

provisions of the PAA should be continued, modified, or eliminated. DOE issued a prior report to Congress pursuant to section 170p. in 1998<sup>5</sup> (“1998 Report”) recommending renewal of the PAA, which was developed and informed by a public comment process.

On July 26, 2021, DOE published a NOI in the **Federal Register** (86 FR 40032) requesting public comment to assist with its preparation of a report to Congress on the need for continuation or modification of the provisions of the PAA as administered by DOE. In the NOI, DOE provided an update on significant changes in law or circumstances since the 1998 Report, included a non-exhaustive list of questions and topics to be considered by commenters, and requested public comment to assist with preparation of the 2021 Report. The NOI requested public comment from interested persons to be submitted by August 25, 2021.

On July 29, 2021, DOE received comments from the Nuclear Energy Institute (“NEI”) expressing appreciation for the opportunity for public participation in the development of the 2021 Report while requesting additional time, a 30-day extension, to provide comments. NEI stated the additional time is necessary to collect views and comments from its members on the future of the PAA and to enable those comments to reflect meaningful and substantive responses to the specific enumerated questions and topics posed by DOE in the NOI. NEI also noted that granting the additional time is consistent with the extensions in the public comment deadlines provided by DOE in connection with the 1998 Report, resulting in a public comment period equal to 56 calendar days.

DOE also received comments and a request for a 60-day extension on August 6, 2021, from the Natural Resources Defense Council (“NRDC”), on behalf of the combined membership of NRDC, Nuclear Information and Resources Service, Beyond Nuclear, and Savannah River Site Watch. NRDC stated that given the significance of the PAA to the framework of the nuclear industry and the range of economic, technical, policy and legal considerations raised in the NOI, an extension of the public period is warranted to provide its members and other stakeholders sufficient time to consider, deliberate and formulate comments in response to the NOI. NRDC particularly noted the need for a

meaningful review period in order to evaluate and address impacts of the PAA in regard to the vital topic of environmental justice, equity, and inclusion, and the evolving and developing technologies in the nuclear industry, such as small modular reactors and potential as-yet unused nuclear fuels.

DOE has determined that extension of the comment period is appropriate based on the foregoing reasons and is hereby extending the comment period to October 25, 2021. Given the importance of proceeding in a timely manner toward development of the 2021 Report that is due to Congress by December 31, 2021, DOE does not intend to grant any further extensions. Accordingly, DOE will consider any comments received by October 25, 2021.

#### Signing Authority

This document of the Department of Energy was signed on August 10, 2021, by John T. Lucas, Acting General Counsel, Office of the General Counsel, pursuant to delegated authority from the Secretary of Energy. That document with the original signature and date is maintained by DOE. For administrative purposes only, and in compliance with requirements of the Office of the Federal Register, the undersigned DOE **Federal Register** Liaison Officer has been authorized to sign and submit the document in electronic format for publication, as an official document of the Department of Energy. This administrative process in no way alters the legal effect of this document upon publication in the **Federal Register**.

Signed in Washington, DC on August 11, 2021.

**Treena V. Garrett,**

*Federal Register Liaison Officer, U.S. Department of Energy.*

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**BILLING CODE 6450-01-P**

## DEPARTMENT OF ENERGY

### Request for Information: Access to Quantum Systems

**AGENCY:** Office of Science, Department of Energy (DOE).

**ACTION:** Request for information (RFI).

**SUMMARY:** Congress has requested DOE to develop a roadmap to provide researchers access to quantum systems so as to enhance the U.S. quantum research enterprise, stimulate the fledgling U.S. quantum computing industry, educate the future quantum computing workforce, and accelerate advancement of quantum computer

capabilities. In collaboration with private sector stakeholders, the research facility user community, and interagency partners, the Department of Energy (DOE), through the Office of Science, intends to develop such a roadmap. DOE invites interested parties to provide input on the quantum systems that DOE should include in the roadmap; how the current access models can meet the needs of quantum researchers; and the appropriate timeline and sequencing for components of the roadmap.

**DATES:** Written comments and information are requested on or before September 30, 2021.

**ADDRESSES:** DOE is using the <https://www.regulations.gov> system for the submission and posting of public comments in this proceeding. All comments in response to this RFI are therefore to be submitted electronically through <https://www.regulations.gov>, via the web form accessed by following the “Submit a Formal Comment” link near the top right of the **Federal Register** web page for this document.

**FOR FURTHER INFORMATION CONTACT:** Requests for additional information may be submitted to [Quantum-Systems-Access-RFI@science.doe.gov](mailto:Quantum-Systems-Access-RFI@science.doe.gov) or Dr. Ceren Susut, (301) 903-0366.

#### SUPPLEMENTARY INFORMATION:

##### I. Background

Quantum information science (QIS) is a potentially transformative emerging field, with resulting quantum technologies having significant implications for scientific discovery as well as for our Nation’s economic prosperity and security.<sup>1</sup> Widespread access to a variety of quantum systems for research, development, testing, and evaluation is critical to continued rapid progress and competitiveness in this field and to accelerate QIS research and development. Congress, in the Joint Explanatory Statement accompanying the Energy and Water Development and Related Agencies Appropriations Act of 2021, requested DOE to “develop a roadmap to provide researchers access to quantum systems so as to enhance the U.S. quantum research enterprise, stimulate the fledgling U.S. quantum computing industry, educate the future quantum computing workforce, and accelerate advancement of quantum computer capabilities.”<sup>2</sup>

*Types of quantum systems under consideration:* DOE may consider access models for research and development

<sup>1</sup> See <https://www.quantum.gov/>.

<sup>2</sup> <https://docs.house.gov/billssthisweek/20201221/BILLS-116RCP68-JES-DIVISION-D.pdf>.

<sup>5</sup> U.S. Dep’t of Energy, Report to Congress on the Price-Anderson Act (1998), <https://www.energy.gov/sites/prod/files/gcproad/documents/paa-rep.pdf> (to be referenced as “1998 Report”).

(R&D) on a wide range of quantum systems. For simplicity, these systems are broadly categorized here, but many real facilities or capabilities will bridge across these flexible groups. The scope of quantum systems to be addressed in response to this RFI includes, but is not limited to:

(1) Systems for synthesis, characterization, and fabrication—including foundries and testbeds.

(2) Sensors and measurement systems—including light-matter sensors, atomic sensors, magnetometers, clocks, detectors, and imaging systems.

(3) Networking and communication systems—including interconnects, transducers, repeaters, switches, routers, entangled nodes, encrypted systems, and network testbeds.

(4) Computers, processors, annealers, and analog simulators—including noisy intermediate-scale quantum (NISQ) and beyond-NISQ computers, emulators, conventional computing systems, hybrid systems, and computing testbeds.

*Existing access models and approaches, and DOE resources and programs that support R&D activities on quantum systems:* DOE utilizes a range of approaches for access to R&D systems and facilities that it supports, depending on the nature of the capability, the scope of the desired interaction, the extent and composition of the community that is interested in access, and other factors.<sup>3</sup> (Other federal agencies may employ similar and/or additional models.) Direct collaboration with DOE-supported researchers (including but not exclusively at DOE National Laboratories), which may involve indirect or direct usage of their systems and instruments, is one frequent method, and may not require specific agreements or obligations other than those applying generally to laboratory requirements. For instance, the Microsystems Engineering, Science, and Applications (MESA) facility<sup>4</sup> at Sandia National Laboratories offers advanced fabrication capabilities relevant to QIS, and Los Alamos National Laboratory provides a variety of quantum computing technologies to scientists and engineers.<sup>5</sup>

Technology transfer and collaboration mechanisms include Cooperative Research and Development Agreements (CRADAs) that formalize joint R&D efforts between federal laboratories and external-to-government partners; Strategic Partnership Projects (SPPs), in which work is done for businesses and

other non-federal entities using specialized or unique facilities and/or expertise; as well as Agreements for Commercializing Technology (ACTs) and Technology Licensing Agreements, among others. Another approach used primarily for major facilities that host substantial numbers of external researchers is the user facility model, in which access is typically provided competitively via merit- and feasibility-based review.<sup>6</sup> Current and next-generation systems at DOE user facilities that enable breakthrough scientific discoveries in QIS include but are not limited to Nanoscale Science Research Centers,<sup>7</sup> High-Performance Computing and Networking Facilities,<sup>8</sup> X-Ray Light Sources,<sup>9</sup> and Neutron Scattering Facilities.<sup>10</sup> Other programs, such as Oak Ridge National Laboratory's Quantum Computing User Program,<sup>11</sup> facilitate access to commercial quantum computing resources via merit-based review and user agreements. Additionally, DOE supports the development of quantum computing and quantum network testbeds for science. For instance, DOE quantum computing testbeds provide the research community with fully transparent access to novel quantum computing hardware.<sup>12</sup>

## II. Questions

Input is requested on information the Department should consider as it develops a roadmap to provide researchers access to quantum systems to enhance the U.S. quantum research enterprise, stimulate the fledgling U.S. quantum computing industry, educate the future quantum computing workforce, and accelerate advancement of quantum computer capabilities. Any information that may be business proprietary and exempt by law from public disclosure should be submitted as described in Section III. Please provide data, analysis, and/or other justification for all responses to this RFI, where applicable. DOE is interested in receiving input on the following questions:

<sup>6</sup> <https://science.osti.gov/User-Facilities>.

<sup>7</sup> <https://science.osti.gov/User-Facilities/User-Facilities-at-a-Glance/BES/Nanoscale-Science-Research-Centers>.

<sup>8</sup> <https://science.osti.gov/User-Facilities/User-Facilities-at-a-Glance/ASCR>.

<sup>9</sup> <https://science.osti.gov/User-Facilities/User-Facilities-at-a-Glance/BES/X-Ray-Light-Sources>.

<sup>10</sup> <https://science.osti.gov/User-Facilities/User-Facilities-at-a-Glance/BES/Neutron-Scattering-Facilities>.

<sup>11</sup> <https://www.olcf.ornl.gov/olcf-resources/compute-systems/quantum-computing-user-program/>.

<sup>12</sup> <https://qscout.sandia.gov> and <https://aqt.lbl.gov>.

(i) What role, if any, should Federal agencies play in mediating, facilitating, or coordinating access to non-Federal quantum systems?

(ii) What special considerations, if any, should be taken into account in accommodating the scientific communities served by these quantum systems?

(iii) What quantum systems should be included in this roadmap?

(iv) What mechanisms should be considered to assure access to quantum systems to the broadest possible user base including under-represented institutions and populations?

(v) What are the needs for user support to make effective use of access to quantum systems?

(vi) What should be the metrics for success in an access model?

(vii) How should software access be provided in conjunction with hardware access?

(viii) For competitive proposals requesting access to quantum systems, what should be the criteria in the merit review process?

(ix) What factors should be considered in adding, expanding, or reducing access to specific quantum systems as the field evolves or matures?

(x) With respect to access to various types of quantum systems, how do near-term and longer-term priorities differ?

(xi) What standard intellectual property (IP) provisions are needed to facilitate broad access to quantum systems for the public benefit?

(xii) Are there other factors, issues, or opportunities, not addressed by the questions above, which should be considered in the development of such a roadmap?

Comments containing references, studies, research, and other empirical data that are not widely published should include copies of the referenced materials. Note that comments will be made publicly available as submitted. Any information that may be confidential and exempt by law from public disclosure should be submitted as described below.

## III. Request for Information

The Department seeks input from stakeholders to assist DOE in developing a roadmap for access to quantum systems, including the nature of quantum systems that should be considered; how the current access models can meet the needs of quantum researchers; and the appropriate timeline and sequencing for components of this roadmap. The input received will be considered by DOE in its development of the roadmap and for QIS program planning and

<sup>3</sup> <https://www.labpartnering.org/partnering>.

<sup>4</sup> <https://www.sandia.gov/mesa/>.

<sup>5</sup> <https://www.lanl.gov>.

development. Please be aware that this RFI is not a Funding Opportunity Announcement, a Request for Proposal, or other form of solicitation, or bid for DOE to fund potential research, development, planning, centers, or other activity.

*Confidential Business Information:*

Pursuant to 10 CFR 1004.11, any person submitting information he or she believes to be confidential and exempt by law from public disclosure should submit via email: One copy of the document marked “confidential” including all the information believed to be confidential, and one copy of the document marked “non-confidential” with the information believed to be confidential deleted. DOE will make its own determination about the confidential status of the information and treat it according to its determination. Factors of interest to DOE when evaluating requests to treat submitted information as confidential include: (1) A description of the items, (2) whether and why such items are customarily treated as confidential within the industry, (3) whether the information is generally known by or available from other sources, (4) whether the information has previously been made available to others without obligation concerning confidentiality, (5) an explanation of the competitive injury to the submitting person which would result from public disclosure, (6) when such information might lose its confidential character due to the passage of time, and (7) why disclosure of the information would be contrary to the public interest.

**Signing Authority**

This document of the Department of Energy was signed on August 11, 2021, by Harriet Kung, Deputy Director for Science Programs, Office of Science, pursuant to delegated authority from the Secretary of Energy. That document with the original signature and date is maintained by DOE. For administrative purposes only, and in compliance with requirements of the Office of the Federal Register, the undersigned DOE Federal Register Liaison Officer has been authorized to sign and submit the document in electronic format for publication, as an official document of the Department of Energy. This administrative process in no way alters the legal effect of this document upon publication in the **Federal Register**.

Signed in Washington, DC, on August 11, 2021.

**Treana V. Garrett,**

*Federal Register Liaison Officer, U.S. Department of Energy.*

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**DEPARTMENT OF ENERGY**

**Federal Energy Regulatory Commission**

[Project Nos. 2572-133 2458-247]

**Great Lakes Hydro America, LLC; Notice of Intent To File License Applications, Filing of Pre-Application Document, Commencement of Pre-Filing Process, and Scoping; Request for Comments on the Pad and Scoping Document, Identification of Issues and Associated Study Requests, and Virtual Public Scoping Meetings and Virtual Environmental Site Review**

a. *Type of Filing:* Notices of Intent to File License Applications for New License and Commencing Pre-filing Process.

b. *Project Nos.:* 2572-133 and 2458-247.

c. *Date Filed:* June 11, 2021.

d. *Submitted By:* Great Lakes Hydro America, LLC.

e. *Name of Projects:* Ripogenus Hydroelectric Project and Penobscot Mills Hydroelectric Project.

f. *Location:* On the West Branch of the Penobscot River and Millinocket Stream in Piscataquis and Penobscot Counties, Maine.

g. *Filed Pursuant to:* 18 CFR part 5 of the Commission’s Regulations.

h. *Licensee Contact:* Randall Dorman, Licensing Manager, Brookfield Renewable, 150 Main Street, Lewiston, ME 04240; (207) 755-5605; [randy.dorman@brookfieldrenewable.com](mailto:randy.dorman@brookfieldrenewable.com).

i. *FERC Contact:* Allan Creamer at (202) 502-8365, or email at [allan.creamer@ferc.gov](mailto:allan.creamer@ferc.gov).

j. *Cooperating agencies:* Federal, state, local, and tribal agencies with jurisdiction and/or special expertise with respect to environmental issues that wish to cooperate in the preparation of the environmental document should follow the instructions for filing such requests described in item o below. Cooperating agencies should note the Commission’s policy that agencies that cooperate in the preparation of the environmental document cannot also intervene. See 94 FERC 61,076 (2001).

k. *With this notice, we are initiating informal consultation with:* (a) The U.S.

Fish and Wildlife Service and/or NOAA Fisheries under section 7 of the Endangered Species Act and the joint agency regulations thereunder at 50 CFR, Part 402; and (b) the State Historic Preservation Officer, as required by section 106, National Historic Preservation Act, and the implementing regulations of the Advisory Council on Historic Preservation at 36 CFR 800.2.

l. With this notice, we are designating Great Lakes Hydro America, LLC as the Commission’s non-federal representative for carrying out informal consultation, pursuant to section 7 of the Endangered Species Act and section 106 of the National Historic Preservation Act.

m. Great Lakes Hydro America, LLC filed with the Commission a Pre-Application Document (PAD; including a proposed process plan and schedule), pursuant to 18 CFR 5.6 of the Commission’s regulations.

n. In addition to publishing the full text of this document in the **Federal Register**, the Commission provides all interested persons an opportunity to view and/or print the contents via the internet through the Commission’s Home Page (<http://www.ferc.gov>), using the “eLibrary” link. Enter the docket number(s), excluding the last three digits in the docket number field, to access the document. At this time, the Commission has suspended access to the Commission’s Public Reference Room, due to the proclamation declaring a National Emergency concerning the Novel Coronavirus Disease (COVID-19), issued by the President on March 13, 2020. For assistance, contact FERC Online Support at [FERCOnlineSupport@ferc.gov](mailto:FERCOnlineSupport@ferc.gov), or call toll-free, (866) 208-3676 or TTY, (202) 502-8659.

Register online at <http://www.ferc.gov/docs-filing/esubscription.asp> to be notified via email of new filings and issuances related to these or other pending projects. For assistance, contact FERC Online Support.

o. With this notice, we are soliciting comments on the PAD and Commission staff’s Scoping Document 1 (SD1), as well as study requests. All comments on the PAD and SD1, and study requests should be sent to the address above in paragraph h. In addition, all comments on the PAD and SD1, study requests, requests for cooperating agency status, and all communications to and from Commission staff related to the merits of the potential applications must be filed with the Commission.

The Commission strongly encourages electronic filing. Please file all documents using the Commission’s