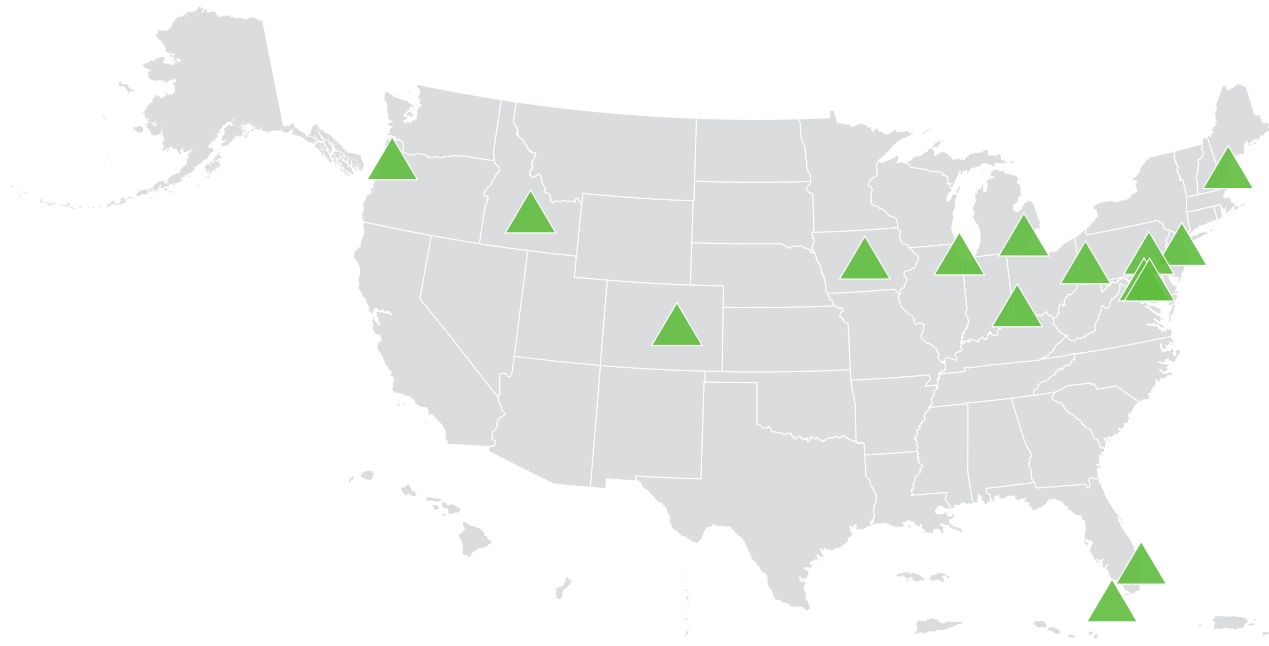


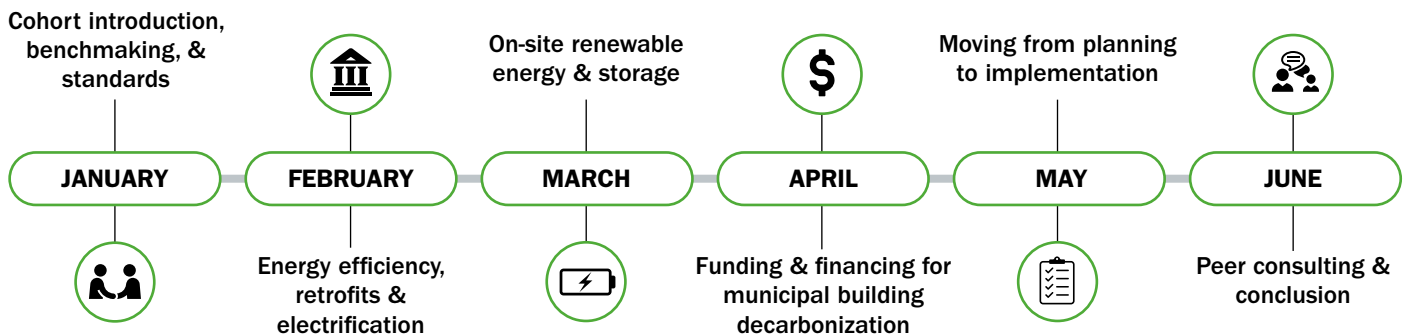


**LESSONS LEARNED** *from*  
**THE CLEAN ENERGY TO COMMUNITIES PEER-LEARNING COHORT ON**  
**Evaluating and Prioritizing Municipal Buildings for**  
**Energy Efficiency and Decarbonization Investment**



The National Renewable Energy Laboratory (NREL), with support from World Resources Institute (WRI), designed and led a six-month peer-learning cohort from January through July 2024 on “Enhancing Resilience at Critical Facilities through Solar, Storage, and Microgrids” as part of the U.S Department of Energy’s **Clean Energy to Communities** ([nrel.gov/c2c](https://nrel.gov/c2c)) (C2C) program.

Representatives from 15 municipal and county governments from across the United States participated in monthly workshops covering best practices for planning and deploying local resilience projects. This document shares key takeaways, lessons learned, and resources from the cohort.





Decarbonizing municipal operations is a fundamental way for local governments to advance their climate and clean energy goals. Municipal building decarbonization often focuses heavily on energy efficiency improvements that reduce electricity consumption, installation of onsite renewable energy systems, and electrification measures that create more opportunities to use clean energy. By taking on these projects, public officials can show leadership on climate action, save public dollars, reduce building emissions, and provide more comfortable workspaces for staff.

Despite these benefits, local government staff often face barriers to implementation, including limited budgets, conflicting political or internal priorities, and limited staff bandwidth. Energy efficiency and decarbonization projects can be technically complex and can also necessitate supporting upgrades to aging infrastructure and systems. The C2C cohort on “Evaluating and Prioritizing Municipal Buildings for Energy Efficiency and Decarbonization Investment” focused on helping municipal staff address these challenges and maximize benefits from local projects over six monthly workshops.

**The following lessons and best practices arose from six sessions of presentations from experts, discussions between cohort participants, and direct technical assistance sessions that took place during the cohort series.**

**1 Municipal energy data should inform priority decarbonization investments.**

The process of identifying the right buildings to focus on and which decarbonization solutions to deploy starts with a review of available energy data. Usage data will often come from utility bills, and data about a building’s systems and routines will come from either an internal and/or external energy assessment or walkthrough. Local staff can establish a baseline of energy usage for its buildings (a process called “benchmarking”) and develop an inventory of buildings’ systems and when those systems will likely need to be replaced. Local governments can use free software like **ENERGY STAR®’s Portfolio Manager®** ([energystar.gov/buildings/benchmark?testEnv=false](https://energystar.gov/buildings/benchmark?testEnv=false)) to benchmark their buildings. Portfolio Manager allows users to enter historic energy usage data and identify buildings that consume high amounts of energy. From there, staff can begin energy assessments

on buildings to identify potential upgrades. Many additional factors will determine which buildings will eventually receive upgrades, but the most effective projects often begin with a benchmarking process.

**2 The structure of administrative processes in a local government can affect access to energy data and the ability to advance municipal energy efficiency and decarbonization projects.**

Many local governments pay utility bills through accounting or other departments that are not directly involved with the implementation of energy efficiency and decarbonization projects. The department responsible for paying these bills may often do so without reviewing changes in energy usage, rates, or other information; and may not track the units of energy used per building. As such, energy usage data must sometimes be obtained directly from the utility, which can be a time-consuming process. Without that information readily available, other departments may have little incentive to reduce their energy usage by helping to implement energy efficiency and decarbonization projects. Further, these departments may not actually see monetary benefit from using less energy, since some local governments divert any savings back into a general fund as opposed to reinvesting it into a department’s budget.

Once utility data is collected and analyzed, a single department can be responsible for monitoring opportunities for decarbonization investments. Centralizing this process helps ensure that financial savings from projects are highlighted and used to perpetuate additional investments. In situations where electricity bills are paid by individual building managers, it can be difficult to track project outcomes and reinvest savings. Some local governments may benefit from restructuring their administrative processes in these cases.

**3 Local governments can select from a wide range of energy efficiency and decarbonization upgrades.**

Municipal buildings can often benefit from a variety of energy efficiency and decarbonization upgrades, including anything from lighting retrofits to installation of onsite solar. Energy assessments, energy usage data, and municipal



goals can help identify which upgrades to pursue. It might be helpful for project leads to survey municipal staff and residents to better understand what upgrades they would like to see implemented in which municipal buildings.

#### 4 **Installing onsite renewable energy with storage systems can support building decarbonization efforts.**

There are several key steps local governments can take to prepare for an onsite renewable energy or storage system. Staff can engage with building managers and other relevant staff to identify potential sites based on institutional knowledge and project goals. From there, energy usage data, building-specific data, and available analysis tools can help narrow down the list of potential sites. The final size of the renewable energy or storage system will depend on the selected site, the projected cost, utility net-metering regulations, along with many other factors.

There are a variety of tools available to local governments that can help in early preliminary stages to identify options for onsite clean energy deployment:

- **NREL's PVWatts® calculator** ([pvwatts.nrel.gov](http://pvwatts.nrel.gov)) estimates the energy production of solar energy systems for user-specified locations.
- **The American Cities Climate Challenge Renewables Accelerator's Municipal Solar Site Selection Tool** ([cityrenewables.org/resources/municipal-solar-site-selection-tool-mssst](http://cityrenewables.org/resources/municipal-solar-site-selection-tool-mssst)) helps organize sites and re-size solar energy systems based on the site's load and net metering rules.
- **NREL's REopt® tool** ([reopt.nrel.gov/tool](http://reopt.nrel.gov/tool)) allows users to analyze the economic viability, optimal system sizes, emissions, and resilience opportunities of onsite clean energy projects.

In later stages, staff can work with qualified professionals to make final design decisions based on an assessment of the system location and using more detailed engineering design and financial analysis tools.

#### 5 **Recent federal legislation has expanded funding and financing options for municipal energy efficiency and decarbonization upgrades.**

Federal funding opportunities may be available to local governments as they plan for and/or

implement energy efficiency and decarbonization upgrades.

Tools like the **American Cities Climate Challenge Renewables Accelerator's AFFORD tool**

([cityrenewables.org/ffold](http://cityrenewables.org/ffold)) can help local governments and other organizations identify available grants and funding opportunities.

If the decarbonization project involves clean energy deployment, local governments may be able to utilize the new “elective pay” mechanism that allows non-taxpaying entities to monetize federal tax credits, and makes direct ownership of clean energy a more viable option for public entities. If direct ownership is not of interest or if the project does not include clean energy deployment, local governments can consider third-party ownership or public-private partnerships.



*These programs are Master Classes for municipal managers to learn and implement best practices in our communities. Other departments and divisions are now seeking out similar programs for their work due to the positive outcomes that I have experienced.*

– Bethany Ayers Fisher, City of Reading, Pennsylvania

#### 6 **Energy savings performance contracting (ESPC) may be a good solution for implementing upgrades but developing a request for proposals (RFP) for ESPC can be complex.**

ESPC is a financing method that enables a local government to pay for energy efficiency and decarbonization upgrades through the associated savings these measures provide on energy bills. This process entails an energy services company (ESCO) completing an energy assessment of a building or set of buildings and detailing potential energy efficiency or decarbonization upgrades and their related costs and savings. From there, that same ESCO would often also implement the upgrades, but local requirements may necessitate a rebid for the implementation phase.

ESPC is often considered a low-risk opportunity for local governments due to the low upfront cost,



and lead to more investment in energy efficiency and decarbonization upgrades overall. First, resiliency projects have discrete funding sources that may not be directly applicable to other energy efficiency and decarbonization projects. Energy efficiency and other decarbonization upgrades can be an important complement to ensuring the success of a resiliency project.

Experts and peers often noted that local governments can take advantage of resiliency-focused funding opportunities by implementing projects at municipally owned, community-facing buildings (like community centers), and including energy efficiency or other decarbonization measures in the funding proposal. Second, a focus on resiliency can often lead to more political buy-in and enable staff to consider additional beneficial outcomes when weighing the value of undertaking a project. Overall, governments can meet multiple objectives at once by combining resiliency with energy efficiency and decarbonization upgrades.

### 8 **Learning from peers is a key to success, and cross-municipal collaboration can be an effective way to share learnings.**

There is value for local governments in ongoing engagement with peer communities to find new paths toward meeting local energy goals. Many local governments and organizations are facing similar challenges and are learning how to take advantage of the resources available to them—those learnings should be continuously shared for the benefit of others. Whether the findings come from using innovative approaches to solve complex challenges or utilizing a tried and tested mechanism like ESPC for the first time in a community, peer engagement can provide a new perspective and valuable insights for all local governments working toward decarbonization goals.



*“Staff went above and beyond to try to connect peers both during the C2C sessions and using their connections for the technical assistance. Much of the work in climate policy and mitigation is learning from others, and [these cohorts] are a true resource in connecting some of those dots and making sure we’re aware of what each other are doing.”*

– Jason Mathias, City of Baltimore, Maryland

which means that the contractor assumes some of the risk if projected savings are not achieved. This low upfront cost also makes ESPC a good option for local governments that do not have large amounts of funding immediately available.

There are resources available through the U.S. Department of Energy-hosted **ESPC Campaign** ([energy.gov/scep/espc-campaign/home](https://energy.gov/scep/espc-campaign/home)) to support local governments interested in advancing ESPCs. A few helpful things to consider:

- Local government administrative staff might be unfamiliar with ESPC. Project staff may need to walk the finance and/or legal departments through the contracting process to ensure they are comfortable with what it entails.
- Some energy efficiency and decarbonization upgrades are easier to implement and offer a greater return-on-investment than others. ESPC might rely on easier upgrades like lighting replacements to ensure overall savings and profit for the ESCO. If those upgrades have already been completed or are not an option for another reason, ESPC may become less economically viable for contractors.
- Finally, local governments often have flexibility in the requirements included in an RFP. Local governments may be able to use more specific language in an RFP to ensure the realization of outcomes that they hope to achieve with their projects.

### 7 **Integrating resiliency into municipal building energy efficiency and decarbonization investments can unlock new opportunities.**

Municipal decarbonization projects that include a focus on resiliency have valuable attributes that can make project implementation smoother



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**Clean Energy to Communities (C2C)** is a U.S. Department of Energy-funded program that aims to significantly accelerate the speed and scale of commitments, plans, and actions to increase clean energy, resiliency, and environmental justice by providing direct support to local communities to achieve their own goals. C2C provides three types of technical assistance to communities across the country: in-depth partnerships, expert match, and peer-learning cohorts.

Peer-learning cohorts are multi-community engagements that convene regularly for approximately six months to exchange strategies and best practices, learn in a collaborative environment, and workshop policy or program proposals, action plans, or strategies to overcome challenges around a common clean energy transition topic.

Three new peer-learning cohorts run every six months and are managed by NREL with support from WRI. For more information on upcoming topics and how to apply, please visit [nrel.gov/c2c/cohorts](https://nrel.gov/c2c/cohorts).



## C2C: Clean Energy to Communities

U.S. DEPARTMENT OF ENERGY

For more information, visit: [nrel.gov/c2c](https://nrel.gov/c2c)

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