Opportunity Title: Hydropower and Power System Modeling Fellow
Opportunity Reference Code: DOE-EERE-STP-WPTO-2021-1502

Organization U.S. Department of Energy (DOE)

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How to Apply Click on *Apply* below to start your application.

ORISE is continuing normal program operations during the COVID-19 pandemic. This opportunity will be offered as long as the Department of Energy Headquarters is able to complete the onboarding process and ensure a meaningful experience to participants. We encourage you to apply and submit your application as soon as possible. Updates to this opportunity will be provided on this page as needed.

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If you have questions, please send an email to DOE-RPP@orise.orau.gov.

Application Deadline 4/30/2021 5:00:00 PM Eastern Time Zone

Description The US Department of Energy (DOE), Energy Efficiency and Renewable Energy (EERE) Science, Technology and Policy (STP) Program serves as a next step in the educational and professional development of scientists and engineers by providing opportunities to participate in policy-related projects at DOE's Office of Energy Efficiency and Renewable Energy in Washington, D.C. Fellows will become part of a group of highly-trained scientists and engineers with the education, background, and experience to be part of the workforce that supports the DOE's mission in the future.

The US power system is changing rapidly, including increasing amounts of renewable energy such as wind and solar. Energy resources that are capable of balancing the variability of wind and solar are increasingly at a premium, from batteries and other chemical storage technologies to hydropower and pumped storage. The existing pumped storage hydropower (PSH) fleet, for example, comprises 550 GWh of storage and 22 GW of capacity, making it by far the largest source of energy storage in the US. Conventional reservoir hydropower, in addition to serving as a source of clean and low-cost energy generation, can also be operated flexibly to balance variable renewables and enable integration of additional wind and solar onto the grid. The changing power system creates opportunities for hydropower and PSH (as well as other resources) to provide new value and support the transition to a 100% clean energy future.

The fellow will pursue these opportunities by applying their technical knowledge to various projects and ongoing efforts in the office. As a full member of the team, the fellow will both learn and contribute across the range of activities associated with managing applied research. The office is also highly receptive to new ideas that fellows may have regarding research topics and strategies. Former fellows have frequently progressed to higher-level and more permanent positions at DOE and elsewhere.

You will learn how to:

- Provide technical insight and support for research projects in a range of topics focused on quantifying the value of hydropower to the power system, mapping plant capabilities and associated constraints, optimizing hydropower operations, and developing new technologies to enable increased flexibility.
- Collaborate as part of a dynamic team to understand challenges and opportunities associated with the changing power system.
- Interact with DOE National Labs and industry partners who lead many HydroWIRES research projects.
- Interact with utilities, technology developers, ISOs, environmental groups, regulators, and international partners to understand perspectives of the hydropower and broader power system communities.
- Serve as a technical reviewer for funding opportunities.
- Participate in and report back on conferences relating to hydropower, energy storage, and/or renewable energy.
- Co-author publications such as white papers, government reports, stakeholder outreach materials, or peer-reviewed journal articles related to hydropower.
- Engage collaboratively with the broader office on areas of hydropower environmental outcomes, fleet modernization, low-impact hydropower development, and marine energy technologies.
- Observe and collaborate with other DOE renewable energy technology offices.

You will collaborate on the office's HydroWIRES Initiative, whose mission is to understand and support hydropower's role in a 100% clean energy future. The HydroWIRES Initiative, as the office's $15M grid integration program, includes research in four broad areas: understanding value drivers for hydropower under evolving system and market conditions; describing flexible capabilities and associated tradeoffs associated with hydropower meeting system requirements; optimizing hydropower operations and resource planning; and developing innovative technologies that enable hydropower to operate more flexibly. HydroWIRES efforts include power/water system modeling, valuation and technoeconomic analysis, innovative technology R&D, convening stakeholders, and international collaboration.

Past and present fellows have commented that Water Power Technologies Office (WPTO) provides a supportive mentorship environment and a positive office culture, even with the limitations of virtual work. WPTO highly values fellows and encourages fellows to proactively pursue their interests within our range of work. We would be happy to arrange for you to speak with our numerous current and previous participants to get a further sense of our office culture and the opportunities this placement could provide.

Fellow Benefits

Selected fellows will receive a stipend as support for their living and other expenses during this appointment. Stipend rates are determined by EERE

officials and are based on the candidate's academic and professional background. Relocation expenses, not to exceed $5,000, incurred in relocating from the participant's current address to Washington, D.C. (if more than 50 miles from the address shown on the application), may be reimbursed. Participants will receive a travel allowance of $10,000 per appointment year to cover travel-related expenses to scientific and professional development activities.

This opportunity is available to U.S. citizens and Lawful Permanent Residents. (LPR). For more information about the EERE Science, Technology and Policy Program, please visit https://www.energy.gov/eere/education/energy-efficiency-and-renewable-energy-science-technology-and-policy-program.

Appointment Location

Washington, DC

Nature of Appointment

You will not enter into an employee/employer relationship with ORISE, ORAU, DOE, or any other office or agency. Instead, you will be affiliated with ORISE for the administration of the appointment through the ORISE letter of appointment and Terms of Appointment.

Qualifications

Program eligibility requirements can be found at: visit https://www.energy.gov/eere/education/energy-efficiency-and-renewable-energy-science-technology-and-policy-program.

Preferred qualifications include:

- Power system modeling experience relevant for energy generation and storage resources, including capacity expansion models, production cost models, and/or stability and power flow models.
- Experience building and/or using power system models, including familiarity with relevant mathematical methods, linear programming, least-cost optimization, power market rules, and physical/engineering constraints.
- Experience with water models, such as water management and river routing models, as well as experience linking power and water models, is a plus, but is not required.
- Experience working with a utility, power producer, system operator, or other industry entity on practical applications, either in a research or industry context, is a plus.
- Capability to understand and evaluate power system models developed in research and commercial contexts to prioritize model improvements and more accurately represent hydropower and other storage resources.
- Capability to identify new modeling questions and studies to understand hydropower's role in the changing power system.

- Ability to learn new things and welcome intellectual challenges.
- Ability to collaborate on a dynamic, supportive team.
- Ability to clearly communicate complex, technical ideas to colleagues and management.

How to Apply:

A complete application consists of:

- An application
- Transcript(s) - For this opportunity, an unofficial transcript or copy of the student academic records printed by the applicant or by academic advisors from internal institution systems may be submitted. Selected candidate may be required to provide proof of completion of the degree before the appointment can start.
- A current resume/curriculum vitae (CV)
- 2 Letters of Recommendations

The resume/CV must include the following:

- Basic applicant Information: Name, address, phone, email, and other contact information.
- Work & Research Experience: List all work and research experiences beginning with current or most recent. Include the name of the employer, location, position held, and time period involved.
- Leadership Experience: List experiences (e.g., work, civic, volunteer, research) that demonstrate your leadership skills. Detail your role, type of experience, organization, location, and duration.
- Educational History: List all institutions from which you received or expect to receive a degree, beginning with current or most recent institution. Include the name of the academic institution, degree awarded or expected, date of awarded or expected degree, and academic discipline.
- Honors & Awards: List in chronological order (most recent first) any awards or public recognitions. Include the name of awarding institution, title of the award or honor, and date of award or honor.

Eligibility Requirements

- **Citizenship:** LPR or U.S. Citizen
- **Degree:** Master's Degree or Doctoral Degree.
- **Discipline(s):**
  - **Computer, Information, and Data Sciences** (11 👁)
  - **Engineering** (6 👁)
  - **Environmental and Marine Sciences** (1 👁)
  - **Mathematics and Statistics** (4 👁)
  - **Other Non-Science & Engineering** (1 👁)
  - **Physics** (2 👁)
  - **Social and Behavioral Sciences** (2 👁)