

CITY OF UNION CITY COMMUNITY ENERGY PLAN

PREPARED BY DMR ARCHITECTS
DECEMBER 2023



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EXECUTIVE SUMMARY

This Community Energy Plan is prepared for the City of Union City through a grant provided by the New Jersey Board of Public Utilities, with technical assistance provided by Sustainable Jersey. Consistent with the Community Energy Planning Grant Goals, the purpose of this document is to serve as an action plan for the City to promote and adopt cleaner and less expensive energy sources and advance the objectives of the State of New Jersey 2019-adopted Energy Master Plan, which aims to generate 100% of the State's energy through renewable sources and reduce greenhouse-gas emissions to 80% of 2006 levels by 2050.

The Energy Master Plan lays out eighteen initiatives that the City intends to pursue over the next three to five years to reduce energy consumption and dependence upon carbon based energy sources by both City government buildings and fleet vehicles as well as those of the City's residents and businesses. The initiatives to reduce energy usage and promote renewable energy generation include regulatory actions, public outreach to encourage action by private citizens, businesses, and organization, and direct City expenditures on public buildings and public rights-of-way.

The initiatives identified in this Plan include, but are not limited to:

- ▶ Support the use of electric vehicles by increasing the presence of charging stations and electrifying the City's vehicle fleet;
- ▶ Zoning to permit private solar installations and community solar projects;
- ▶ Installing on-site renewable energy generation systems on municipal properties;
- ▶ Improving energy efficiency of municipal buildings;
- ▶ Working with the State, utilities providers, and contractors to reduce cost barriers to residential and commercial energy efficiency improvements and renewable energy generation;
- ▶ Encouraging developers to adopt green building practices;
- ▶ Educating and engaging the public in a collective effort to reduce energy consumption and switch to renewable energy sources;and
- ▶ Ensuring that low- and moderate-income households are not excluded from the benefits of the City's initiatives.

This Community Energy Plan is being written at a time when both the State and Federal governments are providing financial incentives for governments, businesses, and households to improve energy efficiency and adopt renewable energy generation and electric or alternative fuel vehicles, making clean energy more affordable than it has ever been. The future of these incentives - whether they will be renewed or eliminated in the coming years - is unknown. Adopting an energy plan and strategically prioritizing the initiatives the City will pursue over the next few years is crucial to ensure that the current opportunity is not missed.

Union City is considered an overburdened municipality, which is defined as a municipality in which more than 50% of the population live within an Overburdened Community (OBC) Census Block and in which more than 35% percent of its population earning incomes below 200% of the poverty level OR the the municipality has a distress score of 40 or more according to the New Jersey Department of Community Affairs Municipal Revitalization Index. Every Block Group in the City meets one or more OBC criteria, and the City has a Municipal Revitalization Index score of 58. In 2022, 33,739 of the City's 65,034 residents were living at or below 200% of the poverty level. These economic conditions constitute obstacles to the City and its constituents taking actions needed to reduce carbon-based energy consumption in the absence of the current incentives. They also reflect the disproportionate susceptibility of the City's population to the impact of climate change and to variations in the costs of energy. As a result, the City is eligible for enhanced incentives to implement energy saving actions, investments, and programs.

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GLOSSARY OF TERMS AND ABBREVIATIONS

To save space in this document, the following terms and abbreviations are used to reference certain technical or scientific language, policies or laws, State or Federal government agencies and departments, technology, vehicle types, and the like.

Alternative Fuel: Vehicle propulsion fuels other than diesel or gasoline and having a lesser net environmental impact than those traditional fuels.

BESS: Battery Energy Storage System

BEV: Battery Electric Vehicle - A vehicle that is powered entirely by an electric battery instead of a combustible fuel. These are also referred to as PEVs - Plug-in Electric Vehicles.

CO₂: Carbon dioxide

Community Solar: One or more solar installations providing energy to buildings and uses on other properties, typically through a subscription service.

Complete Streets: A transportation planning and urban design principle favoring street and road design that accommodates multiple modes of travel rather than prioritizing single-occupancy vehicles.

DPW: The City of Union City's Department of Public Works

EMP or NJ EMP: 2019 New Jersey Energy Master Plan

EPA: The United States Environmental Protection Agency

EV: Electric Vehicle - Generic term for a vehicle that is propelled partially or entirely by an electric powered motor in lieu of or in addition to an engine powered by gasoline or another combustible fuel.

EVSE: Electric Vehicle Service Equipment - This is another way of saying EV charging equipment.

GHG or Greenhouse Gases: Gases emitted through both natural and anthropogenic processes which contribute to the greenhouse effect in the Earth's atmosphere, most commonly in reference to CO₂ and methane

HEV: Hybrid Electric Vehicle - A vehicle that is primarily propelled by a combustible fuel but which can be propelled to a limited extent by an electric battery that is typically charged by the act of braking.

ICE: Internal combustion engine - a vehicular engine which uses a combustible fuel like gasoline for propulsion. Typically does not include HEVs.

LEED: Leadership in Energy Efficient Design - a program hosted by the United States Green Building Council (USGBC) which grants certification to buildings, neighborhood developments, and cities that meet the minimum standards for one of four levels of efficient design, and which offers a credential program to professionals interested in demonstrating proficiency in green building design and operation.

LMI Household: Low- and/or Moderate-Income Households, as defined by U.S. Department of Housing and Urban Development (HUD).

Microgeneration: Any small-scale production of heat or electricity through a low- or no-carbon source, including solar photo-voltaic systems, small wind turbines, and other on-site systems typically powering a single property.

NJ DCA or DCA: New Jersey Department of Community Affairs

NJ DEP or DEP: New Jersey Department of Environmental Protection

NJ DOT: New Jersey Department of Transportation

NJ Transit: New Jersey Transit

PHEV: Plug-In Hybrid Electric Vehicle - A vehicle that can be propelled by an electric battery for a greater distance than an HEV and propelled by a combustible fuel when the battery is drained. Unlike an HEV, the electric battery of a PHEV can be charged by EVSE.

Private Solar: Any form of solar installation intended to provide energy to the buildings or uses located on the same property as the installation.

US DOE or DOE: The United States Department of Energy

VMT: Vehicle miles traveled - a measure of the number of miles traveled by one or more vehicles over a specified period of time.

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INTRODUCTION & PURPOSE

This Community Energy Plan (CEP) has been prepared for the City of Union City in Hudson County, New Jersey, and is funded through the 2022 Community Energy Plan Grant program administered by the New Jersey Board of Public Utilities in partnership with Sustainable Jersey. The goal of the program and of the Community Energy Plan is to advance the purposes and objectives of the 2019 New Jersey Energy Master Plan, which include, by the year 2050:

- ▶ Generating 100% of the State's electricity through carbon-neutral methods, which includes balancing carbon emissions with equal rates of carbon removal; and
- ▶ Reducing greenhouse gas emissions to 80% of 2006 levels.

The City of Union City desires to not only contribute to the State's pursuit of its energy goals, but also to take actions to reduce the energy usage and greenhouse impact from services it provides to its residents and businesses and to help its residents and businesses reduce their own energy and carbon footprints as well as their energy costs.

The CEP Grant program requires grant recipients to select from 38 initiatives to reduce local energy usage, including initiatives related to clean vehicles, solar energy, energy efficiency of buildings, green building practices, accessibility of clean energy for low- and moderate-income communities, and energy storage. This CEP for Union City identifies 18 initiatives that the City desires to pursue over the next three to five years, or beyond, to reduce the City's climate impact, energy consumption, and energy costs. Those initiatives are:

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

- ▶ 1.2 Train First Responders on EVs / EV Charging Infrastructure
- ▶ 1.3 Train Non-Emergency Staff on EVs / EV Charging Infrastructure
- ▶ 1.4 Purchase Alternative Fuel Vehicles
- ▶ 1.5 Improve Municipal Fleet Efficiency
- ▶ 1.6 Install Public EV Charging Infrastructure
- ▶ 1.8 Encourage Workplace EV Charging Infrastructure

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

- ▶ 2.1 Adopt Supportive Zoning and Permitting for Private Solar
- ▶ 2.3 Adopt Zoning and Permitting for Community Solar
- ▶ 2.5 Train Non-Emergency Staff on Solar
- ▶ 2.6 Install On-site Municipal Renewable Generation
- ▶ 2.13 Host a Community Solar Project on Municipal Property

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

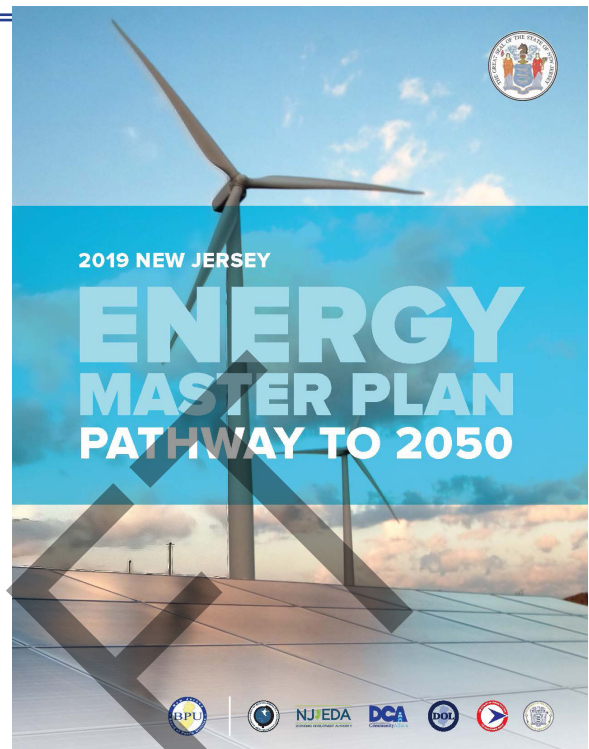


Figure 1. NJ Energy Master Plan Cover Page

- ▶ 3.1 Upgrade Energy Efficiency in Municipal Facilities
- ▶ 3.3 Commercial Energy Efficiency Outreach Campaign

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

- ▶ 4.2 Encourage Benchmarking and Commissioning for Existing Buildings
- ▶ 4.3 Require Developers to Complete Green Development Checklist
- ▶ 4.4 Conduct Outreach Targeting New Construction in the Community

Strategy 6: Support Community Energy Planning and Action with Emphasis on Encouraging and Supporting Participation by Low- and Moderate-Income/Environmental Justice Communities

- ▶ 6.2 Conduct Energy Efficiency Outreach to Low- and Moderate-Income Residents
- ▶ 6.5 Conduct Energy Efficiency Outreach to Community-Serving Institutions

Each action described in this Plan has the potential to improve quality of life and reduce energy costs and emissions in the City by educating the public about opportunities and practices that can reduce their energy costs and environmental footprints, directly reducing the City's energy usage, and creating opportunities for new and existing buildings to be more efficient.

COMMUNITY PROFILE

DEMOGRAPHICS

The City of Union City is a urban municipality with a population of 68,073 (2020) or a density of 52,873.75 persons per square mile over a 1.28 square-mile area. It is located in Hudson County, surrounded by West New York, North Bergen Township, Jersey City, Hoboken, and Weehawken.

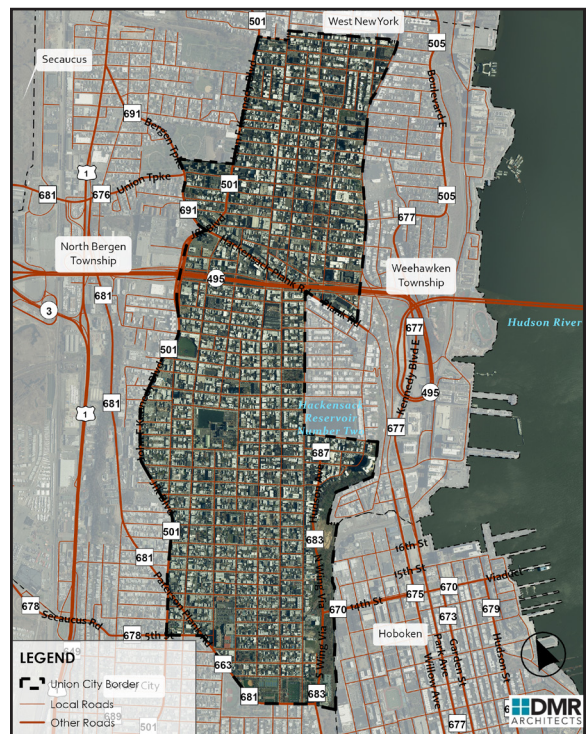
According to the U.S. Census Bureau's Longitudinal Employer – Household Data (LEHD) On the Map data tool, 26.6% of the City's labor force in 2020 worked in New York City (20.5% in Manhattan, 2.8% in Brooklyn, 2.5% in Queens). Another 35% worked in Hudson County, including 12.2% in Union City. Another 11.1% of the labor force worked in outer counties such as Middlesex, Passaic, Union, and Morris County.

Despite transit-accessible places of employment comprising the majority of working destinations, and despite being well-served by transit the 2020 American Community Survey (ACS) data indicates that 44% of commutes by Union City residents are completed by passenger vehicles and just 40% are completed public transit. It should be noted that the ACS treats any commutes that start by car and end on transit - such as anyone driving to a train station or bus park-and-ride - as a commute by passenger vehicle.

The City is a low-income community compared to the rest of New Jersey, with a median household income of \$49,547 in 2020 and 19.7% of the population at or below the poverty level (compared to \$85,245 and 9.7%, respectively, statewide).

The vast majority of residents, 77%, are of Hispanic or Latino origin. The majority of residents, 61%, are white.

Only 19.8% of occupied housing units in the City are owner-occupied, compared to 64% statewide. Renters have fewer options than homeowners to make energy-saving changes to their living spaces or adopt green energy; for example,



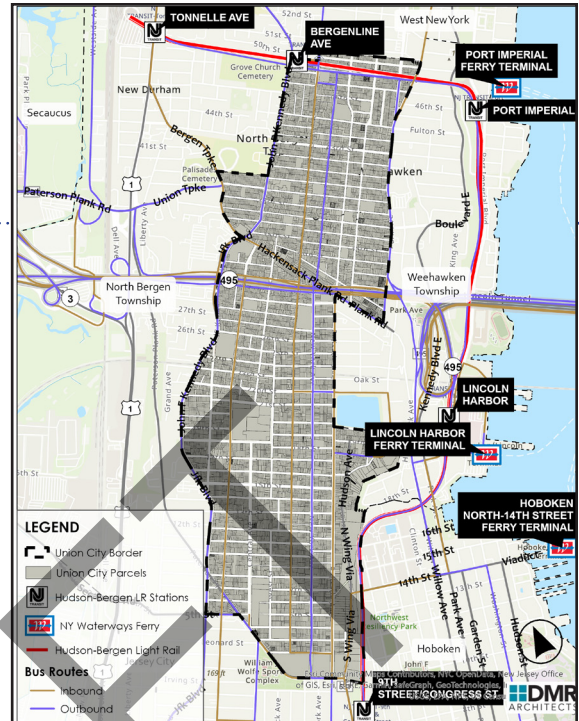
Map 1. City Map

they cannot unilaterally install solar panels on their homes or electric vehicle charging equipment, nor are they often able to replace older, less efficient large appliances with newer, more efficient ones.

ENERGY AND VEHICLE USAGE PATTERNS

Based on 2022 property tax data, more than 46% of the City's land area is devoted to one-to-four family residential uses, and another 7.5% is dedicated to multi-family residential uses. Commercial land uses represent another 20.6% of land area. For comparison, the 2020 U.S. Census identified 2-to-4 unit structures as comprising nearly 4 out of 10 housing units in the City, and approximately half of the housing units in the City as being contained in buildings with 5 or more units.

Despite the majority of residents commuting by transit, walking to work, or working at home, vehicle usage still contributed to more than one third (35.67%) of the City's greenhouse gas emissions in 2020. Vehicle Miles Traveled data for 2019 indicates that 115 million vehicle miles that were traveled in the State were attributable to Union City that year, which is more than 4 times the miles attributed to light-duty trucks and more than 50 times the miles attributed to buses. The City ranks 130 out of 494 municipalities included in the dataset for vehicle miles traveled.



Map 2. Transit Map

Population	% White	% Black	% Asian, Pacific Islander, and Hawaiian	% Other	% Hispanic or Latino Origin*	Households	Median Household Income	Percent of Population in Poverty	Low and Moderate Income*	NJ DCA MRI Score*
68,073	61%	6%	4%	30%	77%	25,528	\$49,457	19.7%	Yes	58

Figure 2. Demographic Profile. Source: Sustainable Jersey Community Profile Data, originally sourced from the US Census Bureau's 2020 American Community Survey.

North Jersey Transportation Planning Authority data from 2017 and 2019 indicate that the City saw a sixty-one thousand mile reduction in vehicle miles traveled between 2017 and 2019, mostly driven by a decline in miles driven by passenger vehicles, even as commercial vehicles (trucks) increased their vehicle miles traveled.

In 2020, residents, businesses, and government facilities purchased a total of 239 million kWh from PSE&G. This is about seven (7) million kWh less than what was purchased in 2015, as commercial and industrial properties consumed eight (8) million less in 2020 while residential properties and street lights used one (1) million more. While change could reflect improvements in energy efficiency, it most likely reflects changes resulting from the COVID pandemic, including the closing of businesses to minimize the spread of disease. Similarly, natural gas consumption declined from 2015 to 2020 among both residential and non-residential users, from 6.5 million therms to just

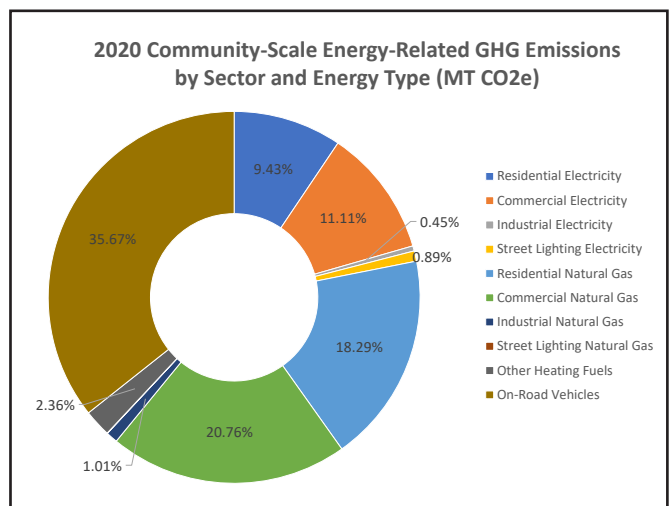


Figure 3. GHG Emissions by Sector / Energy Type; Source: Sustainable Jersey Community Scale GHG Emissions Data.

over 6 million therms. Natural gas represents the predominant source of heating fuel, being used by 77% of households as opposed to 16% that use electric heating.

Electricity, heating, street lighting, and vehicle usage in Union City generated 243,880 metric tons of carbon dioxide equivalent (MTCO_{2e}), the standard measure of greenhouse gas emissions, down from 288,035 in 2015. About eighteen thousand MTCO_{2e} of the estimated reduction is attributed to reduced vehicle usage, while the rest is attributed to reduced emissions from electricity and heating. The reductions in non-residential emissions are largely due to lower electric and gas consumption, while the reduction in emissions from residential users is due to a lower estimated emissions factor per MWh (558.3 pounds of CO_{2e} per MWh in 2015 versus 492.293 pounds per MWh in 2020).

While motor vehicles are responsible for one-third of the City's greenhouse gas emissions, (See Figure 3 on page 15), another third of emissions come from residential and commercial natural gas consumption.

It should also be noted that while the 2020 Statewide emissions rate per-resident was 13.44 MTCO_{2e}, compared to 3.58262 in Union City, making Union City residents the fourth lowest emitting municipality in the State. Residents and workers in dense, mixed-use communities tend to have a lower carbon footprint because of transit access, more efficient land use, and efficiencies of having multiple tenants per building.

Walkscore.com, which uses geographic data to score communities by walkability, transit access, and bike friendliness, gives the City a Walk Score of 94 - meaning that daily errands do not require a car. It also gives the City a transit score of 80, meaning that transit is convenient for most trips, and a bike score of 54, meaning that the City has some bike infrastructure. See Map 3 on page 16.

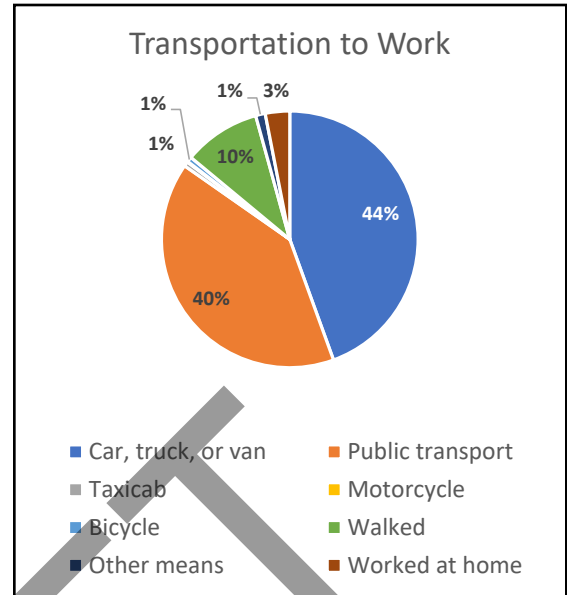


Figure 5. Commute Patterns; Source: 2020 American Community Survey

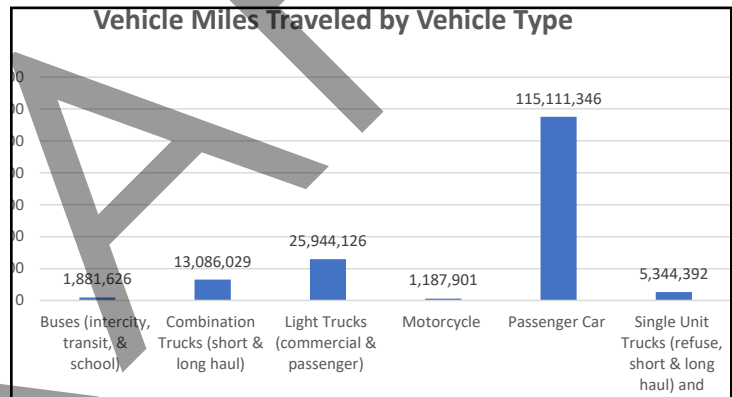
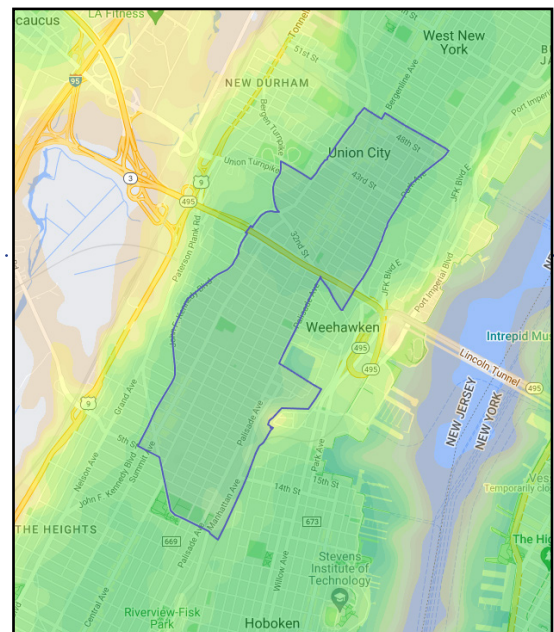


Figure 4. VMT by Vehicle Type in 2019; Source: NJTPA On-Road VMT Data.



Map 3. Walk Score® walkability map for Union City. Darker green means more amenities and services are accessible by foot.

ACTIONS TO DATE, AND POTENTIAL OPPORTUNITIES AND OBSTACLES

ACTIONS TO DATE

- ▶ Union City adopted an Electric Vehicle (EV) charging ordinance implementing the Model Ordinance published by the NJ DCA and incorporated into the Municipal Land Use Law in 2021.
- ▶ In 2022 the City received two grants from the State's EV Tourism and It Pay\$ to Plug In grant programs totaling \$192,000.
- ▶ The Union City Board of Education received incentives worth over \$98k in 2011 through the Local Government

Energy Audit (LGEA) program to identify paths to improve energy efficiency on school facilities.

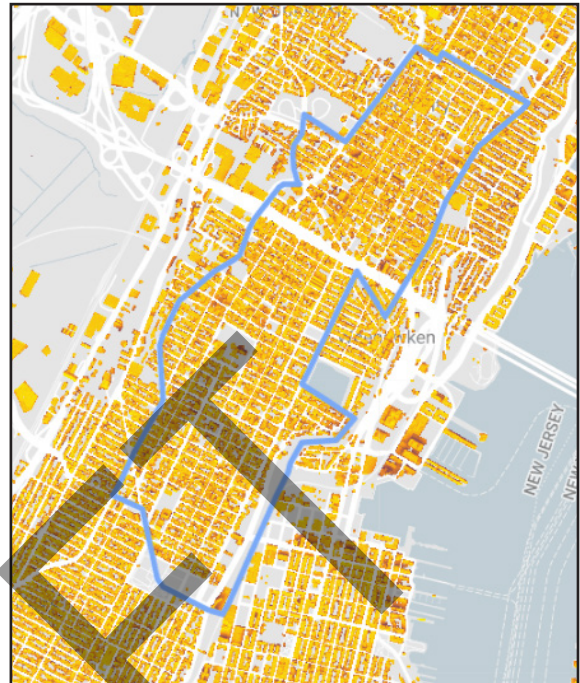
- ▶ The Union City Housing Authority received a \$10,060 incentive in 2015 to retrofit the Palisade Plaza building at 3700 Palisade Avenue, saving more than 89,000 KWh.

OPPORTUNITIES FOR ENERGY IMPACT

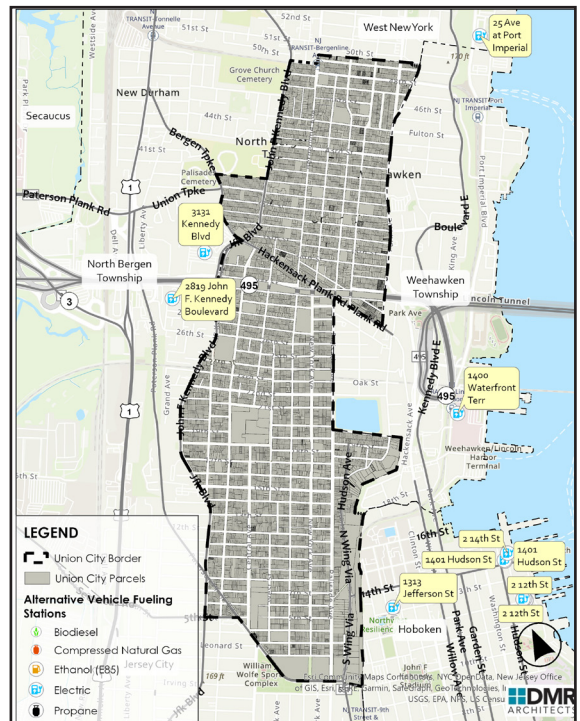
- ▶ **Public Transit:** The City is well-served by bus and light rail lines, and is nearby ferry ports on the Hudson River offering commuter access to New York City. These amenities help in reducing energy consumption and emissions from personal vehicle miles traveled. Each of the nearby rail and ferry stations are served by buses. The City can explore partnerships and grant opportunities to fill in the gaps in last-stop connections to these transit points such as micro-mobility sharing services or even shuttles to Secaucus.
- ▶ **Rooftop Solar:** According to a City-wide analysis from Google's Sunroof program, the City has 5.7 thousand roofs with 4.4 million square feet that can accommodate solar installations with a 62.8 MW DC capacity and generate over 72,600 MWh of electricity per year, or three-quarters of the electricity used by residential consumers in 2020. The median roof can fit a 476 square foot installation that can generate 7.7 thousand kWh per year. One hundred and thirty three (133) roofs in the City could accommodate systems with a capacity between have a between 50k and 300k kW in a year. (<https://sunroof.withgoogle.com/data-explorer/place/ChIJS0E8YJXwokRgBdC98AFoAs/>)
- ▶ **Parking Authority:** The City has a Parking Authority that operates several public lots and garages throughout the City. These facilities are ideal locations to install public charging infrastructure. Their roofs may also be appropriate locations for solar installations including community solar projects.
- ▶ **Public EV Charging Stations:** At the moment there are no public EV charging stations in the City, although there are stations in neighboring Cities. See Map 5 on page 17.

CONSTRAINTS TO ENERGY IMPACT

- ▶ **Housing Tenure:** With 8 out of 10 housing units in the City being rentals, most of the City's households have only limited ability to reduce energy usage and emissions from buildings.
- ▶ **Housing Age:** More than half of the housing units in the City are in buildings that were constructed before 1960. These buildings are typically less energy efficient and require significant rehabilitation to improve efficiency.
- ▶ **Resident Income:** With nearly one out of five households in poverty and a low city-wide median income, residents may not have the same resources available



Map 4. Google Project Sunroof Data for Union City. Yellow roofs have more sunlight exposure, browner roofs have less. Screenshot taken November 3, 2023.



Map 5. Alternative Fueling Stations Near Union City

to switch to electric or alternative fuel vehicles, purchase newer, energy efficient appliances, or invest in weather-proofing their homes.

IDENTIFYING A LEADER

The most important decision the City should make to begin its community energy planning program is to identify the person, office, or body to lead the implementation of its Community Energy Plan. Sustainable Jersey recommends establishing a Green Team, composed of stakeholders from the governing body, municipal departments, advisory and decision making boards and committees, residents, and (if appropriate) representatives from local non-profits and community organizations.

A Green Team allows the City to plan and implement its Community Energy Plan in an inclusive, open, and strategic manner. It is also beneficial if the Green Team is or works in close collaboration with a non-profit organization whose mission is to achieve for the City a specific level of sustainability, such as Sustainable Jersey Bronze or Silver Certification, or LEED Certified Cities, and which can take active action to promote local sustainability independently (such as outreach actions) and in collaboration with other City agencies. The powers and responsibilities of the Green Team can be determined by the City.

SUSTAINABLE JERSEY CERTIFICATION

Many of the initiatives described in this CEP correspond with one or more "Actions" toward municipal certification through Sustainable Jersey as a Bronze or Silver community. The Action information sheets on the Sustainable Jersey website provide guidelines for implementing these actions in greater detail than this CEP.

LOOKING BEYOND THE TEMPLATE

The numbered initiatives explored in this Plan are based on the initiatives identified in the Work Template created jointly by Sustainable Jersey and NJ BPU, and are oriented around the direct relationship between energy end-users and utility providers like PSE&G.

There are a variety of actions that municipalities can take to reduce local energy consumption, vehicle-miles-traveled, and greenhouse gas emissions that are not included in this Report, including:

- ▶ Zoning ordinances that promote higher density and diverse mix of uses around transit;
- ▶ Promoting composting or providing local food and plant waste collection, which reduces methane emissions from decomposing organic waste and can reap local rewards such as generating compost for landscaping or even generating energy through anaerobic digestion processes;
- ▶ Enhancing and expanding the urban tree canopy through tree planting programs or zoning standards, which not only helps to improve local air quality by removing pollutants from the air but also helps to reduce building and automobile energy usage by providing shade in the summer and blocking cold winds in the winter;
- ▶ Incentivizing new construction to meet green building standards by reducing permitting and review fees for projects that achieve certifications such as Energy Star or LEED;

STRATEGY 1: REDUCE ENERGY CONSUMPTION AND EMISSIONS FROM THE TRANSPORTATION SECTOR

This strategy is focused on increasing adoption of electric vehicles - not only passenger vehicles, but fleet vehicles as well - and taking other actions that can reduce transportation related energy use and greenhouse gas emissions. Transportation makes up 42% of emissions in New Jersey (per the NJ EMP) and 9% of an average household's budget based on 2019 Bureau of Labor Statistics data.

According to the U.S. Department of Energy's Alternative Fuels Data Center, the average annual emissions from driving a BEV 11,579 miles in New Jersey is just 1,636 pounds of CO₂e compared to 12,594 lbs CO₂e from a gasoline powered car. New Jersey's EV CO₂e emissions are significantly lower than the national average due to New Jersey's cleaner electric fuel portfolio. ICE vehicles and HEVs have the same emissions in every state, as gasoline is chemically the same across the United States.

While they tend to have a somewhat higher up-front price tag and higher insurance costs, electric vehicles have lower fueling and maintenance costs than ICE vehicles, often resulting in a payback period of about five years for vehicles averaging above 15,000 miles per year when compared to gasoline vehicles in the same class.

Municipalities can reduce GHG emissions from the transportation sector by electrifying municipal fleets, supporting the adoption of electric and alternative fuel vehicles for residential and non-residential use, and taking actions to increase the availability of electric vehicle charging infrastructure.

Union city plans to explore the installation of public EV Charging infrastructure and conduct an outreach campaign to create awareness of the incentives available from the State toward the purchase of electric vehicles for residents and commercial fleets.

Union City has already incorporated the Statewide electric vehicle charging station requirement into its municipal code, which requires a portion of the parking from new development or other applicable site improvements to be equipped for electric vehicle charging.

The specific Strategy 1 Initiatives to be pursued by the City include the following:

- ▶ **1.2 Train First Responders on EVs and EVSE** - To further public confidence and maintain emergency preparedness, require training on electric vehicles and associated infrastructure for local first responders.
- ▶ **1.3 Train Non-Emergency Staff on EVs and EVSE** - Initiate electric vehicle cross-training for non-emergency staff such as code officials, automotive technicians, and electricians.
- ▶ **1.4 Purchase Alternative Fuel Vehicles** - Replace existing municipal fleet vehicles with plug-in hybrid, battery electric, or other sustainable alternative fuel vehicles, using fleet analysis to inform purchases.
- ▶ **1.5 Improve Municipal Fleet Efficiency** - Coordinate the strategic replacement (or retirement) of vehicles, scheduling of preventative maintenance, and improvement of driver efficiency to reduce the GHG footprint of all municipal fleets – public works, police, fire, etc. Requires tracking of fleet data such as age of vehicles, duty cycle, and use patterns.

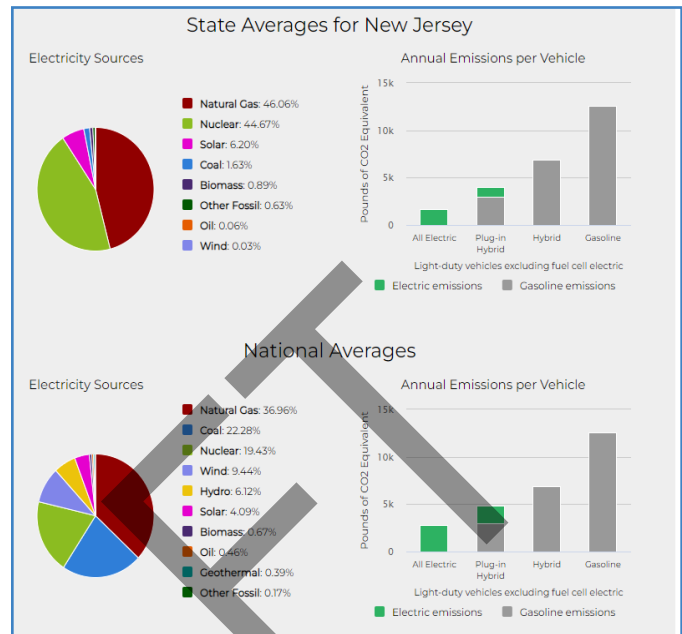


Figure 6. CO₂e emissions by vehicle fuel type in New Jersey and Nationally

- ▶ **1.6 Install Public EV Charging Infrastructure** - Install electric vehicle charging infrastructure, including chargers, signage, and safety and accessibility features, for public use.
- ▶ **1.8 Encourage Workplace EV Charging Infrastructure** - Meet with local employers to ask them to install workplace EV charging. If possible, offer incentives such as promotion in municipal communications, a “ribbon cutting” event with public officials, and/or a fast-tracked permitting process.

1.2 & 1.3 TRAIN FIRST RESPONDERS AND NON EMERGENCY STAFF ON EVS AND EVSE

Fire suppression methods and other emergency response for electric vehicles and charging equipment differ from those for traditional fuel vehicles. Emergency responders who are not trained in response to EV related emergencies put themselves and those involved in the emergencies at great risk of injury, property damage, or death.

To further public confidence and maintain emergency preparedness, require training on electric vehicles and associated infrastructure for local first responders.

Initiate electric vehicle cross-training for non-emergency staff such as code officials, automotive technicians, and electricians.

The Green Team will work with the Union City Fire Department, the Police Department, and Union City Medical Services to determine if EV/EVSE trainings are already part of their training routines. If not, the Departments will require their staff to complete one or more training courses in emergency response to alternative fuel vehicles on a regular basis as may be needed to maintain certification and remain up to date on best practices.



“Make Your Town Electric Vehicle Friendly” Action

Similar to Emergency Response personnel, the City will require its code enforcement personnel and technical in-house staff and contractors to receive regular training and education on electric vehicles and EVSE.

The National Fire Protection Association, the National Alternative Fuels Training Consortium, and Kean University, and the US Department of Energy’s Electric Vehicle Infrastructure Training Program are examples of organizations that offer courses for emergency response professionals.

1.4 PURCHASE ALTERNATIVE FUEL VEHICLES

Replacing older fleet vehicles with newer alternative fuel vehicles can reduce municipal climate impact and costs associated with vehicle upkeep and fueling. The moment that a vehicle no longer serves its purpose or becomes a burden to maintain is a “leverage point” - an opportunity that can be leveraged to make a greater impact - to change energy usage patterns.

Replace existing municipal fleet vehicles with plug-in hybrid, battery electric, or other sustainable alternative fuel vehicles, using fleet analysis to inform purchases.



“Purchase Alternative Fuel Vehicles” Action



“Meet Target for Green Fleets” Action

As of August of 2023, the City’s fleet includes vehicles from the years 1990 to 2023. The oldest vehicle is a medium-duty GMC Topkick truck used by the Sanitation Department having 136,420 miles. The newest vehicle is a 2023 Chevy Malibu used for Senior Services and having 7,448 miles. The most used vehicle is a 2008 Thomas Bus used by the police department and having 323,950 miles. There is no consistent trend between the age of the vehicle or departmental use and the number of miles accumulated.

While electrified light-duty vehicles tend to be the most visible, medium and heavy duty vehicles do exist as hybrid vehicles, battery-electric or plug-in hybrid electric vehicles. Plug-in electric heavy duty vehicles are particularly suitable for electric replacement where the vehicle’s function provides enough downtime between uses to fully charge (such as a street sweeper, refuse truck, or school bus). The typical operations of vehicles like buses and waste collection trucks involve significant stop-and-go movement, which allows them to recharge their batteries every time they stop or slow down, making them ideal for electrification as well.

The up-front cost for such vehicles, however, can be substantially more than that of their gasoline or diesel fueled counterparts; therefore, the lifetime costs of the vehicle with respect to maintenance and charging should be taken into consideration.

The decision as to which vehicles the City should prioritize for replacement should include the following:

- ▶ **Current maintenance and fueling costs of existing ICE vehicle** - Vehicles with the highest fueling and maintenance costs should be among the first targets for comparable EV replacement. Older vehicles typically have the worst fuel efficiency, but may cost little to maintain or use due to infrequent usage;
- ▶ **Rate of usage** - The payback period for an EV (the amount of time it takes for the savings in fuel and maintenance costs to exceed the cost difference between the EV and its internal-combustion equivalent) is highest for vehicles with the highest rate of usage (miles per year). Vehicles that rack up the most miles each year should be among the first targets for comparable EV replacement.
- ▶ **Type of usage** - Vehicles whose daily uses include long idling periods (such as a police car or bus) or frequent stop-and-go patterns (such as a garbage truck or school bus) are great candidates for electric replacement as those use patterns are most wasteful in ICE vehicles;
- ▶ **Available electrified alternatives** - The City should evaluate the costs and reliability of available electric alternatives against newer ICE or HEV models.
- ▶ **Grid and electric system compatibility** - The City should ensure that it is able to install the necessary EVSE at appropriate facilities to charge the EV replacement vehicle to at least 80% charge between uses.
- ▶ **Plans for On-Site Solar** - The City can get the most out of its investment in EVs and in renewable energy if it electrifies fleet vehicles that will be charging at facilities that are targeted for on-site solar installations, as the vehicles could essentially charge for free using energy generated on-site from the solar array.
- ▶ **Available Funding** - The City should put vehicles at the front of the line for replacement if special grants or financing programs are available for the specific vehicle category. This should especially be the case for heavier duty vehicles that have a higher ticket price.

The City may find that it is more economically practical to contract with a vehicle conversion professional to convert current fuel-based fleet vehicles to HEV, BEV or PHEV. Such conversions replace or supplement the ICE engine with an battery and/or motor.

FINANCIAL INCENTIVES AND SAVINGS

- ▶ At the time of this writing, the New Jersey Clean Fleet EV Incentive Program through New Jersey Clean Energy offers \$4,000 grants toward the purchase of light-duty BEVs, \$10,000 for class 2B through 6 BEVs, \$5,000 for public level-two chargers and, for overburdened communities, \$4,000 for level two fleet vehicle chargers.
- ▶ Municipalities can take advantage of tax credits for purchase of electric vehicles either by having the tax credit passed through directly from the vendor or through direct application for reimbursement from the federal government.
- ▶ Through the Regional Green House Gas Initiative (RGGI), NJ State agencies will occasionally offer grants for the replacement diesel powered medium and heavy-duty vehicles, such as school buses, garbage trucks, and the like, with electric alternatives. The most application deadline was September 4, 2023. Overburdened communities receive priority in the grant program. **The City should continue to monitor for future rounds of this grant program.**
- ▶ The NJ ZIP program operated through the NJ EDA provides between \$20,000 and \$175,000 in assistance to acquire a new zero-emission vehicle. Base voucher amounts will depend on vehicle class; however, overburdened communities are eligible for a 10% increase in voucher value, and

there is a 25% increase available for school buses. **Phase 2 (2023) is closed; however, the City should continue to monitor for future phases.**

- ▶ NJ Municipalities are also eligible for sale tax exemptions for new or used Zero Emission Vehicles (ZEVs) sold, rented or leased in the State.
- ▶ Union City can advocate for or join a collaborative of municipalities and agencies in Hudson County to collectively bid for electric vehicles in order to achieve a discounted prices.

Incentive programs and mechanisms to reduce the costs of EV acquisition after adoption of this Plan may differ from those listed in this Report. The City will need to assess the usage and maintenance patterns of their vehicles against the available incentive programs to determine which programs offer the greatest payoff.

OBSTACLES AND CHALLENGES

Some of the obstacles and barriers that the City may face in this initiative include:

- ▶ Buy-in from fleet drivers (police, fire, etc.) and adapting to the unique driving characteristics of electric vehicles;
- ▶ Eligibility of desired vehicles for grants, incentives, or legal obstacles to municipal acquisition;
- ▶ Competition for grants and covering municipal portion of costs of acquisition;
- ▶ Costs and logistics associated with acquiring or leasing specialized vehicles like fire and garbage trucks;
- ▶ Ability to synchronize installation of charging/fueling equipment with acquisition of alternative fuel or electric vehicles.

NEXT STEPS

1. The City's fleet manager, Shawn Thomas, or his designee or successor, will input fleet information into Sustainable Jersey's Fleet Inventory spreadsheet and use the sheet to track and assess the usage, fueling costs, and emissions from the vehicles in the City's fleet. Data from this sheet will be used to identify vehicles that are priority for electrification or replacement with other alternative fuel vehicles.
2. The Fleet Manager will coordinate with the City's Facilities Manager to assess the readiness of municipal garages and vehicle maintenance facilities for EV charging or other alternative fueling capabilities.
3. The Fleet Manager will coordinate with Administration, City Grant Writers, and other City departments and professionals to monitor and apply for grants to replace vehicles most in need of replacement and suitable for electrification.
4. The Fleet Manager will update the fleet inventory on a quarterly or semi-annual basis. Simultaneously, the City will request that its Grant Writer monitor grant opportunities for fleet vehicles on an ongoing basis. Continued monitoring of vehicle usage and grant opportunities, particularly as electric and alternative fuel vehicles are added to the fleet, will allow the City to take the most advantage of grants while improving fleet efficiency

1.5 IMPROVE MUNICIPAL FLEET EFFICIENCY

The City can take a number of actions to make its fleet more efficient beyond electrifying its vehicle fleet. These include:

- ▶ **Idle Reduction Technology** - Installing Idle reduction equipment into fleet vehicles that are expected to remain in operation for at

Coordinate the strategic replacement (or retirement) of vehicles, scheduling of preventative maintenance, and improvement of driver efficiency to reduce the GHG footprint of all municipal fleets – public works, police, fire, etc. Requires tracking of fleet data such as age of vehicles, duty cycle, and use patterns.

least five years. Idle reduction equipment temporarily shuts off a vehicle's engine while idling while powering electronic devices like air conditioning and audio at full or reduced performance on battery power. An "Idling Reduction Savings Calculator" worksheet is included in the appendices to this Plan. ;

- ▶ **Behavior Changes** - Training or educating police, public works, and other municipal personnel on efficient driving and idling practices;
- ▶ **Low Rolling Resistance Tires** - According to the US Department of Energy, "Rolling resistance is the energy lost from drag and friction of a tire rolling over a surface. The phenomenon is complex, and nearly all operating conditions can affect the final outcome. Conventionally fueled passenger vehicles use about 4%–11% of their fuel just to overcome tire rolling resistance. All-electric passenger vehicles can use approximately 25% of their energy for this purpose. For heavy trucks, this quantity can be as high as 30%–33%. A 10% reduction in rolling resistance would improve fuel economy approximately 3% for light- and heavy-duty vehicles. Installing low rolling resistance tires can help fleets reduce fuel costs. It's also important to ensure proper tire inflation." Establishing a City-wide policy to only replace fleet vehicle tires with low rolling resistance tires can help to reduce fuel consumption for medium and heavy-duty internal combustion vehicles.
- ▶ **Speed Control Modules** - Contract with an appropriate vendor to set speed limits on non-emergency vehicles to prevent vehicles from driving inefficiently. According to the US Department of Energy, every 5 MPH over 50 MPH on a light duty vehicle equates to costing an additional \$0.25 per gallon of fuel. That amount varies by vehicle type and age.
- ▶ **Select Smaller Vehicles Where Available** - Lighter weight vehicles use less fuel and can often meet the same needs as their larger counterparts (consider, for example, a Ford Escape instead of the larger Ford Explorer).



"Fleet Inventory" Action

Note 1. Idle Reduction Types

University of Massachusetts, Amherst, Center for Agriculture, Food, and the Environment, identifies these types of IRT:

- **Idle Limiter** – The simplest form of IRT, this mechanism turns a vehicle's engine off after it has been idling for a predetermined period of time.
- **Electronic Stop/Start System** – An electronic device that monitors vehicle battery levels while the engine is off, but appliances are in use. Once battery levels drop below a certain point, the device turns the engine on for a set amount of time to recharge the battery, and then turns the engine off again.
- **Auxiliary Power Unit (APU)** – A small secondary power source that allows a vehicle's electronic appliances to be used when the primary engine is not running. APUs can be powered using the vehicle's main fuel supply, a small separate fuel tank, alternative fuel, rechargeable batteries, or rooftop solar panels.
- **Fuel Operated Heater (FOH) and Battery Air Conditioning System (BAC)** – Small independent heating and cooling systems. FOHs can operate on a range of fuels, including gas, diesel, and alternative fuels. BACs are powered with rechargeable batteries, which can be charged by the engine while it is running, or by rooftop solar panels. These two systems are frequently utilized together.
- **Plug-in Hybrid Systems** – Rechargeable battery systems can be installed to run power take-offs, bucket truck lifts, dump truck hydraulics and other truck equipment, even when the engine is off."

OBSTACLES AND CHALLENGES

The most significant obstacle to making the City's fleet more efficient through interventions such as those listed above will be buy-in from Department Heads or fleet drivers. Other obstacles will include supply chain issues and related barriers to acquiring efficiency-improving equipment.

NEXT STEPS

1. The Green Team will coordinate with relevant department heads to identify relevant fuel saving options (strategies, technology) for those departments;
2. Department heads will update their policies where possible to promote fuel saving practices;
3. The Green Team will create educational materials for distribution to fleet-operating personnel and display in City offices to promote efficient driving and vehicle maintenance practices.
4. The Fleet Manager will help department heads identify opportunities to upgrade existing vehicles with fuel saving technologies or accessories where direct vehicle replacement is not immediately practical.

1.6 INSTALL PUBLIC EV CHARGING INFRASTRUCTURE

The City's Parking Authority owns 11 parking lots and decks for public use. According to statewide alternative fueling area data and private EV Charging locating service, ChargePoint, there are no public electric vehicle chargers within Union City at this time (See "Map 5. Alternative Fueling Stations Near Union City" on page 17).

In 2022 the City received two grants from the State's EV Tourism and It Pay\$ to Plug In grant programs totaling \$192,000. Of that, \$150,000 was for the installation of a DC Fast Charging station, the fastest type of charger currently available.

TYPES OF EVSE

The type of EVSE to be installed will depend on the fleet's needs and the current and potential capability of the site's electrical systems. There are three basic categories of EVSE based on the maximum amount of power the charger provides to the battery. See "Note 2. Typical EVSE Charger Levels" on page 24.

Level 1 chargers can charge 16 to 40 miles of driving in an 8-hour work day based on the 2 to 5 miles of range per hour stated in the previous section, and even for fleet vehicles with substantial downtime between uses. From a public use perspective, these are ideal in public lots used by rail commuters or local workers who will park their vehicles in those lots for at least 6 hours.

Level 2 and DCFC chargers are ideal for vehicles that drive many miles per day and/or have minimal downtime between uses, such as emergency vehicles or public users who are charging their vehicles while shopping, dining, or using a public or private service.

Public charging stations with DCFC or Level 2 charging should be located in public areas where EV users are likely to leave their vehicles for at least 30 minutes. These include municipal lots near shopping areas, City Hall, or religious uses, or installation associated with on-street parking. See Map 6 on page 25 identifies the neighborhoods rated to be most suitable for Fast Charging in Union City by MJ Bradley and Associates.

Install electric vehicle charging infrastructure, including chargers, signage, and safety and accessibility features, for public use.



"Public Electric Vehicle Charging" Action

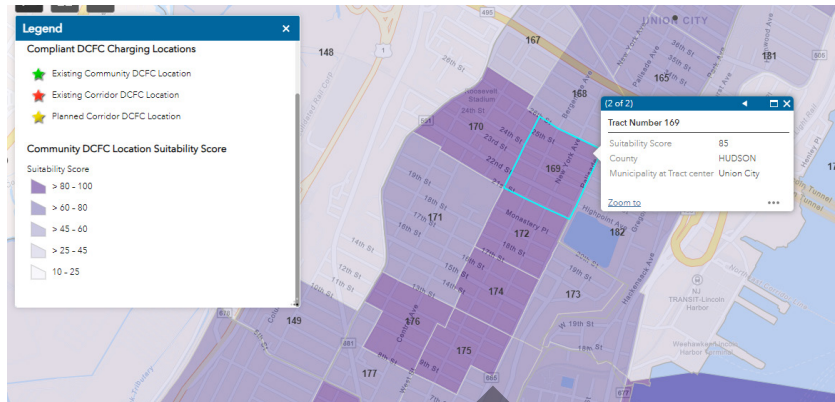
Note 2. Typical EVSE Charger Levels

As summarized by the Delaware Valley Regional Planning Commission:

- "Level 1: Provides charging through a 120 V AC plug and does not require installation of additional charging equipment. Can deliver 2 to 5 miles of range per hour of charging. Most often used in homes, but sometimes used at workplaces. Level 1 charging at home or work may be able to provide adequate charging for most commuters.
- Level 2: Provides charging through a 240 V (for residential) or 208 V (for commercial) plug and requires installation of additional charging equipment. Level 2 can deliver 10 to 20 miles of range per hour of charging. Used in homes, workplaces, and for public charging.
- DC Fast Charging (DCFC): Provides charging through 480 V AC input and requires highly specialized, high-powered equipment as well as special equipment in the vehicle itself. DCFC can deliver 60 to 80 miles of range in 20 minutes of charging. Used most often in public charging stations, especially along long-distance traffic corridors. The cost for DCFC generally makes it too expensive for everyday use. Note that if you think you may need to use DCFC, be sure that the vehicle you purchase has fast charging provisions installed. For some vehicles this is an option. For the 2021 Chevrolet Bolt, this option has an MSRP of \$750. Plug-in hybrid electric vehicles typically do not have fast charging capabilities."

NETWORKED VERSUS NON-NETWORKED CHARGERS

In addition to the power level categories, EVSE come in “networked” and “non-networked” formats. Networked EVSE have a higher up-front cost and costs for the benefit of being connected to a telecommunications network, but also provide benefits such as being able to levy a fee for charging or monitor charging activity. Non-networked chargers might also accept payment through credit cards and other traditional forms of payment; however, this must be assessed on a case by case basis.



Map 6. NJ DEP's Community Fast Charger Solicitation Map Tool for Union City. Highest scoring areas for suitability are in darker purple, scoring as much as 90 out 100 for suitability for Fast Charging stations.

FINANCIAL INCENTIVES AND SAVINGS

At the time of this writing, the New Jersey Clean Fleet EV Incentive Program through New Jersey Clean Energy offers \$4,000 grants toward the purchase of fleet Level 2 EV Charging Stations and \$5,000 grants toward public Level 2 EV Chargers, with a limit of 2 charging stations in a grant period for areas with populations of less than 20,000 persons. Up to \$50,000 may also be available for one DCFC charging stations. Overburdened municipalities like Union City are eligible for an additional 50% bonus to be provided in the form of either additional funding or additional eligible chargers. The City may also be eligible for additional rebates from PSE&G for DCFC infrastructure installation. EV charging equipment is also eligible for a 30% tax credit (Alternative Fuel Vehicle Refueling Property Credit), further reducing the costs to the City. Incentive and other cost-saving programs may change after adoption of this Plan.



LEVEL 2 CHARGING		
Program	 NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION It Pay\$ to Plug In	 PSE&G Electric Vehicle Charging Program
Eligibility	Multi-Unit Dwelling, Publicly accessible, Workplace, Fleet	Multi-Unit Dwelling and Publicly accessible L2. (<i>Workplace and fleet chargers are NOT eligible unless they're publicly accessible</i>)
Incentive	Up to \$4,000 per L2 port (min: 2, max: 20 per location)	Up to \$7,500 per L2 stub (make-ready meter-to-stub) Plus up to \$10,000 per site (make-ready – service upgrade)
Eligible Costs	Purchase of charging station(s) and associated	Make-ready meter-to-stub includes service panels, junction boxes, conduit,

Figure 7. NJDEP's 2023 Level 2 Charging Incentive Comparison Table, last updated January 2023

OBSTACLES AND CHALLENGES

The first challenge faced by a municipality looking to install fleet or public charging stations is identifying the locations where chargers will be most convenient and cost effective based on costs to install and power the equipment and proximity to places that EV drivers will likely visit. The second is determining the most efficient and reliable form of ownership - whether the equipment will be the City's responsibility or that of a third party. After installation, the challenges include possibility of vandalism or misuse requiring repairs and maintenance, and monitoring for potential issues and to measure performance.

NEXT STEPS

1. The City will direct its Planning and Engineering professionals to conduct feasibility studies to identify municipal facilities or City-owned rights-of-way where public EV charging equipment may be most impactful, including parking lots near busy shopping areas and places of employment, lots that provide overnight parking for apartment dwellers, municipal facilities where visitors are likely to stay for 30 minutes or longer (libraries, courts, etc.), and other areas. The City will also refer to the NJDEP's DC Fast Charging

- Suitability Map to pinpoint neighborhoods where DCFC pays off the most.
2. The Facilities Manager will assess the readiness of public lots for EVSE;
 3. The City will instruct Grant Writers to pursue grants for EVSE for installation in areas identified in the feasibility study;
 4. The Green Team will take action to educate the public about the benefits of Public EV, dispel myths about their harms, and hold ground breaking with City officials for the first public EV stations;
 5. Following installation, the City should monitor usage of the EV charging facilities to assess the success of the initial installation and determine the most effective strategies for future installations;
 6. Additional grant opportunities will be monitored and pursued accordingly.

1.8 ENCOURAGE WORKPLACE EV CHARGING INFRASTRUCTURE

One of the best ways to increase the availability of electric vehicle charging infrastructure in the City is to reach out to the owners and operators of the buildings where people work in the City. New multi-family residential buildings and commercial buildings are required by statute to provide EV or EV-ready parking spaces. However, the City can use its influence to encourage business owners and commercial property owners to voluntarily provide EV charging infrastructure for their employees.

Meet with local employers to ask them to install workplace EV charging. If possible, offer incentives such as promotion in municipal communications, a “ribbon cutting” event with public officials, and/or a fast-tracked permitting process.



“Make Your Town EV Friendly” Action

“Electric Vehicle Outreach” Action

OBSTACLES AND CHALLENGES

Property owners and managers often do not understand the benefits of providing EVSE, or the financing programs available to make them more affordable. Additionally, many businesses in urban settings are renting their facilities and have limited influence or decision making when it comes to making facilities improvements. Ownership structures of commercial buildings may also result in complex chains of command and communication that limit the success of outreach initiatives.

STRATEGIES AND NEXT STEPS

1. The City's Green Team will create promotional materials, including inserts to provide with utility bills and tax mailers to commercial property owners/managers, advertising the financial incentives for EVSE on commercial properties and the benefits of having EV parking spaces, and offering a promotional opportunity, such as a ribbon cutting with a City official and publication on the City's website and social media pages.
2. The Green Team will partner with the Chamber of Commerce and other local organizations to identify opportunities to communicate directly to businesses and commercial property owners on this initiative.
3. The City will also instruct its Grant Writers to monitor grant opportunities that encourage partnerships between municipal governments and private property owners to install EVSE on private properties.

STRATEGY 2: ACCELERATE DEPLOYMENT OF RENEWABLE ENERGY AND DISTRIBUTED ENERGY RESOURCES

The goal of Strategy 2 is to expand the adoption of solar-generated electricity and other forms of microgeneration by the City and by City residents and businesses. Actions include adopting ordinances to remove barriers to private and community solar projects, installing solar energy systems on City properties, and reducing obstacles to accessing clean energy, particularly among the City's LMI residents.

A core component of the success of Strategy 2 is a type of program called community solar. Solar energy installations come in a few different forms. Private solar, such as rooftop panels installed on a home or a warehouse, provide on-site electricity and sell whatever is left over to the grid, providing a credit on the property-owner's utility bill. Utility providers, such as PSE&G, can also install solar energy systems which contribute to the total grid electric production. Community solar is a system in which a property owner can develop solar energy infrastructure on their property, or lease land or roof area to another party to develop the infrastructure, and allow residents and businesses to subscribe to a portion of the energy generated, which is credited to their utility bill proportionate to the amount of solar energy that they have subscribed to.

The specific Strategy 2 Initiatives to be pursued by the City include the following:

- ▶ **2.1 Adopt Supportive Zoning and Permitting for Private Solar** - Provide clear guidance/standards for solar developers and limit barriers to solar adoption such as lengthy permitting and multiple reviews.
- ▶ **2.3 Adopt Zoning and Permitting for Community Solar** - Update municipal zoning ordinances to specifically allow large-scale solar projects, and designate future community solar sites as redevelopment zones. Consider offering direct assistance with permitting, expediting the permitting process, and/or reducing permitting fees for community solar.
- ▶ **2.5 Train Non-Emergency Staff on Solar** - To ensure municipal staff can efficiently and effectively inspect, review, permit, etc. solar installations in the community, require training on solar infrastructure for all relevant staff.
- ▶ **2.6 Install On-Site Municipal Renewable Generation** - Host a solar, wind, or geothermal project on municipal property to generate renewable energy for municipal facilities. Such projects can be leased from a developer or purchased and owned outright.
- ▶ **2.13 Host a Community Solar Project on Municipal Property** - Host a community solar project on municipal property, such as a DPW garage, parking lot/garage, or landfill. Most municipalities lease the site to the developer or enter a power purchase agreement (PPA) with the developer to buy the electricity at a reduced rate.

2.1 ADOPT SUPPORTIVE ZONING AND PERMITTING FOR PRIVATE SOLAR

The City will ensure that private solar is clearly permitted as an accessory use in the City, and limit regulatory language to reduce unnecessary barriers like added costs and outdated technological standards.

Provide clear guidance/standards for solar developers and limit barriers to solar adoption such as lengthy permitting and multiple reviews.



"Make Your Town Solar Friendly" Action

A supportive zoning ordinance for private solar infrastructure will establish only the minimum necessary standards to protect public health, safety, and welfare. Sustainable Jersey publishes a document entitled "Guidance for Creating a Solar Friendly Zoning Ordinance" which outlines the "Dos" and "Don'ts" of drafting ordinances surrounding solar. Some of key takeaways of this are:

- ▶ The ordinance should avoid setting standards or definitions specifying types of technology, models, standards, or electrical sizes as they may become outdated or may not be applicable to all situations;

- ▶ The ordinance should not be overly burdensome, such as requiring site plan approval for all solar equipment. For example, solar facilities should not be conditional uses.
- ▶ Permitting fees for solar installations should be minimal and should not exceed fees established in N.J.A.C. 5:23-4.20(c)2.iii(13).
- ▶ The guide includes ordinance-friendly definitions which Sustainable Jersey believes will minimize confusion or obstructions to solar proliferation.
- ▶ To the extent that the ordinance provides standards for solar facilities, the standards should be distinct for ground-mounted / freestanding versus roof-mounted equipment.
- ▶ Avoid abstract language regulating the visual impact of solar on a neighborhood.

The above referenced guidance document is contained in the appendices to this Plan.

Adopting a solar supportive ordinance is a quick, low-cost action that the City can take shortly after the adoption of this plan.

OBSTACLES AND CHALLENGES

The City should anticipate that members of the public may have concerns about the appearance of solar panels and their related equipment.

NEXT STEPS

1. The City will authorize its Planner to review the City's Master Plan to ensure that the Plan does not contain language which would discourage solar installations, and to draft an ordinance permitting private solar based on the guidelines from Sustainable Jersey and its sources.
2. The solar permitting ordinance will be reviewed by the Planning Board for Master Plan consistency, and then referred back to the Mayor and Council for adoption.
3. Staff, Boards, and outside professionals to enforce ordinance.

2.3 ADOPT ZONING AND PERMITTING FOR COMMUNITY SOLAR

This initiative is similar to the prior two and, in fact, may be adopted simultaneously with the general solar permitting ordinance and checklist. Zoning and permitting for community solar differs from those for solar mounted on private properties for private purposes in a few ways:

- ▶ Private solar projects are developed at the scale needed to offset electric demand on that property, whereas community solar projects are developed at a scale to offset electric demand for multiple properties;
- ▶ Private solar is an accessory use to a residence or business whereas community solar may be seen as a principal use in that it is used to generate revenues for the property owner or lessee of the solar-mounting surface.

Update municipal zoning ordinances to specifically allow large-scale solar projects, and designate future community solar sites as redevelopment zones. Consider offering direct assistance with permitting, expediting the permitting process, and/or reducing permitting fees for community solar.



"Municipally Supported Community Solar" Action

The principles for adopting solar friendly zoning and permitting are generally the same for community solar as for private solar – avoid language that may become obsolescent as technology changes and avoid creating unnecessary standards or permitting steps.

Because community solar takes place at a larger scale than private solar (typically), and because there is an incentive by the developer to maximize that scale to serve more customers, it may be appropriate for the City to establish separate and more stringent regulations for community solar projects than for private

solar installations; primarily setback limits to residential properties, screening, and security.

Going beyond simply zoning to allow large-scale solar installations, the City can maximize the benefits of community solar on private properties by permitting community solar installations as a principal use in a designated redevelopment or rehabilitation area, as the development experiences a lessened tax burden through a Payment in Lieu of Taxes (PILOT) or a 5-year tax abatement, which can then be passed through to customers.

OBSTACLES AND CHALLENGES

The ordinance permitting community solar installations may need to reconcile any public concerns or perceptions of large-scale solar installation, such as through appropriate setbacks or screening requirements.

NEXT STEPS

1. The City will authorize its planning consultant to amend the City's zoning ordinance to permit large-scale solar arrays as a principal permitted or conditional use on private properties.
2. The permitting ordinance will be duly reviewed, adopted, and enforced by the relevant governing bodies, boards, staff, and professionals.

Due to the densely developed nature of the City, any private community solar projects outside of any existing vacant land or proposed redevelopment areas would be limited to commercial or industrial rooftops and/or large, open parking lots and parking structures. The City should conduct outreach to the owners of the properties identified above to secure partners them as partners in the creation of community solar installations in the City.

2.5 TRAIN NON-EMERGENCY STAFF ON SOLAR

The City's personnel responsible for inspecting and permitting solar installations may not be familiar with solar energy systems. The City will require training for these staff on how to address this technology, in order to ensure the safety of City residents and workers. Such training programs are offered by a number of institutions for use by municipal staff in various roles.

To ensure municipal staff can efficiently and effectively inspect, review, permit, etc. solar installations in the community, require training on solar infrastructure for all relevant staff.



"Make Your Town Solar Friendly" Action

Sustainable Jersey identifies three providers for training courses for municipalities to consider:

- ▶ Kean University's Fire Safety Training Program;
- ▶ US Department of Energy associated SolSmart, which provides webinars and virtual training resources;
- ▶ IREC's Clean Energy Resources and Training, which provides webinars and virtual training resources.

OBSTACLES AND CHALLENGES

Department heads will need to identify the training program more appropriate to their needs.

NEXT STEPS

- ▶ Department heads will require their staff to complete relevant training courses once every one to three years.
- ▶ The Green Team or City Administrator will work with those department heads to identify the most appropriate training program for their needs and capabilities.

2.6 INSTALL ON-SITE MUNICIPAL RENEWABLE GENERATION / 2.13 HOST A COMMUNITY SOLAR PROJECT ON MUNICIPAL PROPERTY

MUNICIPAL PROPERTIES

The City and its various departments and sub-governmental organizations, including its Housing Authority and Parking Authority, own a number of buildings across the City. These include public housing facilities, public parking decks/lots, community facilities, administrative office facilities, and more. Some of these buildings may be suitable for front- or back-of the meter solar installations - that is, it may be more economical on some buildings to lease roof space to a solar developer that sells electricity back to the system (such as a community solar operator) and in others it may be more economical for the system to offset energy use on-site.

MODES OF OWNERSHIP

The following is taken from Sustainable Jersey's "Municipal On Site Solar System" action guide:

- ▶ *Municipally Owned Solar PV Systems: When a municipality purchases solar photovoltaic equipment outright, the project is no different than any other larger capital improvement project. This approach usually offers a better return on investment than financing the project with a lease or other arrangement. However, outright solar PV purchases present multiple challenges: acquiring immediate capital to cover upfront costs; managing procurement, permitting, and installation; and maintaining the system over time. The municipality is also tasked with capturing all available revenue from the project, which includes displaced utility purchase value and revenue from the sale of the Renewable Energy Certificates (RECs). See "Note 3. Renewable Energy Credits (RECs)" on page 30.*
- ▶ *Financed Solar PV Systems: Commercial financing products are a popular approach to implementing municipal on-site solar projects.*
- ▶ *Leased Systems: Under a leasing arrangement, the municipality pays a monthly leasing fee over a specific term to use the electricity generated by the panels, which are owned by a third party. With a PPA, the municipality contracts to purchase all the electricity that the (third party-owned) system produces at a known price for a fixed term. In both arrangements, there is typically an end-of-term buyout option and a robust maintenance agreement over the term.*

Energy consultants can help scope out the financing opportunities for a project. Some energy consultants structure their fees to be included in the project financing, allowing the municipality to avoid the fees as upfront cost."

It should be noted that the language above was written prior to the passing of the Inflation Reduction Act by the federal government in 2022, which allowed municipalities to directly receive the same benefits

Host a solar, wind, or geothermal project on municipal property to generate renewable energy for municipal facilities. Such projects can be leased from a developer or purchased and owned outright.

Host a community solar project on municipal property, such as a DPW garage, parking lot/garage, or landfill. Most municipalities lease the site to the developer or enter a power purchase agreement (PPA) with the developer to buy the electricity at a reduced rate.



"Municipal On-Site Solar System" Action



"Municipal Wind Energy System" Action



"Municipally Supported Community Solar" Action

Note 3. Renewable Energy Credits (RECs)

Vouchers of monetary value representing a megawatt-hour (MWh) of renewable electricity generation. In New Jersey, RECs acquired from solar installations are known as Solar Renewable Energy Certificates or "SRECs." As directed by the Clean Energy Act of 2018, New Jersey's original SREC Program was closed in 2020 and replaced with the Successor Solar Incentive (SuSI) Program that launched in mid-2021, which awards "SREC-IIs" for solar energy generation. Projects under 5 MW receive SREC-IIs via the Administratively Determined Incentive (ADI) Program. More information on SRECs, including the latest details on the SuSI Program, can be found at NJCleanEnergy.com/RE.

as the federal tax credit to private citizens and businesses through the “direct pay” model. This model makes ownership of a municipal renewable energy project a competitive alternative to leasing or PPAs.

COMMUNITY SOLAR VERSUS ON-SITE GENERATION

With on-site generation of energy from a solar project on a City property, the City can directly utilize the energy generated from the installation, allowing it municipal operations to continue during power outages, while also generating revenues from the sale of RECs.

With a community solar installation on municipal property, however, the community solar provider owns and maintains the solar equipment, and electricity is sold directly to the grid. The benefits to the City through this model include lease payments from the community solar provider to the City, discounts to the City if it signs up as the anchor subscriber, and limited up-front costs to the City.

Based on discussions with a community solar provider, the minimum size for a successful community solar project is 30,000 to 50,000 square feet. According to NJDEP building coverage data, the only publicly owned buildings with a roof area greater than one-acre are school buildings.

Sustainable Jersey provides guidelines for the process of launching a Community Solar program and the time frame thereof:

1. **Planning:** The process of forming a committee, hosting public meetings and stakeholder meetings, and determining the priorities and goals of the project – whether that may be generating revenue from municipal properties, providing low cost energy to LMI households, or something else – may take several weeks.
2. **Public Education and User Interface:** Educating the public about the program and creating the means for residents and businesses to sign up to participate could take 4 to 6 months.
3. **Selecting a Vendor/Partner:** The bidding, selection, and/or on-boarding process could take 2 to 3 months or longer.

LOW- AND MODERATE-INCOME INCLUSION

The NJ BPU requires all community solar projects to reserve 51% or more of their capacity for low- and moderate-income subscribers and to guarantee an energy bill credit discount of at least 15%, meaning that the energy purchased by a subscriber from a community solar project will cost 15% less than what it might have cost through the utility provider.

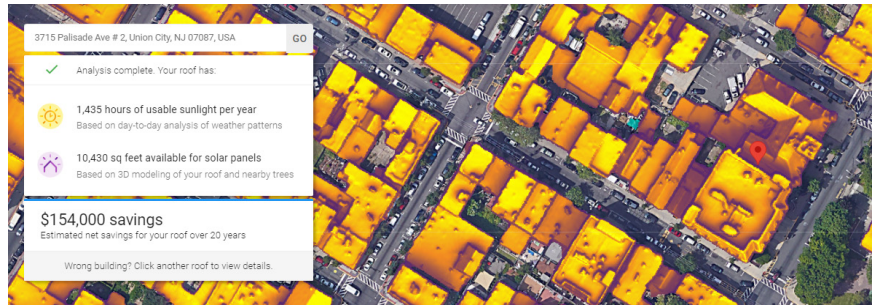


Figure 8. Screenshot of Google Project Sunroof data for City Hall. At an average of 14.2 Watts/square foot, Googles estimated 10,430 square feet of usable roof area could support a 148.2 kW system. At 1,435 hours of sunlight a year that system could generate 212,667 kWh/year or an average of 17,722.25 per month.

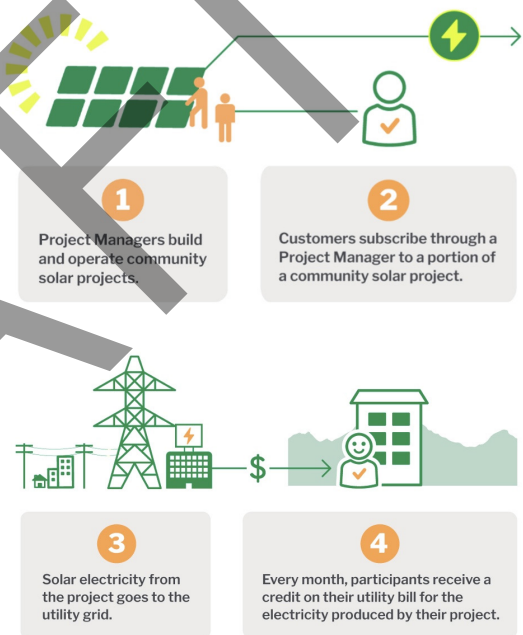


Figure 9. How Community Solar Works; Credit: Neighborhoodpower.com. Community solar extends the benefit of solar energy to people who may not be in a position to install their own systems, like renters and houses that receive a lot of shade.

NEXT STEPS

1. The City will contract a qualified professional or firm to conduct a Solar Feasibility Study(ies) to determine whether one or more municipal buildings are suitable for rooftop solar, to assess economic benefits of solar against the costs to the City, to advise which buildings are suitable for Community Solar, and to identify incentives available to reduce the costs to the City related to installation for behind-the-meter use.
2. Based upon the study outcomes, the City will begin the process of either installing solar on select buildings for behind-the-meter use or partnering with Community Solar providers to host projects on municipal properties.
 - a. For behind the meter installations, the City will conduct a bidding process to select installers to erect and maintain the system and manage sale of renewable energy certificates.
 - b. For Community Solar projects, the City will conduct a bidding process to select a community solar provider.
3. Where appropriate, the City will authorize its planning professional to conduct redevelopment investigations of municipally owned properties to be considered for community solar in order to determine if those properties are eligible for designation as an area in need of redevelopment and to adopt a redevelopment plan permitting community solar and granting incentives for community solar development, in accordance with N.J.S.A. 40A:12A-1 et seq.

DRAFT

STRATEGY 3: MAXIMIZE ENERGY EFFICIENCY AND CONSERVATION AND REDUCE PEAK DEMAND

The goal of Strategy 3 is to take actions within the City's power to reduce energy usage by the municipality, residents and businesses. As technology advances, appliances, equipment, and construction materials become more energy efficient. The City can take direct action to upgrade its own facilities, and can launch public outreach initiatives to make the public aware of services and resources available from the state and from PSE&G to offset the costs of improving building energy efficiency.

- ▶ **3.1 Upgrade Energy Efficiency for Municipal Facilities** - Upgrade municipal facilities to be more energy efficient. New Jersey's Clean Energy Program and electric and natural gas utilities offers incentive programs that guide municipalities through the upgrade process, starting with free audits to establish the most effective measures to reduce energy use. Following implementation, showcase upgrades in energy efficiency outreach to local commercial entities.
- ▶ **3.2 Residential Energy Efficiency Outreach Campaign** - Implement an outreach effort to help residents take advantage of energy efficiency incentive programs offered by New Jersey's electric and natural gas utilities, including Home Performance with ENERGY STAR and Comfort Partners.
- ▶ **3.3 Commercial Energy Efficiency Outreach Campaign** - Implement an outreach effort to help local businesses take advantage of energy efficiency incentive programs offered by New Jersey's electric and natural gas utilities, including the Direct Install (DI) program.

3.1 UPGRADE ENERGY EFFICIENCY FOR MUNICIPAL FACILITIES

An important piece of the City's energy strategy is reducing its energy consumption by replacing inefficient equipment, fixtures, and appliances and identify areas where energy is being wasted due to outdated building design or improper building maintenance. The City desires to achieve a 20% reduction in energy consumption from its most energy-demanding facility or 20% across all of its facilities.

Upgrade municipal facilities to be more energy efficient. New Jersey's Clean Energy Program and electric and natural gas utilities offers incentive programs that guide municipalities through the upgrade process, starting with free audits to establish the most effective measures to reduce energy use. Following implementation, showcase upgrades in energy efficiency outreach to local commercial entities.

INCENTIVES AND FUNDING PROGRAMS

LGEA

The New Jersey BPU's Clean Energy Program's (NJCEP) Local Government Energy Audit (LGEA) program covers 100% of the cost of an audit of a municipality's building energy use, including "offices, courtrooms, town halls, police and fire stations, sanitation buildings, transportation structures, schools and community centers".

Buildings must have had an average peak demand of 200kW or greater in the past 12 months.

According to the website for the LGEA program, "The audit includes an inventory of all energy-consuming equipment, comprehensive utility bill analysis, facility benchmarking, and a screening for solar, combined heat & power, and electric vehicle charging stations. Add-on / targeted audit

Note 4. Energy Upgrade Types

- Direct Install - Provides turnkey energy efficiency solutions for small commercial customers, including local government facilities for municipalities and schools. Includes a free on-site energy assessment (similar to an ASHRAE Level I audit), energy efficiency upgrade recommendations, and an incentive of up to 80% of installed cost for completing those recommendations.
- Prescriptive Equipment - Offers simple rebates on a wide range of pre-qualified "standard" energy efficiency measures.
- Custom Equipment - Offers incentives for energy efficiency measures that do not fall under the Prescriptive Program.
- Engineered Solutions - Provides tailored energy efficiency assistance to larger public entities. Includes

options as outlined in the program guide may also be available. When your audit is complete, you'll have a list of recommended, cost-justified measures and facility upgrades that will help reduce operating expenses and, in many cases, improve the health and productivity of the buildings' occupants."

LGEA caps the audit cost reimbursement at the lesser of \$100,000 or 100% of the audit.

LGEA offers technical assistance to program participants to obtain older utility bills and to interpret utility bills as part of the audit process. LGEA audits are available for buildings owned or leased by the City.

an investment grade (ASHRAE Level 3) energy audit, engineering design, bid-ready document development, installation vendor selection assistance, construction administration, commissioning, and maintenance and verification services to support the implementation of cost-effective and comprehensive efficiency projects.

- Energy Management - Helps identify and implement no and low-cost energy efficiency measures via equipment tune-ups and commissioning.



"Energy Efficiency for Municipal Facilities" Action

An example of an audit report published on the LGEA web page is the Asbury Park municipal complex audit report, prepared by TRC, which provided the City of Asbury Park with two alternative scenarios for upgrading their facilities to reduce energy costs based on the time period for savings to be realized. It also identifies potential project financing incentives for suggested energy upgrades.

ESIP

The Energy Savings Improvement Program (ESIP) is an alternative method for local government units to finance energy conservation improvements, adopted by the State legislature in 2009 and amended in 2012. The program does not "fund" energy improvements; rather, it helps municipalities realize cost savings from efficiency improvements, at no cost to the taxpayer, by paying or the cost of the improvement over a 15 to 20 year period through a portion of the energy-cost savings.

The first step in the ESIP process is an energy audit, such as the ones reimbursed through LGEA. Subsequently, the municipality must prepare an Energy Savings Plan (ESP) that identifies existing systems serving the targeted buildings, such as boilers, HVAC, and appliances, and lays out direct energy saving strategies related to those systems. The ESP must show that the energy savings over the 15 to 20 year period will offset or exceed the total project costs. This process ensures that the municipality can finance the project(s) through just the energy savings.

DIRECT INSTALL

If buildings are not eligible for LGEA or ESIP, the City can apply to the Direct Install program provided by PSE&G for buildings with an average peak demand of less than 200kW over a 12 month period. The program includes a free on-site energy audit and covers up to 80% of the costs of installing more energy efficient systems. The municipality's burden of the cost (as little as 20%) is paid off over 5 years as a fee on the municipality's energy bill. Meanwhile, the program promises to cut energy costs by as much as 30%. See "Note 4. Energy Upgrade Types" on page 33.

MONITORING ENERGY USE

An essential part of the energy efficiency process is benchmarking - collecting and analyzing data on the energy usage in each building and comparing to buildings in similar categories in order to identify facilities that might be more wasteful than others. In the Fall of 2023, Sustainable Jersey and PSE&G offered a Technical Assistance program to assist municipalities in tracking building energy efficiency and pursue incentives for facility upgrades. The program also offers to set municipalities up with building portfolio management software to monitor energy use. The program also offers \$2,500 to assist with the municipal responsibilities related to this assistance, such as costs for staff or professionals to collect the requisite data for building energy monitoring. Sustainable Jersey anticipates future rounds for this program.

BARRIERS AND OBSTACLES

The City owns a number of facilities and consequently bills are agglomerated into a Master Account that reflects energy use and costs on a system wide basis, making it difficult to assess energy usage on a building-by-building basis. The City would need to work with PSE&G to establish a system by which the City can review individual buildings' energy use patterns and request building-specific data while also having a streamlined system for paying the energy bills for such a widespread system.

NEXT STEPS

1. The City will seek technical and grant assistance from Sustainable Jersey to assemble energy usage data necessary to monitor energy usage;
2. Regardless of the City's ability to obtain the technical assistance, the City's administration and finance departments will instruct staff to coordinate with PSE&G or to make it feasible to track energy use on a building-by-building basis, and direct the City's Facilities Manager, CFO, or other party designated by the Administrator to use the data collected to establish a building portfolio management account;
3. CFO or other designee will utilize the portfolio management software on a monthly basis to identify buildings that are under-performing with respect to energy efficiency;
4. The CFO or other designee will review the requirements of the LGEA, ESIP, and Direct Install programs to determine eligibility for worst performing buildings;
5. The City will retain an energy auditor through an RFP process or, in the case of Direct Install, use PSE&G's selected auditor;
6. City will implement most applicable and cost effective recommendations of the energy auditor.

3.3 COMMERCIAL ENERGY EFFICIENCY OUTREACH CAMPAIGN

Commercial users consumed just over 50% of all electricity and natural gas purchased in Union City in 2020. Encouraging businesses to make improvements that reduce their energy usage is, therefore, one of the most effective actions the City can take to reduce local energy consumption. The City will take the following actions with a goal of encouraging 5% of commercial property owners to make energy efficient upgrades to their properties:

Implement an outreach effort to help local businesses take advantage of energy efficiency incentive programs offered by New Jersey's electric and natural gas utilities, including the Direct Install (DI) program.



"Commercial Energy Efficiency Outreach" Action

The City will use available outreach tools to encourage its businesses to participate in PSE&G's Direct Install program. As described in relation to municipal properties, above, the Direct Install program assists businesses to assess opportunities to reduce energy use by as much as 30%, and covers up to 80% of the costs of energy improvements up front, while allowing the business to pay off its own share of the cost of improvements interest free over 5 years through a fee added to their energy bill.

In the Fall of 2023, Sustainable Jersey and PSE&G ran a grant and technical assistance program through which Sustainable Jersey will take the lead on commercial outreach actions and provide funding (competitive) to compensate the City for resources expended to implement the commercial outreach campaign.

NEXT STEPS

The City will take the following steps as part of this initiative:

1. The City will apply for technical assistance and outreach campaign grant funding from Sustainable Jersey to facilitate and expedite the creation of a commercial outreach campaign.
2. The Green Team will assist Sustainable Jersey as appropriate or take the lead to generate outreach materials advertising energy efficiency incentive programs to business owners and commercial property

owners in various languages;

3. Materials to be distributed in regular mailers, posted on City website and social pages, announced during public hearings.
4. The Green Team will coordinate with the Chamber of Commerce and other local groups to identify opportunities to promote energy efficiency to local businesses and commercial property owners.
5. The City will utilize an incentive to encourage business owners who are motivated by the City's outreach campaign to notify the City that they've taken advantage of energy efficiency incentives, to help the City track the success of its campaign and analyze strategic effectiveness.

DRAFT

STRATEGY 4: REDUCE ENERGY CONSUMPTION AND EMISSIONS FROM THE BUILDING SECTOR

New construction projects are opportunities for municipalities to set a trend moving forward for environmentally responsible, high-quality buildings that meet green building standards. Green buildings provide a number of benefits to the community, to the developer, to the operator, and to the occupants of the buildings. They demand less of the community's resources, place lesser burdens on community infrastructure, have lower long term operating and maintenance costs, and provide healthier and more productive living and working spaces than buildings that do not meet green building standards.

Union City will take the following actions to encouraging green building practices in the City:

- ▶ **4.2 Encourage Benchmarking and Commissioning for Existing Buildings** - Educate local building managers about benchmarking and commissioning. Inform building managers of utility building management programs that include benchmarking and/or commissioning.
- ▶ **4.3 Require Developers to Complete Green Development Checklist** - Pass a Green Building Policy or Resolution that requires developers to submit a completed Green Development Checklist with Site Plan Applications. Checklist should refer developers to NJCEP's Commercial and Residential New Construction Energy Efficiency programs.
- ▶ **4.4 Conduct Outreach Targeting New Construction in the Community** - Reach out to developers to encourage participation in NJCEP's Commercial and Residential New Construction Energy Efficiency programs.

4.2 ENCOURAGE BENCHMARKING AND COMMISSIONING FOR EXISTING BUILDINGS

Benchmarking and commissioning are practices for ensuring that building systems are performing as intended and to compare building performance (e.g., energy usage, water usage, indoor air quality) to that of its peers. Systems that are under performing waste money and fail to create optimal interior environments for living and working. Additionally, being able to compare energy use to comparable buildings helps raise awareness for property managers about areas of waste.

Educate local building managers about benchmarking and commissioning. Inform building managers of utility building management programs that include benchmarking and/or commissioning.



"Commercial Energy Efficiency Outreach" Action

NEXT STEPS

1. The Green Team will craft and/or assemble educational materials about commissioning and benchmarking for placement on the City's website, inclusion with building department forms and mailers that typically go to property managers and building owners. Materials will include brochures for PSE&G's Retro-Commissioning program, Strategic Energy Management program, NJCEP's Benchmarking service, and other programs advertised through the Commercial Outreach initiative.
2. The Green Team will also provide a link or QR code on distributed materials to the NJ BPU's list of "Trade Allies" providing Commissioning Services, to assist property owners in identifying potential vendors.
3. The Green Team and the City will also seek out grants and technical assistance from Sustainable Jersey, PSE&G, and other providers to increase the reach of its outreach campaigns.

4.3 REQUIRE DEVELOPERS TO COMPLETE GREEN DEVELOPMENT CHECKLIST

A development checklist does not have the same regulatory impact as an ordinance; however, by requiring a developer to disclose the environmental

Pass a Green Building Policy or Resolution that requires developers to submit a completed Green Development Checklist with Site Plan Applications. Checklist should refer developers to NJCEP's Commercial and Residential New Construction Energy Efficiency programs.

impact of a development, the City can motivate the developer to take steps to improve the project's green profile.

Sustainable Jersey publishes a sample green building checklist which the City will use as the basis for drafting its own checklist. Some of the items in the checklist include, but are not limited to:

- ▶ Whether the project is on a brownfield;
- ▶ The proximity of the project to public transit and/or complete streets;
- ▶ Whether the project preserves or adaptively reuses existing or historical buildings;
- ▶ Impact of the project on stormwater;
- ▶ Provision of amenities like open space, conservation or restoration of environmental features, inclusionary set-asides, facilitating local agriculture (farmers market space), compact and efficient vehicle parking spaces, commuter shuttles, bike parking facilities, and the like.
- ▶ Use of low-impact design features like bio-swales, green walls, pervious pavement, and the like;
- ▶ Use of recycled building materials; and
- ▶ Use of energy efficient equipment/appliances, on-site generation, water efficiency or reuse, use of natural air and light.

The sample checklist, along with a sample green building resolution, are contained within the appendices to this Plan.

NEXT STEPS

1. The City will authorize its Planner to review with the Building Department and engineering consultant the sample checklist and sample resolution contained within this plan as well as other example checklists and resolutions and draft checklists and resolutions that meet the City's needs;
2. The City will adopt an ordinance requiring completion of the checklist with any development application for major new development.
 - a. The City will make reasonable exceptions with respect to the size and type of development to ensure it does not impact homeowners repairing, renovating, or making modest expansions to their homes.



“Create a Green Development Checklist” Action



“Green Building Policy/Resolution” Action

Note 5. Benefits of a Green Building Policy (Sustainable Jersey)

- Owners of older homes are particularly vulnerable to rising energy costs. Homes built prior to the 1970’s oil embargo are often much less energy-efficient than newer units.
- More than half of the 80 million single-family homes in the United States were constructed before modern energy codes existed.
- Many homes are poorly insulated, have high levels of air infiltration, inefficient heating and air conditioning systems, and inefficient water heaters and appliances.
- About 40% of households report at least some winter drafts, and 60% complain of a room that is too warm in the summer.
- Energy efficiency assessments can identify sources of poor air quality and other safety and comfort issues in the home that can be addressed in recommended energy efficiency upgrades.

	Single Family (1 & 2 Family Homes)	Townhouse (3+ Connected Units)	Multifamily (5 stories or less)	Multifamily (MFNC)
Energy Star	\$1,000 per home + \$30 per MMBtu saved	\$500 per home + \$30 per MMBtu saved	\$500 per unit + \$30 per MMBtu saved	\$500 per unit + \$30 per MMBtu saved
ZERH (Zero Energy Ready Home)	\$4,000 per home + \$30 per MMBtu saved Rater Incentive: \$1,200 per home	\$2,500 per home + \$30 per MMBtu saved Rater Incentive: \$1,200 per home	\$1,500 per unit + \$30 per MMBtu saved	N/A
ZERH + Renewables	\$6,000 per home + \$30 per MMBtu saved Rater Incentive: \$1,200 per home	\$4,000 per home + \$30 per MMBtu saved Rater Incentive: \$1,200 per home	\$2,250 per unit + \$30 per MMBtu saved	N/A
UEZ/Affordable House Bonus	+\$500 per home	+\$500 per home	N/A	N/A

Figure 11. NJ CEP Residential New Construction Incentives

LEED or other green building rating systems, in order to encourage developers to pursue LEED level improvements.

4.4 CONDUCT OUTREACH TARGETING NEW CONSTRUCTION IN THE COMMUNITY

The NJ Clean Energy Program offers incentives for new construction of energy efficient residential and commercial buildings.

For residential buildings, the incentives are listed in the chart to the right based on the efficiency grade, and are further detailed in “Note 6. Residential Energy Efficiency Standards, per NJ CEP RNC Program” on page 39 and in “Figure 11. NJ CEP Residential New Construction Incentives”.

NJ CEP’s new construction program for commercial and industrial projects provides incentives for both new construction projects and gut rehabilitation or substantial renovation projects. The new construction program includes three incentive categories: Whole Building/Comprehensive, Multi-Measure, and Single-Measure, which provide incentives for varying levels of energy saving construction practices. See “Figure 12. NJ CEP Commercial New Construction Incentives” on page 39.

NEXT STEPS

The City will promote these programs through media and in locations where developers are most likely to see them, including:

- ▶ As an attachment to the Green Building Checklist, development application forms, and other mandatory forms or documents to be completed by developers of new construction projects;
- ▶ On the Land Use Board and/or Building Department’s websites;
- ▶ Encouraged in new or amended Redevelopment Plans.

The City will request marketing materials from the NJBPU to assist in this initiative.

Reach out to developers to encourage participation in NJCEP’s Commercial and Residential New Construction Energy Efficiency programs.

Note 6. Residential Energy Efficiency Standards, per NJ CEP RNC Program

- **New Jersey ENERGY STAR Homes** are designed to achieve 15% more energy efficiency than the building code (10% for new single-family homes). These homes meet ENERGY STAR version 3.0 or 3.1 standards, which means they are ENERGY STAR certified.
- **New Jersey Zero Energy Ready Home** requires a high energy efficiency achievement in new home construction. The program requirements include meeting or exceeding all DOE Zero Energy Ready Homes technical standards, building in compliance with the ENERGY STAR Homes Program checklists, meeting 2015 IECC insulation levels, and certifying under EPA’s Indoor airPLUS Program.
- **Zero Energy Home +RE (ZERH+Renewables)** This pathway has the same requirements as the ZERH pathway with the additional requirement that 100% the building’s modeled energy usage is met by renewable energy systems installed prior to completion of the home.
- **Multi-Family High Rise (MFHR) Program** requires 15% increased energy savings above code. This pathway will satisfy the requirements for ENERGY STAR Multifamily New Construction (MFNC) Version 1.1 or 1.2 certification.




Savings Potential	Program	Description
●●●	Whole Building/ Comprehensive: Pay for Performance Program  Apply Now	This program is designed for commercial, industrial, and multifamily buildings with 50,000 square feet or more of planned conditioned space. Construct your building to perform better than code compliant buildings with the help of our approved partners and receive incentives.
●●	Multi-Measure: Customer Tailored Energy Efficiency Program  Apply Now	This program allows customers to bundle multiple prescriptive and custom measures into a single application without enrolling in a whole-building program. In addition to measure incentives, customers are eligible for technical assistance incentives to help offset soft costs associated with custom measure development.
●	Single Measure: SmartStart Buildings Program  Apply Now	SmartStart offers prescriptive and custom incentives for projects addressing individual building systems. Includes fixed dollar amounts for installations of popular technologies with well-established savings, such as gas heating and HVAC, and Custom incentives based on energy savings for non-standard equipment that performs beyond code requirements.

Figure 12. NJ CEP Commercial New Construction Incentives

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

The objective of Strategy 6 is to ensure that the City's most vulnerable cohorts, including LMI households, households with language barriers, and others, are engaged and included in the City's energy initiatives. Many of the actions that individuals can take to reduce energy costs or adopt clean energy require significant up front costs. As an overburdened municipality, the success of Union City's Community Energy Plan depends on the ability of LMI households to benefit from the shift to clean energy and efforts to reduce energy consumption. It is also essential that LMI households and households with language barriers are engaged and made aware of opportunities for them to reduce their energy costs and energy impact.

The initiatives to be pursued by the City include:

- ▶ **6.2 Conduct Energy Efficiency Outreach to Low- and Moderate-Income Residents** - Promote state and utility energy efficiency programs for low- and moderate-income (LMI) residents using community-serving institutions as messengers, using non-English promotional materials where appropriate, and emphasizing co-benefits of energy efficiency upgrades (health, safety, and comfort).
- ▶ **6.5 Conduct Energy Efficiency Outreach to Community-Serving Institutions** - Reach out to limited-capacity entities that serve low- and moderate income communities to encourage participation in state and utility energy efficiency programs. Outreach strategies include messaging benefits of reduced capital, maintenance, and energy costs and segmenting outreach to different types of organization with different needs.

6.2 CONDUCT ENERGY EFFICIENCY OUTREACH TO LOW- AND MODERATE-INCOME RESIDENTS

This Community Energy Plan has identified several programs designed to make energy efficiency and clean energy affordable to homeowners and owners of multi-unit dwellings. Cohorts that are more difficult to engage include renter households, homeowners with language barriers, and homeowners who are elderly, and homeowners for whom the most impactful projects are out of reach even with incentives and rebates to offset project costs.

INCENTIVE AND COST-ASSISTANCE PROGRAMS

- ▶ PSE&G's "Marketplace" website offers substantial discounts on energy and water-saving items that renters and homeowners with limited budgets can purchase and install in their homes, including low-flow shower heads, energy saving power-strips, thermostats, and LED light bulbs. In some cases, the purchaser can receive these items for free.

Helping renters access the Marketplace is an effective way help them save energy and money; and Marketplace shoppers are also likely to follow the redirect links for PSE&G's energy efficiency incentive programs for larger purchases like HVAC, boilers, and furnaces. PSE&G will occasionally send sample packages to address where new accounts are established to make customers aware of cost saving opportunities.

Promote state and utility energy efficiency programs for low- and moderate-income (LMI) residents using community-serving institutions as messengers, using non-English promotional materials where appropriate, and emphasizing co-benefits of energy efficiency upgrades (health, safety, and comfort).



"Energy Assistance Outreach" Action

Note 7. Income Based Energy Assistance Programs

- **Lifeline Program** - Operated by the NJ Department of Human Services to assist income eligible disabled adults or seniors to afford utility costs;
- **LIHEAP (Low Income Home Energy Assistance Program) / Universal Service Fund** - Helps to offset home energy and heating costs for low-income households.
- **PAGE (Payment Assistance for Gas and Electric)** - Helps to offset energy and gas costs for income eligible households.

- ▶ PSE&G offers a Home Weatherization Program for Income-Qualified Customers, which provides free energy efficiency assessments to income qualified customers and covers the installation cost of up to \$6,000 in energy efficiency upgrades and \$1,500 in health and safety improvements. The qualifying income range for the program is between 250% and 400% of the federal poverty level.
- ▶ Comfort Partners is a joint program between PSE&G and NJCEP that provides energy efficiency and weatherization assistance to households at or below 250% of the federal poverty level.
- ▶ Energy Check by PSE&G is a program that extends energy saving services to owners of buildings with four or more apartments.

PSE&G and other State and utility entities also offer a number of programs to assist income-eligible persons as well as elderly or disabled persons to afford their home energy and heating costs. See “[Note 7. Income Based Energy Assistance Programs](#)” on page 40.

Union City may be able to obtain assistance through the PSE&G/Sustainable Jersey partnership grant and technical assistance programs to assist the City’s Green Team to implement an outreach campaign targeted towards LMI households.

NEXT STEPS

- ▶ The Green Team will lead the City’s application for technical assistance and grant assistance from Sustainable Jersey to implement an outreach campaign targeting LMI households.
- ▶ The Green Team will host a “Green Fair”, either as a one time event or a periodically repeating event, to educate the public about available programs, opportunities, or energy saving practices. The City will seek sponsorship from PSE&G, NJ BPU, Sustainable Jersey, home and small-business energy efficiency contractors, hybrid and EV car dealerships, solar installers, and home electronics vendors others who can use the Fair to reach-out to potential customers in the City. The City can also post exhibits at the Fair about its own energy accomplishments, goals, and objectives, and to seek public input about potential initiatives.
 - ▶ As the City’s outreach body on all things “green”, the Green Team will be responsible for recruiting partners, organizing and advertising the event, and generating marketing materials.
 - ▶ Advertising materials and informational materials will be prepared in at least two languages to reach as many LMI residents as possible;
 - ▶ Materials will be distributed to LMI-serving institutions to further expand the reach of advertising;
 - ▶ The event will be family friendly to ensure that families with children can easily participate.
- ▶ The City will work with PSE&G to include information about the PSE&G Marketplace and PSE&G’s rebate and incentive programs in regular City mailers and electronic communications.
- ▶ The Green Team will distribute informational materials to LMI-serving institutions to continue to educate the public year-round

6.5 CONDUCT ENERGY EFFICIENCY OUTREACH TO COMMUNITY-SERVING INSTITUTIONS

Improving the energy efficiency of community-serving organizations can improve the financial capacity of those organizations to improve services to their constituents, especially when the cost of energy efficiency upgrades is offset by incentive programs.

Reach out to limited-capacity entities that serve low- and moderate income communities to encourage participation in state and utility energy efficiency programs. Outreach strategies include messaging benefits of reduced capital, maintenance, and energy costs and segmenting outreach to different types of organization with different needs.

IMPLEMENTATION STRATEGY

1. The Green Team will identify the not-for-profit,

governmental, and quasi-governmental entities in the City that primarily serve low- and moderate-income residents and businesses in their neighborhoods. These may include the City's Housing Authority, the Board of Education, Senior Affairs, North Hudson Community Action Corp, small business owners that are staples to the community, churches providing homeless services, and others;

2. The Green Team will host an event for those entities where it will make them aware of the various programs available to commercial, governmental, and non-profit entities to improve their energy efficiency and lower their energy costs;
3. The Green Team will continue to monitor whether the targeted organizations enroll in applicable programs.

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CONCLUSION

The Community Energy Plan examines 18 actions that the City will strive to achieve over a three-to-five year period in order to advance the State's Energy Master Plan, reduce energy costs, expand access to clean energy to low-and moderate-income households, and create green jobs locally. It also identifies several opportunities the City will explore to further reduce local energy consumption and GHG emissions while improving quality of life and economic vitality.

Some of these actions require little to no cost to the City, such as conducting public outreach about incentive programs, establishing internal policies, systems, and guidelines to improve fleet efficiency, and adopting of ordinances, checklists, and permitting documents to expand adoption of clean energy.

Other actions in this Plan require larger investments by the City, such as installing renewable energy generation, weatherizing buildings and upgrading and replacing inefficient fleet vehicles with electric vehicles or hybrid vehicles. Incentives and innovative financing strategies can limit the costs associated with those actions and avoid passing the costs of the actions on to taxpayers.

It should be noted that the time of this writing is a particularly advantageous moment for the City to make investments in clean energy, energy savings, and environmentally friendly infrastructure, as the political administrations at the State and Federal level have identified these as priorities. Many of the grants, rebates, and supportive programs identified in this Plan may not be available under future administrations, and some are scheduled to expire or shrink, or may not be renewed in the coming years. Therefore it is recommended that the City begin implementation early.

NEXT STEPS

Following the adopting of the Community Energy Plan, the City will establish a Green Team comprised of elected officials, City staff, and community members, to set the City's agenda and priorities for implementing actions listed in this Plan document as well as actions laid out by Sustainable Jersey for certification. City officials, staff, and professionals will begin to take the actions in these plans beginning after adoption, particularly as grants and incentives for studying or implementing actions become available.

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APPENDIX

1

WORKPLAN TEMPLATE

APPENDIX

2

IDLING REDUCTION SAVINGS CALCULATOR

APPENDIX

3

MODEL SOLAR SUPPORTIVE ZONING ORDINANCE

APPENDIX

4

BOULDER, CO SOLAR PV SYSTEM CHECKLIST

APPENDIX

5

MODEL WIND ORDINANCE

APPENDIX

6

DIRECT INSTALL BROCHURE

APPENDIX

7

BUSINESS ENERGY SAVER PROGRAM GUIDE

APPENDIX

8

SAMPLE GREEN DEVELOPMENT CHECKLIST

APPENDIX

9

RESIDENTIAL NEW CONSTRUCTION INCENTIVES

APPENDIX

10

MODEL ENERGY STORAGE ORDINANCE, CHECKLIST, AND PERMIT