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<b>Job Title</b>	Graduate Research Assistant - Model Integration
<b>PVN ID</b>	RC-2002-003523
<b>Category</b>	Research
<b>Location</b>	CUNY-ADVANCED SCIENCE RESEARCH CENTER
<b>Department</b>	Environmental Sciences Initiative
<b>Status</b>	Part Time
<b>Hourly Rate</b>	\$15.00
<b>Hour(s) a Week</b>	0.00
<b>Closing Date</b>	Apr 11, 2020 (Or Until Filled)

## General Description

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### **Model Integration and Optimization of Food, Energy, Water Nexus Systems Across the Northeastern and Midwestern United States**

#### **Graduate student position available**

The Advanced Science Research Center (ASRC) at the Graduate Center of the City University of New York (CUNY) has an opening for a graduate student to work on an NSF-funded collaborative research project, involving seven research institutes including academia and national laboratories. The goal of this project is to explore contemporary and future challenges to food-energy-water systems (FEWS) of the Northeastern and Midwestern United States, in light of climate change and its extremes. As multiple models should be linked in this project, their harmonization becomes an essential part of the project, especially given the sizable number and range of climate and sectoral scenarios and the large volumes of outputs to be generated. Alongside with data integration, an optimization scheme should be exercised to maximize positive outcomes, net present value over the planning horizon, while minimizing externalities that could yield improved outcomes across the FEWS domain. The optimization will be formulated as capacity expansion and/or inter-basin resource (water, energy, food) allocation models that seek to maximize net present value over the future planning horizon.

#### **Eligible backgrounds:**

Candidates with experience in one or more of the following fields of training are sought:

- Civil/Environmental Engineering
- Earth System Science
- Energy Systems

- Applied Mathematics
- Operational Research

**Primary responsibilities:**

- Creating an analysis framework comprising advanced modeling and data integration capable of evaluating the impact of climate trends and extremes on the state and dynamics of natural and engineered infrastructure;
- Organizing overall data handling and workflows (model execution in space and time, I/O management for forcing data, state variables and diagnostics, final data outputs);
- Developing optimization algorithms, including electric power production systems and renewable energy;
- Analyzing capacity expansion for water storage, food or energy production.

**Qualifications and skills sought:**

- Understanding data quality, data profiling and extraction, transformation and load (ETL) tools;
- Prior experience with optimization techniques and algorithms applied to environmental and/or energy systems;
- Programming experience (MATLAB, Python, R or C++);
- Good numerical, statistical and uncertainty analysis skills;
- Excellent oral and written communication skills;
- Demonstrable ability to learn new ideas
- Presentation skills for internal team meetings and scientific conferences.

## Other Duties

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## Qualifications

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Candidate should have completed a bachelor's degree by the time of appointment in an appropriate field of study, from an accredited institution. Masters and PhD degree candidates are sought.