



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

ENERGY NORTHWEST NEW NUCLEAR, LLC. – U.S. NUCLEAR REGULATORY COMMISSION STAFF’S FEEDBACK REGARDING THE WHITE PAPER TITLED “ACCEPTABILITY OF HISTORICAL INFORMATION - FLOODING” (EPID: L-2025-LRM-0111)

SPONSOR INFORMATION

Sponsor: Energy Northwest New Nuclear, LLC.
Sponsor Address: 345 Hills Street
Richland, WA 99352
Docket/Project No.: 99902130

DOCUMENT INFORMATION

Submittal Date: July 30, 2025

Submittal Agencywide Documents Access and Management System (ADAMS) Accession No.: ML25211A360

Purpose of the white paper: Energy Northwest New Nuclear, LLC. (ENNN) stated that the purpose of this white paper (WP) is to provide ENNN’s evaluation of the acceptability of using existing 2016 post-Fukushima flooding hazard reevaluations for the Columbia Generating Station (Columbia) (Reference 1), which were accepted by the NRC (Reference 2) in 2018, satisfying the requirements for assessing flooding hazards in the ENNN’s Construction Permit Application (CPA).

Action Requested: ENNN requested that the U.S. Nuclear Regulatory Commission (NRC) staff provide feedback pertaining to the information discussed in the WP titled: “Acceptability of Historical Information - Flooding” (Document XO1-25-012). Specifically, ENNN is requesting feedback on ENNN’s evaluation of the acceptability of applying the historical information from Columbia’s post-Fukushima flooding hazard reevaluations to the flooding evaluations necessary for the proposed ENNN project license application.

Enclosure 2

FEEDBACK AND OBSERVATIONS

Note: [[]] denotes security related information.

Introduction:

The NRC staff reviewed ENNN's letter, dated July 30, 2025, titled "Acceptability of Historical Information - Flooding," (ML25211A360). The WP, with enclosures, outlines ENNN's process for determining the acceptability of historical information to characterize flooding hazards for its proposed site, which will host up to 12 Xe-100 small modular reactors adjacent to the Columbia Generating Station.

Specifically, ENNN evaluated whether the 2016 post-Fukushima Flooding Hazard Reevaluation Report (FHRR) for Columbia remains applicable to the proposed site. The proposed ENNN site is approximately 1.1 miles east of the Columbia site, toward the Columbia River, and at a higher elevation than the Columbia site. Site elevations range from 455.4 to 470.4 feet NAVD 88 - about 11 to 26 feet higher than Columbia's grade elevation. ENNN concluded that, except for local intense precipitation (LIP) flooding, the 2016 FHRR can serve as the flooding hazard basis for the new site CPA. ENNN stated that the LIP flooding mechanism will require a site-specific evaluation due to elevation, grading, and drainage differences at the proposed location.

The 2016 Columbia flooding reevaluation was conducted in response to the 2011 Fukushima Dai-Ichi accident and addressed multiple flooding mechanisms, including: LIP and site drainage, flooding in streams and rivers, dam failures, storm surge and wind-wave activity, seiche, tsunami, ice-induced flooding, channel migration/diversion, and combined effects (including wind-wave run-up). The 2016 Columbia FHRR concluded that the Columbia site would remain dry during all applicable flooding events with substantial margin, except for LIP. The NRC staff reviewed and approved the FHRR in 2018.

Applicability of Historical Data:

ENNN evaluated the applicability of each flood estimate presented in the 2016 FHRR analysis to the new site using six criteria:

1. Regulatory changes
2. Analysis methodology
3. Scope of analysis
4. Site changes
5. Quality assurance
6. Copy of record

A "yes" response for each criterion confirmed that the 2016 FHRR analysis remains applicable. For criteria where the response was "no, but justified," ENNN provided technical bases supporting the use of the historical analysis despite differences. Based on the evaluation of each flood mechanisms, ENNN concluded that the 2016 FHRR flooding evaluations remain valid for the proposed site, with the exception of LIP flooding, which requires a site-specific analysis to determine the maximum water surface elevations for the proposed site.

The NRC Staff’s Review and Observations:

The NRC staff reviewed the ENNN WP, to determine the applicability of the historical Columbia FHRR flood hazard estimates to the proposed site. The NRC staff evaluated the site’s location, elevation, and exposure to each flooding mechanism relative to the 2016 FHRR assumptions as summarized below.

Local Basin Probable Maximum Precipitation (PMF): The NRC staff reviewed available information to determine whether the local basin PMF estimates addressed in Columbia’s FHRR remain applicable to the proposed ENNN site. [REDACTED]

[REDACTED] This local basin PMF level also bounded all applicable Columbia River floods, including riverine PMF and dam failure, with significant margin. Because the ENNN site is 11~26 ft higher than Columbia, the NRC staff determined that the local basin PMF remains applicable, and the proposed site would remain dry with an increased margin above peak flood level.

Acceptability Criterion 4, “Site Change”: The WP defines this criterion as: “Is the project site today consistent with the project site that was analyzed?” However, in reviewing flood hazards for reactor licensing, the NRC staff considers both current and future site conditions over the project’s lifespan. Any new and significant hydrometeorological data should be validated and used to update flood hazard analyses as appropriate. Natural or planned changes in basin hydrogeomorphology - such as, river meandering, canal modifications, or dam construction - as well as changes in river flow regulations, could affect flood hazard estimates. The NRC staff recommends that ENNN address these potential impacts when determining the acceptability of Columbia’s FHRR flood estimates or provide a technical basis for not considering them in the proposed CPA.

Upon completion of the review, the NRC staff shares the following observations:

- Pending confirmation of the continued validity of data used in Columbia’s FHRR analysis for the proposed ENNN CPA licensing period, the historical analyses for the local basin PMF, riverine PMF, and flooding from dam failures, ice effects, channel migration, storm surge, seiche, and combined effects, remain technically valid for the proposed site.
- The NRC staff agrees that LIP flooding requires a site-specific evaluation due to differences in grade elevation and drainage.
- Any anticipated changes to hydrogeomorphic conditions, hydraulic structures, or river flow regulations over the project’s lifespan should be identified and incorporated into updated flood hazard estimates as needed.

Note: The observations reflected in this document do not contain any regulatory commitment or final regulatory decision of the NRC staff.

REFERENCES

1. “Columbia Generating Station, Docket No. 50-397 Flooding Hazard Reevaluation Report, Response to NRC Request for Information Pursuant to 10 CFR 50.54(f) Regarding Recommendation 2.1 of the Near-Term Task Force Review of Insights from the Fukushima Dai-Ichi Accident.” October 6, 2016, ML16286A309.
2. “Columbia Generating Station - Staff Assessment of Response to 10 CFR 50.54(f) Information Request – Flood-Causing Mechanism Reevaluation (CAC No. MF8455, EPID NO. 000495/05000397/L-2016-JLD-0010).” February 21, 2018, ML18051A401.

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