

1. Resilience Planning

In June 2018, Boston took two actions to promote community energy solutions in both the public and private sectors. First, Boston started a [feasibility assessment](#) funded by the [Massachusetts Clean Energy Center](#) (MassCEC) for a district energy microgrid proposed for the Raymond L. Flynn Marine Park. Second, Boston adopted a new [Smart Utilities Policy](#), which includes guidelines for private developers to plan for and, when feasible, develop district energy microgrids. Both actions build on the 2016 [Boston Community Energy Study](#), help implement the recently adopted strategic plans [Imagine Boston 2030](#) and [Resilient Boston](#), and contribute to the city's progress towards a [Climate Ready Boston](#) and 2050 goal for a [Carbon Free Boston](#).

The City of Boston and the Boston Planning and Development Agency conducted the Boston Community Energy Study in 2016 to help educate the public and city government on local energy generation, district energy, and microgrids, and also to get a better understanding of the city's overall energy demand. As a part of the study, the Massachusetts Institute of Technology's Sustainable Design Lab and the MIT Lincoln Laboratory modeled the energy demand of each building in Boston and created an interactive map to visualize the energy use of each building. Based on this analysis, the study identified and led to 42 potential "hotspots" for district energy microgrids. The study also identified the potential of more than \$1 billion in savings and community benefits that could be achieved by lower energy costs and greenhouse gas emissions reductions were these district energy systems developed. The Lincoln Lab used results from the spatial analysis to identify technical solutions for improving resilience in buildings and communities throughout the city.

Additionally, the city connected sites that could be good candidates for Combined Heat and Power (CHP) with the [U.S. DOE's CHP Technical Assistance Partnership \(TAP\)](#) to perform feasibility screenings at eight sites. The Boston Planning & Development Agency and City of Boston also co-hosted a series of microgrid workshops that included participation from key city officials, planners, engineers, technology providers, and members of the real estate community. These workshops resulted in the formation of a business plan framework for a multi-owner, multi-user district energy microgrid.

2. Program or Project Implementation

As part of its efforts to increase resilience, the city is coordinating a pilot project for a multi-user CHP district energy microgrid in Raymond L. Flynn Marine Park (RLFMP). Several industrial and residential customers are located in this area, which is at increased risk of coastal and storm-water flooding. The new microgrid is expected to bring numerous benefits, including improving power quality, providing backup power, reducing operating costs, and creating a 'green' community. The city is currently working on a feasibility assessment of the RLFMP project with support from the MassCEC

The development of the RLFMP pilot project will provide a case study of a multi-user CHP microgrid, which the City of Boston hopes can be a model approach to future deployment of multi-user district energy microgrids in the city. The goal is to provide case studies that include CHP and microgrid technologies that can serve as an example for other projects and regions looking to address resilience issues. The marine park, a 191-acre former military base owned by the Economic Development and Industrial Corporation (EDIC), dba Boston Planning and Development Agency (BPDA), is a prime location for a district energy microgrid project because of its location along the South Boston Waterfront and EDIC's commitment to its tenants to reduce operating costs, provide district-scale backup power, and meet power quality needs. The feasibility assessment builds on work that has identified potential end users, technology options, and a preliminary scope for a district energy microgrid project. This work has included engagement and outreach to the park's tenants.

CHP for Resiliency Accelerator Partner Profile

District Energy Microgrids are one of five Smart Utility Technologies (SUTs) included in the newly-adopted Smart Utilities Policy. For projects above 1.5 million square feet, the BPDA shall, as part of project review under the Boston Zoning Code, require a feasibility assessment for a District Energy Microgrid. If the assessment shows that a District Energy Microgrid is feasible, then the developer must prepare and implement a District Energy Microgrid Master Plan. (The other four SUTs addressed in the policy are telecommunications, green infrastructure, adaptive signal technology, and smart street lights.)

3. Lessons Learned

The resiliency planning process yielded several beneficial insights. First, identifying a modeling process for identifying target sectors, subsectors, individual facilities, and potential hotspots was an important first step. This allowed the city to both educate the public about energy use and potential microgrids, and better target planning efforts for the future. It is also important to have experience in contacting facilities with the potential to implement CHP or microgrids and collect the right information from them in order to make informed decisions. Finally, the city found it was helpful to integrate utility infrastructure planning efforts with smart city initiatives and goals, and combined these strategies through its Smart Utilities Initiative. This initiative enables better planning above and below ground, and has made the movement towards district energy microgrids easier, maximizing the city's efforts toward achieving its overall energy resilience goals.

4. Additional Information

- ▶ [Boston Community Energy Planning Initiatives](#)
- ▶ [Boston Community Energy Study](#)
- ▶ [Raymond L. Flynn \(RLF\) Marine Park](#)
- ▶ [Imagine Boston 2030](#)
- ▶ [Smart Utilities Initiative](#)