Sustainable Jersey Guide for **Sustainable Energy Communities**

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Sustainable Jersey
Sustainability Institute at The College of New Jersey
Forcina Hall, 3rd Floor
2000 Pennington Rd.
Ewing, NJ 08628-0718

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TOP LEFT: Atlantic County Utilities Authority (ACUA). Battery Storage Project. *http://www.acua.com/green-initiatives/renewable-energy/battery/*

TOP RIGHT: NJDEP. 2020. New Jersey to Invest Nearly $45 Million in Electrification of Transportation Sector; Focus on Air Quality Improvements in Environmental Justice Communities. Courtesy of Port Authority of New York and New Jersey. *https://www.nj.gov/dep/newsrel/2020/20_0018.htm*

Sustainable Moorestown. 2015. Green Roof - Municipal Complex. *http://sustainablemoorestown.org/green-roof-municipal-complex/*

BOTTOM: NJBPU. 2021. Solar Panels at Red Bank Elementary School Supplemental Environmental Project, Thorofare, NJ. https://www.nj.gov/dep/enforcement/solarpanels.html

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The NJBPU is a state agency and regulatory authority mandated to ensure safe, adequate and proper utility services at reasonable rates for New Jersey customers. Critical services regulated by the NJBPU include natural gas, electricity, water, wastewater, telecommunications and cable television. The Board has general oversight and responsibility for monitoring utility services, responding to consumer complaints, and investigating utility accidents.

ABOUT THE NEW JERSEY CLEAN ENERGY PROGRAM (NJCEP)

NJCEP, established on January 22, 2003, in accordance with the Electric Discount and Energy Competition Act (EDECA), provides financial and other incentives to the State's residential customers, businesses and schools that install high-efficiency or renewable energy technologies, thereby reducing energy usage, lowering customers' energy bills and reducing environmental impacts. The program is authorized and overseen by the New Jersey Board of Public Utilities (NJBPU).

ABOUT SUSTAINABLE JERSEY

Sustainable Jersey is a certification program for municipalities in New Jersey. Launched in 2009, Sustainable Jersey is a nonprofit, nonpartisan organization that supports community efforts to reduce waste, cut greenhouse gas emissions, and improve environmental equity. It provides tools, training and financial incentives to support and reward communities as they pursue sustainability programs. Sustainable Jersey is one hundred percent voluntary and each town can choose whether it wants to get certified and the actions it wants to do in order to achieve enough points to get certified.

Table of Contents

Strategy 2: Accelerate Deployment of Renewable Energy and Distributed Energy Resources

Strategy 3: Maximize Energy Efficiency and Conservation and Reduce Peak Demand

Strategy 4: Reduce Energy Consumption and Emissions from the Building Sector

List of Figures

Executive Summary

The Sustainable Jersey Guide for Sustainable Energy Communities outlines the role of municipal government in the state-wide effort to reduce greenhouse gas emissions 80% by 2050 and transition New Jersey to a sustainable energy system. Organized by the seven strategies of New Jersey's Energy Master Plan, the initiatives in this guide describe some of the most impactful activities New Jersey municipalities can implement to lower greenhouse gas emissions from their operations and the community.

For the most part, municipalities need the help of partners such as other municipalities, businesses, nonprofits, and other community entities to effectively implement these initiatives. In this guide, potential partners are highlighted for each Energy Master Plan strategy and also mentioned throughout the text. The guide also details how municipalities can create incentives for partners and the wider community to transition to sustainable energy. Case studies are provided to illustrate successful and/or exemplary implementation of activities recommended in the guide.

Introduction

New Jersey is both a significant source of greenhouse gases emissions and a state particularly vulnerable to climate change (NJDEP, "Climate Data"). Increasing heat waves, intense storms, and sea-level rise caused by climate change will dramatically alter our coastal state and impact our communities for many years to come. A transition is urgently needed from the current GHG-intensive energy system to one primarily based on optimizing energy use and producing energy with minimal GHG emissions. Utilizing the framework of New Jersey's Energy Master Plan: Pathway to 2050 (EMP), this guide is intended to provide concrete ideas for municipalities to promote this transition to a sustainable energy system.

The Clean Energy Act of 2018 and the New Jersey Energy Master Plan: Pathway to 2050

To address the crisis of climate change, New Jersey clean energy policy has accelerated over the last few years. In May of 2018, Governor Phil Murphy signed into law the Clean Energy Act of 2018, which calls for a comprehensive transformation of the state's energy system, including widespread energy efficiency measures, distributed renewable electricity generation, offshore wind, and energy storage. In conjunction with the passage of the Clean Energy Act, Governor Murphy signed Executive Order No. 28, requiring the state to produce a new Energy Master Plan that would provide a comprehensive statewide roadmap to meet the Clean Energy Act goals and ensure 100% clean energy for New Jersey by 2050.

In early 2020, the state of New Jersey released the 2019 New Jersey Energy Master Plan: Pathway to 2050. The plan includes seven overarching strategies to achieve 80% emissions reductions by 2050 at the lowest possible cost.

1. Reduce Energy Consumption and Emissions from the Transportation Sector
2. Accelerate Deployment of Renewable Energy and Distributed Energy Resources
3. Maximize Energy Efficiency and Conservation and Reduce Peak Demand
4. Reduce Energy Consumption and Emissions from the Buildings Sector
5. Modernize the Grid and Utility Infrastructure
6. Support Community Energy Planning and Action in Low- and Moderate-Income and Environmental Justice Communities
7. Expand the Clean Energy Innovation Economy

The EMP includes specific directives for state agencies such as the Board of Public Utilities and the Department of Community Affairs, as well as for investor-owned utilities. The EMP also includes specific targets for the state as a whole, such as 330,000 light-duty electric vehicles on the road by 2025 and 600 MW of energy storage by 2021. However, most of the EMP establishes a general direction for action, without detailing particular methods or metrics. In terms of municipal-level action, the EMP highlights the need for local-level initiatives to develop sustainable energy, but does not suggest the specific initiatives for municipalities to pursue.

Community Energy Planning

While the state must take the lead on some efforts, such as setting high sustainability standards in building codes, New Jersey's municipalities, businesses, and individual residents must also actively plan and implement a broad range of initiatives found in New Jersey's Energy Master Plan. In order to lead this effort, municipalities can engage in Community Energy Planning.

Community Energy Planning is the process by which communities collaboratively select for implementation local emissions-reducing initiatives that fulfill the EMP goals.

To help expedite the process, this guide and the accompanying Community Energy Plan Workplan Template document highlight the opportunities for municipalities to generate the highest emissions reductions, and offer guidance to utilize such opportunities. With these resources, municipalities can quickly decide what to do and how to do it, then pivot from planning to implementation.

Sustainable Jersey offers many resources helpful for effective Community Energy Planning. The Sustainable Jersey certification program includes an array of sustainable energy "actions" and guidebooks for municipalities and schools. The Sustainable Jersey Gold Star in Energy can orient municipalities to the most impactful of these actions. Meanwhile, the Sustainable Jersey Data Center provides insights into the current energy system at the local level, as well as historic data that can reveal trends.

How municipalities influence community action

In seeking to promote community-wide action to implement Community Energy Plans, municipalities can and should form partnerships with public and private entities. However, municipalities may need to use a variety of incentives to encourage community implementation of sustainable energy measures, as described in Figure 1 below.

FIGURE 1. Municipal Tools for Encouraging Community Action: Financial and Non-Financial Tools

Municipal Tools for Encouraging Community Action: Financial and Non-Financial Tools

Besides regulations, municipalities have many tools at their disposal to encourage residents, businesses, and nonprofits to contribute towards a sustainable energy system.

One powerful tool to influence community change is leading by example. Municipalities can demonstrate clean energy technology and emissions-reducing behavior in their operations and publicize their efforts using:

- Digital and physical media, such as videos and written materials on the municipal website
- Informational kiosks at municipal facilities
- Tours of municipal systems (especially state-of-the-art systems)
- Special events such as ribbon-cutting ceremonies and workshops

The municipality's demonstration of positive change in the face of a global and pervasive challenge can in turn inspire residents and organizations to contribute towards mitigating climate change and realize the co-benefits of sustainable energy.

Beyond leading by example, municipalities may offer financial and/or non-financial incentives to local residents, businesses, and nonprofits for climate-friendly action:

Financial

- Tax abatements (temporary reduction/ elimination of property taxes)
- Municipal loans or revolving loan program (see Collingswood Case Study)
- Grants and rebates

Non-financial

- Density or parking minimum bonuses
- Expedited permitting
- Permit fee reduction
- Recognition program
- Ribbon cutting with public officials

Finally, municipalities can force local entities to consider sustainable policies via required documents for permit applications. A common example is a Green Building Checklist that forces permit applicants to think about how they could integrate sustainable building practices into their project.

How to use this Guide

This document brings together research and goals of the Sustainable Jersey program and New Jersey's Energy Master Plan to help municipalities efficiently plan and implement sustainable energy initiatives that contribute to achieving the state's GHG emissions reduction goals. The guide lays out the many potential initiatives a municipality might pursue and offers basic details for municipalities to decide which to implement and how to implement them.

For those seeking more detail on these initiatives, the guide links to numerous resources from Sustainable Jersey, state and federal agencies, and other sources of sustainable energy expertise. Many initiatives have corresponding Sustainable Jersey or Sustainable Jersey for Schools "actions," which are denoted in **blue** boxes. These resources can help municipalities take action efficiently, without having to re-invent processes or strategies that others have already figured out.

This guide supplements the ***Community Energy Plan Workplan Template***, a planning tool for municipalities to assess the status of energy use in their community and plan detailed next steps to accelerate the sustainable energy transition. ***Part I*** of the Workplan Template identifies distinct tasks for municipal staff and volunteers, resources to help complete those tasks, and potential measures of success. ***Part II*** of the Workplan Template serves as the workspace for municipalities to develop a Community Energy Plan with concrete details for implementation. Note that the initiatives described in the Template and this guide do not match exactly; this guide contains several ideas not captured in the Template document, including initiatives that are only applicable to a few New Jersey municipalities, such as decarbonizing municipal owned utility infrastructure (5.1).

Appendix A provides a comprehensive table showing the direct overlap between New Jersey's Energy Master Plan and Sustainable Jersey actions, particularly those required for achieving the Sustainable Jersey Gold Star in Energy.

Sustainable Jersey Actions

A significant barrier to the widespread adoption of new technologies and methods is a lack of familiarity and working examples. Projects that showcase unique approaches to addressing sustainability issues are essential to sparking broader change.

Municipalities can receive points towards Sustainable Jersey certification for up to three innovative initiatives that involve energy, civic engagement, resource conservation, etc. and are not included in existing Sustainable Jersey actions. To qualify for certification points, initiatives must have a demonstrable impact on sustainability and be replicable by other municipalities.

Potential initiatives include ordinances, implementation of alternative or new technologies, policies, practices, programs, etc. Ideally, to complement the effort, municipalities promote the project via municipal communications, highlighting how it is valuable to the community.

For further information on receiving points for innovative projects, see the Sustainable Jersey Innovative Community Project action.

Strategy 1: Reduce Energy Consumption and Emissions from the Transportation Sector

Why this topic is important

As a state known for its highways and traffic, New Jersey has understandably substantial GHG emissions related to transportation. In 2018, 42 percent of New Jersey's total greenhouse gas emissions came from the transportation sector (NJDEP, "NJ's Emissions Profile"). Though no "silver bullet" for sustainable transportation exists, there are straightforward opportunities for emissions reductions in this portion of our state's carbon footprint. In addition to promoting adoption of electric vehicles for passenger, medium- and heavy-duty vehicles, local governments can support transition from private automobile use to public transit and improve opportunities for active transportation such as walking and biking.

PARTNER IDEAS

- *Electric vehicle charger vendors*
- *Car share providers*
- *Automobile dealers*
- *Transportation Management Associations*

How municipalities can help

1.1. Supportive Zoning for EV Infrastructure

Municipalities can facilitate adoption of electric vehicles (EVs) by reducing barriers to charging infrastructure installation. Municipalities should adopt the Model Statewide Municipal Electric Vehicle Ordinance, which became effective in all municipalities in September 2021. The Model Statewide Ordinance established electric vehicle charging stations (EVSE) as a permitted accessory use and set requirements for Make-Ready and EVSE parking in new multifamily and mixed-use developments and parking lots. While those aspects of the Ordinance cannot be modified, the "Reasonable Standards" section of the Model Ordinance (which covers standards for accessibility, safety, signage, usage fees, and parking enforcement) is intended to be modified through the normal ordinance amendment process. Municipal boards should set these standards to ensure beneficial installation and use of EV charging infrastructure in the community.

Inspectors and zoning-related staff can be trained on EV infrastructure to help them enforce regulations and promote electric vehicles in their work. Popular training sources include the Electric Vehicle Infrastructure Training Program and Department of Energy Clean Cities program.

1.2. Public EV Charging Infrastructure

Public electric vehicle charging infrastructure is critical to encouraging widespread adoption of electric vehicles (EVs). Research has shown that charging availability is directly correlated with electric vehicle deployment (Howard et al.). EV chargers reduce "range anxiety," a concern of EV users that they will become stranded because of an empty battery. Public chargers can instill confidence in local residents and commuters about traveling locally in EVs, and even attract visitors or new residents who drive EVs.

Funding for electric vehicle charging infrastructure may be offered by state and federal programs. Currently, the New Jersey Department of Environmental Protection (NJDEP) offers grants for EV chargers through the It Pay$ to Plug In program. Electric utility companies also provide incentives for charging station installation, including upgrades to the infrastructure that connects charging stations to the grid (see Section 1.2.2).

Typically, municipalities promote the installation of public charging stations in one of three ways:

1. Municipality owns and operates the EV infrastructure and deploys it on municipal property, typically a public parking lot or municipal street-side parking. The municipality may fund the project through its capital budget and recover costs by charging a fee for parking or providing other services (such as advertising). Fees for electric vehicle charging stations are generally recommended, even if utilization rates are low, as use (and corresponding electricity costs) of the charging stations will likely rise over time.

2. Municipality works with a "sponsoring partner," which funds the purchase and installation of a charger on municipal property. The sponsoring partner may justify the costs as part of a public relations strategy, a customer acquisition/retention

strategy, or providing a public service. Car dealerships and electric utilities are common sponsors for charging infrastructure.

3. Municipality persuades a local private or not-for-profit entity to build an EV charging station on private land for public use. Since this alternative does not involve any of the municipality's assets, municipal procurement rules typically do not apply. To find partners to host EV charging, municipal staff or green teams might contact a downtown business association, managing entity of a business improvement district, economic development office, etc. Siting analysis can be used to demonstrate the demand for charging in a particular area.

By installing public EV charging infrastructure and demonstrating appropriate signage and promotion, a municipality qualifies for Sustainable Jersey's Public Electric Vehicle Charging Infrastructure action.

Carefully regulating use of charging stations helps ensure EV chargers are accessible but not inconvenient. For instance, parking regulations might enable any vehicle to park for 15 minutes in EV charging-capable spots, while allowing EVs to stay (and charge) up to four hours. Time limits and restrictions should be revisited and adjusted over time to reflect the current demand for EV charging and general parking.

1.2.1 Best Practices for Siting EV Charging Infrastructure

To most effectively combat range anxiety, EV charging stations should be located at destinations that are visible and easily accessible to the public, and where drivers would want to spend time while their vehicles charge. At the same time, EV charging hosts should consider how a given location might influence costs – where a charger is located (relative to the electrical interconnection point) can have a large impact on project costs.

Example locations include: a) municipal parking lots and street-side parking (typically in a town center); b) commercial properties such as strip malls, supermarkets, malls, movie theaters, mixed-use facilities, large employers; and c) places where the public gathers such as sports arenas, concert halls, theaters, public libraries, community centers, houses of worship, parks and recreational facilities, public and private schools including universities. Sites easily accessible from major roadways can be well suited for DCFC charging stations (for DCFC siting, see NJDEP's map of strategic locations for DC Fast Charging).

1.2.2 Utility "Make-Ready" Programs

"Make-ready" measures enable the installation of EV charging infrastructure. According to the state, "make-ready" includes "expenses related to service panels, junction boxes, conduit, wiring, and other components necessary to make a particular location able to accommodate Electric Vehicle Supply Equipment or Electric Vehicle Service Equipment [EVSE] on a 'plug and play'

basis." In other words, "make-ready" refers to installing electrical infrastructure to "facilitate easy and cost-efficient future installation of Electric Vehicle Supply Equipment or Electric Vehicle Service Equipment" (NJDCA). "Make-ready" parking spaces have this necessary infrastructure but no actual charging stations.

"Make-ready" measures can be an expensive aspect of EVSE installation but are generally much cheaper when implemented at the time of initial construction. This is why the state requires "make-ready" parking spaces for new commercial development, and also why New Jersey's electric utilities offer incentives to support the development of "make-ready" parking. Information on these incentives is available on the electric utilities' websites.

1.3. First Responder EV Training

To foster public confidence and maintain emergency preparedness, municipalities should train local first responders on electric vehicles and charging infrastructure. The National Fire Protection Association offers a popular free Alternative Fuel Vehicles Safety Training Program for EMS, fire service, and towing/hauling workers. Other training options exist both in-person and online.

First Responder EV training is a requirement of the Make Your Town Electric Vehicle Friendly action.

1.4. Fleet Efficiency

Municipal vehicle fleets contribute a significant portion of the GHG emissions from municipal operations. Municipalities can make their fleets more efficient through a variety of strategies, from instructing drivers to avoid speeding to replacing gasoline vehicles with battery electric equivalents using NJBPU's Clean Fleet EV incentive program. Improving efficiency in the municipal fleet can serve as a demonstration and inspiration to vehicle users in the broader community.

1.4.1 Fleet Tracking and Management

Municipalities can shrink their carbon footprint by tracking fleet use and making strategic changes. Fleet composition, vehicle maintenance, and driver behavior are all valuable to track. This information informs emissions-reducing initiatives such as preventative maintenance, fleet size reduction, training drivers to reduce fuel use, and retrofitting vehicles that must idle frequently (like police cruisers) with idle-reduction technology. Prioritizing maintenance or replacement of low-efficiency and/or high-mileage vehicles will generate the most fuel and fiscal savings.

1.4.2 Fleet Transition

The Energy Master Plan directs the state to transition its vehicle fleet to alternative fuels. Municipalities can mirror that directive by transitioning their own fleets. Sustainable Jersey's Alternative Fuel Vehicle Procurement Guide covers strategies for affordably procuring alternative fuel vehicles with minimal use of staff time. The guide covers four typical procurement methods: fleet vehicle leasing, purchasing co-ops/government contracts, direct purchase, and service contracting or shared services. The Delaware Valley Regional Planning Commission's online Electric Vehicle Resource Kit for Municipalities also provides procurement resources, as well as instructions for choosing the first vehicle in a fleet to replace with an electric version.

Tracking municipal fleet efficiency can fulfill Sustainable Jersey's Fleet Inventory action. Electric vehicle purchases can fulfill the Purchase Alternative Fuel Vehicles action and assist with completing the municipal Meet Targets for Green Fleet action or schools Sustainable Fleets action.

School bus fleets present a major opportunity to mitigate emissions and improve local health by switching to electric vehicles. Electric school buses are significantly more expensive upfront than their traditional diesel counterparts, but incentive programs (such as the Mid-Atlantic Electric School Bus Experience Project) can help with the additional cost, and lower fuel and maintenance costs may result in a lower cost of ownership versus traditional buses.

Municipalities that have their own transit bus system can pursue state and federal grants (such as NJDEP's eMobility grants) to upgrade both infrastructure and operations to improve utilization and reduce emissions.

1.4.3 Service Contracts

One way to reduce fleet emissions in transportation and hauling service contracts, such as school busing, refuse, recycling, and leaf collection, is to include preference for haulers using alternative fuel vehicles in bid specifications or as part of a shared services agreement.

1.5 Community Outreach and Education on EVs

Electric vehicles are gaining popularity, but EV adoption in New Jersey must continue to rapidly accelerate to achieve the state's GHG emissions goals. As trusted sources of information for residents and businesses, municipalities can convey the health threat of ICE vehicles, the many benefits of electric vehicles, and the funding available to help transition to electric transportation. Potential methods of outreach include webpages, e-newsletters, social media posts, mailed letters, ride and drive events, and virtual or in-person workshops.

1.5.1 Residents

Many vehicle owners do not consider purchasing an electric vehicle because they lack knowledge of the options available today. Municipalities can generate awareness of electric vehicles on the market by hosting a ride and drive event or EV car show. Local car dealers are great partners for awareness events, as they can provide vehicles that residents can "test drive" and sometimes even offer a free EV charger installation to the municipality hosting the event. Outreach events and resources (e.g., municipal websites) can also promote incentive opportunities for purchasing or leasing EVs, such as NJBPU's Charge Up New Jersey program. Many municipalities in New Jersey hold events in conjunction with the National Drive Electric Week and Drive Electric Earth Day, which offer direct support and resources, such as tools to recruit current and potential EV owners to attend events.

Case Study: Montclair's Public EV Charging Network

The Township of Montclair has five public charging stations installed in parking garages in the downtown business district and "uptown" shopping area. They are strategically placed for easy accessibility from major roads and highways, such as the Garden State Parkway. There are also at least five charging stations run by local businesses. In 2013, Montclair passed the "Ordinance to Encourage EV Charging-friendly Parking Lots," which ensured that charging-capable parking spots were only used for charging and required clear signage indicating that noncompliant vehicles may be towed. This policy was superseded in 2021 with the signing of P.L. 2021, c. 171, which set standards for EV charging in all New Jersey municipalities via the Model Statewide Municipal Electric Vehicle Ordinance (see Section 1.1).

Montclair, NJ. 2019. Sustainable Jersey Certification Report. sj-site-persistent-prod.s3.amazonaws.com/fileadmin/cic-base/documents/2016/9/10/14734760078723.doc

To further promote EV charging infrastructure locally, Montclair has required charging stations and pre-wiring in three redevelopment zones. For example, within the Seymour Street Redevelopment Area, all parking "must include a minimum of two PEV charging stations as well as the infrastructure necessary to support future demand (e.g., conduit). The car-charging facilities are the responsibility of the redeveloper." (NJTPA, "Montclair")

1.5.2 Commercial Fleets

Municipal staff and green teams can also tackle community GHG emissions by encouraging local fleet managers to improve fleet efficiency. Those familiar with fleet efficiency practices can call government and commercial fleet managers to offer advice and answer their concerns about alternative fuel vehicles (NJTPA, "Guidebook"). Consultations can prompt these managers to implement strategic vehicle replacement and changes to fleet driver protocol to encourage fuel-efficient behavior. Municipalities may also consider requesting or requiring their vendors (e.g., recycling company) to use alternative fuel vehicles for delivery of goods and services.

1.5.3 Commercial and Multifamily Properties

EV charging stations at commercial and multifamily properties can address range anxiety for EV drivers. Residents of multifamily properties are far more likely to buy or lease electric vehicles if the property offers EV charging, while charging stations at commercial

properties enable EV drivers to comfortably visit those properties. Places where people park for extended periods – hotels, malls, offices, grocery stores, movie theaters – are great sites for Level 2 charging stations, while any site near a major roadway could be a good host of DCFC charging stations (for DCFC siting, see NJDEP's map of strategic locations for DC Fast Charging). Outreach teams can present available incentives (e.g., NJDEP's It Pay$ to Plug In) and explain the multifaced benefits of hosting charging stations, including attracting customers/tenants who are more likely to buy more or pay a rent premium. Municipalities can also encourage installations by implementing rewards such as reduced local taxes and permitting fees for properties installing EVSE

1.5.4 Workplaces

Workplace chargers enable employees of local businesses to comfortably commute by electric vehicle. Argonne National Laboratory ranks workplace EV charging as the third most critical type of charging infrastructure, behind charging access at single and multifamily homes (as shown in pyramid in bottom left). Considering the lack of charging access for many multifamily residents and dependence on personal vehicles for most commutes, the availability of workplace charging is crucial for many to justify purchasing an electric vehicle.

> Outreach to promote EV and EVSE adoption can garner points under the Electric Vehicle Outreach action.

Municipalities can directly engage local businesses to promote workplace charging. Businesses might be persuaded with information on available funding, such as NJDEP's It Pay$ to Plug In program. Businesses unfamiliar with EV chargers may be encouraged with resources like NYSERDA's Workplace Electric Vehicle Charging Policies: Best Practices Guide, which outlines policies for employee electric vehicle charger use, such as electricity fees and parking priority.

1.5.5 Automobile Dealerships

As the place where most customers shop for automobiles, dealerships have significant influence on what vehicles are on the road. Municipal outreach teams can connect with dealerships to convince them to encourage shoppers to consider electric vehicles.

To support dealerships selling EVs, municipalities can help facilitate training of salespeople on electric vehicles. These trainings explain how to pitch EVs to potential customers, such as by emphasizing the savings from lower fuel and maintenance costs. Some auto manufacturers offer sales training for their electric models. If manufacturer-specific training is not available, dealerships can use Plug-In America's PlugStar EV Sales Training or the free training videos available from the Sacramento Area Regional Technology Association.

FIGURE 3. EV Charging Infrastructure Pyramid

EV Charging Infrastructure Pyramid

Source: Argonne National Laboratory, 2012

Argonne National Laboratory. 2014. A Guide to the Lessons Learned from the Clean Cities Community Electric Vehicle Readiness Projects. (p. 12) afdc.energy.gov/files/u/publication/guide_ev_projects.pdf

1.6 Anti-Idling Enforcement

A straightforward and low-cost measure to mitigate transportation emissions is to enforce the NJ state law limiting idling to three minutes. To encourage compliance, police can educate drivers that they find idling, explaining that just 10 seconds of idling produces more emissions than turning off and restarting the vehicle. Police departments can map out priority anti-idling locations in the community – schools, banks, and businesses with fleet vehicles – and strategically send idling enforcement at peak times to achieve the greatest emissions reductions. Anti-idling campaigns can include non-enforcement outreach, like distributing bumper stickers or installing signs.

For further guidance, see the municipal Anti-Idling Education & Enforcement Program action or the schools Anti-Idling Education & Enforcement action.

FIGURE 4. Anti-Idling Signs

NJ Department of Environmental Protection 2012. Idling Regulations and Idling Enforcement. (p. 13) www.nj.gov/dep/enforcement/aceacademy/Idling.pdf

1.7 Alternative Commute Programs

Alternative commuting is any form of commuting other than single occupancy vehicle travel, which comprises most of commuting in the U.S. despite being energy inefficient. Municipalities can encourage commuting in a variety of ways, from posting about New Jersey's official ride matching service NJ Rideshare on social media to providing a shuttle service for popular commuting routes. Any form of outreach promoting alternative commuting contributes towards shifting public perception away from inefficient single occupancy travel.

For their own employees, municipalities may provide direct payments to those who forfeit their parking space, or subsidize transit passes. Municipalities can work with their local Transportation Management Associations (TMAs) on such initiatives.

Municipalities can also reach out to local employers to suggest implementing their own commuter incentive program. Municipal staff can frame the idea as business-savvy, bolstering the public image of the employer and lowering parking lot maintenance costs.

For employer programs, see the Smart Workplaces program on the local TMA's website and Sustainable Jersey's Smart Workplaces action.

FIGURE 5. Case Study: Greater Mercer County TMA's PickUp Program

Case Study: Greater Mercer TMA's PickUp Program

The Greater Mercer TMA partnered with Waze to create the PickUp Program, which incentivizes carpooling from Mercer County to job opportunities along the Rt. 130 corridor in the CR 571/ Cranbury/8A warehouse area. The incentives are provided to both riders and drivers using the Waze Carpool peer to peer carpooling app. The program also offers a limited number of rides through a third party for instances when riders can't find a ride back home. (Greater Mercer TMA).

1.8 Land Use Policies

Although electrifying vehicles prevents significant greenhouse gas emissions, reducing the use of private automobiles altogether has even greater potential to reduce emissions. Smart growth is a method of encouraging people to use alternative forms of transportation to private cars. Smart growth refers to "an approach to development that encourages a mix of building types and uses, diverse housing and transportation options, development within existing neighborhoods, and community engagement" (Smart Growth America).

1.8.1 Complete and Green Streets

Smart growth prioritizes active transportation like walking and biking because these generate fewer emissions than motorized transportation and improve the physical, mental, and social health of residents. The most effective way to encourage active transportation is improving safety via Complete Streets, a street design that works for all users, all modes of transportation, and all ability levels. Complete Streets balance the needs of drivers, pedestrians, bicyclists, transit riders, emergency responders, and goods movement based on the local context.

A municipality can use NJDOT's *Complete & Green Streets for All, A Model Local Complete Streets Policy & Guide* to plan for developing Complete Streets. Municipalities often establish an advisory committee to assist with creation and implementation of Complete Streets policies. These advisory committees often develop review checklists to help project developers follow Complete Streets principles from conception to construction to operations. Some advisory committees track progress towards Complete Streets goals with benchmarking metrics such as miles of pedestrian infrastructure (sidewalks, trails and transit amenities).

For more information and resources, see Sustainable Jersey's Complete and Green Streets for All Policy and Bicycle and/or Pedestrian Improvement Projects actions.

Implementation of Complete Streets varies in scope and cost, with projects ranging from smaller investments like changing pedestrian signal timing to larger undertakings like protected bike lane networks. A variety of examples of Complete Streets projects are described on North Jersey Transportation Planning Authority's Complete Streets webpage. Municipalities can apply for federal- and state-funded grants to help cover implementation costs. Relevant grant opportunities are listed on NJDOT's Resource Center webpage.

1.8.2 Climate-Friendly Parking Policy

Parking minimums force developers to construct and maintain parking lots. These mandatory parking lots contribute to urban heat island effect and encourage automobile use over other transportation options. Reducing or eliminating parking minimums diminishes these negative environmental impacts.

Municipalities can transition free public parking to a paid system to have drivers more fully realize the financial and environmental costs of driving. Municipalities can mitigate potential backlash from residents by arranging to direct revenue from paid parking into local neighborhood improvements.

The Effective Parking Management action awards points for parking policy changes.

FIGURE 6. Case Study: Franklin Township's Electric Vehicle Initiatives

Case Study: Franklin Township's Electric Vehicle Initiatives

Franklin Township, in Somerset County, has implemented several initiatives to reduce overall private automobile use and increase EV adoption. To disincentivize driving, Franklin changed parking minimums that would have required the construction of hundreds of new parking spaces. To encourage walking and biking, Franklin changed zoning laws to spur mixed-use development in the downtown area and adopted a Complete Streets policy in 2019.

Franklin has also accelerated the transition to electric vehicles, installing several charging stations around town, including publicly accessible ones at the Municipal Complex. In 2018 and 2019, the town purchased ten all-electric Chevrolet Bolt vehicles for building inspectors through the Middlesex Regional Cooperative Purchasing Program (MRESC), taking advantage of bulk pricing. Franklin's efforts are complemented by Somerset County's electric vehicle initiatives, which is guided by its 2018 Electric Vehicle Readiness Plan.

1.8.3 Transit-Oriented Development

A major aspect of smart growth, transit-oriented development (TOD) policies encourage high density development, allow a mix of land use and housing types, and improve pedestrian and bicycle safety and access near transit facilities. Municipalities can use zoning code to enable and reward high density development near transit stations, increasing the convenience and use of transit. Similarly, zoning code can be modified to enable mixed-use so that residents do not need to travel far to shop, eat out, etc.

While NJ TRANSIT is responsible for maintaining transit stations themselves, municipalities can improve the infrastructure around stations, such as parking, to encourage use. Municipalities can also urge NJ TRANSIT to improve efficiency and usability, such as advocating for updated bus routes that reflect current usage. Municipalities can collaborate with their local Transportation Management Association (TMA) on developing beneficial communication with NJ TRANSIT.

Shared transportation (Section 6.4) such as carsharing and ride-hailing can serve as "last mile" transportation, connecting travelers between their final destination and the transit station. Municipalities can designate pickup/drop-off locations at transit stations for these services and encourage (if not require) shared mobility companies to install their infrastructure at transit stations. Similarly, convenient parking spots can be designated for carpools/vanpools.

When implementing smart growth and transit-oriented development, the Transit Village designation can guide public transit efforts (acquiring the designation can also open opportunities for grants from the New Jersey Department of Transportation).

For more information and resources, see Sustainable Jersey's Transit-Oriented Development Supportive Zoning action.

Strategy 2: Accelerate Deployment of Renewable Energy and Distributed Energy Resources

Why this topic is important

Mitigating New Jersey's contribution to climate change requires a rapid transformation of our energy supply from fossil fuels to renewable energy resources, including distributed energy resources (DER) such as small-scale solar, wind, and combined heat and power (CHP) systems. Distributed energy democratizes energy production, providing more local control and resiliency for consumers in the energy system.

PARTNER IDEAS

- *Major commercial/industrial electricity consumers*
- *Potential community solar or commercial solar hosts – brownfields, warehouses, etc.*
- *Local renewable energy installers*

How municipalities can help

2.1 Permitting and Regulations Supporting Local Renewable Generation

Including solar-friendly language in all relevant policy and planning documents provides the foundation for encouraging installations in the community. Municipalities can also make the installation of renewables (principally solar) much easier and less expensive by updating zoning ordinances and permitting procedures and fees. Local permitting variation can cause price differences of up to $0.18/W for residential solar installations (Burkhardt et al. 2015). Training for municipal staff such as zoning, code, and inspection officials can make the administrative process as easy as possible for solar installers. The municipality should ensure that first responders have received training on how to deal with fires in buildings with solar panels.

2.1.1 Solar

Municipalities can support adoption of solar in the community by ensuring that zoning policies and permitting procedures do not pose barriers to installing solar systems. A solar-friendly zoning ordinance sets relatively permissive approval standards for height, setback, and aesthetics of solar installations. Municipalities should avoid restricting solar installations by setting arbitrary standards for characteristics such as color and glare.

On the permitting side, municipalities can set simple, low fees that fairly reflect the staff time investment needed for issuing a permit. Permitting information, such as a permit requirements checklist, should be posted online.

Case Study: Sayreville's Floating Solar Array

Sayreville is home to New Jersey's first floating solar array, a 4.4-MW system built on a retention pond that supplies 100% of the electricity used by Sayreville's water treatment plant. The array has a higher panel density and smaller install footprint than ground-mounted arrays. Floating solar can also outperform land-based systems in panel efficiency because the water keeps the system cooler. In turn, the panels prevent water loss to evaporation, a particularly useful benefit for areas susceptible to drought (Ludt).

NREL. 2018. Floating Solar. Photo by Dennis Schroeder. 53994.

FIGURE 7. Case Study: Sayreville's Floating Solar Array

To help staff promote solar, the municipality can offer training for planning and code officials in solar technology basics and best practices for solar, like the training offered by the Interstate Renewable Energy Council. The permitting department should seek to minimize the number of trips installers must take to their offices, or even eliminate those visits entirely by moving permitting online. Municipalities can also require pre-wiring for photovoltaic solar panels in new construction so that future building owners can easily install the panels. This saves money and hassle for future owners installing solar, at little cost to the developer.

Municipalities can complete a combination of these initiatives (and others) to earn points for Sustainable Jersey's Make Your Town Solar Friendly action.

2.1.2 Wind

Municipalities can encourage development of small-scale wind generation by setting policies modeled after the NJBPU's Small Wind Energy System Ordinance. As with a solar-friendly ordinance, a wind-friendly ordinance should have relatively permissive standards for setbacks, lighting, appearance, etc. Reasonable permitting fees and a relatively quick permitting process further promote local wind development. Municipalities with favorable small wind regulations in place can attract the interest of wind developers seeking predictability where they do business.

Ordinances modeled after the NJBPU Small Wind Energy System Ordinance can garner points under the Sustainable Jersey Wind Ordinance action.

FIGURE 8. Program Highlight: SolSmart

Program Highlight: SolSmart

Launched in 2016, SolSmart is a national designation program recognizing cities, counties, and regional organizations that help develop local solar markets. SolSmart uses objective criteria to designate communities as SolSmart Gold, Silver, and Bronze. The designation program categories are Permitting and Inspection, Planning and Zoning, Government Operations, Community Engagement, and Market Development. More than 400 entities have achieved SolSmart designation since the program's inception.

To help communities achieve designation, SolSmart provides no-cost technical assistance from a team of national experts. A select number of communities also host SolSmart Advisors: fully-funded, experienced staff who work in communities for periods of up to six months. All U.S. cities, counties, and regional organizations are eligible to join SolSmart and apply to receive the SolSmart Advisors technical assistance (SolSmart).

2.1.3 Biomass

Some municipalities might find local entities interested in biomass facilities, particularly if the state eventually mandates source separation of organic waste from other solid waste (see Goal 2.3.7 of New Jersey's Energy Master Plan). Biomass electricity generation can have attractive co-benefits beyond renewable energy, such as reduced waste transport and landfill emissions (State of New Jersey). However, biomass proposals are best evaluated on a case-by-case basis, as some biomass systems are not effective at mitigating emissions and may create problems such as particulate air pollution (Cho). Find the latest guidance and incentive offerings on New Jersey's Clean Energy Program website.

2.2 First Responder Training on Solar

Another critical piece of support for local solar is having first responders trained specifically in solar safety. Kean University's Fire Safety Training Program offers courses to firefighters on handling solar systems, as does the Interstate Renewable Energy Council (IREC). Municipalities can encourage or require their first responders to attend these trainings to keep the community safe as solar systems become more prevalent.

2.3 Renewable Government Energy Aggregation (R-GEA)

Government Energy Aggregation (GEA) places the choice of energy supply in the hands of local government. Under GEA, a municipality chooses an energy supplier to replace the utility as the default supplier of electricity (and sometimes natural gas) for all residents (and sometimes businesses) in the municipality. A municipality can implement a GEA with renewable energy content above that required by state law, commonly known as Renewable Government Energy Aggregation. By pooling the electricity demand of many residents, the municipality can negotiate a competitively priced supply while achieving a higher proportion of electricity from renewable sources than the standard grid mix. Municipalities can partner with neighboring municipalities to increase the pool of customers, making their bid more competitive. Depending on the current supply market and utility rates, R-GEA contracts generally either match default utility supply prices or offer an even better rate.

Renewable electricity, including what is in an R-GEA, is bought and sold in the form of RECs or Renewable Energy Certificates, which represent 1000 kWh of renewable generation. There are several categories of RECs available for purchase in New Jersey. One of the most popular types, Green-e certified RECs are awarded by the nonprofit Center for Resource Solutions to renewable generation facilities located throughout in the U.S. Green-e RECs tend to be cheap due to extensive onshore wind generation in Texas and other states relative to the amount required by their State Renewable Portfolio Standards. Unfortunately, that low cost

FIGURE 9. Renewable Energy Credits (RECs)

Renewable Energy Certificates (RECs)

- **PJM Class I RECs** are derived from renewable electricity generation (except large hydropower) in PJM territory.
- **Solar RECs (SRECs)** are produced only by solar electricity generation in NJ.
- **PJM Class II RECs** are derived from large hydropower and resource recovery systems such as municipal solid waste, in PJM territory.

means that the premium paid for a Green-e REC is not likely to result in any additional wind or renewable generation.

The other types of RECs commonly bought in New Jersey follow the standards set by New Jersey's Board of Public Utilities (NJBPU) and PJM Interconnection, the organization that manages the electricity grid that includes all of New Jersey and all or part of 12 other states and D.C. PJM Interconnection awards RECs to generation facilities within its territory, while the NJBPU awards RECs to facilities in New Jersey.

When soliciting bids for an R-GEA, municipalities specify the types of RECs to be purchased. PJM Class I RECs are the standard type utilized in R-GEAs in New Jersey, striking a balance between cost, effectiveness at reducing emissions, and ancillary benefits like regional job creation. Only PJM Class I RECs are considered in Sustainable Jersey's Renewable Government Energy Aggregation action requirements.

Municipalities generally pursue R-GEA with help from an energy consultant. Consultants provide expertise to crafting the RFP for electricity supply and can handle much of the workload of implementing an R-GEA. Sustainable Jersey has constructed a sample energy consultant RFP for the R-GEA process and a model ordinance for the governing body to approve the R-GEA.

Before an R-GEA contract goes into effect, residents are notified of the change and of the opportunity to opt-out. Generally, a few take the step of opting-out and most are switched to the R-GEA supply. Though the switch is automated, municipalities should address residents' questions and concerns before releasing an RFP for R-GEA. Commercial customers, on the other hand, are not automatically included in the aggregation but may be able to "opt-in" to the municipality's contract.

The Sustainable Jersey R-GEA How-to Guide and Sustainable Jersey's Renewable Government Energy Aggregation action provide further information on implementing an R-GEA.

FIGURE 10. Case Study: Sustainable Essex Alliance Multi-Municipality R-GEA

Case Study: Sustainable Essex Alliance Multi-Municipality R-GEA

Following the expiration of the original Sustainable Essex Alliance R-GEA contract in December 2020, the towns of Glen Ridge, Glen Rock, Livingston, Maplewood, Montclair, South Orange, and Verona combined the purchasing power of their residents to secure a new contract for electricity supply containing roughly 40% renewable energy from PJM Class I resources. The program includes an option to opt-up to 100% PJM Class I renewable energy, and home energy efficiency education for participating residents.

"Our combined populations gave us an advantage in negotiating for cheaper and greener electrical power. Utility cost-savings for our residents; greener energy for our planet: this is an outcome we are very proud of," said Maplewood's Mayor Victor DeLuca, an enthusiastic supporter of this initiative.

2.4 Municipally Supported Community Solar

Community solar is a program in which customers either partly own or "subscribe" to a solar installation located off-site from their property (like a landfill or warehouse) and receive credit on their utility bill for a portion of the electricity generated by the installation. Whether via ownership or subscription, participating in community solar can reduce electricity costs while requiring less effort than traditional residential solar. These benefits make community solar popular among those who would not otherwise consider owning solar panels.

To promote the growth of community solar, municipalities should identify criteria for community solar projects and selectively support project proposals that meet these desired criteria. Common project elements that municipalities seek include local workforce development, capacity reserved for low- and moderate-income residents (Section 6.3), and consumer-friendly policies. Municipalities generally promote specific community solar projects in the role of project ambassador – facilitating connections between project developers and other stakeholders – and/or outreach coordinator – educating the community to generate project subscriptions.

A municipality can also broadly support community solar with policies such as specifically allowing large-scale solar installations in zoning ordinances, designating a community solar site as a redevelopment zone, and/or expedited and discounted permitting.

Municipalities may also act as anchor subscribers, purchasing a substantial community solar subscription or portion of a community solar installation. Anchor subscribers provide financial stability to the overall project, leading to cheaper financing and insurance that bring down overall costs. Municipalities can even host a project, if a suitable site is available, such as a municipally-owned parking lot or garage with a canopy/roof. If a municipality has a large stake in the project (e.g., is an anchor subscriber or hosts the project site), a formal Request for Proposal (RFP) to solicit bids from solar installers is necessary.

> For a complete overview of how municipalities can support community solar, see Sustainable Jersey's Community Solar Guide. Robustly participating in a community solar project qualifies a municipality for Sustainable Jersey's Municipally Supported Community Solar action.

2.5 Solar Purchasing Programs

Solar purchasing programs are an effective method to expand the use of solar in a community. These programs bring down the cost of solar for all participants by utilizing bulk pricing and shipping of materials, reducing travel time between projects for the installers, and enabling education of many potential consumers at once.

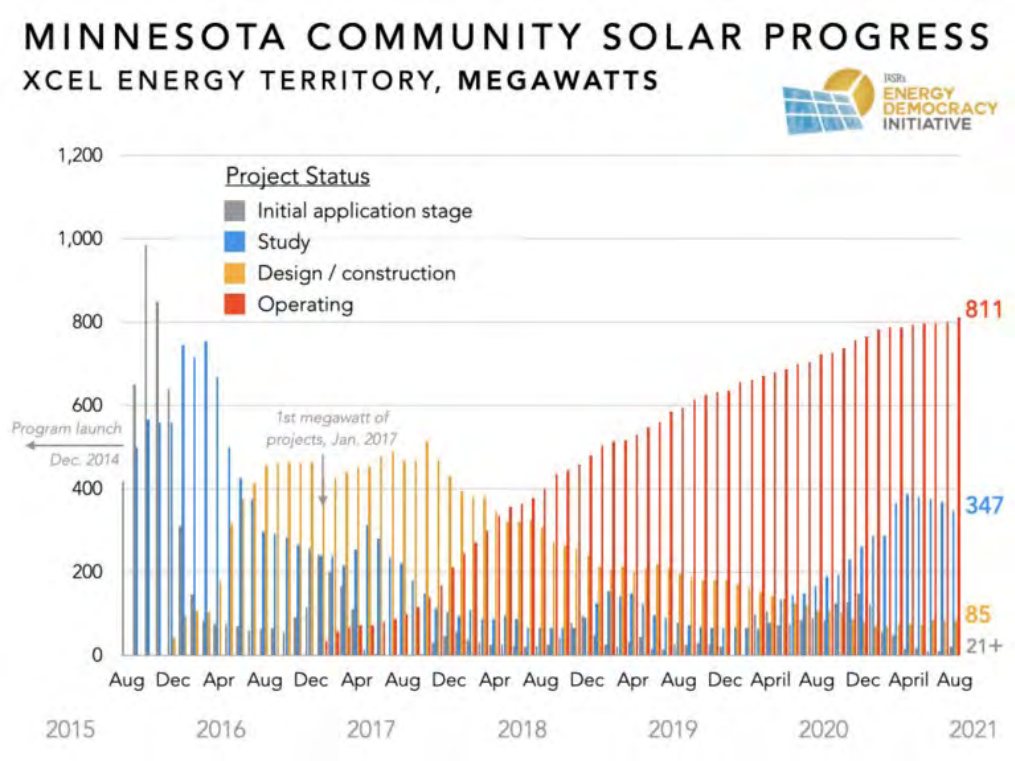
2.5.1 Solarize Campaign

Municipalities can encourage residents and businesses to install ground-mount or rooftop solar systems through solar purchasing programs, commonly referred to as *Solarize* campaigns. To initiate such a campaign, the municipality invites solar installers (via a Request for Proposal) to offer special pricing on solar installations to local residents and businesses for a limited time, at no cost to the municipality. After selecting one or more installer partners, the municipality helps

FIGURE 11. Case Study: Minnesota Community Solar

Case Study: Minnesota Community Solar

Minnesota's community solar program, launched in December of 2014, is now the largest in the country at 811 megawatts of operational capacity (as of August 2021). Most of the capacity (61%) serves public entities such as schools, colleges, hospitals, and county and local governments. More than 12,000 residential customers (84% of all subscribers) are saving money by subscribing to a community solar project (Farrell).



ILSR. 2021. Why Minnesota's Community Solar Program is the Best. ilsr.org/minnesotas-community-solar-program/

advertise the offering to residents/businesses, establishing credibility for the installer(s).

Generally, the selected installer(s) works with the green team and municipal staff to create and fund outreach and marketing. Outreach and education are crucial to a successful *Solarize* campaign. Campaign organizers should use multiple wide-reaching marketing channels, from free yard signs for residents receiving quotes to announcements at community events. Testimonials from program participants and/or prominent local figures, whether elected or local personalities, lend credibility to program outreach materials.

Community-wide solar purchasing programs qualify for Sustainable Jersey's Solar Outreach action.

Municipalities may want to target certain building types in their outreach. For instance, a municipality with many historic buildings may reassure building owners in outreach materials that rooftop solar can be installed without impacting historic building characteristics. For more information on special considerations for historical buildings, see the National Renewable Energy Laboratory (NREL) guidance Implementing Solar PV Projects on Historic Buildings and in Historic Districts.

2.5.2 Solar Marketplace Campaign

A common source of hesitation to adopting rooftop solar is an inability to easily compare the different options for a particular property, including different sizing and financing options. Online solar marketplaces utilize satellite photo imagery to estimate the solar capacity of a roof and provide rooftop solar array quotes from solar installers that have been vetted by the marketplace. Municipalities can partner with organizations like EnergySage, encouraging residents to get an assortment of quotes through the platform. Some municipalities choose a solar marketplace partnership instead of a *Solarize* campaign to avoid endorsing a specific installer.

2.5.3 Employee Solar Purchasing Program

Employers, including municipalities, can offer a solar purchasing program to their employees, partnering with solar installers to provide employees with a reduced rate for new solar installations. This "employee benefit" approach to installing solar mirrors the way employers offer discounts on gym memberships, cell phone plans, etc. to their employees. The program can be promoted with existing organization and communication channels of a workplace, lowering the customer acquisition cost for the installer(s), who then pass on some of the savings to the customers. Besides contributing to climate change mitigation, the employer benefits from increased employee satisfaction and improved public image.

A municipality can utilize its own employee solar purchasing program as a model to promote to other local employers. For more on the potential outreach and incentive options for solar campaigns, see the Department of Energy's SolSmart Program Guide.

Employee solar purchasing programs involving the municipality may qualify for Sustainable Jersey's Solar Outreach action.

Municipalities with a green business recognition program can highlight employers offering solar purchasing programs and apply for points under the Green Business Recognition Program action.

FIGURE 12. Case Study: Solarize Duke University

Case Study: Solarize Duke University

Starting in 2012, Duke University in North Carolina implemented a "Solarize Duke" campaign to bring solar to the rooftops of employee's homes. Duke's Carbon Offset Initiative (COI) program ran workshops in which employees learned how to acquire rooftop solar along with information about improving home energy efficiency. "Solarize Duke" was eventually scaled up to the Home Energy North Carolina program, which offers a wide array of resources for those interested in sustainable energy for their home. The program's workshops include skills training such as how to perform simple home retrofits and how to select and work with contractors (Duke University Office of Sustainability).

2.6 Buy Renewable Electricity for Municipal and School Facilities

Purchasing renewable energy for public facilities contributes to the transformation of our electricity supply market by increasing the demand for renewable energy. A municipality or school district can buy renewable electricity for its facilities directly from an energy supplier or participate in a buying pool that includes renewable power. Buying pools are offered by commercial entities and local cooperatives that can secure great rates for participants thanks to their scale. Purchasing via a buying pool also generally creates little additional work for municipal staff, as decision makers simply choose the buying pool and pass a municipal resolution (or equivalent) to join that entity. Some of the most popular options in the state are the New Jersey Sustainable Energy Joint Meeting (NJSEM) and Alliance for Competitive Energy Services (ACES).

If the supply contract includes renewable energy content at least 5% above New Jersey's current Renewable Portfolio Standard, municipalities can receive points under the Buy Electricity From a Renewable Source action, and schools can receive points under the Buy Renewable Electricity action.

FIGURE 13. Case Study: Essex-Hudson Regional Cooperative Pricing System

Case Study: Essex-Hudson Regional Cooperative Pricing System

In 2011, the counties of Hudson and Essex jointly formed the Essex-Hudson Regional Cooperative Pricing System (RCPS), which includes the majority of municipal governments in the two counties. Essex-Hudson RCPS decided to enhance the electricity product purchased on behalf of the municipal members with additional renewable energy (50% more than what New Jersey required at the time). Those contracts provided enhanced renewable power supply at aggregate annual member savings of about $1M. Subsequent contracts gradually increased the renewable energy content to 20% and then 25%, while still achieving millions of dollars of energy cost savings. Essex-Hudson RCPS combined forces with Passaic and Sussex counties in 2018 for a supply contract includes 30% renewable content, where all renewable energy is sourced from Class 1 PJM resources. This aggregation program saves participating governments money while providing convenient access to renewable energy.

2.7 On-site Municipal Renewable Generation

Municipalities often install their own renewable energy generation to offset facility electricity consumption. Many municipalities hire an energy consultant to explore opportunities for siting a solar system and identify purchasing/leasing options. With the consultant handling most of the work, the municipality need only organize initial support for the effort and gain necessary approvals, engage the consultant, and support the procurement and construction process as required (decision making, access to buildings, etc.).

Once installed, on-site renewable energy projects can serve as demonstrations for nearby

municipalities and commercial facilities. The host municipality can share project information via a web portal for easy access. For example, Hardyston Township has a long-running Solar Energy Project with live online metrics to demonstrate the financial and environmental benefits. The American Cities Climate Challenge website offers guidance on every step of the procurement process for renewable energy solutions popular among municipalities.

Facilities with high hot water demand (e.g., fire stations, recreation centers) are great sites for solar thermal installations. More efficient than their photovoltaic counterparts, solar thermal arrays can quickly pay for themselves in energy cost savings. For example, Manchester Township's rooftop solar thermal system for the police department paid for itself in 3-4 years and served as an example to the community, thanks to educational programming for staff and the public.

Municipal onsite renewable energy projects can qualify for Sustainable Jersey's Municipal On-Site Solar, Municipal On-Site Geothermal, or Municipal Wind Energy System action.

School district solar projects can qualify for the Onsite Renewable Generation System – Solar or Onsite Renewable Generation System – Geothermal action.

FIGURE 14. Technology Highlight: Solar Thermal

Technology Highlight: Solar Thermal

Solar thermal systems harness sunlight to heat water, replacing conventional water heaters powered by natural gas or electricity. They are more cost-effective than electric water heating and less emissions-intensive than natural gas water heating. Solar water heating is even more efficient than photovoltaic solar, making it well suited for buildings with small roofs and significant hot water demand, such as multistory multifamily buildings (MassCEC, "Residential").

Highlighting these benefits, municipalities can promote solar thermal with a dedicated outreach effort or as part of a broader energy efficiency or renewable energy campaign.

Manchester, NJ. 2016. Sustainable Jersey Certification Report. sj-site-legacy-migrate.s3.amazonaws.com/m151913011.zip

Strategy 3: Maximize Energy Efficiency and Conservation and Reduce Peak Demand

Why this topic is important

Reducing the overall demand for energy through energy efficiency and consumer conservation can accelerate the transition to a 100% renewable energy system.

Similarly, reducing peak demand – the highest rate of electricity consumption in a given time period – can also mitigate GHG emissions. Energy systems must be designed to handle their peak demand, so reducing peak demand has major implications for system infrastructure. On the grid level, suppliers generally meet peak demand by using "peaker" plants, power plants that are kept in service specifically for peak demand events. Lowering peak demand reduces the need to build and use these plants, which tend to be the most polluting plants in the grid system.

As we electrify our buildings and transportation, overall electricity demand and peak demand will likely rise in the coming decades. However, strategic development of energy efficiency and demand-related measures can mitigate the demand impact of electrification and reduce the need to build out more and more energy infrastructure.

PARTNER IDEAS

- *Industrial facility eligible for demand side management and/or demand response*
- *Solar installer offering solar + storage solutions*
- *Houses of worship and other religious organizations*

How municipalities can help

3.1 Reducing Energy Use in Municipal and School Buildings

Municipalities and schools can be models of energy efficiency for their community by maintaining high efficiency in their facilities. Most buildings have room for improvement in efficiency, but the specific opportunities are not always obvious. Energy audits, such as New Jersey's Clean Energy Program's free Local Government Energy Audits (LGEAs), are a valuable tool for identifying those opportunities. Energy audits entail professional review of recent utility bill data and existing on-site equipment to produce a report identifying potential energy efficiency upgrades (often called "energy conservation measures" or ECMs). LGEA reports include the project payback timeframe for each measure, which is the length of time for the savings on energy costs to offset the expense of the measure, so that decision makers can compare cost-effectiveness of different ECMs.

To make actual upgrades to energy efficiency, municipalities can utilize New Jersey's Clean Energy Program (NJCEP) and New Jersey's investor-owned utilities incentive programs. If an LGEA (or equivalent audit) shows major opportunity for improvement, a municipality might consider the Energy Savings Improvement Program (ESIP), a financing tool that pairs with NJCEP and utility incentives and allows municipalities to pay for ECMs with the future energy savings that the measures will generate.

Municipalities and schools that perform energy audits and/or energy-saving upgrades can receive points under Sustainable Jersey's Energy Efficiency for Municipal Facilities or Energy Efficiency for School Facilities action.

FIGURE 15. Case Study: Newark's Energy Savings Improvement Plan

Case Study: Newark's Energy Savings Improvement Program

In 2010, Newark received Local Government Energy Audits of 17 municipal properties. In light of the many recommendations in the audit reports, the city sought out an Energy Service Company (ESCO) that could complete the recommended work using New Jersey's Energy Savings Improvement Program (ESIP). In 2019, Newark signed a 20-year, $15.4 million contract with the ESCO Honeywell to upgrade energy efficiency in facilities and operations. NJCEP is providing a $2.3 million rebate for the project, and Honeywell guarantees the energy savings for the city. Newark estimates the initiative will reduce the city's annual energy operating costs by 36%, with a potential savings of nearly $1 million per year. The specific measures planned under the contract with Honeywell include significant upgrades to the municipality's steam system, new combined heat and power plants in two recreation centers and at City Hall, and a city-wide solution to reduce desktop computer power consumption (Honeywell).

Energy utility bill data is helpful for determining how to upgrade energy efficiency in facilities. Municipalities can actively track utility bills to decide what to prioritize for upgrades, validate energy savings as changes are made, and inform maintenance and occupant behavior to improve energy conservation. ENERGY STAR Portfolio Manager is the standard tool for utility bill analysis.

Implementing an energy tracking system can garner points for municipalities under Sustainable Jersey's Energy Tracking and Management action or the Sustainable Jersey for Schools Energy Tracking & Management action.

3.2 Energy Efficiency Outreach Campaigns in the Community

Municipalities are a trusted source of information for their residents and businesses. They can utilize this position to promote energy efficiency, especially encouraging utilization of utility energy efficiency incentive programs. Municipalities can generate interest in energy efficiency via mailings, municipal website posts, social media posts, and public events. Municipal staff and green team volunteers can partner with utility energy efficiency teams and Sustainable Jersey for help with hosting workshops and developing promotional materials.

3.2.1 Residential Energy Efficiency

New Jersey's investor-owned utilities offer several energy efficiency incentive programs for residential customers. The Home Performance with ENERGY STAR (HPwES) program includes an assessment by a certified energy auditor and up to $5000 towards upfront costs of installing the auditor's recommended energy conservation measures (ECMs). The Quick Home Energy Check-Up (QHEC) program consists of a less-intensive assessment and installation of low-cost energy efficiency measures such as LED light bulbs. Other utility residential programs include energy efficient equipment rebates and incentives for recycling old appliances. Municipal outreach teams should work with Sustainable Jersey and their utilities' energy efficiency staff to ensure accurate messaging about the specific offerings of the local utilities. For guidance on outreach specifically to low- and moderate-income residents, see Section 6.2.1.

Depending on the audience and programs promoted, energy efficiency outreach campaigns can fulfill the requirements of Sustainable Jersey's Residential Energy Efficiency Outreach or Commercial Energy Efficiency Outreach actions.

3.2.2 Commercial Energy Efficiency

On the commercial side, the Direct Install program offers small to medium customers an energy assessment and covers up to 80% of the cost of energy efficiency upgrades recommended in the assessment. Other incentives include rebates for energy efficiency equipment. Most New Jersey utilities also offer an Engineered Solutions program that provides eligible large commercial customers both a comprehensive assessment and incentives for completing recommended energy efficiency upgrades, as well as Energy Management programs and multifamily-specific incentives. Entities with over $5,000,000 in total annual energy costs are eligible for New Jersey's Clean Energy Program's Large Energy Users Program incentives. Municipal outreach teams should work with Sustainable Jersey and utility energy efficiency staff to ensure accurate messaging about the offerings available to commercial customers in the community.

FIGURE 16. Technology Highlight: Heat Pumps

Technology Highlight: Heat Pumps

Ground-source (a.k.a. geothermal) and air-source heat pumps are a common form of electrification, transferring the burden of heating (air or water) from oil or gas to electricity. Air-source heat pumps require less investment than their ground-source counterparts, but geothermal systems achieve greater energy efficiency. Ground-source heat pumps utilize the stable temperature of the earth's crust (52-57°F in New Jersey), lowering the amount of energy required to reach a comfortable indoor temperature versus conditioning outside air. Both types of heat pumps are generally more efficient than gas-powered furnaces and baseboard heaters.

If partnered with a highly-renewable electricity supply (as is possible with third-party suppliers and on-site renewable installations), heat pumps can maintain comfort in buildings at a fraction of the emissions of their traditional counterparts. However, because heat pumps are only effective above -10°F, these systems may require a supplementary electric auxiliary furnace, highly efficient natural gas furnace, or combined heat and power (CHP) systems in colder parts of the state.

Municipalities and schools with geothermal systems are eligible for the Sustainable Jersey Municipal Geothermal Energy System and School Geothermal Energy System actions.

NREL. 2017. Daikin Heat Pump. Photo by Dennis Schroeder. 48495.

Municipalities with businesses enthusiastic about energy efficiency can magnify that excitement with an energy efficiency challenge that sets a target percentage reduction in energy use and recognizes the leading businesses. For more guidance on incentivizing energy efficiency with this approach, see the Green Business Recognition Program action.

3.2.3 Multifamily Energy Efficiency

Municipalities can encourage local multifamily property owners and managers to improve energy efficiency by connecting them with the relevant NJCEP or utility incentives. The investor-owned utilities offer multifamily-specific energy efficiency incentive programs (see the utility websites for details).

For guidance, municipalities can use the American Council for an Energy Efficient Economy (ACEEE)'s whitepaper Effective Marketing and Outreach Strategies for Multifamily Energy Efficiency Programs. ACEEE recommends marketing through existing property owner associations, leveraging the connections of contractors and trade allies, and using specific case studies with many similarities to target properties.

FIGURE 17. Case Study: Collingswood Small Business Loan Program

Case Study: Collingswood Small Business Loan Program

While promoting energy efficiency to local businesses, Sustainable Collingswood found that, even with the incentives available from New Jersey's Clean Energy Program, local businesses did not have the necessary capital funds to implement energy efficiency upgrades. In response, the group convinced the Borough to set up a loan fund in 2018 to help businesses interested in making retrofits.

Collingswood invested $50,000 in the revolving loan fund in cooperation with certified SBA microloan provider Cooperative Business Assistance Corporation. Businesses can borrow funds to help fill the gap in funding, then pay back the loan over time partially or entirely with their energy savings. The program has been widely advertised through email, snail mail, and presentations at events for local business leaders.

Collingswood, N.J. 2019. Sustainable Jersey Certification Report. sj-site-persistent-prod. s3.amazonaws.com/fileadmin/cicbase/documents/2019/11/22/15744527119472.pdf

3.2.4 Commercial Rentals Energy Efficiency

Commercial leased building space accounts for around 10% of total energy consumption of the United States economy (USDOE, Energy Efficiency). As with residential rentals, responsibility for energy use and costs is unevenly split between owners and tenants. Building owners own the lights, HVAC equipment, etc. that consume energy, but do not themselves use the equipment or (usually) pay the corresponding energy bills. Thus, building owners may perceive energy efficiency upgrades as essentially paying to save the tenant money.

However, municipal policy can encourage energy efficiency in leased spaces while accounting for the obstacles. Most notably, municipalities can encourage "green leases," in which the tenant and owner agree to improve building efficiency in some manner that splits costs and savings. One common green lease tool is a cost recovery clause that enables the owner to recover costs of energy efficiency upgrades by charging tenants. Under green leases, owners sometimes utilize submetering of tenant spaces to charge tenants somewhat proportionally to the energy use they control (USDOE, Energy Efficiency). BOMA International offers a template and guide for commercial green leases. For a deeper dive into methods of improving commercial building efficiency, see the U.S. Department of Energy's report Energy Efficiency in Separate Tenant Spaces.

3.3 Demand Side Management and Demand Response

Demand side management (DSM) is the practice of shifting routine electricity usage to off-peak hours of the day to help the grid system operators balance supply and demand.

Customers might reduce demand by running equipment sequentially instead of simultaneously, or rescheduling energy-intensive processes for the nighttime. Municipalities can encourage their large commercial buildings and multi-unit residences to sign up for demand side management programs and save money on their energy costs. To sign up, the electricity customer applies through their electric utility. More information and resources available through Rutgers' Green Building Manual.

Municipalities can also recommend industrial and commercial facilities participate in demand response. As with DSM, demand response requires shifting electricity use, but on a larger scale and for only the most strenuous periods for the electrical grid, such as abnormally hot summer days. Large electricity customers must contact a Curtailment Service Provider (CSP) to assess their eligibility for demand response and join the program. Both demand response and demand side management promote grid stability and reduce emissions by reducing the need to construct and use fossil fuel-powered "peaker" plants. Municipalities and school districts can also join DSM and demand response programs themselves to lead by example.

3.4 Streetlight Conversions

Streetlights are an energy-intensive public service with a straightforward opportunity for energy savings – installing light emitting diodes (LEDs). However, the ownership of streetlights in New Jersey is complicated, presenting a challenge to realizing energy savings. Municipalities interested in tackling energy use from streetlights should work with their electric utility and New Jersey's Board of Public Utilities (NJBPU) to determine feasibility of making upgrades.

FIGURE 18. Municipal Tools for Encouraging Community Action: Property Assessed Clean Energy

Municipal Tools for Encouraging Community Action: Property Assessed Clean Energy (PACE)

The Property Assessed Clean Energy model is used across the U.S. to provide funding for building energy improvements. In a PACE program, the property owner receives financing for the costs of a renewable energy, energy efficiency, water conservation, and/or resiliency project and repays the financer through increased property taxes. The system benefits building owners because participation is not contingent on credit score and costs are distributed over a long time frame (up to 30 years). Meanwhile, the community benefits from GHG emissions reductions and a boost to the local clean energy economy.

New Jersey passed legislation enabling PACE in 2011. However, because few utilized this initial system, New Jersey passed a new PACE bill in August of 2021, which directs the New Jersey Economic Development Authority (NJEDA) to create the "Garden State C-PACE Program" (Cloud). The new program enables agricultural, commercial, multifamily, and nonprofit property owners to utilize PACE financing with municipal ordinance approval.

For a complete explanation and step-by-step instructions to implement PACE, see New Jersey PACE's guidance for municipalities.

Strategy 4: Reduce Energy Consumption and Emissions from the Building Sector

Why this topic is important

Commercial and residential buildings consume around 40% of energy in the U.S., generating around 30% of total GHG emissions (Fowler, et al.). By addressing the energy inefficiencies of existing buildings and establishing high standards for new construction, we can realize tremendous savings in emissions in New Jersey.

PARTNER IDEAS

- *Building developers*
- *Architectural firms*
- *Builders trade associations*
- *Financial institutions, community banks, credit unions*

How municipalities can help

4.1 Building Electrification

As the state's electricity grid becomes increasingly supplied by renewable resources, electrification becomes an increasingly effective carbon reduction strategy not only for transportation (see Strategy 1) but also for buildings, especially when the electricity supply contains a higher proportion of renewable electricity than the standard grid mix (e.g., from a Renewable Government Energy Aggregation or third party supply arrangement). Common forms of electrification include heat pumps, electric water heaters, and electric kitchen appliances like stoves.

Municipalities can upgrade equipment in their facilities to electric, and promote utility incentive programs that include electrification measures, such as the equipment rebate programs.

Municipalities can also engage with the Board of Public Utilities and their local utility providers to work on developing rebate programs for electrification (an idea cited as a potential policy directive in New Jersey's Energy Master Plan). Such programs could follow the model of the Massachusetts HeatSmart program. Community leaders can meet with their local state representatives to explain the benefits of electrification, or get involved with the regulatory process for utilities (which can be tracked on the NJBPU website).

Case Study: HeatSmart Massachusetts

Massachusetts's Clean Energy Center (MassCEC) and Department of Energy Resources launched the HeatSmart Massachusetts program in 2018. Communities participating in the program encourage the adoption of clean heating and cooling technology, including heat pumps, wood heating, and solar hot water. Akin to a Solarize campaign, HeatSmart communities solicit bids from certified installers to offer discounted heating and cooling systems to community residents. The program facilitates the sharing of marketing strategies and materials between past and present participants. The program targets Massachusetts communities with a higher prevalence of high-cost heating fuels to realize the greatest financial savings (MassCEC, "HeatSmart").

MassCEC. Solarize-HeatSmart Toolkit. www.masscec.com/solarize-heatsmart-toolkit

FIGURE 19. Case Study: HeatSmart Massachusetts

4.2 Energy Benchmarking

Energy benchmarking, the process of comparing a building's energy use to its peers, helps building managers prioritize energy efficiency improvements. Benchmarking can motivate efforts to improve efficiency by presenting energy efficiency as a sort of competition. Municipalities can also use energy benchmarking of private buildings to guide outreach campaigns about energy efficiency (Section 3.2). For example, benchmarking data might reveal that a city's multifamily buildings are far more inefficient than similar buildings in other cities. The city can then target those buildings in an energy efficiency outreach campaign to achieve significant energy and monetary savings.

New Jersey state law requires benchmarking for large commercial buildings (25,000 ft^2) because the energy efficiency of these buildings has major emissions implications, but benchmarking is useful for all building types and sizes. Municipalities can outright require benchmarking and the disclosure of results for buildings over a certain square footage, such as Boston's Building Energy Reporting and Disclosure Ordinance. Alternatively, municipalities might encourage voluntary benchmarking and motivate engagement via a Green Building municipal resolution, Green Development checklist, or other Municipal Tools for Encouraging Community Action. Building owners can use NJCEP's free Energy Benchmarking program or ENERGY STAR Portfolio Manager to benchmark their buildings.

Municipalities that benchmark their buildings can qualify for points under Sustainable Jersey's Energy Tracking and Management action.

4.3 Building Commissioning and Retro-Commissioning

Commissioning is the process of checking the current systems and operations of a building and making non-capital changes that bolster efficiency and performance. Common changes include adjusting temperature settings, modifying HVAC controls to reflect hours of operations, and repairing HVAC equipment. Commissioning is ideally performed prior to initial occupancy of a building, then on an ongoing basis.

However, while continuous commissioning and preventative maintenance maximize energy efficiency, they also require a significant commitment from building staff that is not always feasible. Instead, many choose to re-commission a building every 5-10 years. In practice, however, many buildings are rarely or never commissioned, meaning building owners are missing major energy savings. Studies suggest a 16% average reduction in energy costs from retro-commissioning (commissioning an in-use building for the first time), savings which usually pay for the process in just one to two years (Mills). Municipalities can make building owners aware of such benefits in energy efficiency outreach materials (see Section 3.2). Municipalities can commission their own buildings, then share the results and savings in a newsletter and on their website. As with benchmarking, municipalities can pass an ordinance *requiring* retro-commissioning for buildings over a certain square footage. For example, New York City requires commissioning at 10-year intervals for all buildings over 50,000 square feet (Local Law 87).

Some utilities in New Jersey offer commissioning programs to commercial customers. Municipalities can participate in these programs themselves and/or promote these programs to eligible local entities. See the local utilities' websites for current offerings.

4.4 Energy Savings in New Construction

Implementing green design measures during construction can generate significant reductions in immediate and ongoing GHG emissions, often at a cheaper cost than retrofitting for energy efficiency at a later time. Green design can also add to a building's value, generating a rental and/or sale price premium, and create a better work environment, yielding greater productivity (IEA).

4.4.1 Ordinances and Outreach Targeting New Construction

A municipal Green Building Policy can encourage commercial and residential developers to use green design. For instance, these documents might suggest buildings be oriented for greatest solar potential and equipped with energy efficient HVAC systems. To ensure green design is considered, municipalities can adopt an ordinance requiring developers to submit a Green Development Checklist.

Municipalities can also promote NJCEP's programs for energy efficient new construction. The Residential New Construction program offers incentives and technical assistance to builders of new residential structures (and homes undergoing a complete rehabilitation) that achieve certifications such as ENERGY STAR and Zero Energy Ready (ZER). Independent third-party inspectors work with the builders to test the home's performance and verify high efficiency.

> For templates and recommendations for implementing these policies, see Sustainable Jersey's Green Building Policy/Resolution and Create a Green Development Checklist actions.

NJCEP's Commercial New Construction program consists of three programs with varying scope and potential for savings. The SmartStart Buildings program provides prescriptive and custom incentives for single energy efficiency measures. Developers can submit one application for several eligible measures via the Custom Tailored Energy Efficiency Program (CTEEP). For construction of buildings with 50,000+ square feet of planned conditioned space, NJCEP offers a comprehensive Pay for Performance program.

In messaging about energy-efficient building design, municipalities can explain the multi-layered benefits of energy efficiency (see above), as well as the broader societal benefit of reducing air pollution, including greenhouse gases.

4.4.2 New Municipal Buildings as Model Green Buildings

Municipalities can reduce emissions from operations by building new municipal facilities to a high efficiency standard. A Green Building Policy or Resolution can specifically require green design for future municipal buildings, even specifying a minimum LEED certification, for example. To achieve high efficiency in new construction, municipalities often hire a professional with green building experience (e.g., from the U.S. Green Building Council's Member Directory) and instruct them to meet these standards. Incentives are available for specific energy efficiency measures via NJCEP's Commercial New Construction program.

FIGURE 20. Municipal Tools for Encouraging Community Action: Engaging Financial Institutions

Municipal Tools for Encouraging Community Action: Engaging Financial Institutions

Building construction and purchases often involve third-party financial institutions such as banks and credit unions. Consequently, financial institutions can influence whether and how building owners pursue sustainable energy in buildings.

Municipalities can initiate dialogue with financial institutions to persuade them to support energy efficiency, renewable energy, etc. Those reaching out to these institutions can message that energy efficiency upgrades make businesses more solvent by generating savings in operational costs and justifying higher rent (IEA). The reliability of energy efficiency savings should make for an attractive opportunity for banks, credit unions, and community financial institutions. For more information, see the Institute for Market Transformation's report Energy Efficiency Finance For Commercial Buildings: Insights From Lenders.

4.5 Effective Energy Code Enforcement

State energy code requires that all buildings meet a baseline level of energy efficiency, but local government is responsible for enforcement of these requirements. Municipalities can provide continuing education and training for code enforcement officials to keep them up-to-date as state energy code changes. Hiring new positions in the code enforcement department can also help ensure enforcement and enable proactive outreach to developers and owners to improve the quality of applications for permits and encourage builders to go beyond energy code (like via NJCEP's New Construction programs). Research by the Lawrence Berkley National Laboratory found that the average energy code plan review takes 2.3 hours, followed by an average of 2.7 hours for the energy code inspection, for a total of 5 hours (Williams et al., pg. 16). Code enforcement agencies should have least enough capacity for that fundamental task, if not more. Code enforcement staff can also refer developers to voluntary standards such as the municipality's Green Development Checklist (see Section 4.4).

Setting a Green Building Policy for municipal or school facilities can fulfill the municipal Green Building Policy/Resolution or schools Green Building Policy action.

Meeting LEED Silver or similar standards with a new building can merit points under the municipal New Construction action or for schools, the Design, Build or Certify New Construction & Major Renovations to Green Standards action.

Municipalities and schools can also train staff on green building for points under the municipal or schools Green Building Training action.

4.6 Energy Efficiency in Rental Housing

Convincing property owners to make energy efficiency and renewable energy improvements to rental properties is often challenging. Since most owners don't live on the property, they don't experience directly the many co-benefits of energy-related home improvements, such as better indoor air quality and temperature regulation. Further, renters often cover the cost of utility bills, so building owners do not pay the price for inefficient HVAC, lighting, and appliances.

Municipalities can step in to facilitate a system that distributes the rewards of energy efficiency in a way that incentivizes landlords. Boulder's (CO) *SmartRegs* program is an oft-cited example for how to resolve the rental energy efficiency problem. *SmartRegs* requires all rental housing to meet an energy efficiency standard. Trained and certified Rental Energy Efficiency Inspectors review each unit during the licensing process and inform landlords of the required energy improvements to complete. The program provides reasonable flexibility to landlords, including exemptions for historic structures and affordable housing, and the option to pursue approval of a carbon offset purchase in place of on-site energy improvements.

Municipalities with capacity to fund energy efficiency inspections of rental properties might develop a program modeled on *SmartRegs*, either mandatory or voluntary.

If capacity for such a program is unavailable, municipalities can target rental properties with messaging that interests landlords. For instance, outreach might emphasize the improvement in property values that accompanies on-site solar arrays or efficient indoor air management. Municipalities can even encourage arrangements in which the landlord commits to efficiency and comfort improvements in exchange for higher rent from the tenant.

Strategy 5: Decarbonize and Modernize New Jersey's Energy System

Why this topic is important

The growing frequency of climate change-induced extreme weather and necessary conversion to weather-dependent renewable electricity generation pose challenges to maintaining a stable electric grid. To continue consistent electricity supply to New Jersey customers, we must modernize the grid, creating a network that can handle rapidly changing supply and infrastructure conditions. Government, utilities, and businesses must together introduce new systems to provide stability, such as distributed battery storage. Modernization also entails new financial structures that incentivize energy conservation, energy efficiency, and renewable energy, such as advanced metering paired with time-of-use rates that price electricity based on the true cost of producing and delivering it.

How municipalities can help

5.1. Municipal-owned Utility Infrastructure

Municipalities that own grid infrastructure such as power plants are directly involved with the grid modernization process. Rather than depend on the state and utilities to shift standard grid electricity to clean sources, these municipalities can directly transition the electricity supply to renewable sources. For example, the Vineland Municipal Electric Utility has developed several utility-grade solar projects over the last few decades (Vineland Municipal Utilities). To get to 100% clean energy, municipal utilities can establish and implement their own energy master plan, which might include integrating modern grid technology that benefits consumers, such as advanced metering.

An ambitious municipality served by investor-owned utilities may decide that the existing utility format is not sufficiently serving its residents and move to "municipalize," purchasing electric distribution infrastructure from the utility to create its own municipal utility. Municipalization enables a community to drive decarbonization of its local grid, but is also an extensive undertaking that few municipalities have enough capacity to implement.

Strategy 6:

Support Community Energy Planning and Action with an Emphasis on Encouraging and Supporting Participation by Low- and Moderate-Income and Environmental Justice Communities

Why this topic is important

Community Energy Plans help communities effectively organize towards the goal of rapid emissions reductions. The planning process establishes priority sustainable energy initiatives based on demonstrated effectiveness, unique local factors, and co-benefits, as well as implementation details for each initiative such as lead department, partner entities, and potential funding sources.

When planning and implementing the clean energy transition, municipalities must take care to provide opportunities for low- and moderate-income (LMI) residents and environmental justice (EJ) communities (i.e., those disproportionately impacted by pollutants) to participate. Low- and moderate-income residents require help with the high costs of both time and money for sustainable energy initiatives such as home efficiency improvements, while environmental justice communities deserve assistance to compensate for past and ongoing harms such as unhealthy air in their neighborhoods. Ensuring participation in community energy planning across socioeconomic levels is part of justly building a sustainable energy future.

PARTNER IDEAS

- *Neighborhood organizations*
- *Faith-based organizations*
- *Schools*
- *Bike & pedestrian organizations*
- *Nonprofits serving LMI residents*
  - *Health clinics*
  - *Food pantries*
  - *Social services*

How municipalities can help

Municipalities should keep low- and moderate-income residents and those most burdened by pollution in mind when planning and implementing all energy measures described in this guide. Community Energy Plans should include initiatives that seek to reduce energy costs for LMI and EJ communities, such as Renewable Government Energy Aggregation (2.3), Community Solar (2.4), and Energy Efficiency Outreach (3.2).

6.1 Inclusive Energy Planning

Municipalities should not only notify underserved communities to the Community Energy Planning process but also ensure people in these communities have influence in the planning process. The planning team should include formal roles to voice the perspective of underserved communities (e.g., a seat reserved for representative from local housing authority). Those creating the planning team should seek to broadly reflect the demographics of the community. Teams can keep required responsibilities to a minimum to allow busy yet interested individuals to participate.

The planning team can follow the tips recommended in Sustainable Jersey's Improve Public Engagement in Planning and Zoning action.

Public comment is a key aspect to inclusive planning. Community-serving institutions such as faith-based and youth organizations can help facilitate soliciting input from underserved communities. Opportunities for in-person comment are best held at varying times to accommodate different schedules, and should be advertised in a variety of communication channels. The planning team can also post Community Energy Plan drafts to the municipal website and offer a notification service for residents to receive updates via email or text message. If some residents have poor internet access, municipalities should ensure there are always alternative forms of public comment to online systems.

6.2 Energy Resources for Distressed Communities

Energy efficiency can simultaneously address the burden of energy costs, improve health and safety, and reduce the GHG footprint of low- and moderate-income communities. Municipalities can reach out to LMI and EJ communities to alert them to the state and utility programs that can assist with improving energy efficiency and reducing energy costs.

6.2.1 Energy Resources for Underserved Residents

As trusted messengers for their residents, municipalities can provide information to low- and moderate-income residents about energy-related programs and opportunities. Municipal communications such as mass mailings can include information about Comfort Partners, the Weatherization Assistance Program, and utility programs for low and moderate-income families and disabled and/or elderly persons. To address concerns about the upfront costs of energy efficiency improvements, municipalities

can emphasize the overall cost savings and opportunities for zero-interest loans from utilities or on-bill repayment. Outreach campaigns should try to eliminate the time burden of enrolling in state and utility energy programs by simplifying the sign-up process, whenever possible. Section 3.2.1 offers more general guidelines for outreach to residential utility customers.

Most low- and moderate-income households are renters, which complicates the process of upgrading their homes. Outreach teams should explain how the state and utility energy efficiency incentive programs allow renters to participate, potentially contacting the property owners to explain how the programs can benefit them too. See Section 4.6 for guidelines on energy efficiency outreach specifically to renters.

Municipalities can best reach underserved communities by utilizing communication channels popular among their target communities. This includes hiring people from the target communities, and/or collaborating with organizations ingrained in the communities.

Many of New Jersey's underserved residents speak languages other than English. Municipalities can better reach non-native speakers of English by providing translated versions of their promotional materials, based on the languages spoken in the community. Additionally, outreach teams can specifically target non-English newspapers and television channels in outreach campaigns.

6.2.2 Outreach to Underserved Community Serving Organizations

Community organizations serving disadvantaged communities are often strained beyond capacity just to provide the services related to their mission. Consequently, many of these organizations cannot afford the time or upfront costs to seek out solutions to issues like inefficient building equipment. However, ongoing excessive energy costs can drain the organization's resources. Energy efficiency improvements to facilities and operations can liberate energy expenditures for use in core program services.

Municipalities can reach out to local community serving organizations to alert them to opportunities to improve energy efficiency at little cost of time and money, such as the utilities' Direct Install program and NJCEP's Local Government Energy Audit program. Municipalities can send targeted letters to these organizations, set up an informational webpage on the municipal website, and/or meet with organization decision makers. Municipalities should utilize existing networks such as nonprofit alliances and interfaith organizations. To reduce the burden of participating, municipalities can guide organization staff through the incentive program application process (Drehobl and Tanabe). Section 3.2 offers further guidance on outreach to commercial and multifamily rental properties.

> For a list of potential outreach channels and best practices in municipal communications, see the Municipal Communications Strategy action. Municipalities can receive points for energy-related outreach to LMI residents and the nonprofits that serve them via the Energy Assistance Outreach action. Sustainable Jersey's Comfort Partners Outreach Toolkit details how to implement outreach for the Comfort Partners program.

6.3 Renewable Energy Development in Distressed Communities

Municipalities can similarly promote renewable energy generation in low- and moderate-income/environmental justice communities. Community solar (Section 2.4) is an important opportunity for residents of these communities to acquire renewable energy, offering a cheaper rate than the default supply, with little burden on the consumer. Municipalities that partner with community solar developers can advocate for LMI/EJ carve-outs and discounts for even greater benefits to their LMI/EJ residents.

Efforts to prioritize LMI residents in municipal community solar policies counts towards completing the Municipally Supported Community Solar action.

For those LMI/EJ residents who do have space with solar potential, municipalities can promote opportunities for affordable solar installation. Solar offers that have low upfront costs, low credit requirements, and long lease/billing timeframes are ideal for low- and moderate-income residents that lack capital to outright purchase and install PV solar. Municipalities can include these preferences in the RFP process for establishing the contractor partner of a *Solarize* campaign (Section 2.5). Alternatively, municipalities might hold educational programming about residential solar, hosting representatives from NJBPU, Sustainable Jersey, and/or the utilities.

6.4 Shared Mobility Programs

Shared transportation networks of cars, bikes, and even electric scooters are rapidly expanding into cities and towns across the country. Because many low- and moderate-income families cannot afford their own private vehicles, these programs can considerably improve the quality of life for those residents. With that potential in mind, NJDEP is seeking to fund proposals for electric car sharing and ride-hailing services ("eMobility") that will benefit low or moderate income communities disproportionately impacted by air pollution.

6.4.1 Bicycles and Scooters

Both traditional and electric bicycles and scooters are available as part of shared mobility networks in cities across the U.S. These low-emissions transportation options have the potential to significantly and affordably reduce emissions. Municipalities can promote these services by establishing favorable regulations and/or partnering directly with companies to launch a public-private program. Municipalities can encourage or require shared mobility programs to provide low-income membership options and docking stations or charging points in neighborhoods with LMI households or poor environmental quality. Municipalities may partner with neighboring municipalities to create a regional shared transportation network (e.g., Citi Bike) The National Association of City Transportation Officials has created extensive guidance for how municipalities can promote bike and scooter shared mobility programs.

6.4.2 Shared Electric Automobiles (Carsharing)

Carsharing is a self-service car rental system in which users rent cars for shorter periods of time than traditional car rentals, often by the hour. An all-electric carsharing fleet accessible to LMI/EJ communities can improve local air quality and provide affordable transportation. Municipalities can partner to launch a public-private electric carsharing program with docking sites in LMI/EJ neighborhoods. For important considerations for electric vehicle carsharing, such as minimizing insurance costs and optimal siting, see the Greenlining Institute's white paper Electric Carsharing in Underserved Communities.

6.4.3 Electric Ride-Hailing

With the advent of ride-hailing smartphone apps, ride-hailing has become a convenient and widespread method of transportation. Because ride-hailing drivers generally put many miles on their vehicles, drivers can mitigate a significant amount of GHG emissions by using an electric vehicle.

Municipalities can seek partnerships with companies in the ride-hailing industry to transition local ride-hailing vehicles to electric. To attract electric ride-hailing drivers, municipalities can offer public EV charging stations (Section 1.2) and specially-designated pickup zones for EV ride-hailing.

FIGURE 21. Case Study: Philadelphia's Indego Bikeshare Program

Case Study: Philadelphia's Indego Bikeshare Program

Indego is a bikesharing program that was launched by the city of Philadelphia in 2015. Users buy a daily, weekly, or monthly pass to gain access to over 1000 self-service bicycles. Pennsylvania residents who qualify for the Supplemental Nutrition Assistance Program (SNAP, formerly known as food stamps) can use their state SNAP ID card to sign up for a discounted monthly or annual pass. The pass provides unlimited rides under one hour, and riders are charged just 5 cents for every additional minute after one hour. The program also discounts rides on electric bikes to 5 cents per minute, providing an electric transportation option to those who could not otherwise afford it.

Beyond those discounts, the city of Philadelphia actively seeks to grow ridership in low-income communities and by historically-marginalized groups. Besides targeting underserved neighborhoods for new docking station installations, the Indego program recruits nonprofits representing various constituencies to organize group rides and participate in community forums on behalf of Indego. The city of Philadelphia is a major member of the Better Bike Share Partnership, which hosts its own themed group rides, such as a Black History Month tour of Philadelphia's underground railroad stops and black-owned businesses.

Philadelphia Office of Transportation, Infrastructure and Sustainability. www.phila.gov/departments/office-of-transportation-infrastructure-sustainability/

Strategy 7: Expand the Clean Energy Innovation Economy

Why this topic is important

We have affordable renewable energy sources today thanks to the rapid acceleration of energy technology innovation over the past several decades. Further clean energy innovation in power generation and storage can improve convenience and price parity of sustainable options and reduce the challenge of transitioning to a fossil-free energy system. Future innovations may include new methods of harnessing renewable resources for human use that fundamentally alter the path to 100% clean energy.

PARTNER IDEAS

- *Colleges and universities*
- *High school STEM programs*
- *Local clean tech companies*

How municipalities can help

7.1 Clean Energy Innovation in Schools

Universities, community colleges, and high schools are common centers for research and development of clean energy technology. Community Energy Plans can include the construction of clean tech systems on school campuses that help demonstrate that technology, such as Princeton's microgrid. Ideally students are involved in such projects, acquiring knowledge and skills in the clean energy field.

Schools can also encourage their students to participate in clean technology competitions like the Center for Science Teaching and Learning's annual Clean Tech Competition. Higher education students can compete for MIT's Clean Energy Prize or the U.S. Department of Energy's Cleantech University Prize. Municipalities can help bring together the necessary partners to equip students and faculty with the tools for cutting-edge research and for participating in national competitions at reasonable cost to the education institution. Clean energy projects may help schools complete actions in the Sustainable Jersey Schools program.

FIGURE 22. Case Study: Delran School District STEM

Case Study: Delran School District STEM

In 2019, the Delran School District partnered with the Delran STEM Ecosystem Alliance to transform the school's unused automotive shop into an Innovation and Fabrication Laboratory. The lab features laser cutters, 3-D printers, woodworking equipment, and other advanced technologies. The Innovation and Fabrication Laboratory helps foster a cross-curricular learning environment with real-world applications. Students will have the opportunity to explore different STEM (Science, Technology, Engineering, and Mathematics) careers and develop technical skills by engaging in hands-on activity with state-of-the-art equipment.

The Delran STEM Ecosystem Alliance is one of four designated STEM ecosystems across New Jersey; the others are Liberty STEM Alliance, Newark STEAM Coalition, and South Jersey STEM & Innovation Partnership.

Delran Schools. Delran Innovation & Fabrication Lab. delranschools.com/stem_old/delran_innovation___fabrication_lab

Efforts to partner on clean energy innovation may garner points under the Sustainable Jersey Green Jobs/ Economic Development action.

7.2 Clean Energy/Buildings Hubs

The Energy Master Plan includes plans for several state "hubs" for sustainable energy innovation. These include a Clean Energy Technology Center to support clean energy start-ups and a Clean Buildings Hub to develop training and educational opportunities for professionals like real estate brokers. Municipalities can reach out to New Jersey's Clean Energy Program to offer space for hosting these hubs. Municipalities and schools that are not hosting these hubs can establish their own green job training partnerships with businesses and labor organizations. Municipalities can promote themselves as great homes for green businesses, hosting sustainable business networks and events. Municipalities can also lend financial support through tax incentives, abatements, etc. to clean energy organizations.

7.3 Creative Pilots

Municipalities can directly participate in energy innovation by hosting state or federal clean energy pilot programs, or initiating their own. Implementing cutting-edge technologies provides valuable insight in promoting and regulating installations elsewhere. Sometimes just one municipality with a successful pilot can inspire dozens more to follow suit.

7.3.1 Energy Storage

Because solar and wind generation is not available on-demand like fossil fuel combustion, energy storage is critical to expanding the proportion of solar and wind energy in the electricity grid. Many think of energy storage as lithium-ion rechargeable batteries, but energy storage also includes pumped hydroelectric, compressed air, and thermal storage such as chilled water. New Jersey has some of the most ambitious energy storage targets in the country thanks to the 2018 Renewable Energy bill: 600 MW of energy storage by 2021 and 2,000 MW by 2030. The NJBPU is expected to develop a mechanism to achieve the targets, but has not released information on that as of the publication of this guide. There are few existing standards for permitting and siting energy storage, particularly battery storage, but the state plans to collaborate with municipalities to develop guidance and rules on permitting energy storage (State of New Jersey, pg. 112). Municipalities can reach out to the NJBPU to express interest in hosting an energy storage pilot.

FIGURE 23. Case Study: Pennington's Solar Storage System

Case Study: Pennington's Solar Storage System

The Borough of Pennington partnered with PSE&G to install a solar storage system that enables the town's DPW building to continue operating during extended power outages. The project combines a 404-kW solar system with 574 kWh Tesla Energy lithium-ion batteries. During normal operation, the solar system provides electricity directly to the grid and can power about 65 homes annually (McCormick).

7.3.2 Microgrids

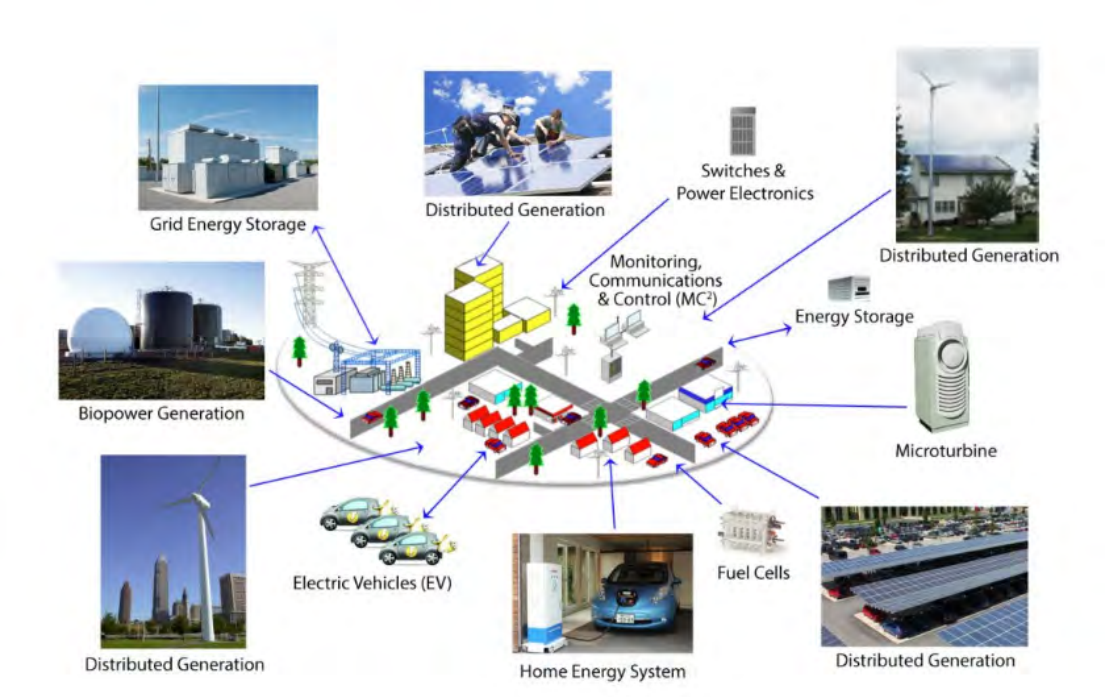
Municipalities can help develop the modern grid by seeking to develop microgrids in their community. College campuses and city downtowns are great settings for microgrids. Princeton University's microgrid utilizes combined heat and power to meet the heating, cooling, and electricity needs of the campus during grid outages (most famously during Hurricane Sandy) and to supplement grid power during normal operation (Kelly). Municipalities may even consider developing a microgrid for their own facilities.

FIGURE 24. Technology Highlight: Microgrids

Technology Highlight: Microgrids

Microgrids are electricity networks controlled by some central entity that can connect and disconnect from the broader grid (known as "islanding" or "island mode"). That flexibility helps alleviate inefficiencies that cause emissions, such as by reducing demand locally when the broader grid is stressed by excessive demand. Microgrids also provide co-benefits such as continued operation during broader grid outages and shifting load via distributed energy resources to avoid potential brownouts/burnouts.

New Jersey's Energy Master Plan instructs state regulators and utilities to adapt the state's electricity grid to accommodate microgrids. As the regulators and utilities make these accommodations, microgrids may become a common alternative energy resource in NJ.



Clean Coalition. Community Microgrids. clean-coalition.org/community-microgrids

As part of the Town Center Distributed Energy Resources Microgrid Program, the New Jersey Board of Public Utilities (NJBPU) has funded feasibility studies for microgrids in several New Jersey communities. The purpose of the studies was to identify opportunities for connecting critical facilities in a microgrid structure to provide energy for essential services in situations of grid outages. In March 2021, the NJBPU approved additional funding for the second phase of the program, in which participating government entities will work on detailed project design. Municipalities not part of the program can fund their own feasibility study to take the first steps towards a microgrid system.

7.3.3 District Energy

District energy comprises a network of underground pipes that provide heating and/or cooling to a given locale from a central plant (EESI). District energy is a particularly appealing approach to improving efficiency for small, older buildings that are difficult and expensive to independently retrofit. District energy can provide the benefits of scale (i.e., low cost and emissions per unit energy) to a network of small buildings in a specific area (Osdobo et al.).

District energy systems provide emissions savings when the central plant is powered by a low-emissions generation system. Many district energy systems utilize combined heat and power (CHP) generation, which captures heat and electric power simultaneously. Though generally powered by natural gas combustion, CHP can achieve much higher efficiency (i.e., ratio of energy output to GHG emissions) than typical fossil fuel combustion. New Jersey's Clean Energy Program offers incentives for combined heat and power systems with an annual system efficiency of at least 60%.

College, hospital, and military campuses are common locations for district energy, but the format works for city downtown districts as well. The quintessential downtown system is District Energy St. Paul in St. Paul, MN, which heats over 80% of St. Paul's central business district via a biomass CHP plant (powered with wood waste) and solar thermal technology (EESI).

Municipalities can prompt local institutions such as colleges to consider district energy solutions for their physical locations. They can also consider spearheading a district energy project for a neighborhood of the municipality itself. For guidance on the process of implementing district energy, see The Role of District Energy in Greening Existing Neighborhoods by the National Trust for Historic Preservation and the University of Oregon.

FIGURE 25. Case Study: Trenton District Energy

Case Study: Trenton District Energy

Since 1983, a district energy network has supplied the downtown core of Trenton, including the State Capitol Complex, with hot water, steam, and chilled water. The network includes highly-efficient 6MW combined heat and power generation that ensures buildings in the network receive energy during grid outages. The district energy operator Vicinity Energy has been adding renewable energy into the network fuel mix and anticipates achieving net zero emissions by 2050 (Vicinity Energy).

Glossary

Alternative Commuting
Any form of commuting other than single occupancy vehicle travel, which makes up the vast majority of commutes in the U.S.

Board of Public Utilities (BPU)
The state agency with authority to oversee the regulated utilities, which provide critical services such as natural gas, electricity, water, telecommunications, and cable television. The law requires the BPU to ensure safe, adequate, and proper utility services at reasonable rates for customers in New Jersey. The BPU addresses issues of consumer protection, energy reform, deregulation of energy, and telecommunications services and the restructuring of utility rates to encourage energy conservation and competitive pricing in the industry. The BPU is also responsible for monitoring utility service and responding to consumer complaints.

Combined Heat and Power (CHP)
Producing both electricity and thermal energy on-site, replacing or supplementing electricity provided from a local utility and fuel burned in an on-site boiler or furnace. Also known as co-generation.

Commissioning
The process of checking the current systems and operations of a building and making non-capital changes that bolster efficiency and performance. Common changes made during commissioning include adjusting temperature settings, modifying HVAC controls to reflect hours of operations, and repairing HVAC equipment. Commissioning an existing building for the first time is called "retro-commissioning." Commissioning an existing building that was previously commissioned is called "recommissioning."

Community Solar
A program in which customers either partly own or "subscribe" to a solar installation located off-site from their property (like a landfill or warehouse) and receive credit on their electric utility bill for a portion of the electricity generated by the installation.

Complete Streets
Streets intentionally designed and operated to promote safety, mobility and accessibility of all users (pedestrians, bicyclists, motorists, transit, etc.) regardless of age and ability.

Demand Response
The practice of shifting electricity use on a very large scale for the most strenuous periods for the electrical grid, such as abnormally hot summer days. Large electricity customers can sign up to participate in demand response via a Curtailment Service Provider (CSP).

Demand Side Management (DSM)
The practice of shifting routine electricity usage to off-peak hours of the day to help the grid system operators balance supply and demand. Customers might reduce demand by running equipment sequentially instead of simultaneously, or rescheduling energy-intensive processes for the nighttime.

District Energy
A network of underground pipes that provide heating and/or cooling to buildings within the network, using energy generated in a central plant (EESI).

Energy Conservation Measure (ECM)
An improvement made to a facility to reduce energy consumption.

Energy Savings Improvement Program (ESIP)
A financing mechanism open to government entities in New Jersey that allows retrofitting public facilities with energy conservation measures (ECMs) without having to budget upfront for the new capital investment. The government entities pay for the energy-related improvements to their facilities using the value of energy savings that result from the improvements. Further details: www.NJCleanEnergy.com/ESIP.

Energy Services Company (ESCO)
Energy Service Companies (ESCOs) develop, design, build, and arrange financing for projects that save energy, reduce energy costs, and decrease operations and maintenance costs at their customers' facilities. In general, ESCOs act as project developers for a comprehensive range of energy conservation measures (ECMs) and assume the technical and performance risks associated with a project. ESCOs are distinguished from other firms that offer energy-efficiency improvements in that they use the performance-based contracting methodology. When an ESCO implements a project, the company's compensation is directly linked to the actual energy cost savings (USDOE, "Energy Service Companies").

Green Lease
A property lease agreement that includes mechanisms for splitting the costs and savings of energy efficiency measures between the owner and tenant.

Low- and Moderate-Income (LMI) Households
Households with an adjusted gross income at or below 200% of the federal poverty guideline (low-income) or a total gross annual income in excess of 50% but less than 80% of the median income, as determined by annual HUD income limits (moderate-income).

"Make-Ready" (for EVSE)
Relating to the necessary electrical infrastructure to operate a charging station, including conduit and wiring, concrete foundation for mounting, and (sometimes) cellular repeaters.

Megawatt (MW)
A unit of measuring power*, especially electricity. A megawatt is equal to 1000 kilowatts. A kilowatt is equal to 1000 watts. A watt is a measurement of energy transfer that equals one joule per second.
*Power is often described as the ability to do work.

Microgrid
Electricity networks controlled by some central entity that can connect and disconnect from the broader grid (known as "islanding" or "island mode").

Peak Demand
The amount of power used when customer electricity use is at its highest. New Jersey electric utilities define peak demand as an entity's highest energy use during a 15-minute timeframe. Utilities charge each commercial and industrial customer a per-kilowatt rate based on the customers peak demand (see Demand Charges).

Renewable Government Energy Aggregation (R-GEA)
The practice of obtaining an electricity supply for residential customers in a specific geographic area with more renewable content than is required by law. In most cases, residential customers in that area are automatically enrolled but can "opt-out" and use a different supply. Also referred to as Community Choice Aggregation (CCA).

Request for Proposal (RFP)
A document that lays out the requirements for participating in a public, competitive bidding process to award a contract for a product or service. Bidders usually describe how they would design and finance the product/service. Rules for RFP solicitations are governed by state and local government unit statutes.

Transportation Management Association (TMA)
A nonprofit organization that works with businesses, commuters, county and local governments, and state agencies to implement programs that reduce traffic congestion and improve air quality.

Third Party Electric Supplier
An entity licensed to provide electric supply to consumers as an alternative to the default electrical supply provided by the electric utilities.

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Appendix A. Energy Master Plan/ Sustainable Jersey Actions

KEY:

BUY RENEWABLE = Buy Electricity from a Renewable Source

COMM EE = Commercial Energy Efficiency Outreach

COMMUNITY SOLAR = Municipally Supported Community Solar

COMPLETE STREETS = Complete and Green Streets for All Policy

EA OUTREACH = Energy Assistance Outreach

EE FACILITIES = Energy Efficiency for Municipal Facilities

ETM = Energy Tracking and Management

EV OUTREACH = Electric Vehicle Outreach

GREEN FLEETS = Meet Target for Green Fleets

MYTSF = Make Your Town Solar Friendly

MYTEVF = Make Your Town Electric Vehicle Friendly

ON-SITE GEOTHERMAL = Municipal Geothermal Energy System

ON-SITE SOLAR = Municipal On-Site Solar System

ON-SITE WIND = Municipal Wind Energy System

PUBLIC EVSE = Public Electric Vehicle Charging Infrastructure

PAFV = Purchase Alternative Fuel Vehicle

RES EE = Residential Energy Efficiency Outreach

R-GEA = Renewable Government Energy Aggregation

SOLAR OUTREACH = Solar Outreach

All other Sustainable Jersey actions listed below closely align to the full name of the action.

NOTES:

1. Actions in parentheses are related to directives in the corresponding EMP section, but do not actually fulfill that directive because municipalities cannot directly impact the outcomes.
2. Goals/directives in italic font cannot be directly fulfilled by municipalities.
3. Subsections with a check mark in the "Local Gov't" column can be at least partly fulfilled by municipal action.
4. Sustainable Jersey Gold Star in Energy actions:

Energy Efficiency

- Commercial Energy Efficiency Outreach
- Residential Energy Efficiency Outreach
- Energy Assistance Outreach

Renewable Energy

- Make Your Town Solar Friendly
- Municipally-Supported Community Solar
- Solar Outreach

Transportation

- Make Your Town Electric Vehicle Friendly
- Public Electric Vehicle Charging Infrastructure
- Electric Vehicle Outreach

Section of New Jersey's Energy Master Plan	Local Gov't	Community Actions	Municipal Operations	Other Actions
Strategy 1: Reduce Energy Consumption and Emissions from the Transportation Sector				
1.1 Decarbonize the transportation sector				
1.1.1 330,000 light-duty electric vehicles by 2025	✓	EV Outreach MYTEVF Public EVSE	Green Fleets PAFV	
1.1.2 Deploy EV charging infrastructure	✓	EV Outreach MYTEVF Public EVSE		
1.1.3 Encourage purchase of EVs and incentivize charging station installation	✓	EV Outreach MYTEVF Public EVSE	Green Fleets PAFV	
1.1.4 Increase consumer and fleet owner awareness & acceptance of EVs	✓	EV Outreach MYTEVF Public EVSE		
1.1.5 Transition state's fleet to EVs				
1.1.6 Improve NJ Transit environmental performance				
1.1.7 Increase clean transportation options in LMI and EJ communities	✓	EV Outreach MYTEVF Public EVSE		Environmental Justice in Planning/Zoning
1.1.8 Partner with industry to develop incentives to electrify medium/heavy duty fleet	✓	EV Outreach	(PAFV)	
1.1.9 State policies to accelerate adoption of alt fuels				
1.2 Improve Connections Between People, Jobs, and Services				
1.2.1 Identify opportunities to strengthen connections between people, jobs, and services	✓	EV Outreach MYTEVF Public EVSE		Bicycle and/or Pedestrian Audit/Plan Building Healthier Communities Clustering Ordinance Complete Streets Sustainable Land Use Pledge

Section of New Jersey's Energy Master Plan	Local Gov't	Community Actions	Municipal Operations	Other Actions
1.2.2 Energize implementation of Transit Village Initiative and transit-oriented development	✓	MYTEVF Public EVSE	PAFV	Bicycle and/or Pedestrian Audit/Plan Clustering Ordinance Complete Streets Transit Oriented Development (TOD) Effective Parking Management
1.2.3 Relieve congestion and idling	✓		Green Fleets	Anti-Idling Education/ Enforcement Bicycle and/or Pedestrian Audit/Plan Complete Streets Transit Oriented Development (TOD)
1.2.4 Establish sustainable funding source for maintaining transportation system				
1.3 Reduce Port and Airport Emissions				
1.3.1 Support electrification of diesel-powered transportation and equipment at the ports and airports				
1.3.2 Support a diesel truck buy-out program		(EV Outreach)		
1.3.3 Support community solar developments on port property	✓	Community Solar		
Strategy 2: Accelerate Deployment of Renewable Energy and Distributed Energy Resources				
2.1 100% Clean Power by 2050				
2.1.1-2.1.4 Meeting RPS and 100% clean energy	✓	Solar Outreach Community Solar RGEA	Buy Renewable On-site Geothermal On-site Solar On-site Wind	
2.1.5 Update interconnection processes to address increasing DER and EV charging		(Solar Outreach) (MYTEVF) (MYTSF)		

Section of New Jersey's Energy Master Plan	Local Gov't	Community Actions	Municipal Operations	Other Actions
2.1.6 Value-stacking for DER				
2.1.7 Develop low-cost loans or financing for distributed energy resources	✓	Solar Outreach MYTSF	On-site Solar On-site Wind	
2.1.8 Coordinate permitting and siting processes for renewable energy development	✓	Community Solar MYTSF Solar Outreach		Wind Ordinance
2.1.9 Stakeholder engagement to explore rules to limit CO2 emissions from electric generating units				
2.2 Develop 7500 MW Offshore Wind Energy Generation by 2035				
2.3 Maximize Local (On-site or Remotely-Sited) Solar Development and Distributed Energy Resources by 2050				
2.3.1 Continue to grow community solar	✓	Solar Outreach Community Solar		
2.3.2 Transition to a successor solar incentive program		(Community Solar) (MYTSF) (Solar Outreach)		
2.3.3 Maximize solar rooftop and community solar development in urban/LMI communities	✓	Community Solar MYTSF Solar Outreach		Environmental Justice in Planning/Zoning
2.3.4 Develop programs to increase the deployment of solar thermal tech	✓	MYTSF Solar Outreach	On-site Solar	
2.3.5 Mandate non-wires solutions on state-funded projects	✓	(All Gold actions)		
2.3.6 Develop mechanisms for achieving 600 MW of energy storage by 2021, 2000 MW by 2030	✓		On-site Solar On-site Wind	
2.3.7 Maximize the use of source separated organic waste for energy production and encourage anaerobic digestion	✓			Food Waste
Strategy 3: Maximize Energy Efficiency and Conservation and Reduce Peak Demand				
3.1 Increase New Jersey's Overall Energy Efficiency				

Section of New Jersey's Energy Master Plan	Local Gov't	Community Actions	Municipal Operations	Other Actions
3.1.1 Implement Clean Energy Act requirement that utilities reduce consumption		(Comm EE) (EA Outreach) (Res EE)		
3.1.2 Increase awareness of and access to NJ CEP programs	✓	Comm EE EA Outreach Res EE		
3.1.3 Establish strategic and targeted energy efficiency programs to increase energy reductions and customer engagement	✓	Comm EE EA Outreach Res EE		
3.1.4 Establish a clearinghouse for home energy and health and safety programs targeting LMI	✓	EA Outreach Res EE		
3.1.5 Adopt equitable clean energy financing mechanisms that enable greater penetration of EE opportunities for all customers	✓	Comm EE EA Outreach Res EE		
3.1.6 Streamline and increase marketing, education, awareness, and program administration	✓	Comm EE EA Outreach Res EE		
3.1.7 Revise street lighting tariffs to incentivize mass adoption of EE initiatives			(EE Facilities) (ETM)	
3.2 Manage and Reduce Peak Demand				
3.2.1 Support new pilots and programs to manage/reduce peak demand			(EE Facilities) (ETM)	
3.2.2 Pilot alternative rate design to manage EV charging and encourage customer-controlled demand flexibility		(EV Outreach) (MYTEVF) (Public EVSE)	(PAFV)	
3.3 Strengthening Building and Energy Codes and Appliance Standards				
3.3.1 Advocate for net zero carbon buildings in new construction in ICC code change hearings				

Section of New Jersey's Energy Master Plan	Local Gov't	Community Actions	Municipal Operations	Other Actions
3.3.2 Establish transparent benchmarking and energy labeling	✓	(Comm EE) (Res EE)	ETM	Green Building Policy/ Resolution Green Building Training, Education Green Development Checklist
3.3.3 Establish mechanisms to increase building efficiency in existing buildings	✓	Comm EE EA Outreach Res EE	(EE Facilities) (ETM)	
3.3.4 Build state-funded projects and buildings to a high performance standard				
3.3.5 Improve EE in state buildings				
3.3.6 Increase compliance of mandated building and energy codes	✓			
3.3.7 Adopt more stringent appliance standards				
Strategy 4: Reduce Energy Consumption and Emissions from the Building Sector				
4.1 Start the Transition for New Construction to be Net Zero Carbon				
4.1.1 Electrify state facilities				
4.1.2 Partner with private industry to establish electrified building demonstration projects				
4.1.3 Expand and accelerate current statewide net zero carbon homes incentive programs for new and existing homes	✓	(Res EE)		Green Building Policy/ Resolution Green Building Training, Education Green Development Checklist
4.1.4 Study and develop mechanisms and regulations to support net zero carbon new construction	✓			Green Building Policy/ Resolution Green Building Training, Education Green Development Checklist

Section of New Jersey's Energy Master Plan	Local Gov't	Community Actions	Municipal Operations	Other Actions
4.1.5 Develop electric vehicle-ready and demand response-ready building codes for new multi-unit dwelling and commercial construction	✓	MYTEVF MYTSF		
4.2 Start the Transition to Electrify Existing Oil- and Propane-Fueled Buildings				
4.2.1 Incentivize transition to electrified heat pumps, hot water heaters, and other appliances	✓	Comm EE Res EE	(EE Facilities)	
4.2.2 Develop transition plan to a fully electrified building sector				
Strategy 5: Decarbonize and Modernize New Jersey's Energy System				
5.1 Upgrade the distribution system to handle increased electrification and DER	*Transmission infrastructure and energy rates significantly impact all activities on the local level, but municipalities mostly have an indirect impact on implementing these changes (e.g., through advocacy). Municipally owned utilities have a more tangible role in infrastructure changes, but most New Jersey municipalities are served by investor-owned utilities.			
5.2 Exercise regulatory jurisdiction and increase oversight over transmission upgrades				
5.3 Modify current rate design and ratemaking processes				
5.4 Maintain gas pipeline system reliability and safety and plan for future reductions in consumption				
Strategy 6: Support Community Energy Planning and Action with an Emphasis on Encouraging and Supporting Participation by Low- and Moderate-Income and Environmental Justice Communities				
6.1 Encourage Municipalities to Establish and Enact Community Energy Plans				
6.1.1 Develop comprehensive Community Energy Plan program in concert with local community groups to identify energy needs and establish ways to participate in and benefit from the clean energy transition at the local level, prioritizing education and incentives for LMI/EJ communities	✓	See Community Energy Plan Workplan Template		Climate Action Plan Environmental Justice in Planning/Zoning

Section of New Jersey's Energy Master Plan	Local Gov't	Community Actions	Municipal Operations	Other Actions
6.1.2 Encourage communities to incorporate land use, zoning, and multimodal transportation plans into their Community Energy Plans	✓	MYTEVF Public EVSE		Bicycle and/or Pedestrian Audit/Plan Climate Action Plan Clustering Ordinance Complete Streets Environmental Justice in Planning/Zoning Sustainable Land Use Pledge Transit Oriented Development (TOD)
6.1.3 Prioritize energy efficiency programs in LMI/EJ communities	✓	Comm EE EA Outreach Res EE		
6.2 Support Local, Clean Power Generation in LMI/EJ Communities				
6.2.1 Support community-led development of community solar projects	✓	Community Solar Solar Outreach		
6.2.2 Incentivize maximum installation of rooftop and community solar by the local workforce	✓	Community Solar MYTSF Solar Outreach	On-site Solar	Green Jobs/Economic Development Support Local Business
6.2.3 Develop clean energy workforce opportunities and training programs	✓	Community Solar	On-site Solar	Green Jobs/Economic Development Support Local Business
6.2.4 Target DER incentives to support local clean power generation in LMI/EJ communities	✓	Solar Outreach		Environmental Justice in Planning/Zoning
6.3 Prioritize Clean Transportation Options in LMI/EJ Communities				
6.3.1 Prioritize replacement of fossil-fueled public transportation fleets with electric fleets	✓	EV Outreach MYTEVF	Green Fleets PAFV	

Section of New Jersey's Energy Master Plan	Local Gov't	Community Actions	Municipal Operations	Other Actions
6.3.2 Support electrification of diesel-powered transportation and equipment, prioritizing those in ports/airports, diesel truck buy-out program			(Green Fleets) (PAFV)	
6.3.3 Build or incentivize EV charging infrastructure and incentivize adoption of EVs in LMI communities	✓	EV Outreach MYTEVF Public EVSE		Environmental Justice in Planning/Zoning
6.3.4 Develop shared mobility programs, including bike sharing, electric taxis and ride-hailing and car sharing, scooters	✓	EV Outreach MYTEVF Public EVSE		Bicycle and/or Pedestrian Audit/Plan
6.4 Identify Barriers that Prevent the Participation In and Benefit From the Clean Energy Economy and Create Outreach Programs that Work with Communities to Overcome those Obstacles				
6.4.1 Provide education and community outreach to LMI/EJ communities to ensure inclusion in clean energy future	✓	All Gold actions		Community Education and Outreach
Strategy 7: Expand the Clean Energy Innovation Economy				
7.1 Grow world-class R&D and supply chain clusters for clean energy sub-sectors				
7.2 Establish clean energy workforce training	✓	Community Solar		Green Jobs/Economic Development Support Local Business
7.3 Provide innovative financing for clean energy projects and tech				
7.4 Capitalize on offshore wind opportunities				
7.5 Establish a Clean Energy New Technology Innovation Center and other resources				
7.6 Explore establishing a Clean Buildings Hub				