



UNH Sustainability Institute

Sustainability Fellowship **Building Towards a Net-Zero City through Electrification of Thermal Energy Systems** Cambridge, MA

In 2015, in keeping with a long tradition of leadership in urban Climate Action, the City of Cambridge adopted a Net Zero Action Plan (www.cambridgema.gov/CDD/Projects/Climate/netzerotaskforce) – a detailed plan to achieve net zero greenhouse gas emissions from buildings by mid-century. One key strategy to achieving net zero will be electrification: transitioning heating and cooling systems from reliance on fossil fuels like natural gas to electric technologies that can be powered by renewable electricity (e.g., heat pumps). Identifying the most impactful opportunities (and the challenges) for reducing building GHG emissions through electrification will be critical to both early action and long-term progress towards net zero.

The Fellow will produce a white paper that offers a preliminary roadmap for building electrification efforts in Cambridge, both near- and long-term. The recommendations will be based on research and analysis (also to be presented in the white paper) of the following:

- A review of relevant technologies
- An analysis of building data (geography, load profiles, current mechanical and energy systems, and structural constraints) to develop building typologies
- An analysis of end-uses of current natural gas and oil consumption
- Relevant cost-benefit estimates for different strategies or scenarios, including the potential role of energy storage systems
- Other factors as they emerge

Working on this cutting-edge project will be an excellent opportunity to develop subject matter expertise in energy-efficiency strategy, clean energy technologies, and urban climate strategy. The chosen Fellow will participate in the development of long-term sustainability visioning for the City of Cambridge, and will develop skills in data analysis, strategy development, and policy research (e.g., studying global strategies for electrification).

Location: Environmental and Transportation Planning Division, City of Cambridge
Community Development Department

Time commitment: 37.5 hours per week, June 5-August 18, 2017

Compensation: \$6000 stipend

Desired Qualifications:

- A very strong understanding of building energy systems and technologies.
- A passion for urban climate and energy issues.
- Demonstrated skill in research and quantitative analysis (Excel, GIS, and/or other tools)
- Ability, and preferably experience, with relevant financial analysis
- Excellent verbal and written communication skills
- Experience in producing reports for use by policy and decision makers would be beneficial
- Academic background in a related field or fields (e.g. 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 Cambridge Energy Planner Nikhil Nadkarni, as well as mentoring and extensive professional development offerings from UNHSI.

Fellows will be expected to participate in three MANDATORY events:

- A three-day, two-night orientation in Durham, NH, May 31st- June 2nd. Lodging and food are provided; Fellows are responsible for any associated travel costs.
- Midterm project presentations to UNHSI staff, faculty and relevant project partners (can be done remotely).
- A summative evaluation and feedback session at the end of their placement.

Apply by February 17th at www.sustainableunh.unh.edu/sustainability-fellows