Sustainability Fellowship

Resource Planning and Load Flexibility Analysis

Burlington Electric Department
Burlington, VT

Summary:
The Burlington Electric Department is the City of Burlington’s municipal electric department. As a municipal utility, BED is an expression of the community’s commitment to not-for-profit rates, local control, and sustainability. BED is a recognized leader in green energy, and sources 100% of its energy from renewable generation. BED is now working to transition the city to net zero energy in the thermal and transportation sectors. The majority of BED customers have smart meters, enabling BED to consider load flexibility and other scenarios to help ensure grid optimization and reliability.

The Burlington Electric Department’s Fellow will conduct a review of Integrated Resource Plans (IRP) by utilities around the country, with the intent of providing BED recommendations and models for potential use in future IRPs. The Fellow will also conduct an analysis of the City of Burlington’s municipal electric accounts that have likelihood for load flexibility and/or contribute significantly to wholesale electric costs per kWh. The task will likely involve interviews with facility managers, analysis of 15-minute advanced metering infrastructure (AMI) data along with other city datasets, and a final report to optimize City accounts.

Deliverables:
- A list of recommendations and models on how BED might improve its IRP process to reflect best practices and the ongoing energy transition.
- A final report identifying which City accounts are most appropriate – and mechanically possible – for load flexibility, ultimately saving energy and money for the Electric Department & City. Potential sources of flexibility will include, but are not limited to thermostatically controlled loads (TCL), phase-change storage, deferrable loads, and battery storage. An economic cost-benefit analysis, and research on funding that can be tapped to explore additional innovative solutions would be beneficial.

Impact:
This project will help to catalyze long-term, substantial change for the Department and its customers. A replicable model for future Integrated Resource Planning reports will serve to help ensure that Burlington’s future electricity needs are addressed in the most effective, efficient, and resilient manner possible. Identifying possible load flexibility
opportunities will set the stage for optimizing the overall energy load of the city and improving system resiliency.

**Location:** Burlington Electric Department, 585 Pine Street, Burlington, Vermont  
**Time commitment:** 40 hours per week, June 4-August 17, 2018  
**Compensation:** $6,000 stipend

**Desired Qualifications:**
- A very strong understanding of energy systems and technologies.
- A passion for urban climate and energy issues.
- Demonstrated skill in research and quantitative analysis (Excel, GIS, Python, R, and/or other tools).
- Experience with cost-benefit analysis.
- Excellent verbal and written communication skills.
- Experience in producing reports for use by decision makers.
- Academic background in a related field or fields (e.g. Energy, Building Science, Engineering, etc.)

**UNHSI Sustainability program eligibility:**
Graduate students, exceptional undergraduate students, and recent graduates are eligible. We will encourage, but not require, an academic sponsor or reference for each fellow, and where possible we will ask that course credits are awarded.

**Supervision, Training, Mentoring and Evaluation:**
This fellow will receive supervision from James Gibbons, Director, Policy and Resource Planning, Burlington Electric Department, as well as mentoring and extensive professional development offerings from UNHSI.

Fellows will be expected to participate in the following MANDATORY events:
- A three-day, two-night orientation in Durham, NH, May 29-31. Lodging and meals will be provided. A limited number of travel scholarships will be available to assist with transportation to Durham.
- Weekly webinars during the course of the 10-week fellowship.
- Midterm project presentations to UNHSI staff, faculty and relevant project partners in Durham, NH, July 12. Travel support provided.
- Final project presentations to UNHSI staff, faculty and relevant project partners in Durham, NH, August 10. Travel support provided.

**Apply by February 14** at [www.sustainableunh.unh.edu/sustainability-fellows](http://www.sustainableunh.unh.edu/sustainability-fellows).