



NUCLEAR REGULATORY COMMISSION

NRC-2020-0266

Replacement Energy Cost Estimates for Nuclear Power Plants: 2020–2030

AGENCY: Nuclear Regulatory Commission.

ACTION: Draft NUREG; request for comment.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) is issuing for public comment draft NUREG-2242, “Replacement Energy Cost Estimates for Nuclear Power Plants: 2020–2030.” This guidance updates previous estimates of replacement energy costs for potential shutdowns of U.S. nuclear electricity-generating units.

DATES: Submit comments by **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]**. Comments received after this date will be considered if it is practical to do so, but the NRC is able to ensure consideration only for comments received before this date.

ADDRESSES: You may submit comments by any of the following methods:

- **Federal Rulemaking Web Site:** Go to <https://www.regulations.gov> and search for Docket ID NRC-2020-0266. Address questions about NRC dockets to Dawn Forder; telephone: 301-415-3407; e-mail: Dawn.Forder@nrc.gov. For technical questions, contact the individual listed in the FOR FURTHER INFORMATION CONTACT section of this document.

- **Mail comments to:** Office of Administration, Mail Stop: TWFN-7-A60M, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, ATTN: Program Management, Announcements and Editing Staff.

For additional direction on obtaining information and submitting comments, see “Obtaining Information and Submitting Comments” in the SUPPLEMENTARY INFORMATION section of this document.

FOR FURTHER INFORMATION CONTACT: Pamela Noto, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington DC 20555-0001; telephone: 301-415-6795, e-mail: Pamela.Noto@nrc.gov.

SUPPLEMENTARY INFORMATION:

I. Obtaining Information and Submitting Comments

A. Obtaining Information

Please refer to Docket ID NRC-2020-0266 when contacting the NRC about the availability of information for this action. You may obtain publicly available information related to this action by any of the following methods:

- **Federal Rulemaking Web Site:** Go to <https://www.regulations.gov> and search for Docket ID NRC-2020-0266.

- **NRC's Agencywide Documents Access and Management System (ADAMS):** You may obtain publicly available documents online in the ADAMS Public Documents collection at <https://www.nrc.gov/reading-rm/adams.html>. To begin the search, select "[Begin Web-based ADAMS Search](#)." For problems with ADAMS, please contact the NRC's Public Document Room (PDR) reference staff at 1-800-397-4209, 301-415-4737, or by e-mail to pdr.resource@nrc.gov. The draft NUREG, "Replacement Energy Cost Estimates for Nuclear Power Plants: 2020–2030," is available in ADAMS under Accession No. ML20342A132.

- **Attention:** The Public Document Room (PDR), where you may examine and order copies of public documents is currently closed. You may submit your request to the PDR via e-mail at PDR.Resource@nrc.gov or call 1-800-397-4209 between 8:00 a.m. and 4:00 p.m. (EST), Monday through Friday, except Federal holidays.

B. Submitting Comments

Please include Docket ID NRC-2020-0266 in your comment submission.

The NRC cautions you not to include identifying or contact information that you do not want to be publicly disclosed in your comment submission. The NRC will post all comment submissions at <https://www.regulations.gov> as well as enter the comment

submissions into ADAMS. The NRC does not routinely edit comment submissions to remove identifying or contact information.

If you are requesting or aggregating comments from other persons for submission to the NRC, then you should inform those persons not to include identifying or contact information that they do not want to be publicly disclosed in their comment submission. Your request should state that the NRC does not routinely edit comment submissions to remove such information before making the comment submissions available to the public or entering the comment into ADAMS.

II. Discussion

The NRC is developing new guidance to update replacement energy cost estimates for both short- and long-term nuclear power plant outages. The new guidance document, NUREG-2242, "Replacement Energy Cost Estimates for Nuclear Power Plants: 2020–2030," when finalized, updates and replaces the information contained within NUREG/CR-4012, Volume 4, "Replacement Energy Costs for Nuclear Electricity-Generating Units in the United States: 1997-2001," and NUREG/CR-6080, "Replacement Energy, Capacity, and Reliability Costs for Permanent Nuclear Reactor Shutdowns" (ADAMS Accession Nos. ML20073J435 and ML20076F500, respectively).

Replacement energy costs are estimated for the U.S. electricity wholesale market regions with nuclear electricity-generating units over the 2020–2030 study period. These estimates were developed to assist the NRC in evaluating proposed regulatory actions that (1) require safety modifications that might necessitate temporary reactor outages and (2) reduce the potential for extended outages resulting from a severe reactor accident. Estimates were calculated using ASEA Brown Boveri's PROMOD model and ICF's Integrated Planning Model for North America. The model simulates dispatching a collection of generating units in merit order (i.e., lowest to highest incremental cost of dispatch) until the regional power demand is met. Each generating unit is characterized by the technology and fuel it uses to generate electricity, the unit's heat rate, and the variable and fixed costs incurred in owning and operating

the unit. To estimate the replacement energy cost, the study models a Reference Case, in which all operational nuclear power plants are generating, and an Alternative Case, in which a nuclear generating unit is taken offline so that the next unit in merit order is dispatched to replace the lost generation. The difference in market clearing prices between the two cases is the replacement energy cost.

The resulting wholesale power price projections capture the dynamics and economics of the U.S. electricity markets, which provide short- and long-term replacement energy cost estimates on a market area basis. Factors that affect replacement energy costs, such as load growth, replacement sources of generation, fuel prices, air emission requirement outlooks, and seasonal variations were treated in the analysis.

On November 18, 2020, the NRC held a Category 3 public meeting (ADAMS Accession No. ML20336A181) to discuss the updated replacement energy cost estimates. The NRC appreciates feedback received from the November 18, 2020 public meeting and will consider comments received during the public comment period when developing the final NUREG-2242. After Commission approval and publication of the final NUREG-2242, the NRC plans to develop an appendix to NUREG/BR-0058, Revision 5, "Regulatory Analysis Guidelines of the U.S. Nuclear Regulatory Commission," (ADAMS Accession No. ML19261A278) to provide guidance for applying the replacement energy cost estimates.

Dated: December 15, 2020.

For the Nuclear Regulatory Commission.

John R. Tappert,

Director,

Division of Rulemaking, Environmental, and Financial Support,

Office of Nuclear Materials Safety and Safeguards.

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