR 52 Subpart A).

10.2 U.S. Code of Federal Regulations, “Domestic Licensing of Production and Utilization Facilities,” Part 50, Chapter I, Title 10 (10 CFR 50).

10.3 U.S. Code of Federal Regulations, “Combined Licenses,” Subpart C, Part 52, Chapter I, Title 10 (10 CFR 52 Subpart C).

10.4 Nuclear Energy Institute, “Guidelines for Development of a Regulatory Engagement Plan,” NEI 18-06, Rev. 0, June 2018.

10.5 Nuclear Energy Institute, “Industry Guideline for Developing a Plant Parameter Envelope in Support of an Early Site Permit,” NEI 10-01, Rev. 2, August 2021, NRC Agencywide Documents Access and Management System (ADAMS) Accession No. ML21222A220.

10.6 Nuclear Energy Institute, “Nuclear Generation Quality Assurance Program Description,” NEI 11-04A, Rev. 0, August 2013, NRC Agencywide Documents Access and Management System (ADAMS) Accession No. ML13235A26.

10.7 U.S. Code of Federal Regulations, “Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions,” Part 51, Chapter I, Title 10 (10 CFR 51).

10.8 U.S. Nuclear Regulatory Commission, “Preparation of Environmental Reports for Nuclear Power Plants,” Regulatory Guide 4.2, Rev. 3, September 2018, Agencywide Documents Access and Management System (ADAMS) Accession No. ML18071A400.

10.9 U.S. Nuclear Regulatory Commission, “General Site Suitability Criteria for Nuclear Power Stations,” Regulatory Guide 4.7, Rev. 3, March 2014, Agencywide Documents Access and Management System (ADAMS) Accession No. ML12188A053.

10.10 U.S. Nuclear Regulatory Commission, “Standard Review Plans for Environmental Reviews for Nuclear Power Plants,” NUREG-1555.

10.11 Electric Power Research Institute, “Advanced Nuclear Technology: Site Selection and Evaluation Criteria for New Nuclear Energy Generation Facilities (Siting Guide) – 2022 Revision,” Technical Report 3002023910.

10.12 U.S. Nuclear Regulatory Commission, “DRAFT Pre-application Engagement to Optimize Advanced Reactor Application Reviews,” May

2021, Agencywide Documents Access and Management System (ADAMS) Accession No. ML21145A106.

10.13 U.S. Nuclear Regulatory Commission (Office of Nuclear Reactor Regulation), “Preapplication Readiness Assessment,” NRR-LIC-116, Rev. 0, August 3, 2020, Agencywide Documents Access and Management System (ADAMS) Accession No. ML20104B698.

10.14 U.S. Nuclear Regulatory Commission (Office of Nuclear Reactor Regulation), “Acceptance Review Process for New Nuclear Facility Licensing Applications,” NRR-LIC-117, Rev. 0, January 28, 2021, Agencywide Document Access and Management System (ADAMS) Accession No. ML20283A188.

10.15 U.S. Nuclear Regulatory Commission, “Guidance for Electronic Submissions to the NRC,” May 30, 2023, Agencywide Documents Access and Management System (ADAMS) Accession No. ML13031A056.

10.16 U.S. Nuclear Regulatory Commission (Office of New Reactors), “Processing Requests for Additional Information,” NRO-REG-101, Rev. 2, August 15, 2018, Agencywide Documents Access and Management System (ADAMS) Accession No. ML18199A238.

10.17 U.S. Nuclear Regulatory Commission, “Applications for Nuclear Power Plants,” Regulatory Guide 1.206, Rev. 1, October 2018.

10.18 U.S. Code of Federal Regulations, “Standard Design Certifications,” Subpart B, Part 52, Chapter I, Title 10 (10 CFR 52 Subpart B).

10.19 U.S. Code of Federal Regulations, “Standard Design Approvals,” Subpart E, Part 52, Chapter I, Title 10 (10 CFR 52 Subpart E).

10.20 U.S. Nuclear Regulatory Commission, “Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition,” NUREG-0800.

10.21 Quality Assurance Program Description for the Appalachian Power Small Modular Reactor Early Site Permit Activities, Rev. 0, January 28, 2025, Agencywide Documents Access and Management System (ADAMS) Accession No. ML25028A159.

ENCLOSURE 2 TO AEP-SMR-NRC-2025-002

AEP-SMR-NRC-002
American Electric Power (AEP) / Appalachian Power Company (APCo)
Response Pursuant to U.S Nuclear Regulatory Commission RIS 2020-02
Revision 0 (Non-Proprietary)

American Electric Power (AEP) / Appalachian Power Company (APCo) Response Pursuant to U.S Nuclear Regulatory Commission RIS 2020-02

Revision 0 – Initial Issue

Preparation & Review			
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Date:	2025-02-28	2025-02-28	3/4/2025 | 11:36 AM EST

Licensing process questions for all potential/future applicants:

1)

a) **What types of NRC interactions do you plan to seek (e.g., pre-application, focused review, permit, license, design approval, amendment, renewal, certification)? This may be in the form of a white paper; topical report; CP, DC, ESP, LWA, COL, OL, SDA, ML, or LAR.**

AEP is pursuing an ESP under 10 CFR 52 Subpart A based on the requirements per sections §§52.16 and 52.17. The licensing approach will be a technology agnostic ESP utilizing a Plant Parameter Envelope (PPE) approach to develop a list of parameters that will bound the design of a reactor or reactors that might be later deployed at the site.

b) **If you plan to request an ESP, will you seek approval of either proposed major features of the emergency plans in accordance with 10 CFR 52.17(b)(2)(i) or with 10 CFR 52.17(b)(2)(ii)?**

As per 10CFR52.17(b)(2)(i) and (ii), the provisions allow the ability to either provide a less comprehensive emergency plan or a comprehensive emergency plan. AEP will provide a full and comprehensive emergency plan per the requirements of 10 CFR 52.17(b)(2)(ii).

2)

a) **In which month and year do you expect to submit your applications or other documents?**

AEP is currently developing an application schedule and is forecasting a submittal in Q1 2027.

3)

a) **If applicable at this time, is there a designated reference COL applicant?**

Not Applicable at this time.

b) **In what order would you like the NRC to review the subsequent applications?**

Not Applicable at this time.

4)

a) **Where will the facility be located?**

The preliminary location for the facility is in the Commonwealth of Virginia.

b) **How many units or modules will the design, or a specific facility, contain, if known?**

Not Applicable at this time.

5)

a) **Will you be part of an organized Design Centered Working Group (DCWG) or Technical Working Group (TWG)?**
Not Applicable at this time.

b) **Who are the other members of the DCWG or TWG?**
Not Applicable at this time.

c) **Who will be the primary point of contact for each DCWG or TWG?**
Not Applicable at this time.

Technical questions for all potential and future applicants (to the extent practical and possible):

1)

a) **What type of reactor design will be used?**
This information is not known at this time because AEP has not selected a reactor technology.

b) **What type of coolant and fuel will be used?**
This information is not known at this time because AEP has not selected a reactor technology.

2)

a) **What is the current status of the development of the facility design (e.g., conceptual, preliminary, or final)?**
Not Applicable at this time.

b) **Have you established a schedule for completing the design?**
Not Applicable at this time.

3)

a) **Do you plan to submit white papers or technical and topical reports related to the features of your design or for the resolution of policy or technical issues?**
White papers or technical and topical reports will be submitted as required.

b) **Do you have a schedule for submitting such papers or reports?**
There is no schedule currently.

4)

a) **Are you interested in licensing and testing a first-of-a-kind plant under the prototype provisions of 10 CFR 50.43(e)?**
At this time, AEP is not interested in the licensing and testing of a first of a kind plant.

b) **If so, to the extent practical, describe milestones, plans, and intended tests.**
Not Applicable at this time

5)

a) Are vendors or consultants assisting you in preparing the application?

AEP will be acquiring vendors and consultants to support this project.

b) If so, please describe their roles and responsibilities for the design and licensing activities.

AEP is in the process of issuing RFPs and awarding scopes of work. When vendors are selected, specific vendors, roles, and responsibilities will be provided.

6)

a) Are the U.S. Department of Energy, national laboratories, universities, or other institutions assisting you in developing the design or preparing the application?

AEP has not acquired the service of the US Department of Energy, national laboratories, universities, or other institutions for the development, design, or preparation of the application.

b) If so, please describe their roles and responsibilities for the design and licensing activities.

Not Applicable at this time.

7)

a) Have you established a schedule for qualifying fuel and other major systems and components?

There is no schedule currently.

8)

a) Have you developed computer codes and models to perform design and licensing analyses?

Not Applicable at this time.

b) Have you established a schedule for completing the design and licensing analyses?

Not Applicable at this time.

9)

a) Describe, to the extent practical, your schedule for defining principal design criteria, licensing-basis events, and other fundamental design and licensing relationships.

AEP is pursuing an ESP under 10 CFR 52 Subpart A based on the requirements per sections §§52.16 and 52.17. The licensing approach will be a technology agnostic ESP utilizing a Plant Parameter Envelope (PPE) approach to develop a list of parameters that will bound the design of a reactor or reactors that might be later deployed at the site. The technology specific aspects will be provided once the technology is selected.

10)

a) Have you developed procedures for the use of thermal fluidic testing facilities and for use of the results of their tests to validate computer models?

Not Applicable at this time.

b) Have you established a schedule for completing the thermal fluidic testing?

Not Applicable at this time.

c) Have you established a schedule for the construction of testing facilities?

Not Applicable at this time.

11)

a) Have you identified system and component suppliers (including fuel suppliers), manufacturing processes, and other major factors that could influence design decisions?

Not Applicable at this time.

b) Have you established a schedule for identifying suppliers and key contractors?

Not Applicable at this time.

12)

a) Do you have a quality assurance program or a schedule to develop one?

AEP submitted a QAPD for NRC review on January 28th, 2025 (ML25028A159). AEP must have the necessary Appendix B controls in place for ESPA development. Prior to that, AEP will leverage Contractor(s) Appendix B QA Programs to cover those aspects of the safety-related activities performed prior to the NRC approval of the AEP QAPD. These responsibilities shall be delegated to responsible Contractors by AEP for control of activities. Formal owner acceptance reviews will only take place with the NRC approved AEP QAPD in place.

AEP may utilize their existing D.C. Cook Appendix B program to control the procurement of Contractor(s). These procurement(s) will include utilizing the Contractor(s) Appendix B program to complete early site activities, such as geotechnical investigations and characterizations, meteorologic data developments and early design activities. AEP will determine if additional procedures or updates to procedures are needed to control these activities.

AEP would plan to develop or utilize an existing corporate corrective action program to control the identification and correction of issues related to procured services. A corrective action program will be developed for new generation projects prior to any owner acceptance reviews for the ESPA. The procured Contractor(s) corrective action program should be utilized as needed under its Appendix B program. AEP will determine if additional procedures or updates to procedures are needed to utilize the current corrective action program.

Areas such as training, document control, and records control will be controlled under the Contractor(s) QA program until such time records need to be transferred to AEP. If

records are transferred to AEP for control, AEP's existing records control system will be utilized.

Once the AEP QAPD is put in place, AEP can continue to have activities performed under Contractor(s) programs. However, as the potential licensee, AEP will continue to retain responsibility for the activities, or AEP may elect to have activities performed under the AEP QA Program.

13)

a) Have you developed the probabilistic risk assessment (PRA) models needed to support your applications, including the information needed to support risk-informed licensing approaches (for Chapter 19)?

Not Applicable at this time.

b) Do you plan to use the PRA for any risk-informed applications (e.g., risk-informed technical specifications, risk-informed inservice inspections, risk-informed categorization and treatment, risk-informed inservice testing)?

Not Applicable at this time.

c) Do you plan to use the PRA models in the development of the design?

Not Applicable at this time.

d) At what level will the PRA be prepared, and at what point during the application process will it be submitted?

Not Applicable at this time.

14)

a) Have you developed the plans for the construction and use of a control-room simulator?

Not Applicable at this time.

15)

a) Do you have a staffing plan?

Not Applicable at this time.

b) What is your current staffing level for the execution and testing of the reactor design?

Not Applicable at this time.

c) Do you plan to increase staffing?

Not Applicable at this time.

16)

a) Which systems, structures, and components, including fuel, do you foresee will be fabricated off site and delivered for the manufacturing, fabrication, and site construction of a completed operational nuclear power plant?

Not Applicable at this time.

b) What is intended to be assembled and constructed on site versus at a remote facility?

Not Applicable at this time.

c) In addition, and as applicable, provide the construction plans and schedules for the fabrication of large components and modules of the applicable SMR or non-LWR designs when available.

Not Applicable at this time.

Certificate Of Completion

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Document Pages: 33
Signatures: 1
Certificate Pages: 2
Initials: 0
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ID: bf20bc67-155c-4534-ab07-2206d3d07578

In Person Signer Events	Signature	Timestamp

Editor Delivery Events	Status	Timestamp

Agent Delivery Events	Status	Timestamp

Intermediary Delivery Events	Status	Timestamp

Certified Delivery Events	Status	Timestamp

Carbon Copy Events	Status	Timestamp

Witness Events	Signature	Timestamp

Notary Events	Signature	Timestamp

Envelope Summary Events	Status	Timestamps
Envelope Sent	Hashed/Encrypted	3/5/2025 12:34:49 AM
Certified Delivered	Security Checked	3/5/2025 5:58:28 AM
Signing Complete	Security Checked	3/5/2025 5:58:37 AM
Completed	Security Checked	3/5/2025 5:58:37 AM

Payment Events	Status	Timestamps

Electronic Record and Signature Disclosure

ELECTRONIC RECORD AND SIGNATURE DISCLOSURE

Each party agrees that the electronic signatures, whether digital or encrypted, of the parties included in this Agreement are intended to authenticate this writing and to have the same force and effect as manual signatures. Electronic signature means any electronic sound, symbol or process attached to or logically associated with a record and executed and adopted by a party with the intent to sign such record.

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