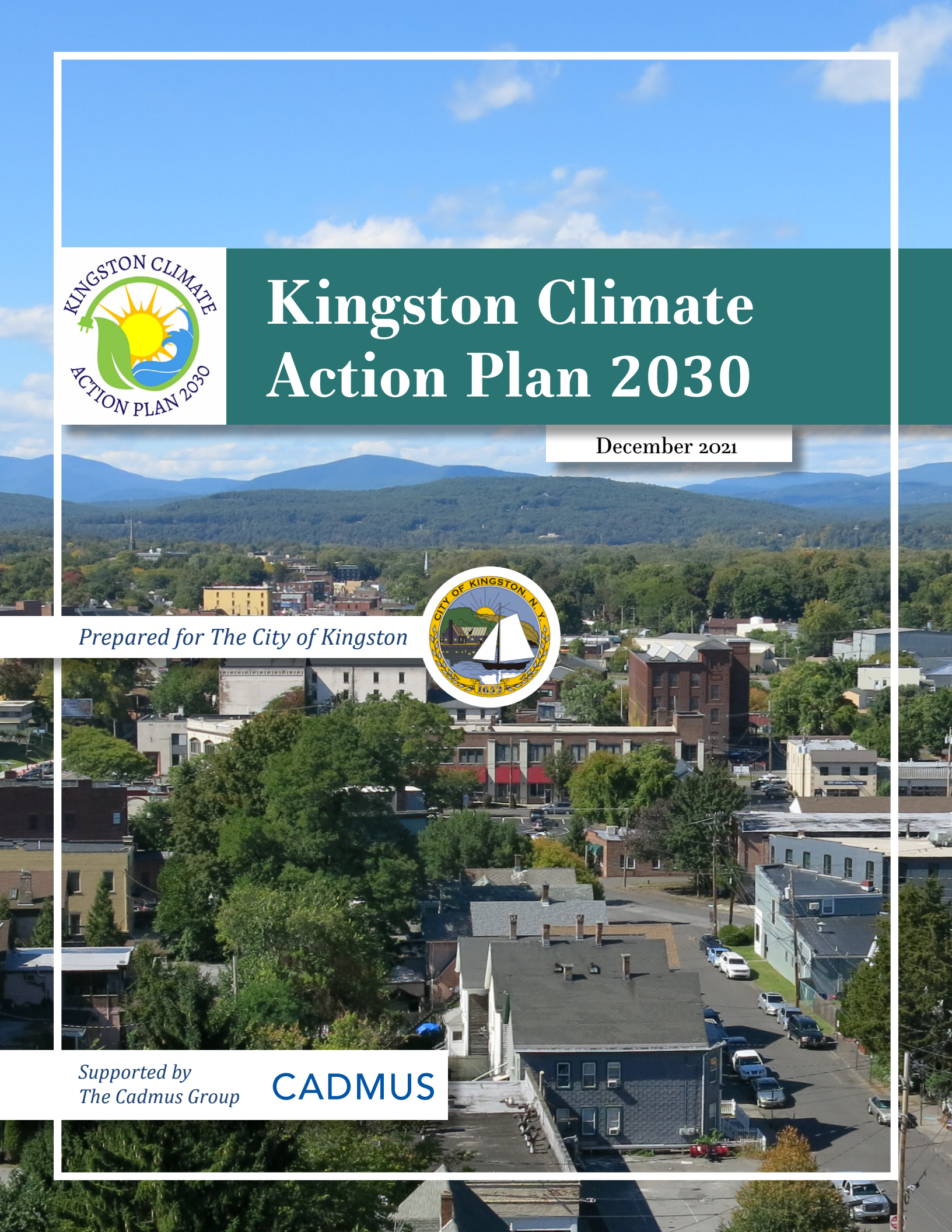
Kingston Climate Action Plan 2030

December 2021

Prepared for The City of Kingston

Supported by The Cadmus Group

CADMUS



Acknowledgements

The Cadmus Group developed this resource in collaboration with the City of Kingston. Key project participants are listed below.

Mayor

Steven T. Noble

City of Kingston Common Council

- Andrea Shaut, President
- Barbara Hill
- Carl Frankel
- Reynolds Scott-Childress
- Rita Worthington
- Naimah Muhammad
- Anthony Davis
- Michael Olivieri
- Steven Schabot
- Michele Hirsch

Project Manager

Julie Noble, City of Kingston

Project Advisory Committee

- Betta Broad
- Cal Trumann
- Gwenn Sorensen
- James Childs
- Jeff Domanski
- Jessica Clegg
- Kevin McEvoy
- Meg Clark
- Melinda Herzog
- Pat Courtney-Strong
- Rennie Scott-Childress
- Rita Worthington
- Susan Gillespie
- Troy Ellen Dixon
- Lisa Mitten

Consultant: Cadmus

- Farrah Andersen
- Megan Lynch
- Steve Tobey
- Jennifer Cox
- Anita Tendler
- Henry Locke
- Chad Laurent
- Ben Butterworth

Special Acknowledgements

Special thanks to Citizens for Local Power and NoVo Foundation.

Thank you to the City of Kingston for providing all photos within this report.

Letter from the Mayor

Mayor Steven T. Noble

As the first city in the state to earn the title of Silver-certified Climate Smart Community, we have made tremendous progress over the past ten years, completing hundreds of actions outlined in Kingston's first Climate Action Plan and shattering our already ambitious goal of reducing greenhouse gas (GHG) emissions by 20% by 2020. There is no doubt that the City of Kingston has lived up to its reputation as a leader in sustainability across New York.

Our community should be incredibly proud - our success did not come easily. It required careful, intentional planning, strategic financial investments, and broad institutional changes to municipal operations. Together, we made high-impact infrastructure improvements, including the LED conversion of the City's entire 2,200 unit streetlight system. We embarked on a comprehensive, multi-million dollar redesign of our transportation system, including the development of key sections of the Kingston Greenline and a complete overhaul of the City's central Broadway corridor, all of which is set to make Kingston a far more walkable and bikeable community than it was a decade ago. And while we worked to reduce our City's overall carbon footprint, we also began preparing for the inevitability of climate change, including planning for the projected impact on our waterfront. By leveraging state and federal grant funding, we did all of this - and so much more - without overburdening local taxpayers. In fact, the streetlight conversion alone is set to save the City $100,000 each year.

Simply put, we have taken climate change seriously. But the work is far from over - and we need your help to achieve Kingston's next bold target: Reducing our local GHG emissions by 50% by 2030. Kingston's Climate Action Plan 2030 outlines the next series of strategies our community must advance to further reduce our reliance on fossil fuels and lower our emissions. While some of these strategies focus on municipal operations and policy changes, many are designed for direct community participation. Whether it's using existing and new incentives to replace an aging appliance or add solar to your home, transitioning to a career in the green cleantech workforce, or starting a community garden or local food forest, there are plenty of ways to help our community reduce our GHG emissions over the next decade.

I am asking each of you - every single person who calls Kingston home, who owns or works in a local business, or who dreams of watching their children grow and thrive here - to help our beloved City continue to lead the way toward a brighter and more sustainable future. The next generations of Kingstonians are counting on us.

Sincerely,

Steven T. Noble
Mayor

Table of Contents

Executive Summary

The City of Kingston has a strong record as a municipality leading on sustainability and has demonstrated an ongoing commitment to climate action progress and greenhouse gas (GHG) emissions reductions. In 2010, the City of Kingston leveraged state funding to commission an initial 10-year Climate Action Plan (CAP 2020). CAP 2020 aimed to reduce emissions by 20% by 2020 and was primarily focused on municipal-level actions and impacts. Over the last decade, the City of Kingston drove forward a variety of critical climate action and sustainability initiatives. As a result of Kingston's local efforts and broader state and federal trends, **the City greatly surpassed its former goal and achieved a 32% reduction in community-wide GHG emissions** from 185,814 MT CO_2e in 2010 to 126,798 MT CO_2e in 2019.

Now, 10 years later, Kingston has embarked on its 2030 Climate Action Plan (**CAP 2030**). CAP 2030 moves beyond the municipal action focus with a bold, community-wide vision to achieve an updated goal of:

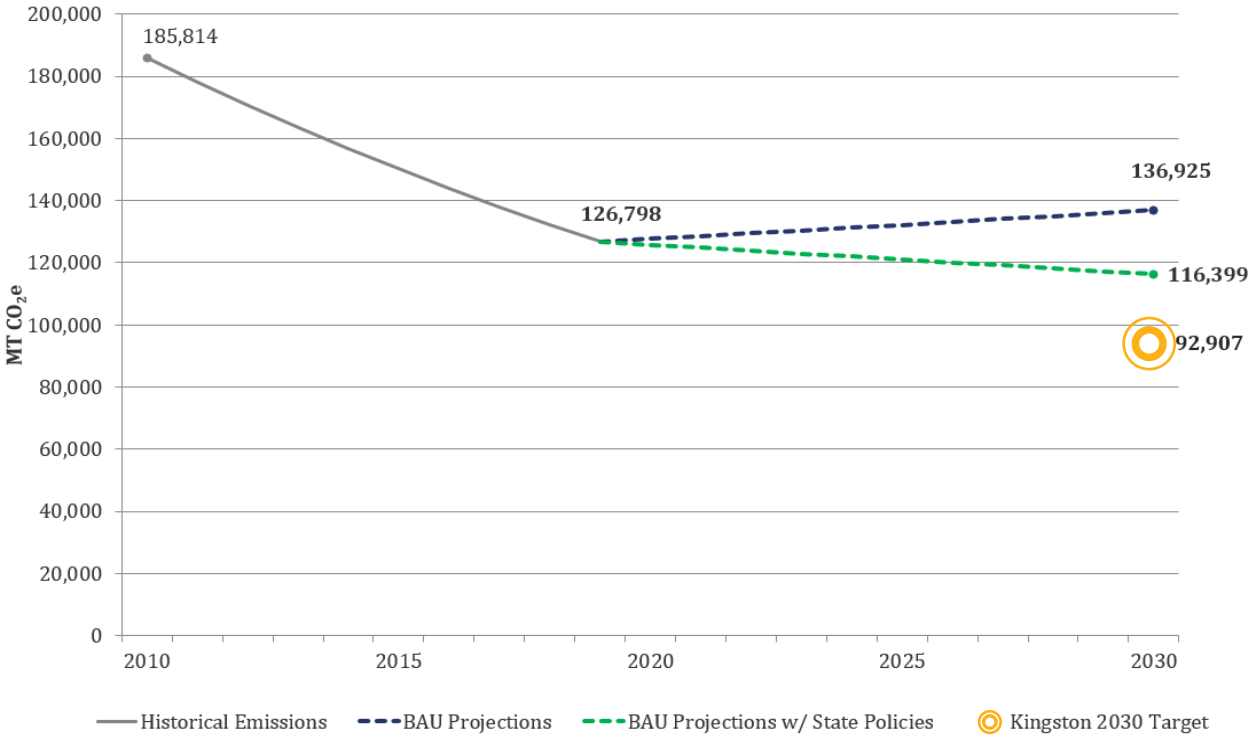
50%

GHG EMISSIONS REDUCTIONS BELOW 2010 LEVELS BY

2030

The graphic below summaries Kingston's historical and projected emissions in relation to the 2030 goal. The green line shows what achieving its 2030 goal may look like.

Figure 1: Total Community Emissions Forecast: 2019 - 2030



As reference, the figure also shows a Business As Usual (BAU) case, which forecasts changes in future emissions if no additional policy action is taken locally and Business As Usual with State Policies case, which creates a similar forecast but additionally accounts for planned New York State policies. Both of these forecasts illustrate that **to achieve its 2030 goal, Kingston will need to enact additional strategies to further reduce emissions.**

This report describes 20 climate actions strategies that will specifically target emissions reduction in sectors that greatly contribute to overall community emissions. These strategies were identified through a series of local engagement efforts and supporting research to ensure they reflect the community's priorities and best practices. Together, these strategies will support Kingston in achieving its bold GHG emissions reduction target through actions in four sectors:

Clean Electricity Supply

The Clean Electricity Supply strategies will support Kingston in reducing emissions from and reliance on fossil fuels for electricity by increasing the use of renewable sources to power homes, buildings, lighting, and transportation.

Decarbonized Buildings

The Decarbonized Buildings strategies will enable Kingston to reduce emissions from and reliance on fossil fuels to generate heat and hot water in buildings through increased energy efficiency and electrification of equipment.

Sustainable Mobility and Land Use

The Sustainable Mobility and Land Use strategies will enable Kingston to reduce emissions from and reliance on fossil fuel powered vehicles by encouraging alternative forms of transportation, such as biking and walking, and replacing internal combustion vehicles with electric vehicles.

Managing Resources Sustainably

The Managing Resources Sustainably strategies will enable Kingston to reduce emissions associated with food production, consumption, and waste disposal. In addition, this section includes a strategy that will utilize land to effectively sequester carbon.

Clean Electricity Supply Strategies

1. Achieve 100% renewable electricity in city operations
2. Establish a community choice aggregation program
3. Increase local participation in community solar
4. Require the installation of solar PV on new construction

Decarbonized Building Strategies

5. Upgrade municipal buildings to increase energy efficiency and electrify buildings
6. Increase utilization of existing PACE financing program
7. Adopt benchmarking requirements for commercial and multifamily buildings
8. Provide educational and workforce cleantech opportunities
9. Increase utilization of existing incentives to electrify equipment and appliances in homes and businesses
10. Increase utilization of existing incentives to improve energy efficiency in homes and businesses

Sustainable Mobility and Land Use Strategies

11. Transition the city fleet to all-electric vehicles
12. Expand public electric vehicle (EV) charging infrastructure
13. Expand bus routes and schedules
14. Increase walkability and bikeability
15. Update zoning regulations to support smart growth and increased housing density
16. Implement dockless bike and/or scooter program
17. Adopt EV-ready building codes and parking requirements in commercial and multifamily buildings

Managing Resources Sustainably Strategies

18. Establish organic waste collection
19. Sequester carbon through preservation and expansion of urban forest
20. Increase local participation in community gardens

A filled in circle indictates that a strategy is a spotlight strategy and includes additional details in the sections below.

Introduction

Courtesy of ScenicHudson.org (photo by Riley Johndonnell)

Background and Purpose

The City of Kingston has demonstrated an ongoing commitment to climate action progress and greenhouse gas (GHG) emissions reductions. Starting in 2009, the Kingston Conservation Advisory Council, a City of Kingston commission made up of community members, was formed, which later played an integral role in advancing the City's first Climate Action Plan process. In 2010, the City of Kingston leveraged state funding to commission an initial 10-year Climate Action Plan (CAP 2020), which laid out action-based emissions reduction goals and was primarily focused on municipal-level actions and impacts. Ultimately, the Climate Smart Kingston Commission was formed in 2015, with a goal of advancing the work of the Climate Action Plan.

In this second Climate Action Plan (CAP 2030), the City of Kingston seeks to develop a plan that moves beyond municipal action with a community-wide vision that is bold, transformative, engaging, and capable of achieving deep GHG emissions reductions to ensure Kingston contributes to global efforts to limit warming to 1.5 degrees Celsius. CAP 2030 will serve as a blueprint for the City of Kingston to address and plan for its future local climate and to radically reduce GHG emissions across the next 10 years. This plan outlines a set of 20 climate action strategies that will ensure Kingston achieves its bold vision for 2030. While these strategies are primarily focused on enabling deep community-wide GHG emissions reductions, they also provide co-benefits that will improve quality of life, create jobs, and enhance community prosperity. It should be noted that CAP 2030 is a summary of key actions that Kingston will take over the coming decade and should be followed by an implementation plan to support the timely and clear execution of the CAP.

While the City will continue to play a large leadership role in driving forward progress on climate action, it recognizes that these goals can only be achieved if we act as a collective community. Many of the strategies highlighted in the CAP require the active engagement and participation of the community. Each strategy includes hyperlinks to additional information or avenues to become more involved as a community member. The City views the CAP as a means to share a vision of these key strategies with the community as well as an invitation to the community to continue its active partnership on advancing Kingston's climate action.

THE NEED TO ADDRESS CLIMATE CHANGE

The effects of climate change are one of the most important issues threatening communities across the globe. While scientists have warned of the impacts that GHG emissions have on the climate for decades, these impacts are now being realized.

To date, communities in New York are already experiencing these impacts, including higher temperatures, more extreme heat waves, more frequent and intense storm events, historic flooding, and more. If action is not taken to curb emissions, more catastrophic impacts are expected to occur.

The City of Kingston recognizes that GHG emissions from human activity are catalyzing profound changes in the climate, the consequences of which pose substantial risks to the future, health, well-being, and prosperity of the community. While global levels of greenhouse gases in the atmosphere released from human activity drive climate change, action at the local level is critical to addressing the economic and environmental risks of a changing climate.

Summary of Approach

CAP 2030 was developed by a Project Team that includes the following entities:

The City of Kingston:
Oversaw CAP development and guided the overall direction of the CAP.

Project Advisory Committee (PAC):
Provided local perspective and content expertise to further guide the overall direction of the CAP.

Citizens for Local Power (CLP):
Led the stakeholder and community outreach efforts conducted to inform the CAP development.

Cadmus:
Provided technical and strategic support, as well as supplementary stakeholder and community engagement support.

NoVo Foundation:
Provided process support throughout CAP development. Financial support for CAP 2030 was provided by the Novo Foundation.

To identify climate action strategies that will enable the City of Kingston to achieve its bold vision for the next decade and achieve substantial GHG emissions reductions across the community, the Project Team took the following approach:

Figure 2: Summary of Project Team Approach

GHG Inventory, Forecast, & Progress Reporting

- Updated the 2010 community GHG inventory with 2019 data.
- Developed a high-level emission forecast out to 2030.
- Set target goals for emissions reduction for 2030.
- Developed a progress tracking tool that will enable the City to track progress on the prioritized strategies and provide updates to stakeholders and the community.

Climate Action Strategy Identification & Analysis

- Identified 20 potential climate action strategies.
- Solicited input from the City, PAC, and community to identify strategies for additional analysis
- Conducted qualitative and quantitative analysis on seven of the selected strategies, including GHG reduction potential, and key costs and benefits.
- Outlined progress to date and next steps for the 13 strategies already underway.

Stakeholder & Community Engagement

- Conducted several stakeholder and community engagement efforts throughout the project to inform CAP development. Key efforts included:
  - Five meetings with the PAC throughout the project.
  - Initial community engagement efforts to inform strategy identification and prioritization.
  - Additional community engagement to solicit feedback on the draft CAP.

Organization of this Plan

The remainder of this plan is organized into the following sections:

Kingston Climate Action Context:

Summarizes the various climate action initiatives Kingston has implemented over the past decade and details Kingston's progress and current status on GHG emissions.

Kingston CAP Strategies:

Provides a detailed overview of 20 climate strategies that will support Kingston in achieving its bold vision for the next 10 years, including details on the Project Team's strategy analysis and engagement process.

Conclusion & Next Steps:

Highlights key next steps for the City and community, including details on how to measure and track progress toward GHG emissions reductions.

Appendix A: Provides the modeling methodology and calculations used to develop the GHG inventory and conduct the GHG emissions analysis and the costs and benefits review, which were used to inform the strategy identification and analysis process.

Appendix B: Outlines key details on the community engagement conducted as part of the CAP process.

Appendix C: Provides additional information on Citizens for Local Power's (CLP) engagement efforts prior to and in support of CAP 2030.

Kingston Climate Action Context

Since the development of CAP 2020, the City of Kingston has cemented its status as a state-wide leader in sustainability initiatives. This section provides a high-level summary of Kingston's key climate action achievements over the past decade and how they supported Kingston in achieving a 32% reduction in GHG emissions between 2010 and 2019. This section also includes information on Kingston's projected emissions between 2019 and 2030 and the progress Kingston will need to make to achieve its goal of 50% GHG emissions reductions below 2010 levels by 2030. The following section of this report, Kingston CAP Strategies, will outline a set of 20 climate action strategies that will support Kingston in achieving this goal.

Climate Action Progress To-Date

A comprehensive overview of the City's progress in sustainability and supporting documents is available in the New York State Climate Smart Communities Certification Report.[1] The report outlines the 51 actions completed by the City of Kingston, as of May 2020, to earn its Silver Certification - the highest benchmark reached by any city in New York. In addition to being the first city to reach Silver Certification as a Climate Smart Community and the first city in the state to be named a Clean Energy Community, the City has made significant progress on the goals set forth in CAP 2020. As a result of these efforts, the City has achieved substantial GHG emissions reductions from 2010-2020, as well as an increased community resiliency, decreased dependency on fossil fuels, and increased environmental literacy throughout the community. Key achievements are summarized below.

ENERGY

LED Conversion all of the City Streetlights.[2] All the City's 2,200 streetlights have been replaced with 3000K LEDs, for an estimated annual savings of $100,000.

LED Conversion of Municipal Buildings.[3] In an effort to decrease energy demand from local government operations, the City conducted an energy efficiency analysis of a portion of city-owned buildings and completed the conversion to LED lighting for twelve municipal buildings, for an estimated annual savings of $50,000.

NYStretch Energy Code Adoption.[4] In spring 2021, the City of Kingston adopted high energy standards for new construction and major retrofits to buildings.

TRANSPORTATION

Kingston Greenline.[5] The Greenline is a network of urban trails, complete streets, improved sidewalks, bike lanes, and linear parks in the City of Kingston. When complete the Kingston Greenline will be approximately 20 miles long. The off-road portion will be 10.7 miles long and the on-road portion will total 9.3 miles. More than half of the Greenline is completed and open.

Bicycle/Pedestrian Infrastructure Improvements.[6] The City has secured funding for multiple bike/pedestrian infrastructure projects to add bike lanes, improve crosswalks and sidewalks and more in areas such as Broadway, Henry Street, Franklin Street, Foxhall Ave, Flatbush Ave, to name a few.

UCAT Bus integration.[7] The Ulster County Transit Systems Integration served to improve transit service frequency and links to existing UCAT services, ensured weekday and Saturday transit service to key destinations, created multiple transfer hubs, and provided full city transit coverage with the introduction of easy to use demand-response service.

EV Charging Stations.[8] The City has installed five EV charging stations with seven more in the works as of September 2021. The Kingston EV charging stations have avoided 28,108 kg of GHG emissions, cumulatively, to date.

Green City Fleet.[9] Between 2016-2021, thirteen new electric vehicles were added to the City's fleet. This achievement equates to 20% of municipal vehicles which have more efficient equivalent vehicles available on the market, having been replaced with more efficient, electric models.

DESIGN AND CONSTRUCTION

Green Infrastructure.[10] The City has prioritized the installation of green infrastructure practices in new and existing developments throughout the City, including the use of dry wells, bioretention areas, pervious pavement, permeable pavers, rain gardens, tree pits, and street trees in multiple projects city-wide. Key installations include 50+ bioswales and one mile of permeable pavers on Broadway, parking lot installations at North Front Street, Pearl Street, Kingston Point, the Kingston Library, SUNY Ulster Kingston Campus and Forsyth Park, and soon, full installations at Cornell Street, Prince Street, and Dietz Stadium.

Kingston Point Park.[11] The Kingston Point Park Project is a redesign of Kingston Point to accommodate sea level rise and flooding by incorporating an elevated parking lot, elevated soccer field, and new stormwater management and by reconstructing an existing parking lot to a wetland.

PLANNING

Natural Resources Inventory.[12] Completed in 2018, the inventory maps all city natural, cultural and recreational resources.

Open Space Plan.[13] Adopted in 2019, this Plan guides the City toward sustainable land use and natural resource protection and set visions and goals for land use protection by 2030.

Waterfront Flooding Task Force and Planning for Rising Waters Report.[14] In 2013 the task force studied sea level rise and flood projections, analyzed local vulnerability assessments, and recommended 24 strategies for increasing the resilience of waterfront areas.

Parks and Recreation Master Plan.[15] Completed in 2013, the master plan is a guide for the continuing strategic improvement and development of parks, recreational facilities, and services in the City.

100% Renewable Energy Transition Roadmap.[16] In 2019, the City of Kingston partnered with the NoVo Foundation and hired Cadmus and the National Renewable Energy Laboratory (NREL), which developed a long-term roadmap for the City to achieve 100% renewable and resilient community-wide electricity supply.

ADAPTATION AND RESILIENCE

Weaving the Waterfront.[17] The City has been working with stakeholders and partners on Kingston's waterfront, from the Rondout to Kingston Point, to improve the resiliency and sustainability of the shoreline, implement an economic development strategy, and develop better access to the river, parks, and open space for people on foot, on bicycle, and in boats.

Flood Preparedness Guide.[18] The City of Kingston has produced a Flood Preparedness Guide that gives residents in flood-prone areas a plan for safety and provides official evacuation routes.

High Water Festival[19] The City of Kingston hosted a day-long celebration of waterfront resilience and revitalization on Friday, October 19th, 2018, at Rondout Landing. The event celebrated the progress that the City has made toward revitalization of the waterfront, while adapting to projected flooding and inundation caused by sea level rise and extreme storms related to a changing climate.

CAD-Climate Adaptive Design.[20] The Climate-Adaptive Design (CAD) Studio links Cornell students in landscape architecture with Hudson Riverfront communities to explore design alternatives for more climate resilient, beautiful, and connected waterfront areas. Kingston hosted the CAD Studio in 2016, 2017, and 2018, advanced one of the studios to pre-construction design with funding from NY State, and was the recipient of a 2021 Merit Award in ASLA-NY Design Awards in the Analysis, Planning, Research and Communications category.

COALITION BUILDING AND COMMUNITY ENGAGEMENT

Climate Smart Kingston Commission.[21] The Climate Smart Kingston Commission, established in 2016, convenes monthly to strategize, plan, and implement the goals of Kingston's Climate Action Plan.[20]

Conservation Advisory Council (CAC).[22] The Kingston CAC was established in 2009 with the mission to ensure the conservation of the City of Kingston's natural resources and the enhancement and protection of its environment while fostering unified action on environmental matters.

Kingston GHG Emissions Progress and Current Status

KINGSTON GHG EMISSIONS PROGRESS: 2010 VS. 2019

As a result of Kingston's local sustainability efforts coupled with changes at the state and federal level, Kingston has achieved a 32% decrease in total community-wide emissions from 185,814 MT CO_2e in 2010 to 126,798 MT CO_2e in 2019. This section provides a breakdown of GHG emissions reduction progress over the decade by sector (area of operations within community) and by source (direct origin of emissions).

GHG EMISSIONS PROGRESS BY SECTOR AND SOURCE: 2010 VS. 2019

Community GHG emissions can be broken down into three sectors. The sectors and the associated total percentage of Kingston's GHG emissions that each sector is responsible for including the following: the built environment (57%), transportation (42%), and waste (1%). The built environment and transportation each have multiple specific sources of emissions.

A summary of Kingston's GHG emissions progress by sector and source between 2010 and 2019 can be found in the bullets and graphs below. It should be noted that, despite significant emissions reductions across each sector, the share of total emissions for each sector and source has remained relatively constant aside from an increase in residential gas.

Waste. Emissions from the waste sector decreased by 14% from 1,494 MT CO_2e in 2010 to 1,282 MT CO_2e in 2019.

Built Environment. Emissions attributed to commercial, residential, and industrial buildings decreased by 33% from 105,522 MT CO_2e in 2010 to 71,125 MT CO_2e in 2019. The following detailed changes have occurred:

Residential Electricity: Emissions attributed to residential electricity decreased by 58% from 15,543 MT CO_2e in 2010 to 6,488 MT CO_2e in 2019.

Non-Residential Electricity: Emissions attributed to non-residential electricity decreased by 63% from 12,790 MT CO_2e in 2010 to 4,789 MT CO_2e in 2019.

Residential Other Fuels: Emissions attributed to other residential fuels decreased by 28% from 14,699 MT CO_2e in 2010 to 10,604 MT CO_2e in 2019.

Non-Residential Other Fuels: Emissions attributed to other non-residential fuels decreased by 57% from 10,965 MT CO_2e in 2010 to 4,760 MT CO_2e in 2019.

Residential Gas: Emissions attributed to residential gas increased by 8% from 24,276 MT CO_2e in 2010 to 26,166 MT CO_2e in 2019.

Non-Residential Gas: Emissions attributed to non-residential gas decreased by 33% from 27,249 MT CO_2e in 2010 to 18,319 MT CO_2e in 2019.

Transportation: Emissions attributed to mobile combustion decreased by 31% from 78,798 MT CO_2e in 2010 to 54,391 MT CO_2e in 2019. The following detailed changes have occurred.

Diesel Vehicles: Emissions attributed to diesel vehicles decreased by 23% from 13,331 MT CO_2e in 2010 to 10,260 MT CO_2e in 2019.

Gas Vehicles: Emissions attributed to gas vehicles decreased by 33% from 65,467 MT CO_2e in 2010 to 44,106 MT CO_2e in 2019.

Figure 3: Total Community Emissions by Source: 2010 vs. 2019

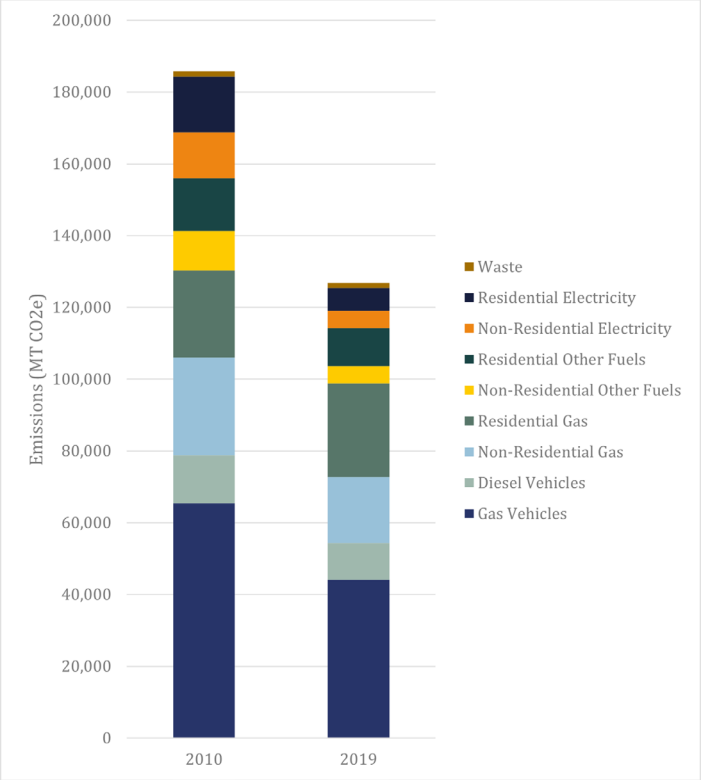
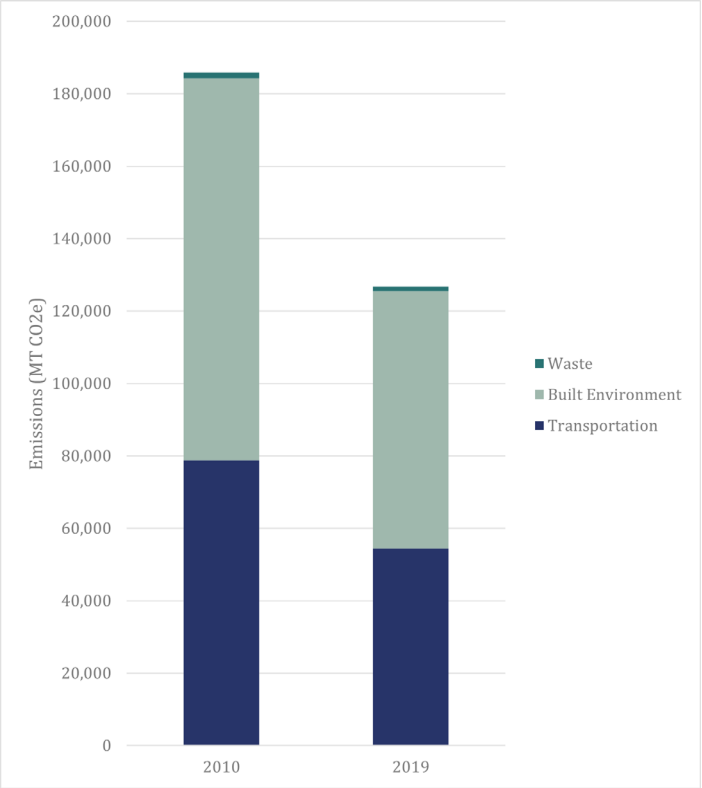


Figure 4: Total Community Emissions by Sector: 2010 vs. 2019



KINGSTON GHG EMISSIONS FORECAST: 2019 TO 2030

While Kingston has made substantial progress in reducing GHG emissions over the past decade, additional reductions are needed to achieve the City's goal of 50% GHG emissions reductions below 2010 levels by 2030. To achieve this goal and inform the selection of more targeted emissions reduction strategies, it is helpful to understand the progress Kingston can make over the next decade.

As such, the project team forecasted Kingston's future emissions into 2030 based on two policy scenarios, including Business As Usual, which forecasts changes in future emissions if no additional policy action is taken and Business As Usual with State Policies, which creates a similar forecast but additionally accounts for planned New York State policies, including key targets outlined in the Climate Leadership and Community Protection Act (CLCPA). [23]

A summary of Kingston's forecasted GHG emissions can be found in the graphic and section below:

Business as Usual (BAU): With no additional policy intervention, total community GHG emissions are forecasted to increase by 8% from 126,798 MT CO_2e in 2019 to 136,925 MT CO_2e in 2030. To achieve its 2030 goal, Kingston would need to reduce emissions by an additional 44,018 MT CO_2e.

BAU with State Policies: Under a BAU scenario with planned state policies implemented, total community GHG emissions are forecasted to decrease by 8% from 126,798 MT CO_2e in 2019 to 116,399 MT CO_2e in 2030. This would result in a 37.4% decrease in emissions from 2010 levels, requiring Kingston to reduce its emissions by an additional 23,492 MT CO_2e by 2030 to achieve its goal.

Figure 5: Total Community Emissions Forecast: 2019 - 2030

Kingston CAP Strategies

Overview of Strategies

The 20 climate action strategies included within this Plan are summarized on page 14 and further described in the following sections. These strategies will support Kingston in achieving its bold vision of 50% reduction below 2010 GHG emissions levels by 2030 by cleaning the electricity supply, decarbonizing buildings, increasing the sustainability of mobility and land use, and improving resource management and local food production.

The following sections contain additional details about the strategy analysis and engagement process, as well as each of the 20 climate action strategies listed below. Strategies are organized into the following sector categories:

Clean Electricity Supply

Includes strategies that will reduce reliance on fossil fuels for electricity by increasing the use of renewable sources to power homes, buildings, lighting, and transportation.

Decarbonized Buildings

Includes strategies that will reduce reliance on fossil fuels to generate heat and hot water in buildings through increased energy efficiency and electrification of equipment.

Sustainable Mobility & Land Use

Includes strategies that will reduce emissions from transportation by reducing reliance on vehicles by encouraging alternative forms of transportation, like biking and walking, and replacing internal combustion vehicles with electric vehicles.

Managing Resources Sustainably

Includes strategies that will reduce emissions associated with food production, consumption, and waste disposal. In addition, this section includes a strategy that will utilize land to effectively sequester carbon.

For most of the 20 strategies, the following section provides a high-level overview of their impact on GHG emissions, the City's key progress to-date, future actions, and where more information can be found. Seven of the strategies are "spotlighted" with a more detailed overview of GHG impact, associated costs and benefits, similar case studies, implementation steps, and key resources and partners. These seven spotlighted strategies are indicated by a filled-in circle on the list below.

Clean Electricity Supply Strategies

1. Achieve 100% renewable electricity in city operations
2. Establish a community choice aggregation program
3. Increase local participation in community solar
4. Require the installation of solar PV on new construction

Decarbonized Building Strategies

5. Upgrade municipal buildings to increase energy efficiency and electrify buildings
6. Increase utilization of existing PACE financing program
7. Adopt benchmarking requirements for commercial and multifamily buildings
8. Provide educational and workforce cleantech opportunities
9. Increase utilization of existing incentives to electrify equipment and appliances in homes and businesses
10. Increase utilization of existing incentives to improve energy efficiency in homes and businesses

Sustainable Mobility and Land Use Strategies

11. Transition the city fleet to all electric vehicles
12. Expand public EV charging infrastructure
13. Expand bus routes and schedules
14. Increase walkability and bikeability
15. Update zoning regulations to support smart growth and increased housing density
16. Implement dockless bike and/or scooter program
17. Adopt EV-ready building codes and parking requirements in commercial and multifamily buildings

Managing Resources Sustainably Strategies

18. Establish organic waste collection
19. Sequester carbon through preservation and expansion of urban forest
20. Increase local participation in community gardens

A filled in circle indictates that a strategy is a spotlight strategy and includes additional details in the section below

Strategy Analysis & Engagement

To support the CAP development, the Project Team conducted a series of engagements and analyses. A summary of these efforts can be found in Table 1 and Table 2 below.

Table 1: Overview of Strategy Analysis Activities

STRATEGY IDENTIFICATION

To identify a set of strategies that would build on Kingston's climate action progress to date and enable the City to achieve its ambitious goals, Cadmus compiled a list of 20 climate action strategies strategies informed by discussions with the City and NoVo, a review of climate action plans developed by cities of a similar size and level of ambition, as well as the Cadmus Team's prior work with municipal government nation-wide.

INITIAL STRATEGY MATRIX

To provide an initial understanding of the strategies, Cadmus conducted a high-level strategy analysis in which each of the 20 strategies were ranked on a scale of "high," "medium," and "low"against key criteria. These criteria included the strategy's potential GHG emissions impact, potential financial impact, its technical feasibility, potential equity impacts, and community acceptability. The community acceptability ranking was informed by the engagement activities outlined in Table 2.

QUANTITATIVE ANALYSIS

For the strategies that are spotlighted within this Plan, Cadmus conducted a quantitative review of GHG impacts and general costs and benefits associated with each strategy.

QUALITATIVE DEVELOPMENT

For the strategies that are spotlighted within this Plan, Cadmus conducted additional research on its impacts, program examples, and implementation guidance.

Table 2: Overview of Strategy Engagement Activities

INITIAL COMMUNITY ENGAGEMENT

CLP conducted a series of community engagement efforts to provide an overview of the project process, identify opportunities to get involved, and solicit feedback on the strategies. Key efforts included:

- A community kickoff meeting in January 2021
- Community CAP Survey
- Development of a city CAP interactive webpage

PROJECT ADVISORY COMMITTEE (PAC) MEETINGS

The Project Team met with the PAC five times throughout the project to solicit additional feedback related to the strategies and the overall direction of the CAP.

ADDITIONAL COMMUNITY ENGAGEMENT

The Project Team held two additional community meetings in November 2021 and held a three-week public comment period to solicit input on the initial CAP draft. Feedback received during this process was integrated into the final CAP.

Clean Electricity Supply

The Clean Electricity Supply category includes climate action strategies that will support Kingston in achieving its climate goals by reducing reliance on fossil fuels for electricity by increasing the use of renewable sources to power homes, buildings, lighting, and transportation.

A full list of the climate action strategies within this sector can be found below.

Clean Electricity Supply Strategies

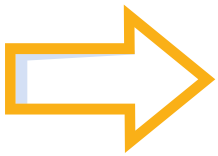
1. Achieve 100% renewable electricity in city operations
2. Establish a community choice aggregation program
3. Increase local participation in community solar
4. Require the installation of solar PV on new construction

A filled in circle indictates that a strategy is a spotlight strategy and includes additional details in the section below.

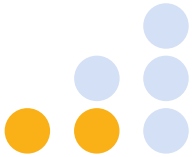
1. Achieve 100% Renewable Electricity in City Operations

The City leverages a variety of procurement methods (e.g., on-site solar, power purchase agreements, community solar) to supply city operations with 100% renewable electricity.

Greenhouse Gas Impact



Direct Emissions Reductions



Low-Medium Impact

This strategy is expected to directly reduce GHG emissions by reducing reliance on fossil fuels and increasing reliance on renewables to generate electricity for city operations. However, the impact is limited to municipal emissions.

Key Progress to Date

COMMITMENT

The City of Kingston has demonstrated a commitment to divesting from fossil fuel production of electricity in city operations. CAP 2020 set the goal that the City of Kingston Government will get at least 20% of its energy from renewable sources by 2020.[24]

In 2017, the City adopted Resolution #179 of 2017: Resolution of the Common Council of the City of Kingston, New York, Committing to 100% Clean Energy by 2050 and Continuing Support of the Principles of the Paris Agreement.[25] Further, on April 10, 2018, the City of Kingston, New York, joined the 100% Committed campaign in partnership with The Climate Reality Project: Hudson Valley and Catskills NY Chapter.[26] Through this commitment, the City pledged to help our community shift to 100% renewable electricity.

PLANNING

The City aspires to a future that is based in sustainable, resilient, and independent socioeconomic systems. Functional to this goal is the development of a renewable energy strategy that ensures the City's electricity supply is sourced from local and renewable resources. In 2019, in partnership with the NoVo Foundation, the City hired Cadmus and NREL to develop a long-term roadmap for the City to achieve 100% renewable and resilient community-wide electricity supply.[27] Research revealed a pathway for the City to achieve its 100% renewable electricity goal by simultaneously pursuing multiple strategies that can be categorized into the following four key pillars.

PILLAR 1. Foundational Policies and Programs

PILLAR 2. Municipal Supply Mix Strategies

PILLAR 3. Community Choice Aggregation

PILLAR 4. Scaling Solar Generation

INVESTMENT & INFRASTRUCTURE

Community Solar

Since 2020, the City of Kingston has participated in local Community Solar projects for a portion of the municipal accounts.

- The Pointe Kingston Community Solar, at 243 Hurley Avenue (Pointe of Praise Church): 28 panels/12,305.72 kWh
- Community Solar Array on Albany Avenue, at 241-243 Albany Avenue (Radio Kingston): 100 panels

Solarize Kingston

Beginning in June 2021, the City of Kingston launched Solarize Kingston, in partnership with Ulster County and the Solarize Ulster Campaign, to provide opportunities for Kingston residents to enroll in Community Solar programs. More information can be found at the Solarize Kingston homepage.[28] As of September 1, 2021, 38 customers had enrolled in this program in Kingston alone.

Municipal Arrays

In 2012, the City, along with a local Eagle Scout, installed the City's first solar array, a 1.2 kW system on municipal property at the Forsyth Nature Center with five panels. In 2018, a second solar array was installed, a 4.8 kW system of 20 panels, also at the Forsyth Nature Center. In 2021 and 2022, a new 49 kW rooftop solar system will be installed on the Andy Murphy Center, offsetting 110% of the building's electricity demands.

Future Action

Potential future action should include:

- Evaluate potential for and install additional solar arrays on municipal buildings
- Expand investment in Community Solar projects or power purchase agreements to offset remaining municipal accounts

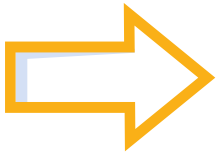
Additional Information

For more information about how the City has advanced the Transition to Renewable Energy, see the Energy Page on the City's sustainability website.

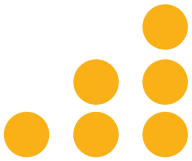
2. Establish a Community Choice Aggregation (CCA) Program

This strategy would enable local governments to pool the electricity load of residents and businesses and procure electricity on their behalf. A Community Choice Aggregation (CCA) Program would give residents greater control over their energy mix and the opportunity to increase the share of renewables in the grid mix at potentially lower electricity prices.

Greenhouse Gas Impact



Direct Emissions Reductions



High Impact

This strategy is expected to substantially reduce GHG emissions by enabling the City to procure up to 100% of the electricity supply from renewables on behalf of the Kingston community.

Participation & Equity

Community-Wide Participation

This strategy would apply to all residents and small businesses, including HEAP recipients, regardless of income and would be fully equitable across all demographics. The City will ensure robust education and outreach to engage all audiences.

Key Progress to Date

COMMITMENT

The City of Kingston's commitment to CCA began in 2015 when Mayor Shayne Gallo advocated to the Public Service Commission to enable CCAs state-wide. Also, in 2015, the Common Council passed Resolution #60 of 2015 to Support Statewide CCA Legislation.[29] The commitment and momentum continued when the Common Council adopted Local Law #3 of 2021, enabling CCA in the City of Kingston.

PLANNING

To advance the City's commitment through action, the City engaged with the Ulster CCA Working Group from 2016-2018 to plan for an Ulster County based CCA. To carve out a specific plan for the City of Kingston, in 2018, the City engaged NREL and Cadmus to develop a Roadmap to 100% Renewable Energy for the City.[30] This process identified CCA as a top priority for the City.

Future Action

Potential future actions should include:

- Design and issue RFP for CCA Administrator; contract with CCA Administrator
- Establish Kingston CCA, and engage and educate the community on CCA, including how it works, how to participate, and how it connects to other renewable energy offerings and programs
- Design and issue RFP for energy procurement; contract with energy provider

Additional Information

To follow the establishment of Community Choice Aggregation in the City of Kingston, check out Kingston's community engagement page for information on the timeline, key players, documents, policy updates and meeting announcements.

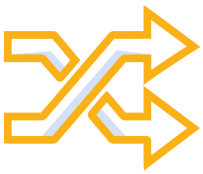
Courtesy of ScenicHudson.org (photo by Riley Johndonnell)

SPOTLIGHT STRATEGY

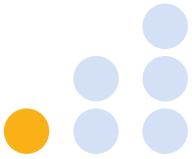
3. Increase Local Participation in Community Solar

Community solar is a local solar PV system installed within or near the community that residents and businesses can subscribe to. Subscribers gain access to the clean energy produced by these panels and receive credits toward their electricity bills. The City supports outreach and coordination to increase awareness of and local participation in community solar projects.

Greenhouse Gas Impact



Indirect Emissions Reductions



Low Impact

This strategy indirectly supports reductions in GHG emissions by enabling community members to participate in community solar. Increasing participation in community solar, in turn, reduces emissions by raising the percentage of the local electricity supply that comes from clean energy, and divesting consumption of fossil fuels.

Participation & Equity

Community-Wide Participation

Residents, including renters and individuals whose property may not be suitable for rooftop solar PV, are eligible to participate in community solar.

Strategy Benefits

Job Creation

The development of new community solar projects can result in the creation of short-term construction and installation jobs as well as longer-term operations and maintenance jobs.

Health Benefit

Solar generation displaces the use of fossil fuel resources and can therefore reduce GHG emissions and other pollutants that can cause adverse health effects.

Cost Savings

Community solar participants receive credits each month on their electric bill for their share of the solar energy project. The amount credited each month varies depending on the amount of solar energy generated but typically results in 5 to 10% annual savings.[31]

Increased Community Awareness and Education

Outreach and education efforts will increase community members' awareness and understanding of environmental issues and may influence community members to not only participate in community solar but to make other informed decisions (e.g., implement energy efficiency and conservation measures). This could include more targeted opportunities to educate youth on the benefits of renewable energy technologies.

Strategy Costs

Administrative Resources

The City is expected to bear some direct administrative costs associated with the planning, coordination, and implementation of outreach and education events. Overall costs will vary depending on the extent of City investment.

Sample Projects and Pilots

County of Tompkins, NY: Get Your GreenBack Tompkins[32]

Get Your GreenBack Tompkins is a community initiated and supported campaign that aims to support individuals and organizations in taking the key steps across various categories that help reduce community emissions and generate other key co-benefits.

As part of the campaign, Get Your GreenBack Tompkins provides detailed guidance on its website about how residents and businesses can easily participate in a community solar campaign. The guidance includes information on how community solar works, different membership options, local providers, and cost/savings estimates. Interested participants can also contact a Get Your GreenBack Energy Advisor with additional questions.

This campaign is housed within Cornell Cooperative Extension (CCE)-Tompkins, which also acts as its fiscal sponsor. Additionally, a sister campaign called Smart Energy Choices is active in the Southern Tier and Central New York regions.

Ulster County, NY: Solarize Ulster and Solarize Kingston[33]

As part of its Green New Deal initiative, in 2021, Ulster County ran a Solarize Ulster campaign to help connect residents and businesses to eligible community solar projects. The City of Kingston also did its own Community Campaign, Solarize Kingston.

As part of both campaigns, the county vetted and selected three trusted community solar providers on behalf of the community, including Common Energy, PowerMarket, and Solstice. To increase ease of participation, the county provided a summary of each provider's offerings and subscription links on its Green New Deal initiative webpage, along with additional information on how community solar works and potential savings. The webpage also highlights that, with each subscription, the associated provider would donate $100 to the county's Green New Deal Fund to support the development of additional community programs.

The City of Kingston partnered with Ulster County and Solarize Ulster, enabling members of the Kingston community to participate in this community solar campaign. Information on how Kingston can build upon these initial efforts can be found in the implementation steps below.

Implementation Steps

1. **Review key community solar campaign resources**, such as the Solarize Guidebook,[34] to learn more about potential campaign outreach efforts the City could implement.

2. **Select and implement outreach and education efforts** to increase local awareness and participation in the current community solar campaign and educate the community on community solar. Potential efforts may include implementing a social media strategy, hosting in-person workshops, and tabling, among others. The City could consider implementing these efforts independently or in partnership with Ulster County and Solarize Ulster.

3. To support these efforts, the City may also **consider identifying community partners**, including trusted sources for low- to moderate-income (LMI) communities, and local volunteers that can help spread the message to further increase awareness and participation in the campaign.

4. Parallel to these efforts, the City **could continue to monitor community solar projects** within the Central Hudson territory and **consider participating directly as a customer.**

Additional Resources

NYSERDA: Home Page for Community Solar[35]

This webpage introduces the concept of community solar and discusses its benefits. It also includes links to additional webpages that provide information on how community solar works, how to find eligible community solar projects, and how to select a project.

NYSERDA: Solarize Your Community Homepage[36]

This webpage provides an overview of solarize campaigns and details the similarities and differences between rooftop solar and community solar Solarize campaigns. For communities interested in pursuing a community solar Solarize campaign, the webpage also houses useful campaign templates and tips. It also links to useful campaign resources, including the Solarize Guidebook.

NYSERDA: Solar For All Overview[37]

This webpage provides a summary of Solar for All, a state-administered utility bill assistance program that improves access to solar for low-income households across New York through no-cost community solar subscriptions as well as information on how to determine eligibility and apply to the program.

Potential Partners

NYSERDA

NYSERDA has developed resources that can be useful in educating community members on the benefits of participating in community solar.

Ulster County, NY

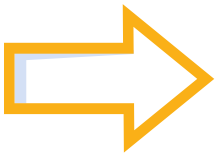
Given Ulster County's current efforts to increase participation in community solar, the City could consider connecting with the County to learn more about its approach and lessons learned to inform next steps.

SPOTLIGHT STRATEGY

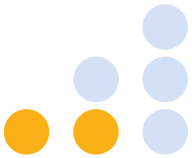
4. Require the Installation of Solar PV on New Construction

Establish a mandate requiring the installation of solar PV in certain cases, such as new construction of residential and/or commercial buildings of a certain size. Ensure implementation is conducted in a cost-effective way that would not financially burden disadvantaged communities.

Greenhouse Gas Impact



Direct Emissions Reductions



Low - Medium Impact

This strategy supports GHG emissions reductions by encouraging the development of additional renewable energy installations within the community. This will increase the percentage of the electricity supply that comes from renewables and thereby reduce consumption from fossil fuels. As this strategy is limited to new construction, impact is limited in the near term. Long-term impact will depend on the design of the requirement but has the potential to be significant.

Participation & Equity

Owners of New Homes and Businesses

Participation in this strategy would be limited to owners of new homes and businesses. It is expected that most newly constructed homes and businesses subject to these requirements will be up-market, thus the benefit of increased access to renewable energy will likely be experienced in greater proportion by higher-income residents.

Strategy Benefits

Job Creation

Requiring the installation of solar can contribute to creating short-term construction and installation jobs as well as longer-term operations and maintenance jobs.

Health Benefits

Solar generation displaces the use of fossil fuel resources and therefore reduces GHG emissions and other pollutants that can cause adverse health effects.

Cost Savings

Homes and businesses with solar are expected to experience lower utility bills and long-term savings.

Strategy Costs

Administrative Resources

The City is expected to bear some direct administrative costs associated with developing and adopting such a requirement.

Sample Projects and Pilots

Watertown, MA: Solar Mandate[38]

In November 2018, the City of Watertown, Massachusetts, set a mandate that required all new commercial construction greater than 10,000 square feet, retrofits of sites greater than 10,000 square feet, and all new residential structures with ten or more units to include solar power. The solar systems are required to be equivalent of 50% of the roof area of buildings and 90% of uncovered areas of parking structures (with exceptions due to access issues).

New York City, NY: Solar Mandate[39]

In April 2019, the New York City Council passed two bills as part of its Climate Mobilization Act requiring the installation of solar electric systems and/or green roofs on new construction and/or buildings undergoing roof replacement.

- Introduction 1032-A directs the Department of Buildings to modify the building code to require solar and/or green roofs on "sustainable roofing zones" (contiguous roof areas greater than 200 square feet).
- Introduction 276-A clarifies that residential buildings less than five stories that have 100 square feet of contiguous roof area are also subject to the requirement. It also directs the Department of Housing Preservation and Development to study the financial feasibility of integrated solar.

Exceptions to the requirement include affordable housing properties until 2024.

Implementation Steps

1. Devise a high-level potential approach. Begin by reviewing existing requirements for communities across the U.S. and adapting to Kingston's needs. It may be beneficial to align the approach with that of other communities in New York, such as the New York City's Solar Mandate described above.

2. Engage with key stakeholders to help inform and develop the new mandate, including requirements, as well as key exceptions. Outreach may take the form of targeted calls and meetings. Stakeholders could include representatives from relevant city departments, the local and/or construction industry, City Common Council, Central Hudson, environmental advocacy groups, and community members.

3. Draft, finalize and publicly release solar mandate. Identify another locale's solar mandate that closely resembles the vision that Kingston stakeholders have coalesced around. Propose modifications to that text and share with key stakeholders for feedback before sharing with council for approval.

4. Consider partnering with SolSmart throughout these efforts for additional technical assistance related to best practices and implementation.

Additional Resources

SolSmart: Solar Energy Toolkit for Local Governments[40]

This toolkit aids local governments and community stakeholders with encouraging the use of solar energy. Specifically, the "Planning, Zoning, and Development" section provides local governments with information on how to incorporate solar energy goals into local planning documents.

Potential Partners

Kingston Planning Board

The Kingston Planning Board is responsible for reviewing and approving site plans and subdivisions. It also plans future zoning requirements. Policies that will regulate the use of the electricity grid may fall outside of the purview of zoning codes, thus this partnership will be key in identifying best practices to define and regulate future solar installations.

SolSmart

SolSmart assists local governments in developing Grow Solar Toolkits, which are a set of resources to assist a specific city or community to implement solar program best practices. Solar Toolkits allow these communities to access resources to navigate permitting, planning, and zoning. SolSmart also offers webinars describing best practices for planning and zoning large-scale solar.

Decarbonized Buildings

The Decarbonized Buildings section includes strategies that will enable Kingston to achieve deeper GHG emissions reductions by reducing reliance on fossil fuels to generate heat and hot water in buildings through increased energy efficiency and electrification of equipment.

A full list of the climate action strategies within this sector can be found below.

Decarbonized Buildings Strategies

5 Upgrade Municipal Buildings and Facilities to Increase Energy Efficiency & Electrify Equipment

6 Increase Utilization of Existing PACE Financing Program

7 Adopt Benchmarking Requirement for Commercial and Multi Family Buildings

8 Provide Educational & Workforce Cleantech Opportunities

9 Increase Utilization of Existing Incentives to Electrify Equipment & Appliances in Homes and Businesses

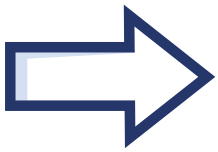
10 Increase Utilization of Existing Incentives to Improve Energy Efficiency in Homes and Businesses

A filled in circle indictates that a strategy is a spotlight strategy and includes additional details in the section below.

5. Upgrade Municipal Buildings and Facilities to Increase Energy Efficiency & Electrify Equipment

Further improve energy efficiency in government buildings through energy audits, interior lighting, and energy management systems. The City will establish financing mechanisms for energy efficiency projects. End of life fossil-fuel equipment to be replaced with electric equipment (e.g., air source heat pumps, heat pump water heaters).

Greenhouse Gas Impact



Direct Emissions Reductions

Low-Medium Impact

This strategy is expected to directly reduce GHG emissions by reducing overall municipal electricity and fuel consumption through energy efficiency upgrades. Overall impact is limited to municipal emissions.

Key Progress to Date

COMMITMENT

CAP 2020 identified a goal to reduce overall energy consumption and GHG emissions in the City and in municipal government operations by at least 20% by 2020. Since then the City has been advancing projects to address energy use in City operations.

PLANNING

To best understand the existing conditions and to set a plan for action, the City initiated a NYSERDA FlexTech Energy Efficiency Study of 24 City Buildings in 2007, engaging Wendel to complete the study. A subsequent energy performance contract (see below) completed numerous recommendations in that plan, and in 2010, a Baseline Implementation Report was completed by Malcolm Pirnie to evaluate the results and next steps. In 2018, the City of Kingston, with the NoVo Foundation, hired Cadmus and NREL to develop energy efficiency and PV measure analyses for several municipal buildings and assets.

In 2009, the City entered an energy performance contract for lighting, air handling, energy management, HVAC, pumps, sludge, etc., and made a $2,102,825 investment in energy efficiency upgrades to municipal systems.

In 2019, the City of Kingston took a big step to retrofit municipal buildings with energy efficient LED lighting. Done under the Central Hudson Small Business Direct Install Lighting Program in collaboration with Lime Energy Services Company, the City retrofitted lighting in 12 municipal buildings. These retrofits will result in an estimated annual savings of more than $46,500 and more than 387,800 kWh savings. This is equivalent to the electricity use of 50 homes in one year.

In 2020, the Housing and Urban Development Community Development Block Grant funded an upgrade of the Rondout Neighborhood Center HVAC system with the installation of building-wide air source heat pumps. This project reduced energy use, emissions, and long-term costs for the operations of the building, while also increasing user comfort.

Also in 2020, with support from NYSERDA, 145 storm windows were installed in Kingston City Hall. This retrofit provided insulation and energy savings comparable to those of double pane windows but at a fraction of the cost of full window replacement and without compromising the historical integrity of the building.

Prior to 2020, Kingston's streetlights consumed 1.9 million kWh of energy annually. But in 2020, the City retrofit all 2,200 existing streetlights to energy-efficient LED streetlights, generating annual energy savings of 1,160,353 kWh and an annual cost savings of over $100,000 per year.

Future Action

Potential future actions should include:

- Conducting an updated energy audit to plan for any remaining energy upgrades.
- Establishing a funding mechanism for upgrade projects; either through energy performance contract, bonding, grant funding, revolving fund, etc.
- Upgrading any remaining systems and electrify as much as possible.

Additional Information

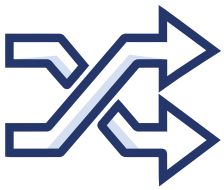
To find out more information, see the following links:

- NYSERDA Flexible Technical Assistance (Flex Tech) Program
- Central Hudson Small Business Direct Install Lighting Program
- HUD Community Development Block Grants
- NYSERDA Clean Energy Communities
- LED Streetlight Program, City of Kingston

6. Increase Utilization of Existing PACE Financing Program

Property Assessed Clean Energy (PACE) financing is an innovative mechanism for financing energy efficiency and renewable energy improvements on commercial buildings and non-profits (established in Kingston in 2015). The City will collaborate with community organizations to drive an increase in participation among businesses.

Greenhouse Gas Impact



Indirect Emissions Reductions

Low Impact

This strategy is expected to indirectly support GHG emissions reductions by enabling the development and implementation of energy efficiency and renewable energy improvements that will decrease energy use and increase the percentage of the electricity supply that comes from renewables.

Participation & Equity

Business and Non-Profit Organizations

The City will work to ensure all businesses and non-profits, regardless of size or demographic, have access to this program and its benefits.

Key Progress to Date

COMMITMENT

In 2015, the City of Kingston adopted a local law to establish a sustainable energy loan program in the City of Kingston. Working with the Energy Improvement Corporation (EIC), the PACE Loan program was established and then further advanced with the adoption of C-PACE in 2019.[41] EIC Open C-PACE (Property Assessed Clean Energy) is operated by the Energy Improvement Corporation (EIC) and provides a low cost, long-term alternative to traditional loans to fund clean energy projects in commercially owned buildings. EIC bills the property owner and directs the property owner to remit the funds to the capital provider, removing any collection obligation from the municipality. As the program administrator, EIC reviews and approves each financing, ensuring it conforms with the enabling legislation and NYSERDA C-PACE guidelines. To date, this program has been leveraged to support the installation of a 6.84kW rooftop solar PV system on a commercial building in 2016.

Future Action

Potential future actions should include:

- Develop promotional campaign for PACE Financing Program.
- Collaborate with community organizations to really drive participation.

Additional Information

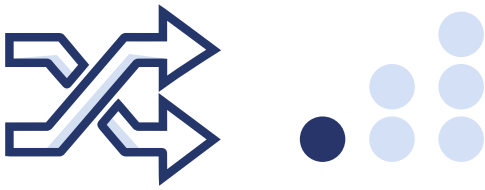
To find out more information, see the following links:

- C-PACE Application
- C-PACE Opportunities
- Local Law #3 - 2015
- Local Law #2 – 2019 Enabling Open C-PACE
- City of Kingston Energy Benchmarking Report

7. Adopt Benchmarking Requirement for Commercial and Multifamily Buildings

Require the annual reporting of energy used in specific types of buildings (e.g., commercial and multifamily buildings over 25,000 square feet). The City will set up a system for measuring and sharing data on building energy use over time, which allows owners and occupants to compare energy usage against other buildings and to better identify opportunities to cut energy waste.

Greenhouse Gas Impact



Indirect Emissions Reductions

Low Impact

This strategy will indirectly contribute to GHG emissions reductions by increasing transparency and improving knowledge of energy usage among traditionally high-energy consuming buildings. While this strategy is expected to have a limited direct impact on emissions in the near term, it will enable owners and occupants to better identify targeted emissions reduction strategies in the future.

Participation & Equity

Commercial and Multifamily buildings over 25,000 square feet

The City will provide technical assistance to participants to reduce the burden as much as possible.

Key Progress to Date

COMMITMENT

In 2017, the City of Kingston adopted Energy Benchmarking requirements for commercial buildings owned or occupied by the City and that are 1,000 square feet or larger in size.[42] This demonstrates the City's commitment to reducing energy use and its associated costs from buildings that are the largest energy consumer in the City. Additionally, the legislation included a Resolution of the Common Council to establish that data must be reported annually to the Common Council, making commitment and progress tracking publicly accessible.[43]

Future Action

Potential future actions should include:

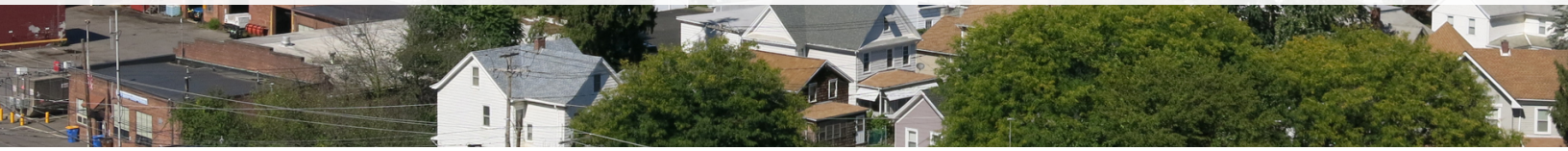
- Determine scope of benchmarking requirements and draft legislation.
- Adopt commercial benchmarking legislation.
- Establish benchmarking protocol, criteria, software, and reporting mechanisms.
- Create communications strategy to connect and educate commercial businesses on the new legislation and existing tools.
- Provide direct assistance to small businesses to reduce the burden of this initiative.
- Establish and provide additional details on the process for voluntary participation.
- Consider expanding benchmarking requirements to include water usage.

Additional Information

To find out more information, see the NYSERDA Clean Energy Communities Benchmarking Toolkit.

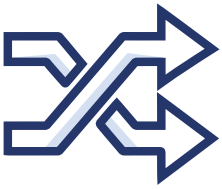
SPOTLIGHT STRATEGY

8. Provide Educational & Workforce Cleantech Opportunities



The City will work with local organizations to expand Empower Kingston Green Jobs Apprenticeship and the Green Careers at SUNY Ulster program and leverage NYSERDA workforce development programs for cleantech, on-the-job, and other training. Additional details on these programs can be found in the Potential Partners section below.

Greenhouse Gas Impact



Indirect Emissions Reductions

Low Impact

This strategy helps bolster the local cleantech workforce. While this action is expected to have a limited direct impact on GHG emissions, investing in the cleantech workforce will ensure Kingston has the labor and resources it needs to implement other, more direct actions.

Participation & Equity

Broad Participation

Workforce development opportunities are open to the Kingston community. As discussed in the Implementation Steps below, Kingston can target frontline communities and individuals employed in sectors heavily impacted by the transition to a decarbonized economy.

Strategy Benefits

Job Creation

Investing in local educational and workforce development opportunities is expected to result in strengthening Kingston's workforce to grow and keep long-term clean energy jobs held within the community.

Educational Opportunities

This strategy will support the development of educational opportunities for the broader community. Kingston could also consider leveraging these partnerships to develop educational opportunities more targeted to local youth.

Strategy Costs

Administrative Resources

The City is expected to direct some administrative resources related to coordination and marketing activities associated with this strategy.

Sample Projects and Pilots

New York, NY: Sustainable South Bronx[44]

Sustainable South Bronx addresses the economic and environmental challenges in the South Bronx and New York City through green jobs training, community greening programs, and social enterprise. In 2015, Sustainable South Bronx partnered with The HOPE Program, a leading workforce development organization, to strengthen its green jobs training program among other green initiatives. There are four main programs:

SSBx

This is a 12-week classroom-based and hands-on green jobs training program. Students engage with projects such as tree surveys, water quality testing, and shoreline restoration. Eighty-four percent of graduates have secured employment through this program.

NYC °CoolRoofs

Each year, Sustainable South Bronx hires 70 individuals for paid training and work experience in installing energy-saving reflective rooftops. In 2020, the program was responsible for coating over 1 million square feet of rooftop and $250,000 in earned income for participants.

Intervine

This is a social enterprise that trains and employs community members to create and maintain green infrastructure projects.

YouthBuild

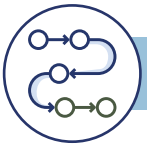
This is an international training model that serves young adults. It combines elements of HOPE's training with additional leadership opportunities, high school equivalency, and training stipends.

Chattanooga, TN: Build It Green Workforce Development Program[45]

Build It Green was launched in 2018 as a partnership between the City of Chattanooga and Green Spaces, a local nonprofit. The 12-week program enrolls young adults from low-income communities and prepares them for sustainable construction trade jobs using mentorship, soft-skill development, and technical training.

The City of Chattanooga Office of Workforce Development, City Council, and the Office of Public Safety partnered to help with program funding and recruitment; local contractors and builders provided mentorship and job placement; Build Me a World, which is a local nonprofit supporting community members who have experienced gang-related crime, offered soft-skills training; and The Association of General Contractors of East Tennessee offered certification courses.

Each class has seen a 75% graduation rate and 90% job placement rate.



Implementation Steps

1. **Establish a partnership with Empower Kingston and SUNY Ulster.** The City may consider developing a formal partnership with these groups to expand educational and cleantech opportunities in Kingston. Topics to discuss could include partner roles, funding, expansion opportunities, and community needs.

2. **Determine target groups and conduct targeted engagement** to the community through community groups, community leaders, schools, events, social media, and the Kingston website. Identify target groups such as frontline communities and individuals currently employed in jobs that will be impacted by the transition to a decarbonized economy. Work with community organizations to narrow the focus of outreach and engagement toward identified target groups.

3. **Identify opportunities to scale or modify programs.** In partnership with community organizations, review alignment of programs with needs and gaps identified during outreach to target groups (Step 2 above).

4. **Promote training opportunities** to the community through community groups, community leaders, schools, events, social media, and the Kingston website.

5. **Track success of outreach and participation** to inform continued growth of educational and workforce development opportunities. Metrics could include the number of community members reached, participation numbers, job placement numbers, number of partnerships with contractors and community groups created, and resulting earned income for participants. Tracking demographic-level participation where possible can help ensure that the program monitors participation from identified target groups. The City could also consider sharing best practices with additional local job programs, such as Ulster Board of Cooperative Educational Services (BOCES) to catalyze further green job development.

Additional Resources

SUNY Ulster: Green Careers[46]

SUNY Ulster Green Careers is a collaboration with Ulster County to deliver the skills and expertise to community members looking to begin careers in the clean technology industry. The program offers 13 courses in the clean technology and energy efficiency fields. Most courses offer a certificate or certification. NYSERDA offers grant programs in which students can apply to earn a scholarship to reduce the cost of each course.

Empower Kingston: Green Jobs Program[47]

CLP hosts this four-week internship program that provides interested community members with hands-on building training. Topics of the training include solar panel installation, home sealing, weatherization, electrical maintenance and installation, and energy auditing. Through the program, interns gain experience, relationships with local contractors, opportunities for continued job training through Ulster County, and opportunities for continued learning through SUNY Ulster.

NYSERDA: Clean Energy Training Resources[48]

NYSERDA has developed an extensive resource list for clean energy training, including:

Clean Energy Career Maps

Interactive maps created for educators, career advisors, jobseekers, employers, policymakers, and professionals that illustrate career opportunities related to energy efficiency and clean energy technologies.

Training Provider Resources

Training materials on Cold Climate Air Source Heat Pump Sizing and Design that can be used for training programs.

Directory of Free Online Clean Energy Training

A directory listed all of the available free online training that can be used to advance a clean energy career.

Potential Partners

NYSERDA

NYSERDA has dedicated more than $100 million in funding to support clean energy workforce development and training. Funding is dedicated to training building and operations staff to properly operate and maintain buildings; providing on-the-job training for new clean energy workers; supporting internships for students at a clean energy company; enhancing curricula to meet the demands of clean energy employers; and establishing a talent pipeline that reduces the cost of hiring new workers. Preference is given to job training programs that prioritize individuals from disadvantaged communities. The City could partner with NYSERDA to secure a grant to expand education and workforce development opportunities.

Central Hudson

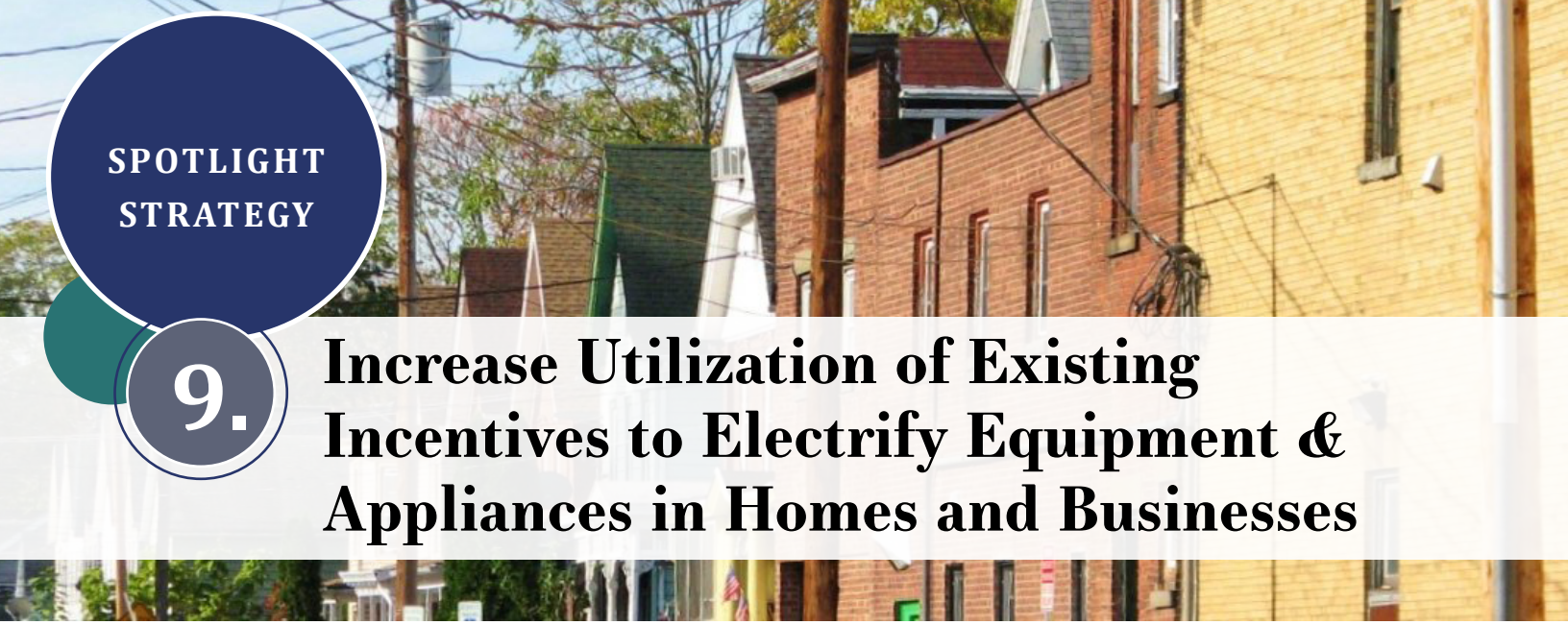
As a utility provider in Kingston, the City could partner to expand internship opportunities and job placement.

Empower Kingston

Empower Kingston has established the green jobs internship program in Kingston and therefore would make a strong partner to identify ways to expand the offerings and reach of the program.

SUNY Ulster

With technical offerings in the green energy field, the City could partner with SUNY Ulster to establish a pipeline of skilled professionals.

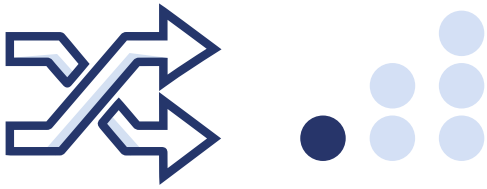


SPOTLIGHT STRATEGY

9. Increase Utilization of Existing Incentives to Electrify Equipment & Appliances in Homes and Businesses

Leverage incentives through Central Hudson and/or group purchase discounts from future HeatSmart campaigns to encourage replacement of fossil-fuel powered equipment with electric equipment (e.g., air source heat pumps) in homes and businesses. The City can collaborate with community organizations to drive increased participation among residents and businesses.

Greenhouse Gas Impact



Indirect Emissions Reductions

Low Impact

This strategy increases awareness and utilization of incentives that aim to transition fossil-fuel powered equipment to electric equipment. Since electric equipment can be supplied with clean energy, this strategy lowers reliance on fossil fuels for the heating of homes and businesses, thereby indirectly reducing GHG emissions.

Participation & Equity

Broad Participation

Incentive programs for electrification are available to cover most electrification applications with eligible equipment, regardless of building sector, including small and multifamily residential, commercial, and industrial sites. Additional programs through NYSERDA are available to provide increased incentives and support for LMI customers, though access to these programs can be limited by availability of participating contractors and program restrictions. Eligibility for a locally administered “HeatSmart” program would be determined by the program implementers. HeatSmart programs implemented in New York and Massachusetts (through the NYSERDA Clean Heating and Cooling Communities and HeatSmart Massachusetts programs) have primarily focused on small residential applications, though many campaigns have added other components to support engagement of LMI households and local businesses.

Strategy Benefits

Job Creation

By increasing demand for clean heating and cooling, this strategy is expected to help grow the need for a local workforce in the clean heating and cooling sector.

Health Benefits

This strategy encourages the displacement of fossil fuel powered heating and cooling that is associated with harmful air pollutants.

One system for heating and cooling

Heat pumps can both heat and cool spaces, offering high-efficiency cooling to Kingston homes that may currently lack central air conditioning.

Potential Cost Savings

Residents and businesses are expected to face some higher upfront costs in replacing existing systems with electric equipment. The incremental cost will vary depending on the incentive level and the existing systems in the home. However, natural gas prices vary for a number of reasons,[49] and they may vary further due to potential climate legislation. It is possible these shifts could make electric appliances more cost-effective over time.

Strategy Costs

Administrative Resources

The City is expected to see the cost of some direct administrative resources related to coordination and marketing activities associated with this strategy.

Project Costs

Community participants will bear the upfront cost of electrified equipment installation.

Electricity Costs

Community participants may experience an increase in utility electricity costs resulting from increased electricity consumption from new appliances.

Sample Projects and Pilots

Tompkins County, NY: HeatSmart Tompkins[50]

Volunteers in Tompkins County, New York, created and lead the HeatSmart Tompkins campaign to serve as a resource and advocate for people wanting to improve their homes with heat pumps and other energy efficient measures. Primarily funded through grants and donations, this campaign offers tools and resources to people looking to improve their homes, including a list of vetted contractors with transparent pricing options. Partners include Tompkins County, Cornell Cooperative Extension of Tompkins County, and SUNY Cortland Physics Department.

Since the first round of HeatSmart Tompkins launched in 2015, thousands of county residents have engaged with the program, with a few hundred residents installing heat pumps and energy efficiency measures using their list of vetted installers. Modeled after this program, NYSERDA created a state-wide program (Clean Heating and Cooling Communities) with over 20 state-funded efforts across New York State.

Arlington, MA: HeatSmart Mass[51]

HeatSmart Mass is an outreach and education program that encourages clean heating and cooling technology installations, such as air-source and ground-source heat pumps, automated wood heating, and solar hot water, through a group purchasing model. Each community vets and selects installers, in addition to developing a marketing campaign to spread the message.

To create program awareness among community members, Arlington conducted face-to-face outreach at town events and committee monthly meetings, held meetings with volunteer groups, submited articles to online media and newspapers, and ran an ad on local television. The town created a website, Facebook page, and hosted page on Arlington's website that included HeatSmart resources and installer information. In addition, an annual town survey included questions about current home heating and cooling systems and awareness of clean technologies. Survey data is included in the town's Annual Report.

To date, Arlington has secured 183 contracts to install clean heating and cooling technologies.

Implementation Steps

1. Identify local resources, establish key partnerships, and begin campaign planning process. Leveraging existing incentive and other programs, city resources, volunteer support, and strategic partnerships is critical to a successful program. As first steps for the campaign planning process, the City should identify volunteers and local community partner organizations that can support and broaden outreach activities, augment the capacity of city staff, and support the vetting and selection of contractors. The City should also consider connecting with representatives of the HeatSmart Ulster Sullivan campaign to learn more about best practices and lessons learned.

2. Engage local contractors and develop a request for proposals to solicit qualified contractors. Encouraging qualified contractors with strong heat pump installation experience within the City to participate in the campaign is necessary to ensuring residents and businesses are well-served through participating in the campaign. However, historically, some campaigns have had difficulties with encouraging contractors to apply to participate in campaigns due to concerns with increased administrative requirements and lacking capacity to take on additional work. The City should consider engaging local contractors prior to releasing a solicitation to ensure they understand the benefits of participating in the program. In developing a solicitation for contractors, it is important to consider that lengthy RFPs and extensive paperwork and administrative requirements may deter contractors from applying to participate in the program.

3. Develop a campaign describing how to electrify homes and businesses, what the benefits of switching from fossil-fuel equipment are, existing incentives, and qualified local contractors. Potential approaches include developing a variety of marketing messages that resonate with the diverse interests of its residents and businesses, campaign timeline, and schedule of events (including kickoff events, open house events, presentations, and partnerships with other community events, such as a clean technology expo with local regional business associations). In addition, the City should consider establishing key roles and responsibilities for campaign staff and volunteers for engaging customers and selected contractors. Prior experience suggests that campaigns of at least six months can be more successful due to the lengthy customer decision-making process.

4. Announce and promote the campaign. Potential approaches should include launching on the Kingston website and/or social media, reaching out to local businesses directly, hosting events, or hosting a booth at one or more community events. The City should also consider partnering with local community champions or other trusted community organizations to help spread the message and recruit volunteers and promoting Kingston's own efforts to electrify buildings and address climate change.

5. Evaluate the success of the program and identify lessons learned for future efforts. The City should consider surveying customers for experience and areas that need improvement, interviewing campaign staff and contractors, and tracking completed installations.

6. For periods where there is not an active HeatSmart campaign, Kingston should consider leveraging existing or developing additional educational content to distribute to community members that summarizes information on existing Central Hudson incentives to further encourage uptake of electric equipment.

7. Throughout these efforts, Kingston should continue to monitor activity at the state level related to all all-electric buildings and consider the feasibility of adopting an all-electric mandate for certain types of buildings in the future.

Additional Resources

Massachusetts HeatSmart ToolKit[52]

This is an extensive toolkit that enables communities to launch their own HeatSmart campaigns. The resource consists of webinars for campaign planning, implementation, wrap-up, and other helpful materials that could be leveraged and/or modelled from to inform a campaign in Kingston.

NYS Clean Heat[53]

This program offers incentives to promote the use of electric heat pump systems. This resource provides information and benefits of heat pumps, provides a tool to compare options, and overviews available rebates and incentives.

Central Hudson Rebates and Incentives[54]

Central Hudson offers a variety of rebates and incentive programs to support residents and businesses in installing electric appliances.

Potential Partners

NYSERDA

NYSERDA's Clean Heating and Cooling Communities program supports communities interested in implementing community-based outreach and education around clean heating and cooling technologies. Through the program, NYSERDA works with community-based organizations and local governments to increase awareness of technologies, reduce costs, increase adoption of technologies, grow the workforce, and increase participation among LMI households.

Citizens for Local Power

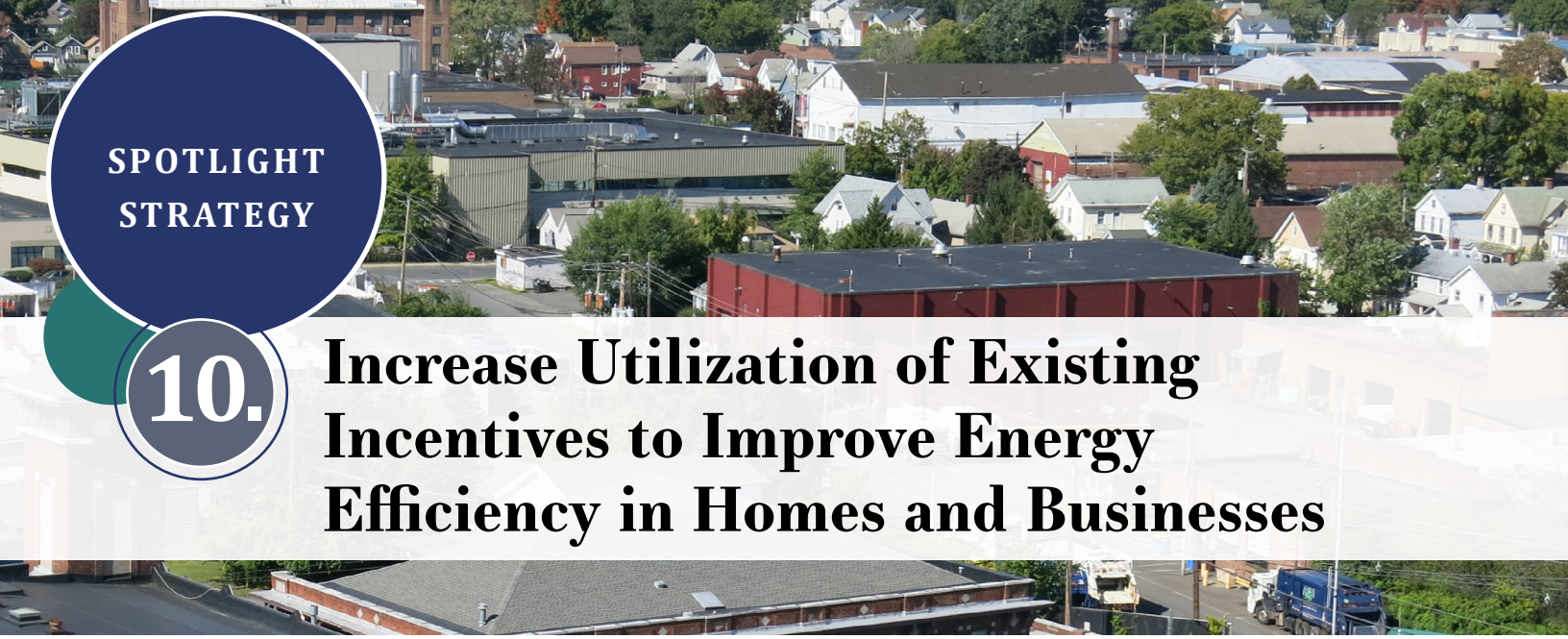
CLP is a community-based organization that helps communities in the Mid-Hudson Region transition to a locally based, clean energy economy.

Central Hudson

The City should consider a partnership with the local utility to leverage co-branded and/or coordinated marketing approaches as well as discuss incentive approaches.

HeatSmart Ulster Sullivan

The City should consider connecting with representatives from the former HeatSmart Ulster Sullivan campaign to identify lessons learned and best practices from their experience to inform a future Kingston campaign. The HeatSmart Ulster Sullivan campaign was a collaboration between Catskill Mountainkeeper and Sustainable Hudson Valley.

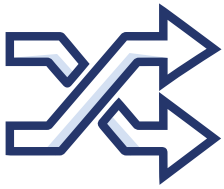


SPOTLIGHT STRATEGY

10. Increase Utilization of Existing Incentives to Improve Energy Efficiency in Homes and Businesses

Leverage incentives through NYSERDA and Central Hudson to increase energy efficiency in homes and businesses. Different comprehensive incentive programs (HVAC, water heating, insulation) are available depending on income level, measures pursued, and building type. The City will collaborate with community organizations to drive increased participation among residents and businesses.

Greenhouse Gas Impact



Indirect Emissions Reductions

Low Impact

This strategy indirectly supports GHG emissions reductions by increasing awareness and use of incentives that reduce energy consumptions in homes and businesses.

Participation & Equity

Broad Participation

Most Kingston residents and businesses are eligible to participate in this strategy, given the existence of comprehensive incentive programs that are available for different income levels, measures pursued, and building types. Renters likely will not be able to participate directly, but can benefit if their building owner chooses to participate.

Strategy Benefits

Job Creation
Increased uptake of energy efficiency measures is expected to increase demand for the local cleantech workforce.

Health Benefits
This strategy is expected to reduce pollutants (e.g., sulfur dioxide and nitrogen dioxide) associated with harmful health impacts.

Reduce Ongoing Costs
Program participants are expected to see cost savings associated with energy efficiency measures.

Improved Comfort
Energy-efficient homes and businesses can feel more comfortable during hot and cold weather.

Strategy Costs

Administrative Resources

The City is expected to devote some direct administrative resources related to coordination and marketing activities associated with this strategy.

Sample Projects and Pilots

Somerville, MA: Somerville Energy Efficiency Now (SEEN)[55]

Somerville's Office of Strategic Planning and Community Development Housing Division runs SEEN to connect residents to incentives and programs from MassSave. MassSave is a collaboration between Massachusett's electric and natural gas utilities and an energy efficiency service provider to help residents and businesses become more energy-efficient. The goal of Somerville's program is to create cleaner and safer housing environments by implementing energy efficiency upgrades. Participants can receive a free home energy assessment from MassSave, which will identify opportunities for upgrades. Following the assessment, participants can find eligible incentives and programs for upgrades.

Ulster County, NY: Green Business Champions[56]

As part of Ulster County's Green New Deal Plan, the County will be launching a program that aims to connect businesses with service providers and financial assistance to increase energy efficiency and access renewable energy. The program will also recognize businesses who make an effort to green their operations.

Implementation Steps

1. Identify existing incentives and potential barriers to participation. Potential approaches could include partnering with NYSERDA and Central Hudson to understand incentives and how they have been utilized by homes and businesses. The City could ask if data on its own residents and businesses can be shared. The City could then assess if there are gaps of in use of incentives among certain groups, such as frontline communities. If determined useful, the City may also consider surveying homes and businesses to assess understanding of and barriers to accessing existing incentives.

2. Develop or compile educational content describing energy efficiency in homes and businesses, its benefits, existing incentives, and local contractors to increase awareness. The City should consider leveraging existing educational content, such as those highlighted in the Additional Resources section below, as a starting point for this content.

3. Distribute educational content to the community. Potential approaches could include creating a campaign (potentially in conjunction with an electrification campaign to streamline efforts and messaging), housing materials on the Kingston website, reaching out to local businesses directly, hosting events, or hosting a booth at a community event. The City should also consider partnering with local community champions or other trusted community organizations to help spread the message, particularly to frontline communities.

4. Evaluate the success of delivering the educational content to the community and identify lessons learned for future efforts. Building on the partnership established in step 1, the City should track energy efficiency upgrades pursued and associated incentives utilized. If that is not possible, the City may consider surveying community members for experience and areas that need improvement as well as tracking completed installations.

Additional Resources

Central Hudson: Practical Energy Saving Tips[57]

This resource overviews a number of strategies for making a home more energy-efficient, including lighting, heating, cooling, and appliance upgrades.

NYSERDA: Home Energy Efficiency Programs[58]

NYSERDA's Home Energy Efficiency Programs help New York State residents conduct a home energy assessment and provide assistance with completing energy efficiency improvements.

NYSERDA: Community Engagement Program[59]

Through the Community Engagement Program, a Community Energy Advisor helps residents and businesses reduce their energy consumption and costs. Advisors guide residents and businesses through project implementation, including overviewing financing options and energy contractors.

Potential Partners

NYSERDA

NYSERDA's Clean Energy Communities Program provides the resources and funding for local governments to create a healthy and sustainable environment for their communities by investing in clean energy solutions.

Ulster County, NY

Given the County's focus on forming business champions to increase their energy efficiency, the City could connect to the County to apply lessons learned when developing an outreach program to businesses in Kingston.

Central Hudson

Central Hudson provides a number of residential and business incentives for improving energy efficiency. In addition, they offer resources, such as local contractors, energy saving tips, energy calculators, and home energy audits.

Association for Energy Affordability, Inc.

This organization provides training, program design, and implementation services for Weatherization, utility, and NYSERDA-funded programs that specialize in energy efficiency in multifamily properties and affordable housing.

Sustainable Mobility and Land Use

The Sustainable Mobility and Land Use section includes strategies that will reduce emissions from transportation by reducing reliance on cars, encouraging more active forms of transportation like biking and walking, and replacing internal combustion vehicles with electric vehicles.

A full list of the climate action strategies within this sector can be found below.

Sustainable Mobility and Land Use Strategies

11 Transition the City Fleet to All-Electric Vehicles

12 Expand Public EV Charging Infrastructure

13 Expand Bus Routes and Schedules

14 Increase Walkability and Bikeability

15 Update Zoning Regulation to Support Smart Growth and Increase Housing Density

16 Implement Dockless Bike and/or Scooter Program

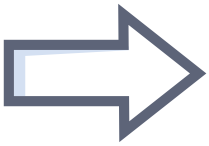
17 Adopt EV-Ready Building Codes and Electric Vehicle Supply Equipment (EVSE) Parking Requirements in Commercial and Multifamily Buildings

A filled in circle indictates that a strategy is a spotlight strategy and includes additional details in the section below.

11. Transition the City Fleet to All-Electric Vehicles

As suitable electric vehicle substitutes become available and cost-effective, the City will replace all gasoline and diesel city fleet vehicles with equivalent electric vehicles (EVs).

Greenhouse Gas Impact



Direct Emissions Reductions

Low-Medium Impact

This strategy would decrease GHG emissions associated with conventional vehicles in the transportation sector. However, impact is limited to municipal emissions.

Key Progress to Date

COMMITMENT

The CAP 2020 set a goal to double the fuel efficiency of the City's government vehicle fleet, reduce fuel usage by 20%, and ensure 20% of the fleet comprises of alternative fuel vehicles by 2020.[60]

INVESTMENT and INFRASTRUCTURE

In 2017, with support from the New York State Department of Environmental Conservation (NYS DEC), the City hired an environmental asset manager to green the city's fleet. Objectives of this role are to:

- Develop and implement a fleet management program.
- Develop city policy requiring minimum fuel efficiency.
- Use smaller vehicles for appropriate tasks.
- Explore and implement anti-idling technologies.
- Consider the use of biodiesel in equipment as appropriate.
- Doubling the overall current fuel efficiency of City Fleet.
- Initiate and promote car-sharing.

The City Fleet Transition plan has added 13 new EVs between 2016 and 2021.

In 2021 the Sustainability Office and the Mayor established the Green Fleet Policy, an Executive Policy.[61] The purpose of this policy is to implement the City's intent to:

- Prioritize purchases of hybrid, hybrid-electric, battery powered, and other low-carbon vehicles when commercially available and practicable.
- Eliminate unnecessary idling of vehicles to reduce the community's exposure to tailpipe exhaust from gasoline and diesel engines.
- Review individual vehicle purchases so the City replaces its aging fleet and ensure that the long-term environmental and monetary benefits of purchasing low-carbon vehicles are taken into account.

Future Action

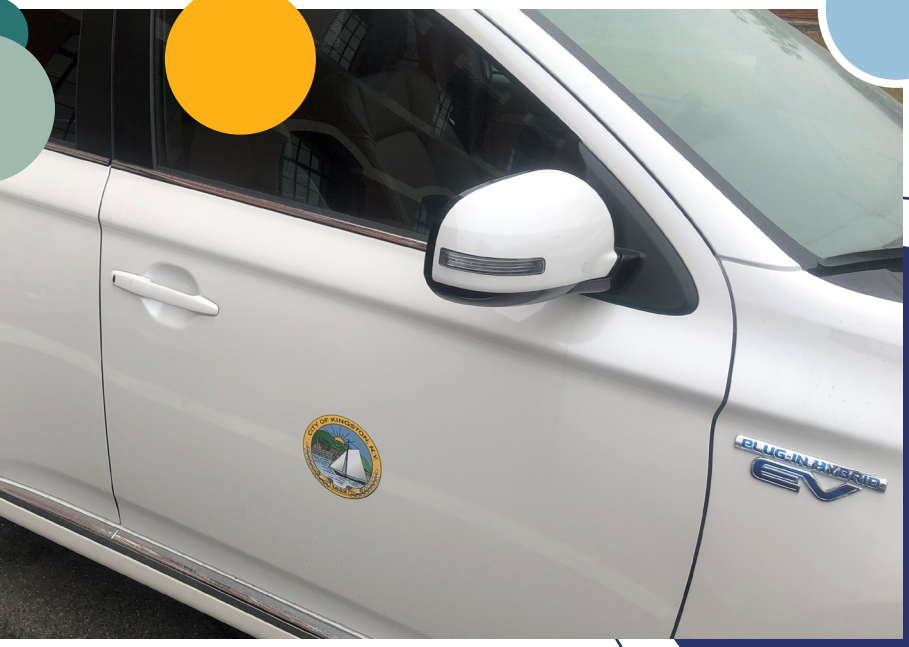
Potential future actions should include:

- Update the City Fleet Transition plan with a vehicle replacement schedule.
- Continue to engage with the Electrification Coalition and Climate Mayors.
- Establish funding mechanisms or annual capital plans for replacement.
- Keep abreast of new emerging technologies for heavy duty and specialty vehicles and equipment.

Additional Information

To find out more information, see the following links:

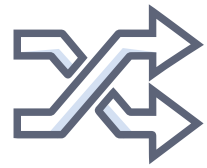
- NYS DEC Climate Smart Communities Grants
- NYSERDA's Clean Fleet Toolkit
- Kingston's Green Fleet Policy and Initiatives



12. Expand Public EV Charging Infrastructure

The City will expand on the number of existing city-owned EV chargers to provide charging access for both city fleet and resident/visitor vehicles. It will identify areas where EV chargers would be most useful to both the city fleet and public. The City will leverage Charge Ready NY Rebates and other state funding sources to help offset installation costs.

Greenhouse Gas Impact



Indirect Emissions Reductions

Medium Impact

This strategy indirectly supports GHG emissions reductions because it promotes EV adoption. While this strategy has limited direct emission reduction, it will support the direct reduction of emissions associated with transportation in the longer term by supporting EV adoption and the displacement of conventional vehicles.

Participation & Equity

Current and Future EV drivers

Incentives for driving EVs will be provided through offset installation and charging fees. As EVs become more mainstream, this strategy will apply to a larger segment of the population.

Key Progress to Date

COMMITMENT

The CAP 2020 set the goal to promote and further the use of alternative fuel vehicles and technology. The plan set a 2020 goal that electric vehicle infrastructure would be installed city-wide, including in municipal government facilities.

INVESTMENT and INFRASTRUCTURE

In the summer of 2018, the NYS DEC zero-emission Vehicle (ZEV) Infrastructure Grants supported the City's installation of three new public electric vehicle charging stations in the following municipal lots: Cornell Street, Dock Street, and Lower Broadway. In 2019, a new EV Charging Station was installed in a city municipal lot: the Building Safety Department's lot off Garraghan Drive. Additionally, a new EV charging station will be installed as part of the Downtown Revitalization Initiative (DRI) investment upgrades at Dietz Stadium in 2022 and in the Prince Street lot in 2023. In 2021, the City is seeking funding for EV charging stations for three more locations in North Front Street Lots, Block Park, and Building Safety.

Future Action

Potential future actions should include:

- Create an EV Infrastructure Plan for the City to include locations for EV supply equipment (EVSE) in collaboration with Ulster County.
- Seek additional funding to support EV charging station (EVCS) installation.
- Install additional EVCS annually to reach plan's goal

Additional Information

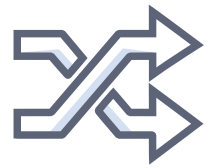
To find out more information, see the following links:

- As of September 2, 2021, the Kingston EV Charging Stations have avoided 28,108 kg of GHG emissions, cumulatively. This is equivalent to the GHG impact of planting 669 trees and their continued growth for 10 years.
- NYS Department of Environmental Conservation Grant Funding for Municipalities.
- For EVCS locations in Kingston, see PlugShare or ChargePoint.

13. Expand Bus Routes and Schedules

Collaborate with Ulster County Area Transit (UCAT) to expand bus routes and schedules along key corridors in Kingston.

Greenhouse Gas Impact



Indirect Emissions Reductions

Low - Medium Impact

This strategy would indirectly decrease GHG emissions by diverting transportation from more carbon intensive modes, such as individual passenger vehicles. The strategy's impact is dependent on the extent of ridership increase resulting from route expansion.

Participation & Equity

Community Wide Participation

This strategy will serve all segments of the population. Increased access to the bus system can benefit the entire community by providing equal opportunity for all.

Key Progress to Date

INVESTMENT and INFRASTRUCTURE

In 2019, the City of Kingston and Ulster County merged the Citibus transit system with the Ulster County Area Transit (UCAT) system.[62] This consolidation sought to reduce redundancies, minimize GHG emissions and fuel consumption, and minimize costs to both transportation entities and the public. Bus routes have been reconfigured to address transit demand and reduce travel time. Additionally, Demand-Response Transit Service was established to create better connections and travel experiences.

In 2019 and 2020, Ulster County sought feedback from the community to improve ridership and modifications to the bus routes were consequently made.

Future Action

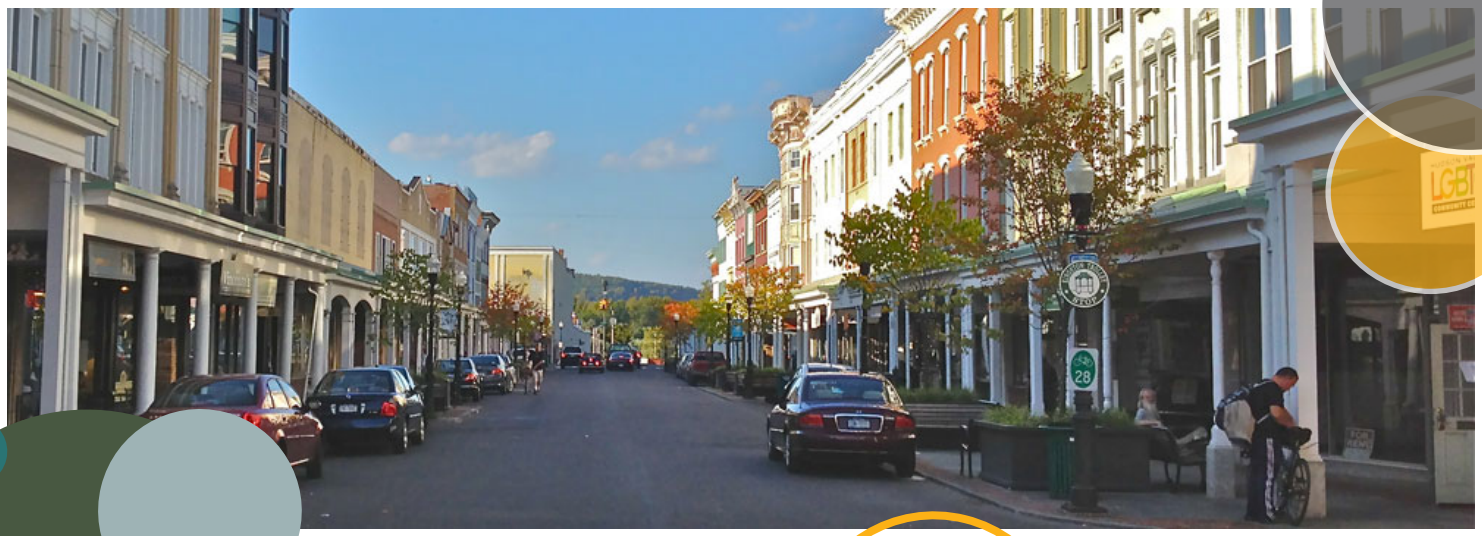
Potential future actions should include:

- Collaborate with UCAT to evaluate and expand bus routes.
- Collaborate with the Kingston City School District and work directly with students, particularly in Kingston High School, to increase collaboration with UCAT and increase ridership of youth, to add routes and schedules that serve students to school and or job site, and perhaps to include free transportation for students.
- In moving towards implementation, the City should collaborate with the County to evaluate innovative options such as ensuring demand response management, and integrating existing bus GPS systems to enable buses to communicate with traffic controllers and traffic management centers, to name a few.

Additional Information

To find out more information, see the following link:

- Ulster County Area Transit



14. Increase Walkability and Bikeability

Implement strategies that support biking, including the expansion of designated bike lanes, bike storage in buildings and on-street bike racks. The City will also make walking and cycling safer by redesigning streets (e.g., widen sidewalks, install round-abouts or speed tables) to reduce motor vehicle speeds.

Greenhouse Gas Impact

Indirect Emissions Reductions

Low - Medium Impact

This strategy indirectly supports GHG emissions reduction by increasing access to less carbon-intensive modes of transportation. The extent of indirect emissions reduction is dependent on the share of transportation that is diverted from reliance on single-occupancy vehicles.

Participation & Equity

Community-Wide Participation

This strategy will serve all segments of the population, by providing increased access city-wide to an expanded system of free, safe and accessible routes around the city.

Key Progress to Date

COMMITMENT

The Kingston 2025 Comprehensive Plan states, "Complementing the network of complete streets should be a network of off-street walking and cycling paths…". To accomplish this, the plan outlines the following initiatives:

- Density concentration in the City's urban cores.
- Utilize form-based codes.
- Identify strategic new policies that may promote Complete Street standards that support walking and biking.
- Identify strategies that employ traffic mediation by reducing speed and improving bike safety.
- Prioritizes the development of a long-range plan for a comprehensive transportation network.

CAP 2020 has similarly outlined the following initiatives:

- Improve the existing sidewalk network to promote safer transportation.
- Overhaul local sidewalks for repair by 2020.
- As a part of the Pedestrian Bicycle Master Plan, improve bike infrastructure to include designated bike lanes and bike racks in all public facilities by 2020.

- Expand a network of trails, bike paths, and Complete Streets in the City that connect rail trails from the Wallkill Valley, Rondout Valley, Catskill Mountains, and Kingston Point to a midtown hub along the Broadway Corridor.

The Open Space Plan prioritizes a city-wide trail system that would serve as a linear park and a transportation alternative.[63] This would expand walking and bicycling opportunities which have recreation and mobility benefits. The plan also sets a goal to have five miles of new trails of dedicated and shared-use paths by 2030.

PLANNING

The City of Kingston is creating a Pedestrian and Bicycle Master Plan (PBMP) that will inform the City's efforts to improve conditions for active transportation users, reduce vehicle congestion and emissions, and support a culture of health across the community.

INVESTMENT and INFRASTRUCTURE

The Kingston Greenline is a complementary initiative to the Kingston Land Trust of the City and Ulster County.[64,65] The Greenline is a network of urban trails, complete streets, improved sidewalks, bike lanes, and linear parks in the City of Kingston. This infrastructure connects to a county network of rail trails and is a hub for non-motorized transportation and tourism from four different directions in the county. It will be part of the Hudson River Valley Greenway and the recent Empire State Trail.[66,67] When complete, the Kingston Greenline will be approximately 20 miles long, with an off-road portion of 10.7 miles and an on-road portion of 9.3 miles. Notably, many of the Kingston Greenline projects improve existing road and sidewalk infrastructure, serving Kingston's business districts and neighborhoods.

The Pedestrian Safety Action Intersection Project used funding from the New York State Department of Transportation's Pedestrian Safety Action Plan Program to improve safety across seven key intersections across Kingston.[68] This work was completed in 2021.

Future Action

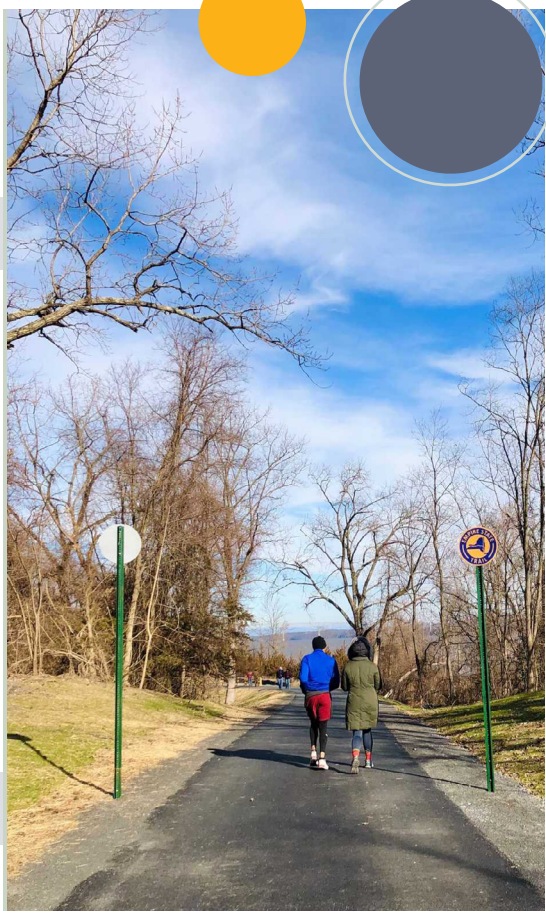
Potential future actions should include:

- Complete Pedestrian and Bicycle Master Plan.
- Secure funding for initiatives outlined in the plan.
- Implement strategies outlined in the plan.
- Include youth representatives on the Project Advisory Committee and involved in the implementation of the plan; ensure the Complete Streets Advisory Council has youth representation.
- Coordinate with adjacent municipalities to ensure a safe network of walking and biking routes to accommodate for commuters.

Additional Information

To find out more information, see the following links:

- Kingston 2025 Comprehensive Plan
- Open Space Plan for Kingston
- Complete Streets Advisory Council

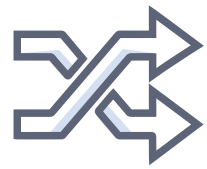


Courtesy of ScenicHudson.org
(photo by Riley Johndonnell)

15. Update Zoning Regulation to Support Smart Growth and Increase Housing Density

Smart growth is an urban planning and transportation concept that concentrates growth in compact, walkable urban centers. The City will update zoning regulations to support the Comprehensive Plan guiding principle to "concentrate density and retail commercial uses in three core areas" (Uptown, Midtown, Rondout). The City will also implement parking sensors/dynamic pricing in key areas as a tool to reduce traffic congestion.

Greenhouse Gas Impact



Indirect Emissions Reductions

Low- Medium Impact

This strategy indirectly supports GHG emissions reductions by increasing access to less carbon-intensive modes of transportation. The extent of indirect emissions reduction is dependent on the share of transportation that is diverted from reliance on single-occupancy vehicles.

Participation & Equity

Community-Wide Participation

This strategy will impact all sectors of the community as the zoning updates will be city-wide and will provide additional housing, walkability, better transportation and access to all.

Key Progress to Date

PLANNING

The Kingston 2025 Comprehensive Plan outlines strategies which support Smart Growth through land-use policies and increased housing density.

INVESTMENT and INFRASTRUCTURE

On April 6, 2021, the Common Council passed Resolution 67 of 2021,which authorized the City of Kingston to hire highly regarded expert consultants, Dover, Kohl and Partners, to update the City's problematic and long-outdated zoning code.[69] Using extensive public engagement over the following 12 to 18 months, the consultants will create a form-based zoning code for the Common Council to consider for adoption.

Future Action

Potential future actions should include:

- Ensure re-zoning process integrates Smart Growth principles.
- Implement strategies and regulations that result from the re-zoning.

Additional Information

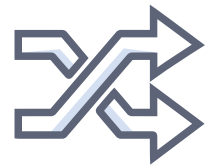
To find out more information, see the following links:

- 2025 Comprehensive Plan
- Engagekingston.com/Kingston-forward

16. Implement Dockless Bike and/or Scooter Program

Dockless bikes and scooters have become popular mobility options in many cities and can reduce reliance on single-occupancy vehicles trips and serve as "first mile/last mile" connections to public transportation. The City will develop legislation to enable dockless bikes and scooters and explore partnership opportunities with micromobility companies (e.g. Lime, Jump) to implement a program.

Greenhouse Gas Impact



Indirect Emissions Reductions

Low - Medium Impact

This strategy would support less carbon intensive modes of transportation and further decrease dependency on vehicle travel. The extent of indirect GHG emissions reductions is dependent on the share of travel that is diverted toward the bike and scooter program.

Participation & Equity

In designing the implementation of this strategy, the City will evaluate and implement methods of access that are the most accessible including dock locations, pricing structure and education.

Key Progress to Date

PLANNING

In the Spring of 2019, the City of Kingston partnered with the Columbia University School of International and Public Affairs (SIPA) with funding from NYSERDA to complete the Sustainable City Mobility Innovations, a capstone project. This report generated 14 recommendations, of which Bike Share was highly rated.

Future Action

Potential future actions should include:

- Evaluate feasibility of dockless bike and scooter system options.
- Conduct a pilot study to further evaluate the potential benefits and risks of dockless bike and scooter programs.
- Acquire political and legislative approval to implement micro-mobility systems city-wide.

Additional Information

To find out more information, see the following links:

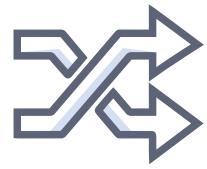
- Kingston's Smart Mobility Solutions.
- Sustainable City Mobility Innovations.

SPOTLIGHT STRATEGY

17. Adopt EV-Ready Building Codes and Electric Vehicle Supply Equipment (EVSE) Parking Requirements in Commercial and Multifamily Buildings

Update local codes to define the type of EVSE charging that will be provided (e.g., Level 1, Level 2) and establish a streamlined permitting process to install charging. Establish a mandate that requires newly constructed commercial and multifamily buildings to install a minimum percentage of parking spots in lots with EVSE infrastructure.

Greenhouse Gas Impact



Indirect Emissions Reductions

Low- Medium Impact

This strategy indirectly supports GHG emissions reductions by enabling EV adoption. EVs can be powered by electricity from renewable sources. Thus, this strategy will support decreasing emissions over time as conventional vehicles are displaced with EVs and the power grid becomes increasingly clean.

Participation & Equity

Building Owners

While the community is expected to benefit from overall expanded public EVSE infrastructure, building owners will be responsible for implementing any new requirements.

Equitable EV Access

Current EV owners will benefit most immediately, but installing EV charging in commercial and multifamily spaces enables EV adoption among community members, particularly renters, who may not typically have home-charging access.

Strategy Benefits

Job Creation
This strategy could be implemented by utilizing the local workforce for retrofits.

Health Benefits
Transition to EVs is expected to reduce the emissions of harmful pollutants associated with tailpipe emissions from gas-powered vehicles.

Reduced EV Ownership Costs
EV adopters see lower vehicle maintenance and ownership costs compared to conventional vehicles.

Reduced EVSE Installation Costs
The installation of EVSE infrastructure is typically less expensive when installed during the initial construction phase as opposed to a retrofit.[70]

Strategy Costs

Administrative Resources
The City is expected to bear some direct administrative costs associated with time and/or resources spent implementing these code changes.

Project Costs
Building owners are expected to bear the upfront cost of installing EVSE infrastructure.

EV Costs
EV adopters bear the higher upfront cost of an EV. However, there are more indications that EVs will reach price parity with traditional vehicles in the coming years.

Sample Projects and Pilots

City of Denver, CO: EV Amendment [71]

As part of Denver's Climate Action Plan to reduce its GHG emissions, the City adopted an amendment to encourage the use of electric vehicles in 2019. The amendment included specific definitions and goals as follows:

- Multifamily buildings – 5% of spaces are EVSE Installed, 15% are EV-Ready, and 80% and EV-Capable
- Commercial buildings – 5% of spaces are EVSE Installed, 10% are EV-Ready, and 10% are EV-Capable

West Hollywood, CA: EV Charge Up West Hollywood[72]

In 2018, to keep up with the increasing demand of electric vehicles and encourage new buyers, the West Hollywood City Council adopted local amendments that required a percentage of EV Ready parking spaces in new residential and non-residential projects. In addition, the City adopted an ordinance to streamline the approval process for qualifying EV charging stations for existing buildings. The City also offers free technical assistance and resources to owners and landlords of multifamily buildings interested in installing EV charging stations.

As of July 2020, the City's Facilities and Field Services and Engineering divisions have installed and maintained eleven 24-Volt Level 2 public EV charging stations throughout the City. Charging usage monitoring has shown that the City has cumulatively saved 131,387 kg/kWh of GHG emissions across its 32,500 individual charging sessions and an average 66% increase in new EV drivers who are charging in West Hollywood.

Implementation Steps

1. **Form a working group with key stakeholders** to help inform and develop the new codes and streamlining process. Stakeholders should include local government officials, the planning board, the local utility, the local EV industry, and property developers.

2. **Review current building, electrical, and parking codes** in Kingston and other municipalities that have implemented EVSE codes. The City should consider reviewing whether EV charging is appropriately defined, whether charging infrastructure and related infrastructure are clearly a permitted use, and whether the current design guidelines for EVSE support curbside management, safety, Americans with Disabilities Act, and historic preservation. At this time, the City should also **review the current permitting process for EVSE** and other examples of municipalities that have streamlined processes.

3. **Draft and finalize EVSE code with detailed definitions and benchmarks.** Benchmarks should include the percentage of required parking be built and wired as EVSE-ready by newly constructed commercial and multifamily buildings. The City should also consider setting a target number of charging stations on public property.

4. **Remove barriers for EVSE implementation** by updating the permitting process to be streamlined and fast. Strategies should include reducing permitting and inspection fees, minimizing processing and inspection times, creating an online application process, and developing programs to support a skilled electrician workforce.

5. **Promote new code and streamlined process** on the City's website and through partnerships with businesses, employers, multifamily building developers and owners, and homeowners' associations. **Increase awareness of the incentives and discounts** made available by NYSERDA for the installation of ESVE. Consider opportunities to expand requirements to existing buildings in the future.

Additional Resources

U.S. Department of Energy: Alternative Fuels Data Center[73]
Provides guidance for plug-in EV deployment policy tools. Resources are listed for an overview of existing EVSE-related codes, highlighting the federal standards that must be met.

Southwest Energy Efficiency Project: EV Infrastructure Building Codes: Adoption Toolkits[74]
This Toolkit outlines recommended code structures based on building size for both residential and commercial properties. It provides additional resources on defining EVSE, crafting the language for the new building codes, and other informational items.

Energetics: Residential EVSE Permit Process Best Practices[75]
Through the Community Engagement Program, a Community Energy Advisor helps residents and businesses reduce their energy consumption and costs. Advisors guide residents and businesses through project implementation, including overviewing financing options and energy contractors.

Great Plains Institute: Summary of Best Practices in Electric Vehicle Ordinances[76]
Through the Community Engagement Program, a Community Energy Advisor helps residents and businesses reduce their energy consumption and costs. Advisors guide residents and businesses through project implementation, including overviewing financing options and energy contractors.

Potential Partners

Central Hudson Utility
Additional site assessment will be required to determine the electrical service capability and potential upgrade requirements to support EVSE installation. Utility considerations can potentially complicate non-residential installations in their total load management and rate structures for the EVSE.

City Council
Amending building codes for EVSE infrastructure will also entail edits to future plumbing codes and other mechanical codes associated with new and existing building infrastructure.

NYSERDA
NYSERDA has a number of best practice guides and programs that offer incentives for installing ESVE.

Key Definitions

LEVEL 2 CHARGING:

EVSE capable of charging at 30 amps or higher at 108 or 240 VAC. Average time to charge a fully depleted EV to fully charged averages two to 10+ hours, depending on the vehicle.

ELECTRIC VEHICLE READY SPACE:

A parking space that is provided with one dedicated branch circuit for Level 2 EVSE that is terminated at a receptacle, junction box, or EVSE within the parking space.

ELECTRIC VEHICLE CAPABLE SPACE:

A designated parking space that is provided with the conduit size for a Level 2 dedicated branch circuit to the parking space with sufficient physical space in the same building electrical panelboard to accommodate electric power needed for EVSE.

EVSE INSTALLED SPACE:

A parking space with Level 2 EVSE equipment.

Managing Resources Sustainably

The Managing Resources Sustainably section includes strategies that will reduce emissions associated with food production, consumption and waste disposal. In addition, this section includes a strategy that will utilize land to effectively sequester carbon.

A full list of the climate action strategies within this sector can be found below.

Managing Resources Sustainably Strategies

18 Establish Organic Waste Collection

19 Sequester Carbon Through Preservation and Expansion of Urban Forest

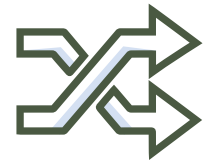
20 Increase Local Participation in Community Gardens

A filled in circle indictates that a strategy is a spotlight strategy and includes additional details in the section below.

18. Establish Organic Waste Collection

Enact the final recommendations of the City of Kingston Organics Diversion Plan

Greenhouse Gas Impact



Indirect Emissions Reductions

Medium Impact

This strategy indirectly supports GHG emissions reductions by increasing access to less carbon-intensive modes of transportation. The extent of indirect emissions reduction is dependent on the share of transportation that is diverted from reliance on single occupancy vehicles.

Participation & Equity

Community-Wide Participation

This strategy would apply to all residents, homeowners and renters, and businesses city-wide. A robust educational campaign would inform the community of implementation plans and access would be universal.

Key Progress to Date

PLANNING

The City of Kingston conducted the Kingston Organics Diversion Plan, a three-year feasibility study funded by the NYS DEC evaluating the diversion of food waste produced at municipal buildings, residencies, and small businesses.[77] This study was done in partnership with the Kingston Conservation Advisory Council, the Climate Smart Kingston Commission, and the Hudson Valley Regional Council. The results from this study were utilized to propose a methodology for rolling out food waste diversion. The study entailed:

- Conduct a local government waste audit.
- Develop a waste management strategy for government hosted and permitted events.
- Plan for an organic waste program for government buildings.
- Develop a residential and commercial organic waste program implementation plan.
- Develop a distribution plan for compost bins for residents.

Future Action

Potential future actions should include:

- Garner political and legislative support for an organics diversion system.
- Determine a financing strategy for plan implementation.
- When implementing a future organics diversion plan, engage youth to help educate families on how to divert food waste.
- Establish systems that can advance organics collection.
- Share the finalized Organics Diversion Plan with neighboring municipalities in the Hudson Valley.

Additional Information

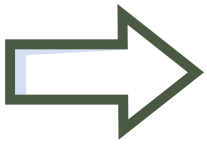
To find out more information, see the following links:

- New York State Pollution Prevention Institute: Food Waste Diversion Funding
- NYS DEC Grant Funding for Municipalities: Climate Smart Communities Grant program

19. Sequester Carbon Through Preservation and Expansion of Urban Forest

Enact the final recommendations of the Open Space Plan: The City will enhance the management of a street tree program, develop more parks in urban residential neighborhoods, and continue to update the Tree Inventory.

Greenhouse Gas Impact



Direct Emissions Reductions

Low- Medium Impact

This strategy would promote carbon sequestration through urban forestry.

Participation & Equity

Community-Wide Participation

This strategy would benefit the entire population, in all sections of the City, with increased air quality, energy reduction, beautification, improved health and so much more.

Key Progress to Date

COMMITMENT

The Kingston Tree Commission is a group of citizens appointed by the Mayor and administered through the Kingston Planning Department to monitor the health of the street trees of the City. The commission advises home and business owners on street-side tree care on their property and can authorize the removal and re-planting to help Kingston maintain its status as a "Tree City." The City of Kingston has been designated a "Tree City USA" for 25 years.[78]

The Kingston Open Space Plan set an ambitious goal of 1,000 new street trees planted by 2030. This will be a collaborative effort between the Tree Commission, the Kingston Conservation Advisory Council, the City, and the community.

PLANNING

In 2018, the City of Kingston conducted a Tree Inventory of the City's street and park trees through a contract with ArborPro, Inc. and with a grant through the DEC Urban and Community Forestry program. This inventory has been used by the Tree Commission when reviewing tree removal and pruning permits and to identify locations for future tree plantings.[79]

In October 2021, the City was awarded grant funding through the NYS DEC to fund a Community Preservation Plan which, should the Plan be used to create a Community Preservation Fund, would allocate funding from a real estate transfer fee for Open Space Preservation.

The City of Kingston and the Kingston Tree Commission created the Tree Planting Program for residents and business owners with funding from the DEC Urban and Community Forestry Program. The species and final locations are chosen by the Tree Commission based on biodiversity priorities, targeting neighborhoods with low canopy cover, and planting sites that are most suitable for tree growth.

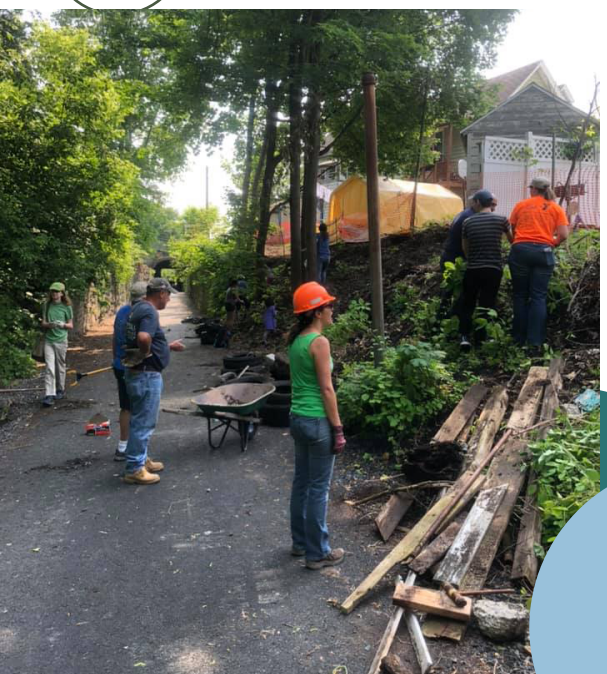
Future Fruits is a Hudson Valley initiative to activate public space, grow food for the general public, and reconnect people with place and purpose. Future Fruits is an LLC installing permaculture landscape designs in the Hudson Valley NY area.

Future Action

Potential future actions should include:

- Establish funding mechanisms to complete the 1,000 street tree planting goal established in the Open Space Plan.
- Establish a Community Preservation Fund as a funding mechanism for Open Space Protection.
- Implement the final recommendations in the Open Space Plan in collaboration with community groups.
- Implementation of Open Space Plan goals and tree plantings should readily engage youth groups, to facilitate actions such as local fundraising, planting programs, outdoor education, and input into expansion of parkland and open space.

Additional Information



To find out more information, see the following links:

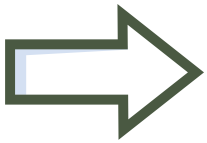
- Kingston Open Space Plan
- NYS DEC Urban and Community Forestry Grants

SPOTLIGHT STRATEGY

20. Increase Local Participation in Community Gardens

Increase the installation of and participation in community gardens on public and private lands.

Greenhouse Gas Impact



Direct Emissions Reductions

Low Impact

This strategy would reduce emissions by reducing the number of miles between the sites of food production and the consumer. Additional reductions of emissions may come from decreasing refrigeration as well as energy usage associated with higher levels of packaging endemic to broad -scale food production and distribution. The strategy will also increase the concentration of local vegetation and soil health maintence, which promotes carbon sequestration.

Participation & Equity

Community-Wide Participation

Community gardens on public land will provide equitable access to the benefits associated with community gardens and bolster self-reliance. Gardens on private land may be somewhat restricted to owners or tenants of that land. However, the City can intentionally select private partners that would collectively enable equitable access to community gardens.

Strategy Benefits

Environmental Benefits
Urban agriculture can support stormwater management by improving soil infiltration capacity. Additionally, urban green space can provide a cooling effect in urban areas that tend to experience higher temperatures due to high density of pavement and other surfaces that retain heat.

Educational Opportunities
Participation in creating community gardens offers the opportunity to educate the community on sustainable food growing practices and provides connection to their local environment. Kingston could consider developing targeted opportunities for youth education and participation.

Supports Local Business
Community gardens and local food production offers the opportunity for community members to purchase healthy food locally.

Resilient Food System
Locally grown food decreases the miles the food travels before reaching the consumer and is less susceptible to shocks in the supply chain, which supports a self-reliant food system.

Health Benefits
Urban agriculture close to homes increases access to nutritious, locally grown food. These green spaces also help reduce air pollutants that have adverse health effects.

Job Creation
Community gardens can contribute to the development of a cohort of local farmers.

Strategy Costs

Project Costs
The City is expected to bear some costs associated with the organization of educational campaigns and setting up gardens. Costs may vary depending on the roles of community partners and the capacity of private and public land owners/managers to provide garden space at no or reduced charges.

Sample Projects and Pilots

City of Austin, TX: Sustainable Urban Agriculture and Community Garden Program[80]

Austin City Council developed the Sustainable Urban Agriculture and Community Garden Program to establish a single point of contact and streamline the process for establishing community gardens and sustainable agriculture on city land. As part of the program, some city land may be available for community members to cultivate and manage their own garden. The City provides resources for community groups who are interested in forming their own garden on city owned land.

These community gardens are producing an estimated 100,000 pounds of local, organic produce for residents every year.

City of New Platz, NY: New Paltz Gardens for Nutrition[81]

New Paltz Gardens for Nutrition is a volunteer-run, nonprofit organization that leads one of the oldest community gardens in New York. The garden area has over 150 individual plots that can be rented out by community members for their own garden. Gardening equipment, such as wheelbarrows and lawnmowers, is provided. In addition, the organization hosts educational events and community work and clean up days.

Implementation Steps

1. **Identify partners and form a workgroup to develop a plan for community gardens**. It will be important to understand the City and partners' capacity, what resources are needed, where the gardens will be located, that will maintain the gardens, and who will be responsible for outreach and education. Partners could include Parks and Recreation, the school district, existing nonprofits who run community gardens, and community leaders.

2. Once a plan is established, **host a community engagement event** to understand what community interests and needs are. This event can include engaging activities that develop a vision for the community gardens, a giveaway with gardening supplies, gardening education resources, and a farmers' market with locally grown food.

3. **Install community gardens and continue outreach**. This may include community leaders and relevant departments spreading awareness of the community gardens, creating social media pages, and listing information on their websites. Community garden organizations could host events centered at or near the gardens. Outreach efforts could also include the development and distribution of educational materials or a starter kit for participants to build their own garden at home.

4. If there is interest in the community, the City could consider **developing permitting materials** for community members to start their own gardens on public land.

Additional Resources

The Cornell Small Farms Program: Urban Guide to Farming in NY[82]
This resource guide informs urban farmers about advocacy, accessing and reclaiming land, producing food and farm products in city centers, marketing, finance, and other farm business information.

Alliance for Strong Families and Communities: Maximizing Urban Agriculture to Increase Community Health and Wellness Toolkits[83]
This toolkit supports organizations hoping to implement urban agriculture or community gardens by developing strategies that maximize the community benefit of the farm. This resource highlights organizational considerations, critical planning components, strategies for maximum impact, and evaluation and other resources.

Potential Partners

Kingston YMCA Farm Project

This is an urban, educational farm in Kingston, New York providing locally grown fruits and vegetables to the community. It runs educational programs and workforce development opportunities to engage community members in local food production. With a focus on social justice, its programs aim to create a more equitable food system for all. As a trusted community resource, the city could consider a partnership with the farm to expand its education and workforce development programs to other sites in Kingston.

Kingston City School District

The school district could be a critical partner in helping engage youth and families in community gardening. The district could also be a valuable resource in creating an educational program to teach youth how to garden.

Conclusion & Next Steps

As a result of Kingston's local efforts, as well as state and federal level initiatives, the City greatly exceeded its goal of 20% GHG emissions reductions by 2020, achieving a 32% reduction in community-wide GHG emissions between 2010 and 2019. Kingston needs to build on its success to date with further action to ensure the City is on track to achieve its updated goal of reducing community-wide GHG emissions 50% below 2010 levels by 2030. The development of this plan is a key step in achieving this target. The plan's 20 actionable climate action strategies will further reduce emissions by cleaning the electricity supply, decarbonizing buildings, increasing the sustainability of mobility and land use, and improving resource management and local food production.

While the City is expected to play a large leadership role in driving forward progress on climate action, this community-wide goal can only be achieved with collective, community action. Many of the strategies highlighted in CAP 2030 will be enhanced by the active engagement and participation of the community. As such, the strategies within this document include details on where to find additional information or avenues to become more involved as a community member.

Finally, CAP 2030 is a summary of the key actions that Kingston will take over the coming decade and should be followed by an implementation plan to support timely and clear execution of the CAP. The implementation plan would outline greater detail on how strategies can be enacted, including what roles various stakeholders are expected to play.

SINCE THE DEVELOPMENT OF CAP 2020, THE CITY OF KINGSTON HAS REMAINED A LEADER THROUGH SUSTAINABILITY AND CLIMATE ACHIEVEMENTS.

The City of Kingston can only achieve its climate goals with active engagement from all of its residents, local businesses and partners.

To get involved, please visit engagekingston.com

References

1. New York State. Climate Smart Communities Certification Report. Accessed September 2021. Accessed at https://climatesmart.ny.gov/actions-certification/participating-communities/certification-report/?tx_sjcert_certification%5Bcertification%5D%5B__identity%5D=75&tx_sjcert_certification%5Baction%5D=show&tx_sjcert_certification%5Bcontroller%5D=Certification&cHash=ea76461f86c7cb3761f88233873bce6c
2. City of Kingston. Greening our Streetlights. Accessed September 2021 at: https://kingston-ny.gov/streetlights.
3. City of Kingston. Energy. Accessed September 2021 at https://kingston-ny.gov/content/8399/22301/22336/default.aspx.
4. NYSERDA. NYStretch Energy Code-2020: Outreach, Training and Resources. Accessed October 2021. Accessed at https://www.nyserda.ny.gov/All-Programs/Programs/Energy-Code-Training/NYStretch-Energy-Code-2020.
5. Kingston Greenline. Accessed September 2021. Accessed at https://kingstongreenline.org/.
6. City of Kingston. Kingston on the Move! - Transportation Projects. Accessed December 2021. Found at: https://www.kingston-ny.gov/kingstononthemove
7. Ulster County. Transit System Integration. Accessed December 2021. Found at https://ulstercountyny.gov/transportation-council/active-studies/transit-system-integration.
8. City of Kingston. Transportation. Accessed October 2021. Accessed at https://www.kingston-ny.gov/content/8399/22301/22342/default.aspx.
9. City of Kingston. Transportation. Accessed October 2021. Accessed at https://www.kingston-ny.gov/content/8399/22301/22342/default.aspx.
10. City of Kingston & NYSERDA. City of Kingston Uptown Stockade Business District. Accessed October 2021. Accessed at https://www.ny.gov/sites/default/files/atoms/files/Kingston_DRI_Plan.pdf .
11. City of Kingston. Kingston Point Park Infrastructure Improvements. Accessed September 2021 at: https://www.kingston-ny.gov/kingstonpointparkii.
12. City of Kingston. Natural Resources Inventory. 2018. Accessed at https://kingston-ny.gov/filestorage/8399/8491/8495/10452/COK_NRI2018_Final_hires.pdf.
13. City of Kingston. Open Space Plan. June 2019. Accessed at https://kingston-ny.gov/filestorage/8399/8491/8495/10452/Kingston_Open_Space_Plan_FINAL_JULY_2019.pdf.
14. City of Kingston. Waterfront Flooding Task Force. Accessed September 2021 at https://www.kingston-ny.gov/waterfrontfloodingtaskforce.
15. City of Kingston. Parks & Recreation Master Plan. January 2013. Accessed at https://kingston-ny.gov/filestorage/8463/10614/Draft_kingston_recreation_master_plan.pdf.
16. City of Kingston. 100% Renewable Energy Transition Roadmap. March 2020. https://kingston-ny.gov/filestorage/8399/22301/22336/Kingston_100%25_RE_Roadmap_Final_Clean_ext_-_Copy.pdf.
17. City of Kingston. Weaving the Waterfront. Accessed September 2021. Accessed at https://kingston-ny.gov/weavingthewaterfront.
18. City of Kingston. Flood Preparedness Guide. Accessed September 2021. Accessed at https://www.kingston-ny.gov/floodpreparedness.
19. City of Kingston. Adaption and Resilience. Accessed September 2021. Accessed at https://kingston-ny.gov/content/8399/22301/22330/default.aspx.
20. Climate-adaptive Design. Accessed September 2021. Accessed at https://trophic.design/cad/.
21. City of Kingston. Climate Smart Kingston. Accessed September 2021. Accessed at https://kingston-ny.gov/content/8399/8491/15147/10454/default.aspx.
22. City of Kingston. Conservation Advisory Council. Accessed September 2021. Accessed at https://kingston-ny.gov/kingstoncac.

23. New York State. Climate Act. Accessed October 2021 at: https://climate.ny.gov/.
24. Kingston Climate Action Plan. September 2021. Accessed at https://kingston-ny.gov/filestorage/8399/8491/15147/10454/City_of_Kingston_Climate_Action_Plan_2012_publicsafety.pdf.
25. Kingston Climate Action Plan. September 2021. Accessed at https://kingston-ny.gov/filestorage/8399/8491/15147/10454/City_of_Kingston_Climate_Action_Plan_2012_publicsafety.pdf.
26. Resolution #179: Commitment to 100% renewable energy by 2050. Accessed September 2021 at: RESOLUTION_179_of_2017.pdf (kingston-ny.gov)
27. Climate Reality Project, 100% Committed. Accessed September 2021 at: 100% Committed | Climate Reality (climaterealityproject.org)
28. Solarize Kingston. Accessed September 2021 at: Welcome to the City of Kingston, NY - Solarize Kingston (kingston-ny.gov)
29. Resolution #60: Commitment to join Statewide CCA, March 2015. Accessed September 2021. Accessed at: RESOLUTION_60_of_2015.pdf (kingston-ny.gov)
30. City of Kington. City of Kingston 100% Renewable Energy Transition Roadmap. March 2020. Accessed at https://kingston-ny.gov/filestorage/8399/22301/22336/Kingston_100%25_RE_Roadmap_Final_Clean_ext_-_Copy.pdf.
31. EnergySage. Community Solar Savings by Season. Accessed September 2021 at: https://news.energysage.com/community-solar-savings-by-season/
32. Get Your GreenBack Tompkins. Accessed September 2021. Accessed at https://www.getyourgreenbacktompkins.org/.
33. Ulster County. Accessed September 2021. Accessed at https://gnd.ulstercountyny.gov/solarize-ulster/.
34. U.S. Department of Energy. Accessed September 2021. Accessed at https://www.energy.gov/sites/default/files/2014/01/f7/54738.pdf.
35. NYSERDA. Accessed September 2021. Accessed at https://www.nyserda.ny.gov/All-Programs/Programs/NY-Sun/Solar-for-Your-Home/Community-Solar/How-it-Works.
36. NYSERDA. Accessed September 2021. Accessed at https://www.nyserda.ny.gov/All%20Programs/Programs/NY%20Sun/Communities%20and%20Local%20Governments/Solarize.
37. NYSERDA. Accessed September 2021. Accessed at https://www.nyserda.ny.gov/All-Programs/Programs/NY-Sun/Solar-for-Your-Home/Community-Solar/Solar-for-All.
38. Town of Watertown Department of Community Development and Planning Board. October 2018. Accessed at https://www.watertown-ma.gov/DocumentCenter/View/26235/2018-11-27-Zoning---Solar-Assessments.
39. Here Comes Solar. "New Law Requires Solar on NYC Buildings." May 21, 2019. Accessed at https://herecomessolar.nyc/brilliant-blog/new-york-citys-solar-mandate/.
40. SolSmart. Accessed September 2021. Accessed at https://solsmart.org/solar-energy-a-toolkit-for-local-governments/.
41. Local Law No. 2 – 2019. Accessed September 2021. Accessed at: https://kingston-ny.gov/filestorage/8399/10476/11808/36541/36543/LOCAL_LAW_2_of_2019.pdf
42. City of Kingston 2020 Energy Benchmarking Report for the period January 2018 to January 2020. Accessed September 2021. Accessed at: https://kingston-ny.gov/filestorage/8399/22301/22336/Energy_Benchmarking_Report_pdf.pdf
43. Resolution of the Common Council of the City of Kingston, New York, Adopting Energy Benchmarking Policy Requirements for Certain Municipal Buildings in the City of Kingston. Accessed September 2021. Accessed at: https://kingston-ny.gov/filestorage/8399/22301/22336/Energy_Benchmarking_Resolution_%2321_of_2017_City_of_Kingston%2C_NY.pdf
44. Sustainable South Bronx. Accessed September 2021. Accessed at https://www.ssbx.org/.
45. American Council for an Energy Efficient Economy. Cities and Clean Energy Workforce Development. Accessed September 2021. Accessed at https://www.aceee.org/sites/default/files/pdfs/cities_workforce_development_v2_0_2.pdf.

46. Suny Ulster. Accessed September 2021. Accessed at https://www.sunyulster.edu/continuing_education/industrial-tech/green-careers.php.
47. Empower Kingston. Accessed September 2021. Accessed at https://www.empowerkingston.org/greenjobs.
48. NYSERDA. Accessed September 2021. Accessed at https://www.nyserda.ny.gov/All-Programs/Programs/Clean-Energy-Workforce-Development/Clean-Energy-Training-Resources.
49. U.S. Energy Information Administration. Natural Gas Explained. Accessed October 2021. Access at: https://www.eia.gov/energyexplained/natural-gas/factors-affecting-natural-gas-prices.php.
50. HeatSmart Tompkins. Accessed September 2021. Accessed at https://www.solartompkins.org/.
51. Massachusetts Clean Energy Center. Accessed September 2021. Accessed at https://www.masscec.com/heatsmart-mass.
52. Massachusetts Clean Energy Center. Accessed September 2021. Accessed at https://www.masscec.com/solarize-heatsmart-toolkit.
53. NYS Clean Heat. Accessed September 2021. Accessed at https://cleanheat.ny.gov/.
54. Central Hudson Gas & Electric Corp. Residential Incentives. Accessed Novemeber 2021. Access at: https://www.cenhud.com/my-energy/save-energy-money/residential-incentives/
55. City of Somerville. Accesses September 2021. Accessed at https://www.somervillema.gov/departments/programs/somerville-energy-efficiency-now-seen.
56. Ulster County Green New Deal. April 2021. Accessed at https://gnd.ulstercountyny.gov/wp-content/uploads/2021/04/Ulster-Green-New-Deal-Plan.pdf.
57. Central Hudson. Accessed September 2021. Accessed at https://www.cenhud.com/globalassets/pdf/save-energy/2020_energy_saving_tips_web.pdf.
58. NYSERDA. Accessed September 2021. Accessed at https://www.nyserda.ny.gov/All-Programs/Programs/Home-Energy-Efficiency-Upgrades.
59. NYSERDA. Accessed September 2021. Accessed at https://www.nyserda.ny.gov/All-Programs/Programs/Community-Energy-Engagement-Program.
60. City of Kingston Climate Action Plan: 2010 Community-Wide & Local Government Operations Energy and Greenhouse Gas Emissions Inventory. Accessed September 2021. Accessed at: https://kingston-ny.gov/filestorage/8399/8491/8495/10452/Kingston_Climate_Action_Plan_FINAL.pdf
61. City of Kingston and Ulster County Bus Merger. Accessed September 2021. Accessed at: https://www.kingston-ny.gov/filestorage/8463/8511/15386/19005/Bus_Merger_Kingston_FAQ.PDF.
62. City of Kingston, New York Open Space Plan (2019). Accessed September 2021. Accessed at: https://legistarweb-production.s3.amazonaws.com/uploads/attachment/pdf/404046/Kingston_Open_Space_Plan_FINAL_JULY_2019.pdf
63. Kingston Pedestrian and Bicycle Master Plan. Accessed September 2021. Accessed at: https://kingston-ny.gov/pedbikeplan
64. Kingston Greenline. Accessed September 2021. Accessed at: https://www.kingston-ny.gov/kingstongreenline
65. Kingston Land Trust. Accessed September 2021. Accessed at: https://kingstonlandtrust.org/
66. Hudson River Valley Greenway. Accessed September 2021. Accessed at: https://hudsongreenway.ny.gov/
67. Empire State Trail. Accessed September 2021. Accessed at: https://empiretrail.ny.gov/
68. City of Kingston Pedestrian Safety Action Plan Intersection Project. Accessed September 2021. Accessed at: https://engagekingston.com/pedestrian-safety-action-plan
69. Kingston News: Statement from Mayor Noble on Re-Zoning the City of Kingston. Accessed September 2021. Accessed at: https://www.kingston-ny.gov/news/?FeedID=1392
70. Southwest Energy Efficiency Project. Accessed September 2021. Accessed at https://swenergy.org/transportation/electric-vehicles/building-codes.

71. Denver Community Planning and Development. April 26, 2019. Accessed at https://drive.google.com/file/d/1mcJSpvXRuS0V-5pry2FWaZoas67S244X/view.
72. City of West Hollywood. Accessed September 2021. Accessed at https://www.weho.org/city-government/city-departments/planning-and-development-services/building-and-safety/ev-charge-up-west-hollywood.
73. U.S. Department of Energy. August 2015. Accessed at https://afdc.energy.gov/bulletins/technology-bulletin-2015-08.html.
74. Southwest Energy Efficiency Project. Accessed September 2021. Accessed at https://swenergy.org/transportation/electric-vehicles/building-codes.
75. Energetics Incorporated. "Residential EVSE Permit Process Best Practices." NYSERDA. April 2013. Accessed at https://www.nyserda.ny.gov/-/media/files/programs/chargeny/permit-process-streamlining.pdf.
76. Cooke, Claire and Brian Ross. "Summary of Best Practices in Electric Vehicle Ordinances." Great Plains Institute. June 2019. Accessed at https://www.betterenergy.org/wp-content/uploads/2019/06/GPI_EV_Ordinance_Summary_web.pdf.
77. City of Kingston Organics Diversion. Accessed September 2021. Accessed at: https://www.kingston-ny.gov/content/8399/22301/22340/default.aspx
78. Kingston Tree Commission. Accessed September 2021. Accessed at: https://www.kingston-ny.gov/Trees
79. City of Kingston, NY Tree Inventory Summary Report. Accessed September 2021. Accessed at: https://www.kingston-ny.gov/filestorage/8399/8491/8505/Inventory_Summary_Report.pdf
80. City of Austin. Accessed September 2021. Accessed at https://www.austintexas.gov/department/city-austin-community-gardens-program.
81. New Paltz Gardens for Nutrition. Accessed September 2021. Accessed at https://gardensfornutrition.org/.
82. Koski, Hannah. "Guide to Urban Farming in New York State." The Cornell Small Farms Program. 2016. Accessed at https://smallfarms.cornell.edu/resources/guides/urban-guide-to-farming-in-ny/.
83. Alliance for Strong Families and Communities. "Maximizing Urban Agriculture Toolkit." Accessed September 2021. Accessed at https://alliance1.org/web/resources/pubs/maximizing-urban-agriculture-toolkit.aspx.

Appendix A: Quantitative Methodology

The following appendix provides a summary of the methodology, assumptions, and data sources related to the 2019 community greenhouse gas emissions inventory, the greenhouse gas impact analysis, and the costs and benefits review associated with Kingston CAP 2030.

City of Kingston 2019 Community Greenhouse Gas Emissions Inventory Methodology

Overview

The below section of the appendix summarizes the methodology utilized to conduct the City of Kingston's 2019 Community Greenhouse Gas Emissions Inventory. The 2019 Kingston Community Greenhouse Gas Emissions Inventory (2019 GHG Inventory) calculates community-wide GHG emissions for the City of Kingston. The inventory is designed according to the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC). For this inventory, GHG emissions are broken out into the following GPC emissions sectors: Stationary Energy, Transportation, and Waste. Within each sector, emissions are further broken out by subsector, source, and scope.

Overall, the 2019 inventory closely follows the methodology adopted in the 2010 Kingston Community Greenhouse Gas (GHG) Emissions Inventory. However, several key updates were made to ensure that the 2019 inventory results were as accurate as possible and applied the best available data. These updates enabled a closer "apples-to-apples" comparison between the 2010 and 2019 inventory results to provide a clearer understanding of the GHG emissions trends over the past 9 years.

This appendix documents the methodology used to complete the 2019 inventory, and where applicable, identifies updates made to the 2010 inventory and any differences in methodology between 2010 and 2019 inventories. For greater detail on the assumptions, calculations, and raw data, please see the Kingston 2010 Community Greenhouse Gas (GHG) Emissions Inventory. The rest of this appendix is divided into the three key emissions sectors (stationary energy, transportation, and waste). Within each sector, an overview of the methodology and data sources is provided, followed by any adjustments in methodology from the 2010 inventory.

Stationary Energy: Community-Wide Building Energy & Emissions

The methodology used to calculate the GHG emissions associated with stationary energy consumption in Kingston closely follows the methodology adopted in the 2010 inventory. Emissions are separated out by building categories: Residential and Non-Residential (i.e., Commercial and Industrial) buildings. The methodology and data used to estimate GHG emissions associated with building electricity, natural gas, and heating fuel (fuel oil, propane, kerosene) consumption is described below.

Electricity and natural gas consumption data is provided directly through NYSERDA's Utility Energy Registry (UER). There is no centralized data source for heating fuel (fuel oil, propane, kerosene) consumption in residential and non-residential buildings. For this reason, this inventory followed the methodology used in the 2010 inventory. U.S. Census data was used to scale down state level heating fuel consumption (data from the Energy Information Administration) to estimate local consumption in the residential and non-residential sectors.

Adjustment from 2010 GHG Inventory: Non-Residential Electricity Consumption

The data used to estimate non-residential electricity in the 2010 baseline was adjusted. A review of the commercial electricity consumption data used in 2010 revealed a miscalculation. The 2010 inventory assumed that 109,954,288 kWh of non-residential electricity was consumed; however, the Project Team identified that this value reflected total electricity consumption in Kingston (across all sectors, residential, non-residential, and industrial). Thus, to accurately reflect only non-residential electricity consumption in 2010, the value for residential electricity consumption (62,782,267 kWh) was subtracted from total electricity consumption (109,954,288 kWh).

Adjustment from 2010 GHG Inventory: Natural Gas Consumption

For the 2019 inventory, electricity and natural gas data was obtained through NYSERDA's UER system. But, in its reporting, these data do not differentiate between "commercial" and "industrial" electricity and natural gas consumption. The most straightforward way to breakout this UER data is into two buckets:

1) Residential, and
2) Non-residential (covering all electricity not included in the Residential category).

The 2010 inventory was revised to merge "Commercial" and "Industrial" electricity and natural gas consumption into one "Non-residential" sector for ease of comparison with 2019 data.

Adjustment from 2010 GHG Inventory: Natural Gas Consumption - Industrial

Data on "Industrial" natural gas consumption and the associated GHG emissions were identified in the 2010 inventory methodology, but upon the Project Team's review, the emissions associated with industrial natural gas consumption were not included in the reported cumulative 2010 emissions. The Project Team included these emissions in both the 2010 and 2019 inventories, and therefore adjusted the 2010 Community Emissions GHG calculations to reflect "Industrial" natural gas emissions in the Non-Residential Buildings natural gas emissions and activity.

Adjustment from 2010 GHG Inventory: Emissions Factors

In some cases, the 2010 inventory used outdated emissions factors for fuels (e.g., diesel, gasoline, fuel oil, natural gas, etc.). Emissions factors for the 2010 inventory were updated to align with those used in the 2019 inventory to ensure an accurate comparison between the two inventory years.

Transportation: Community-Wide On-road Energy & Emissions

The methodology used to calculate emissions associated with transportation in Kingston closely follows the methodology used in the 2010 inventory. Emissions for the transportation sector are broken out by consumption of fuel type (gasoline or diesel) for internal combustion engine (ICE) vehicles and electricity use for electric vehicles (EV).

Fuel consumption among gasoline and diesel ICE vehicles was further broken out by vehicle type: passenger, light truck, and heavy duty (diesel only). New York and California follow the same vehicle efficiency standards, so the California Air Resources Board's database for on-road diesel and gasoline vehicle efficiency was adopted for Kingston in 2019. Vehicle miles travelled (VMT) data specific to vehicles in Kingston was obtained from the Ulster County Transportation Council (UCTC). The 2019 inventory assumed that diesel vehicles comprised the same share of total VMT in Kingston as in 2010. However, the percent of total VMT attributed to gasoline vehicles was adjusted down from 2010 levels to account for the greater number of EVs in 2019.

A count of EVs registered in Kingston was obtained from NYSERDA and used to estimate the percent of total VMT attributable to EVs. Data on EV efficiency was obtained from the U.S. Department of Energy's FuelEconomy.gov site.

Adjustment from 2010 GHG Inventory: Daily Vehicle Miles Travelled (VMT)

Transportation activity data and emissions, for both gasoline and diesel vehicles, was adjusted to account for revised and more accurate daily VMT estimates from 2010 provided by the Ulster County Transportation Council (UCTC). It was determined that in order to provide as accurate of an "apples-to-apples" comparison between 2010 and 2019 transportation emissions, it made the most sense to adjust the daily VMT used in the original 2010 inventory (481,158 VMT/day) based on the updated model available to UCTC. The updated 2010 daily VMT (372,789) reflects the updated UCTC model that was used for the 2018 VMT estimates and for the 2019 GHG Inventory. Use of the updated UCTC model also more properly reflects that road type "12: Urban Principal Arterial - Other Freeways and Expressways" does not exist in Kingston and adjusts the original 2019 inventory assumptions to reflect no VMT associated with this road type.

Adjustment from 2010 GHG Inventory: Transportation Subsectors

The 2010 inventory broke out Transportation Sector emissions into several Subsectors, including "DPW Waste Transportation". This approach resulted in double-counting Department of Public Works (DPW) Waste Transportation GHG emissions. These emissions were already accounted for in the original 2010 GHG inventory Transportation Sector under "Heavy Duty Diesel" Subsector. Thus, this DPW Waste Transportation sector was only included as an "informational item" above and therefore has no impact on total community GHG emissions.

Waste: Community-Wide Solid Waste Disposal

Following the methodology used in the 2010 GHG Inventory, the 2019 GHG Inventory utilized emission factor assumptions by material type built into the EPA Waste Reduction Model (WARM). The following material types were included: paper products, food waste, plant debris, wood or textiles, and all other. The material type composition was based on the most recent Ulster County Resource Recovery Agency (UCRRA) Waste Composition Analysis data. The total tonnage of waste collected by the City of Kingston DPW in 2019 was provided by the City of Kingston estimated 2019 waste emissions.

Adjustment from 2010 GHG Inventory: Waste Composition Analysis

Updated data on waste composition by material type was not available for 2019, therefore this analysis assumed that the waste composition data used in the 2010 inventory remains the same for 2019. Data used was from most recent UCRRA data.

GHG Impact Analysis & Costs and Benefits Review Methodology

Overview

For the seven “spotlighted” strategies included in CAP 2030 (listed below), the Project Team conducted further analysis to better understand each strategy’s impact. This analysis included a greenhouse gas (GHG) impact analysis and a broader costs and benefits review. The following sections summarize the methodology, assumptions, and findings related to the strategies for both parts of the analysis. The seven “spotlighted” strategies are as follows:

Strategy 3: Increase local participation in community solar.
Strategy 4: Require the installation of solar PV on new construction.
Strategy 8: Provide educational and workforce cleantech opportunities.
Strategy 9: Increase utilization of existing incentives to electrify equipment and appliances in homes and businesses.
Strategy 10: Increase utilization of existing incentives to improve energy efficiency in homes and businesses.
Strategy 17: Adopt EV-ready building codes and parking requirements in commercial and multifamily buildings.
Strategy 20: Increase local participation in community gardens.

GHG Impact Analysis: Strategy Modeling Methodologies, Assumptions, & Findings

The following section provides information regarding the methodology and assumptions underlying the GHG impact modeling process, as well as the associated results for each strategy. It should be noted that the Project Team quantitatively modelled the potential GHG impacts of five of the seven spotlighted strategies (Strategies 3, 4, 9, 10, and 17); however, the impacts of the remaining two strategies (Strategies 8 and 20) were qualitatively summarized. These two strategies are expected to indirectly impact community-wide emissions in the longer term and, as such, a qualitative analysis better captures the nuance of these strategies' impacts.

Strategy 3: Increase Local Participation in Community Solar

Description:

Community solar (CS) is a local solar PV system installed within or near the community that residents and businesses can subscribe to. Subscribers gain access to the clean energy produced by these panels and receive credits towards their electricity bills. For this Strategy, the City will support outreach and coordination to increase awareness of and local participation in community solar projects.

Modeling Methodology:

- To start, the Project Team derived the addressable market of total eligible Kingston customers; customers (both commercial and residential) were deemed illegible if they already have a solar project onsite. Total residential and commercial buildings were adopted from the Team's previous work for the "Kingston 100% Renewable Energy Transition Roadmap" in 2020.[1] This previous work utilized a 2018 NYSERDA dataset for Clean Energy Community Energy Use (this dataset is no longer available online). Total onsite solar projects reported by 2020 were derived from NYSERDA.[2] Thus, the total number of addressable customers in Kingston was calculated as the difference between total customers in Kingston and reported onsite solar projects.
- Next, the Team estimated a current participation rate in CS projects based on the addressable market in Kingston. Key sub-steps included:
  - Identified the total solar capacity of CS projects installed in the Central Hudson service territory and derived annual energy generation for both residential and commercial customers. The Project Team used NYSERDA data at the Central Hudson level since CS subscribers can only access projects in the same utility territory.[2]
  - Scaled down the total number of CS projects to identify the addressable market based on the number of utility customers in Kingston.
  - Allocated a percentage of the total scaled down addressable market to the commercial and residential sectors. It was assumed that the commercial sector would comprise 40% of the market at its maximum and the residential sector would comprise the remaining 60% (based on New York's restriction for allocation within CS projects).[3]
  - Next, the Project team estimated the solar project degradation rate to be 0.8% based on previous project experience.
  - Lastly, the Project Team set up three growth scenarios for participation rates in 2030: low, medium, and high growth.

Results:

The first row of Figure 1, labeled "No Growth", shows a summary of initial CS participation rates for residential and commercial utility customers in Kingston. The remaining three rows show how total solar generation varies across the three participation growth scenarios over the Modeling Period (2021-2030) and the resulting GHG reduction. To note, the "No growth" scenario still generates an increase in the CS participation rate due to

[1] Cadmus, "City of Kingston 100% Renewable Energy Transition Roadmap" 2020

[2] Solar Electric Programs Reported by NYSERDA: Beginning 2000: https://data.ny.gov/Energy-Environment/Solar-Electric-Programs-Reported-by-NYSERDA-Beginn/3x8r-34rs

[3] NYSERDA. "Community Solar for Contractors": https://www.nyserda.ny.gov/all-programs/programs/ny-sun/contractors/resources-for-contractors/community-solar

underlying growth in the number of utility customers.

Figure 1: Starting Participation Rates and Estimated GHG Reduction

		Residential by 2030		Commercial by 2030			
Participation Rate Scenario	Change in Participation Rate by 2030	Participation Rate	Total New Participants	Participation Rate	Total New Participants	Total PV Energy (MWh)	Offset GHGs (MT CO2e)
No growth (starting rate)	0%	3.7%	58	2.1%	15	4,665	496
Low growth	250%	13.0%	1,025	7.3%	147	50,287	5,345
Medium growth	500%	22.3%	1,991	12.4%	278	90,063	9,572
High growth	750%	31.6%	2,957	17.6%	409	127,637	13,566

Strategy 4: Require the Installation of Solar PV on New Construction

Description:

Establish a mandate requiring the installation of solar PV in certain cases, such as new construction of residential and/or commercial buildings of a certain size. Ensure implementation is conducted in a cost-effective way that would not financially burden disadvantaged communities.

Modeling Methodology:

- The Project Team first derived the number of new residential and commercial buildings to determine the scope of new solar energy generation in Kingston resulting from this strategy. The key assumptions behind the projected number of new construction projects included:
  - The compound annual growth rate (CAGR) of new buildings was calculated based on historical Kingston accounts (2% residential, 3.7% commercial).
  - The turnover rate of residential and commercial buildings was assumed to be 100 years[4] and 50 years,[5] respectively.
- Next, the Team adjusted the number of new buildings to represent only those that would be subject to this strategy's mandate.
  - The Team adopted the exemptions and other provisions of the New York Stretch Energy Code to scale down the number of new buildings that would be subject to the mandate.[6]
  - Additionally, the Team derived the projected number of new buildings to be installed in the City based on the Team's previous work for the "Kingston 100% Renewable Energy Transition Roadmap" in 2020.[7] This previous work utilized a 2018 NYSERDA dataset for Clean Energy Community Energy Use (this dataset is no longer available online).
- The Team analyzed current solar projects in Kingston to set up representative residential and commercial solar projects in order to estimate the GHG impact of the projected new generation.
  - A residential project was assumed to have a nameplate capacity of 8 kW and a commercial project would be 50 kW, despite higher average project size.
  - The representative commercial solar capacity was scaled down to align with demand considered in the Community Solar analysis in Strategy 3.[8]
- The Team subsequently estimated the expected energy production of each representative project.

[4] SwissLife, "What is the lifespan of a house?" https://www.swisslife.com/en/home/hub/wie-lange-lebt-ein-haus.html

[5] RDH, "How Long do Buildings Last?" https://www.rdh.com/blog/long-buildings-last/

[6] NYStretch Energy Code-2020 information on NYSERDA website: https://www.nyserda.ny.gov/All-Programs/Programs/Energy-Code-Training/NYStretch-Energy-Code-2020

[7] Cadmus, "City of Kingston 100% Renewable Energy Transition Roadmap" 2020

[8] Solar Electric Programs Reported by NYSERDA: Beginning 2000: https://data.ny.gov/Energy-Environment/Solar-Electric-Programs-Reported-by-NYSERDA-Beginn/3x8r-34rs

- Lastly, the Team modeled the growth in new mandate-eligible buildings on which solar would be installed. The total capacity of the resulting installed solar projects was aggregated over the Modeling Period and converted to GHG reductions.

Results:

Figure 2 summarizes the estimated aggregate energy production from solar PV generation on new construction and the associated GHG emissions reductions. The first row shows the total number of new buildings expected to be subject to the mandate over the Modeling Period (2021-2030), row two displays the total new nameplate capacity (MW) of solar PV on these new buildings and row three illustrates the associated energy generated (MWh). Lastly, row four illustrates the offset carbon emissions associated with the new clean energy generated over the Modeling Period.

Figure 2: Aggregated Solar PV Generation and Estimated GHG Reduction

	Residential	Commercial	Total
New buildings subject to mandate over period	1,323	498	1,821
Total capacity (MW)	10.6	24.9	35
Total energy over period (MWh)	61,057	141,451	202,508
Offset Carbon Emissions (MT CO2e)			21,523

Strategy 8: Provide Educational & Workforce Cleantech Opportunities

Description:

The City will work with local organizations to expand the Empower Kingston Green jobs Apprenticeship and the Green Careers at SUNY Ulster program and leverage NYSERDA workforce development programs for cleantech, on-the-job, and other training.

Qualitative Assessment:

The Project Team conducted a qualitative assessment of the indirect effects that this strategy has on future GHG emission reductions. Investing in workforce development and training creates opportunities for community members, some of whom may be currently employed by the fossil fuel industry, to support the transition towards a locally based, clean energy economy. Many jobs associated with the development and installation of solar systems tend be local.[9] The solar industry requires more workers per unit of energy compared to fossil fuels. In this way, this strategy can capitalize on the already growing solar industry in New York State. The number of jobs across all clean energy sectors (e.g., energy efficiency, renewable generation, alternative transportation, etc.) grew by about 12% between 2015 and 2020 in New York.[10] Kingston can expect to see similar increases within its local workforce.

Strategy 9: Increase Utilization of Existing Incentives to Electrify Equipment and Appliances in Homes and Businesses

Description:

Leverage incentives through Central Hudson and/or group purchase discounts from future HeatSmart campaigns to encourage replacement of fossil-fuel powered equipment with electric equipment (e.g., air source heat pumps) in homes and businesses. The City can collaborate with community organizations to drive increased participation among residents and businesses.

[9] OECD Report for the G7 Environment Ministers. 2017. "Employment Implications of Green Growth: Linking jobs, growth, and green policies.": https://www.oecd.org/environment/Employment-Implications-of-Green-Growth-OECD-Report-G7-Environment-Ministers.pdf

[10] NYSERDA. "2021 Clean Energy Industry Report": https://www.nyserda.ny.gov/About/Publications/New-York-Clean-Energy-Industry-Report

Modeling Methodology:

- The Project Team focused on air source heat pump electrification due to limitations in data availability. To start, a participation rate in incentive programs was derived from a NYSERDA operated rebate program for residential air source heat pumps from 2018 to 2020.[11] Key sub-steps included:
    - First, the Team calculated an annual air source heat pump adoption rate for Kingston households based on heating fuel type, gas or fuel oil, based on household participation in the NYSERDA program.
    - The number of Kingston households using gas or fuel oil as their heating fuel was extracted from the 2019 Census American Community Survey.[12] This baseline data was utilized to scale the participation rate in the NYSERDA program based on household heating fuel type.
    - Based on the Project Team's previous experience, it was assumed that households using gas or fuel oil will electrify only 10% and 70%, respectively, of their existing system because of the differing cost of these fuels.
- The Project Team set up three scenarios for target participation rates in 2030: low, medium, and high growth.
- The electrification of appliances is associated with a decrease in fossil fuel energy consumption but an increase in electricity consumption. As such, the Team derived the net impact from two, countervailing effects.
    - First, the annual fuel energy savings associated with air source heat pump installation was calculated based on equations in the New York Standard Approach for Estimating Energy Savings from Energy Efficiency Programs – Residential, Multi-Family, and Commercial/Industrial Measures (Version 8, 2021).[13]
    - These fuel savings were then translated to a reduction in GHG emissions associated with diminishing gas or fuel oil consumption as a heating fuel.
- Lastly, the aggregate GHG impact of reduced fossil fuel and increased electricity consumption was forecasted through the Modeling Period (2021-2030).

Results:

Figure 3 summarizes the expected participation rates of homes with gas and fuel oil in these incentives over the Modeling Period for each of the growth scenarios, as well as the associated GHG emissions reductions. The second column below displays the increase in the participation rate given the growth scenario. Columns three and four illustrate, respectively, the final participation rate and the associated percentage of households that electrify, by heating fuel type, cumulatively by the final year of the Modeling Period, 2030. The fifth column displays the GHG emissions reductions resulting from reduced fossil fuel and increase electricity consumption by 2030.

[11] NYSERDA-Supported Air Source Heat Pump Projects 2017-2019: https://data.ny.gov/Energy-Environment/NYSERDA-Supported-Air-Source-Heat-Pump-Projects-20/dpke-svni

[12] U.S. Census American Community Survey, 2019 5-Year Survey: https://www.census.gov/programs-surveys/acs/news/updates/2019.html

[13] New York Standard Approach for Estimating Energy Savings from Energy Efficiency Programs – Residential, Multi-Family, and Commercial/Industrial Measures. Version 8: https://www3.dps.ny.gov/W/PSCWeb.nsf/96f0fec0b45a3c6485257688006a701a/72c23decff52920a85257f1100671bdd/$FILE/NYS%20TRM%20V8.pdf

Figure 3: Participation Rates and Estimated GHG Reduction

		Rates by 2030		
Participation Rate Scenario	Rate by 2030	Gas	Fuel Oil	GHGs (MT CO2e)
No growth (starting rate)	0%	0.3%	1.1%	3,022
Low growth	200%	1.0%	3.2%	5,974
Medium growth	400%	1.6%	5.3%	8,908
High growth	600%	2.3%	7.4%	11,849

Strategy 10: Increase Utilization of Existing Incentives to Improve home Energy Efficiency in Homes and Businesses

Description:

Leverage incentives through NYSERDA and Central Hudson to increase energy efficiency in homes and businesses. Different comprehensive incentive programs (HVAC, water heating, insulation) are available depending on income level, measures pursued, and building type. The City will collaborate with community organizations to drive increased participation among residents and businesses.

Modeling Methodology:

- To calculate the GHG impact of this strategy, the Project Team used NYSERDA's Clean Energy Dashboard to identify and analyze Central Hudson energy efficiency programs between 2016 and 2020 to estimate participation rates and average savings.[14]
- The existing energy efficiency programs listed on the Dashboard vary in their household participation rates and GHG impact. Based on the Project Team's previous experience in energy efficiency programs, the following three representative programs were chosen based on the City's tangible ability to impact household participation:
    - For the residential sector, the Team chose the *Appliance Recycling* program and the *Retail Lighting and Efficiency Products* program.
    - For the commercial sector, the Team chose the *Small Business Direct Install* program.
- For each of the programs, the Project Team forecasted the energy savings reported in the Dashboard for participants over the Modeling Period (2021-2030).
- The Project Team set up three scenarios for target participation rates in 2030: low, medium, and high growth.

Results:

Figure 4 summarizes aggregate energy savings and associated GHG emissions reductions for each of the three representative programs, based on projected participation rates over the period. The second columns below display the increase in the participation rate given the growth scenario. The third and fourth columns, respectively, illustrate the final participation rate and the associated number of participants in the energy efficiency program by the final year of the Modeling Period, 2030. Given the increase in participation, columns five and six display the resulting energy savings and offset GHG emissions associated with completing the energy efficiency measure. To note, the "no growth" scenario still generates energy and GHG savings because it reflects the baseline participation rate reported in NYSERDA's Clean Energy Dashboard. The low, medium, and high growth scenarios represent a percent increase in the participation rate from this baseline.

[14] NYSERDA. New York State Clean Energy Dashboard: https://www.nyserda.ny.gov/Researchers-and-Policymakers/Clean-Energy-Dashboard

Figure 4: Participation Rates, Estimated Energy Savings, and Estimated GHG Reduction

Residential: Appliance Recycling

Annual Adoption Rate Scenarios					
Growth Scenario	Change in Rate by 2030	Rate in 2030	Total Participants	Energy Savings (kWh)	Offset GHGs (MT CO2e)
No growth (starting rate)	0.0%	0.6%	504	2,520,000	268
Low growth	200.0%	1.8%	977	4,102,000	436
Medium growth	400.0%	3.0%	1,373	5,289,000	562
High growth	600.0%	4.2%	1,736	6,317,000	671

Residential: Retail Lighting/Efficiency Products

Annual Adoption Rate Scenarios					
Growth Scenario	Change in Rate by 2030	Rate in 2030	Total Participants	Energy Savings (kWh)	Offset GHGs (MT CO2e)
No growth (starting rate)	0.0%	31.8%	27,000	40,500,000	4,305
Low growth	20.0%	38.2%	29,916	43,662,900	4,641
Medium growth	30.0%	41.4%	31,323	45,159,300	4,800
High growth	40.0%	44.6%	32,700	46,609,500	4,954

Commercial: Small Business Direct Install

Annual Adoption Rate Scenarios					
Growth Scenario	Change in Rate by 2030	Rate in 2030	Total Participants	Energy Savings (kWh)	Offset GHGs (MT CO2e)
No growth (starting rate)	0.0%	1.3%	1,098	137,250,000	14,588
Low growth	200.0%	3.9%	2,118	222,250,000	23,622
Medium growth	400.0%	6.5%	2,976	286,725,000	30,474
High growth	600.0%	9.1%	3,762	342,475,000	36,400

Strategy 17: Adopt EV-Ready Building Codes and Parking Requirements in Commercial and Multifamily Buildings

Description:

Update local codes to define the type of Electric Vehicle Supply Equipment (EVSE) charging that will be provided (e.g., Level 1, Level 2) and establish a streamlined permitting process to install charging. Establish a mandate that requires newly constructed commercial and multifamily buildings to install a minimum percentage of parking spots with EVSE infrastructure in lots.

Modeling Methodology:

- The GHG impact of this strategy was calculated based on the correlation between public EV charging availability and EV ownership.
    - First, the Project Team adopted the ratio of 11.1 EVs for one public (Level 2) charger that was modeled for NREL's 2019 "Meeting 2025 Zero Emission Vehicle Goals: An Assessment of Electric Vehicle Charging Infrastructure in Maryland" for the Kingston context.[15] In this model, it was assumed that 30% of EVs would be owned by individuals without consistent access to residential charging.
    - This ratio was then applied to the City's target EV count of 1,041 vehicles by 2030 which was previously calculated in the 2019 Community GHG Inventory. The projected 2030 EV count was based upon a compound annual growth rate estimated in the City's baseline projection.
- Next, the Project Team applied the 11.1 EVs to 1 public charger ratio to determine the number of incremental

[15] NREL's Simulation for Maryland Public Charging to Meet Projected EV Count: https://www.nrel.gov/docs/fy19osti/71198.pdf

Level 2 chargers needed to meet the charging demand of the projected number of EVs in Kingston by 2030: 69. The baseline number of public chargers available in Kingston was derived from the US DOE's Alternative Fuels Data Center.[16]

- The Team derived the average GHG emissions for internal combustion engine (ICE) cars being displaced (4.6 MT CO2e) by the growth in EVs (EPA).[17] These abated emissions were netted against the GHG emissions from a growth in electricity consumption required for EVs (~0.2 MT CO2e). These netted emissions were forecasted based on an annual growth (25% CAGR) in fleet to match the 2030 target EV growth rate.
    - To note, the increase in fuel efficiency of ICE vehicles over the Modeling Period was not accounted for.

Results:
The third column of Figure 5 shows the count of EVs and associated public EV chargers in Kingston in the baseline year. The fourth column illustrates the number of additional EVs and Level 2 EV chargers needed to meet the 2030 EV target count, which is listed in column 5. The net GHG impact of the increased EV count netted with the emissions associated with an increase in electricity consumption by the greater number of public EV chargers in 2030 is shown in the bottom row.

Figure 5: Ratio of Level 2 Public Chargers to Meet EV Charging Demand and Estimated GHG Reduction

	Units	Start	Count to Reach	2030
EV count	#	110	901	1,041
Level 2 charger count	#	24	69	93
Net GHGs avoided	MT CO2e			14,371

Strategy 20: Increase Local Participation in Community Gardens

Description:
Increase the installation of and participation in community gardens on public and private lands.

Qualitative Assessment:
The Project Team conducted a qualitative assessment of the potential sectors impacted by this strategy and the sources of emissions addressed. Based upon a review of existing literature, community gardens can impact emissions associated with the transportation and agricultural sector.

The transportation and distribution of conventionally produced food is responsible for generating 5 to 17 times more GHG emissions compared to locally produced food. On average, conventionally produced food travels 1,500 miles from farm to plate.[18]Community gardens, therefore, decrease the total miles travelled between the food production source and the consumer. Local food production in community gardens also supports a shift from more GHG intensive modes of transport (e.g., aviation for transporting conventional foods) to less GHG intensive modes of transport (e.g., local passenger vehicles).[19]Prior research has found that a net decrease in 52,000 miles for food transportation is associated with a reduction in 576.9 tons of carbon dioxide equivalents (CO2e).[20]

[16] US DOE Charging Vehicle Station Locator: https://www.nyserda.ny.gov/all-programs/programs/drive-clean-rebate/charging-options/electric-vehicle-station-locator#/find/nearest
[17] EPA. Greenhouse Gas Emissions from a Typical Passenger Vehicle: https://www.epa.gov/greenvehicles/greenhouse-gas-emissions-typical-passenger-vehicle#:~:text=typical%20passenger%20vehicle%3F-,A%20typical%20passenger%20vehicle%20emits%20about%204.6%20metric%20tons%20of,8%2C887%20grams%20of%20CO2
[18] Columbia Climate School State of the Planet, "How Green is Local Food?": https://news.climate.columbia.edu/2012/09/04/how-green-is-local-food/
[19] State of Oregon Department of Environmental Quality, "Executive Summary: Environmental Footprint Literature Review. Food Transportation.": https://www.oregon.gov/deq/FilterDocs/PEF-FoodTransportation-ExecutiveSummary.pdf
[20] Gi-Eu Lee, Steven R. Miller, Scott Loveridge. Research in Agricultural & Applied Economics. "Modelling Local Food Policy and Greenhouse Gas Emission Due to Transportation.": https://ageconsearch.umn.edu/record/293617/

Similarly, community gardens have been found to generate 2 kg less CO2e per kg of vegetables grown compared to conventionally grown vegetables.[21] Through the implementation of this strategy, Kingston can expect to experience GHG emissions reductions in similar sectors.

Costs and Benefits Review: Strategy Modeling Methodologies, Assumptions, & Findings

The following section provides information on the methodology and assumptions underlying the costs and benefits analysis, as well as strategy-specific findings. Similar to the GHG Impact Analysis, the costs and benefits of Strategies 3, 4, 9, 10, and 17 were largely quantitatively assessed with some additional qualitative inputs, whereas Strategies 8 and 20 were qualitatively summarized given their more indirect impacts.

The following benefit categories were considered and analyzed for each strategy:

- **The generation of clean energy and/or reduction of energy consumption.** Quantification of this benefit was based on the results from the GHG Impact analysis over the Modeling Period (2021-2030).
- **Local job creation.** Job creation estimates were derived using a variety of existing sources that were adopted to the Kingston context, outlined below.
- **Health co-benefits.** Quantification of the public health benefits associated with strategy implementation were modeled using EPA tools, listed below
    - AVERT (Avoided Emissions and Generation Tool) estimates the displaced emissions resulting from energy efficiency or renewable energy projects. The EPA's New York sub-region provided location-specific emissions factors. The analysis was conducted using medium-growth projected emissions and generation data to output one-year worth of avoided emissions. The fundamental structure and assumptions of the model are outlined in the AVERT's User Manual available online.[22]
    - COBRA (Co-Benefits Risk Assessment Health Impacts Screening and Mapping) is a tool that estimates avoided health impacts resulting from projects that displace emissions. Output from the AVERT tool was directly used in COBRA, so the health impact analysis was also assumed to be for one year. The fundamental structure and assumptions of the model are outlined in the COBRA's User Manual available online.[233]
- **Reduction of costs.** The costs associated with shifts in energy consumption trends were quantified with utility specific cost data.
- **Other quantitative and qualitative benefits.** These benefits were noted for certain strategies where applicable.

The following cost categories were considered and analyzed for each strategy:

- **Administrative resources.** This category includes costs the City of Kingston is expected to bear related to staff time and/or consultant support to implement a given strategy. The assessment of costs associated with expended administrative resources was based upon the Project Team's previous experience in comparable projects for similarly sized cities. Additional qualitative research was conducted to supplement those findings.
- **Project costs.** The initial upfront investments required to implement the strategy were derived using a variety of existing sources.

[21] Columbia Climate School State of the Planet, "How Green is Local Food?": https://news.climate.columbia.edu/2012/09/04/how-green-is-local-food/

[22] EPA. AVERT User Manual: https://www.epa.gov/statelocalenergy/avert-user-manual

[233] EPA. COBRA User Manual: https://www.epa.gov/statelocalenergy/users-manual-co-benefits-risk-assessmentcobra-screening-mode

Strategy 3: Increase Local Participation in Community Solar

Results associated with a Medium Growth Rate modeling a doubling in the Participation Rate resulting in a 22 GW CS project by 2030.

Category	Methodology	Results
Strategy Benefits		
Generate Clean Energy	See Modeling Methodology described in the GHG Impact Analysis section.	Under the medium scenario, the cumulative solar energy production would be **25,700 MWh** over the Modeling Period.
Create Jobs	• The Solar Foundation estimated 3.3 installation and development jobs per MW for utility-scale projects.[24] • This ratio was applied to the Medium Growth Rate model.	A 25,700 MWh CS project translates to a total of **72 installation and development jobs**. This value does not include ongoing operations and maintenance.
Health Benefits	• EPA's AVERT tool translates 90 GW of utility-scale solar energy generation to the displacement of: 6 tons of SO2, 13.6 tons of NOx, 1.7 tons of NH3, 3.5 tons of PM2.5, and 1.5 tons of VOCs.[25] • EPA's COBRA tool generates decrease in incidence for Ulster County for various health concerns from a reduction in the emissions output by AVERT.[26]	The material health impacts of a 25,700 MWh CS project would be a reduction of around **0.3 Minor Restricted Activity Days and ~0.1 Work Loss Days.**
Reduce Costs	• Central Hudson CS projects typically provide up to 10% savings on participant's electricity bill.[27] • Applied the total energy offset by the CS project to utility energy-based charges (kWh) for residential ($0.15), and commercial ($0.06-0.1) customers to calculate cost savings associated with energy offset by CS projects.	Cumulative utility bill savings over the Modeling Period are **$186k for residential** and around **$70-130k for commercia**l participants, the latter of which depends upon the tariff class and whether the customer is demand metered.
Strategy Direct Costs		
Administrative Resources	• The Project Team derived an FTE estimate for implementing this strategy through a Community Solar campaign. This estimate was based upon previous projects with similar sized cities. • City action may include organizing awareness campaigns, coordinating with utilities and/or CS project developers.	Increasing participation is associated with 0.5 FTE during the campaigning period of around 6 months.
Project costs	• The capacity-weighted installed cost of CS projects in Central Hudson was around $1.60/W, based on an analysis of NYSERDA project data. • Ongoing operations/maintenance (O&M) costs for a utility-scale project are around $12/kW-year, with additional administrative costs to coordinate with the utility on billing and replacing subscribers potentially adding $25/kW-year. • Applied these values to the estimated capacity modeled in the Medium Growth Rate.	• The installed costs of a 25,700 MWh CS project for developers would be around **$7.6 million.** • Cumulatively, O&M costs borne by developers may be around **$175k/year.**

[24] Solar Energy Information Association. National Solar Jobs Census 2020: https://www.seia.org/research-resources/national-solar-jobs-census-2020

[25] EPA. Avoided Emissions and Generation (AVERT) Tool: https://www.epa.gov/avert

[26] EPA. CO-Benefits Risk Assessment (COBRA) Tool: https://cobra.epa.gov/

[27] Central Hudson, Gas & Electric Supply Prices: https://www.cenhud.com/account-resources/rates/gas--electric-supply-prices/

Strategy 4: Require the installation of solar PV on new construction

Results associated with a Medium Growth Rate of 200,000 MWh generated from new solar PV through 2030.

Category	Methodology	Results
Strategy Benefits		
Generate Clean Energy	See Modeling Methodology described in the GHG Impact Analysis section.	Under the medium scenario, the cumulative solar energy production would be **200,000 MWh** over the Modeling Period.
Create Jobs	• The Solar Foundation estimated 38.7 and 21.9 installation and development jobs per MW for residential and commercial rooftop projects, respectively.[28] • This ratio was applied to the Medium Growth Rate model.	The installation of 11 MW of residential and 25 MW of commercial generation translates to a total of **956 installation and development jobs.** This value does not include those from ongoing O&M.
Health Benefits	• EPA's AVERT tool translates 200 GWh of residential-scale solar energy generation to the displacement of: 11.4 tons of SO2, 26.4 tons of NOx, 3.3 tons of NH3, 6.8 tons of PM2.5, and 2.9 tons of VOCs.[29] • EPA's COBRA tool generates decrease in incidence for Ulster County for various health concerns from a reduction in the emissions output by AVERT.[30]	The material health impacts of 200,000 MWh of solar generation would be a reduction of around **0.6 Minor Restricted Activity Days** and around **0.1 Work Loss Day.**
Reduce Costs	Central Hudson energy-based charges (kWh) were applied to calculate cost savings associated with energy offset by the installation of new solar PV.[31]	Based on the estimated energy (kWh) generated over the Modeling Period, **$8M** of energy savings accrue for all residential installations and between **$8-15M** for commercial installations.
Strategy Direct Costs		
Administrative Resources	A qualitative assessment was conducted based upon the Project Team's previous experience with projects for cities of a similar size.	Costs will vary depending on the extent of City investment. Costs may include those resulting from drafting legislation and department coordination. This will include doing a solar compatibility type analysis for future construction.
Project Costs	• The average capacity-weighted installed cost solar PV NYSERDA project for Kingston is around $3.16/W for residential and $2.22/W for commercial. • Typical ongoing O&M costs for residential and commercial projects are around $25/kW-year and $14k/kW-year, respectively. • Installation and ongoing O&M costs may be borne by home and building owners or developers, depending on the PV system's ownership structure. For instance, O&M costs would more so be taken on by the developer under a lease agreement versus the home or building owner under a full system purchase agreement.	• The total installation costs across all residential projects (cumulatively 11 MW) would cost around **$33M** cumulatively. • The total installation costs across all commercial projects (cumulatively 25 MW) would cost around **$55M** cumulatively. • Total O&M costs for all residential projects may be around **$370k-year.** • Total O&M costs for all commercial projects may be around **$349k-year.** • It is expected that project management, site lease processes, and property taxes (or payment procured in lieu of taxes) may add to the annual costs for certain commercial projects.

[28] Solar Energy Information Association. National Solar Jobs Census 2020: https://www.seia.org/research-resources/national-solar-jobs-census-2020

[29] EPA. Avoided Emissions and Generation (AVERT) Tool: https://www.epa.gov/avert

[30] EPA. CO-Benefits Risk Assessment (COBRA) Tool: https://cobra.epa.gov/

[31] Central Hudson, Gas & Electric Supply Prices: https://www.cenhud.com/account-resources/rates/gas--electric-supply-prices/

Category	Methodology	Results
Project costs **(continued)**		• A key caveat to the project costs described here is that they represent the *unsubsidized* cost to install a solar system and its O&M costs. Rebates and incentives vary widely and were thus not accounted for, so the real costs are be expected to be *lower* than the unsubsidized costs reported here. Incentives (e.g., cash rebates), tax benefits, and/or performance-based incentives can reduce the cost for a solar system from anywhere between 26 to 50%.[32] • To note, financing opportunities for residential and commercial PV systems extend the payback period for the cumulative costs described here, so these costs may extend beyond the Modeling Period. For example, NYS currently offers loans for residential and commercial PV systems with terms of 5, 10, or 15 years.[33]

Strategy 8: Provide educational and workforce cleantech opportunities

Qualitative Assessment

Category	Methodology	Results
Strategy Benefits		
Create Jobs	The Project Team reviewed available external resources to qualitatively evaluate the benefits associated with this strategy.	• NYSERDA reported 164k clean energy jobs across NYS in 2019.[34] • As a local example, in Sept. 2020, Citizens for Local Power (CLP) hired 8 interns to launch the first Empower Kingston Green Jobs Internship Programs. CLP held an additional internship session from May-June 2021.[35]
Environmental Co-Benefits		The environmental benefits associated with this strategy are generated indirectly through the transition to clean energy (e.g., reduced air pollution). The extent of this indirect impact will be based upon several factors, including participation, sectors of participation, and the size of workforce that remains in Kingston.
Strategy Direct Costs		
Administrative Resources	The Project Team reviewed available external resources to qualitatively evaluate the benefits associated with this strategy.	Costs will vary depending on the extent of City level of effort. This may include staff time and materials to plan and implement outreach events. Administrative costs will vary depending on the extent of planning that is outsourced and collaborated on with partner organizations.

[32] Energy Sage. "Solar Rebates and Incentives": https://www.energysage.com/solar/benefits-of-solar/solar-incentives/
[33] U.S. Department of Energy SunShot Initiative Rooftop Solar Challenge II: New York State Financing Options and Services for Solar PV: https://nysolarmap.com/media/1105/nys_fo_wg_financing_options_list_4_13.pdf
[34] NYSERDA. "2021 New York Clean Energy Industry Report": https://www.nyserda.ny.gov/About/Publications/New-York-Clean-Energy-Industry-Report
[35] Citizens for Local Power. Empower Kingston: https://citizensforlocalpower.org/empower-kingston

Strategy 9: Increase utilization of existing incentives to electrify equipment and appliances in homes and businesses

Results associated with a Medium Growth Rate modeling a doubling in the Participation Rate by 2030.

Category	Methodology	Results
Strategy Benefits		
Reduce GHG Emissions from Heating	See Modeling Methodology described in the GHG Impact Analysis section.	Additional electrification would result in a net reduction of nearly **9,000 MT CO2e.**
Create Jobs	The American Council for an Energy-Efficient Economy (ACEEE) estimates an average $1,800 per million MT CO2 avoided.[36]	A modeled reduction in 9,000 MT CO2e translates to around **11 job- years.**
Health Benefits	• Assumed that electricity consumption from adopted electrified equipment, 839 MWh, will be powered by 100% renewable energy grid in 2030. • Input 839 MWh as utility-scale renewable generation to the displacement of: 0.1 tons of SO2, 0.1 tons of NOx, <0.1 tons of NH3, <0.1 tons of PM2.5, and <0.1 tons of VOCs.[37] • EPA's COBRA tool generates decrease in incidence for Ulster County for various health concerns from a reduction in the emissions output by AVERT.[38]	The material health impacts associated with a decrease of 9,000 MTCO2e would be a reduction of around **0.003 Minor Restricted Activity Days** and around **<0.01 Work Loss Day.**
Strategy Direct Costs		
Administrative Resources	A qualitative assessment was conducted based upon the Project Team's previous experience with projects for cities of a similar size.	Costs will vary depending on the extent of City investment. This includes costs to confirm installers for the community and go through RFP process.
Project Costs	• NYSERDA analysis found that retrofitting existing residencies with clean heating/cooling can range between $12-20k, depending on the size of the building. This range accounts for the net costs of the heat pump retrofit balanced with the avoided cost of conventional heating and cooling.[39] • Range was applied to the estimated number of participants in electrification program that were modeled in the Medium Growth Rate.	Based on the Medium Growth Rate, the estimated 1,300 participants would cumulatively spend around **$15-26M** to retrofit.
Electricity Costs	• Central Hudson energy-based charges for residential customers is around $0.15/kWh. • This value was applied to the modeled increase in electricity consumption from clean heating and cooling appliances in the Medium Growth Rate.	Based on the estimated energy (kWh) required to offset the fuel burned, additional electricity costs could cumulatively be around **$2M.**

[36] American Council for an Energy-Efficient Economy. "Fact Sheet: Clean Infrastructure Efficiency Investments for Jobs, Climate, and Consumers": https://www.aceee.org/fact-sheet/2021/06/clean-infrastructure-efficiency-investments-jobs-climate-and-consumers

[37] EPA. Avoided Emissions and Generation (AVERT) Tool: https://www.epa.gov/avert

[38] EPA. CO-Benefits Risk Assessment (COBRA) Tool: https://cobra.epa.gov/

[39] NYSERDA. "New Efficiency: New York. Analysis of Residential Heat Pump Potential and Economics": https://www.nyserda.ny.gov/-/media/Files/Publications/PPSER/NYSERDA/18-44-HeatPump.pdf

Strategy 10: Increase utilization of existing incentives to improve energy efficiency in homes and businesses.

Results associated with a Medium Growth Rate modeling a doubling in the Participation Rate by 2030.

Category	Methodology	Results
Strategy Benefits		
Reduce Energy Consumption	See Modeling Methodology described in the GHG Impact Analysis section.	Additional participation in energy efficiency incentives results in **337,000 MWh** of energy reductions over the Modeling Period.
Create Jobs	• The ACEEE estimates net 1,130-2,500 jobs per year are generated for each million MT CO2 emissions avoided by building Energy Efficiency (EE) programs.[40] • These values were applied to the estimated per year MT CO2 emissions modeled in the Medium Growth Rate.	A reduction of 3,600 MT CO2 emissions per year translates to **5-10 job-years.**
Health Benefits	• EPA's AVERT tool translates 337 GWh of energy savings to the displacement of: 29.3 tons of SO2, 60.6 tons of NOx, 7.9 tons of NH3, 16.7 tons of PM2.5, and 6.8 tons of VOCs.[41] • EPA's COBRA tool generates decrease in incidence for Ulster County for various health concerns from a reduction in the emissions output by AVERT.[42]	Based on the cumulative energy noted above, the material health impacts would be a reduction of around **1.5 Minor Restricted Activity Days** and around **0.3 Work Loss Days.**
Reduce Costs	• Central Hudson energy-based charges for residential customers is around $0.15/kWh and between $0.06-0.11/kWh for commercial customers. • These values were applied to the modeled reduction in energy consumed in the Medium Growth Rate of EE programs.	Estimated energy (kWh) reductions over the Modeled Period would accrue savings around **$758k** for all residential participants and between **$15k-$29M** for commercial participants.
Strategy Direct Costs		
Administrative Resources	The Project Team reviewed available external resources to qualitatively evaluate the benefits associated with this strategy.	Costs will vary depending on the extent of City investment. This may include administrative and staff costs to plan and implement outreach events. Administrative costs will vary depending on the extent of planning that is outsourced and collaborated with partner organizations.
Project Costs	• The Lawrence Berkeley National Lab found that energy efficiency programs cost energy efficiency program administrators (e.g., the utility) around $0.022 and $0.027 for every kWh of energy saved in residential and commercial EE programs, respectively.[43] •The same study found that EE programs cost residential and commercial participants around $0.017 and $0.028, respectively, for every kWh of energy saved.[43]	• The modeled 50,400 MWh of energy savings in the Medium Growth Rate of residential participation in EE programs would cumulatively cost EE program administrators about **$1.1M** and all residential participants cumulatively **$858k**. • The modeled 286,700 MWh of energy savings in the Medium Growth Rate of commercial EE programs would cumulatively cost EE program administrators around **$7.7M** and all

[40] American Council for an Energy-Efficiency Economy (ACEEE). "Clean Infrastructure: Efficiency Investments for Jobs, Climate, and Consumers": https://www.aceee.org/fact-sheet/2021/06/clean-infrastructure-efficiency-investments-jobs-climate-and-consumers

[41] EPA. Avoided Emissions and Generation (AVERT) Tool: https://www.epa.gov/avert

[42] EPA. CO-Benefits Risk Assessment (COBRA) Tool: https://cobra.epa.gov/

[43] Lawrence Berkeley National Lab. "The Cost of Savings Electricity Through Energy Efficiency Programs Funded by Utility Customers." Figure ES-7: https://eta-publications.lbl.gov/sites/default/files/cose_final_report_20200429.pdf

Category	Methodology	Results
Project Costs (continued)	• These values were applied to the modeled energy savings resulting from an increase in energy efficiency program participation in the Medium Growth Rate.	commercial participants cumulatively **$8M**.

Strategy 17: Adopt EV-ready building codes and parking requirements in commercial and multifamily buildings

Results associated with installing 69 additional Level 2 EV chargers and additional 900 EVs adopted by 2030.

Category	Methodology	Results
Strategy Benefits		
Create Jobs	The Project Team reviewed available external resources to qualitatively evaluate the benefits associated with this strategy.	Overall job creation is expected to be minimal.
Health Benefits	The Project Team reviewed available external resources to qualitatively evaluate the benefits associated with this strategy.	With no tailpipe emissions, EVs reduce both GHG emissions and other harmful co-pollutants like particulate matter and its precursors. Other reductions include NOx emissions which have public health implications for respiratory and cardiovascular conditions.[44]
Reduce Costs	A Consumer Reports study found:[45] • Fuel savings from EV adoption accrue to over $4.7k over the first 7 years, or $671/year. • While upfront costs are higher, total ownership savings range between $6-10k.	• Modeled EV ownership would estimate fuel savings around **$2M.** • Modeled additional EVs over the Modeling Period would accrue lifetime ownership savings between **$5.4-9M.**
Strategy Direct Costs		
Project Costs	• Average per-port cost of Level 2 installations is around $9k, of which $5k is for the make-ready aspect of installation (e.g., charging hardware).[46] • This value was scaled to the number of additional Level 2 EV chargers installed by 2030.	The building owners of the commercial and multi-family properties subject to this mandate will bear the EVSE installation costs. The cost to install 69 new level 2 chargers needed would cumulatively cost around **$620k.**
Project Costs	• The cost premium varies depending on the vehicle class, so certain EV models can be cost-competitive or even cost less than their conventional counterparts.[47] Current 2021 federal tax credits up to $7.5k are available to newer, lower production EVs (e.g., Tesla and GM models are no longer eligible).[48] • This value was scaled to the number of new EVs adopted by 2030.	Assuming a $2-5k premium, the total upfront cost premium borne by EV owners would amount to **$1.8-4.5M** for the additional 900 EVs.

[44] Ernani F. Chorna, John S. Evans, James K. Hammitt, Jose A. Gomez-Ibanez, John D. Spengler. Environment International. "Assessing the health impacts of electric vehicles through air pollution in the United States.": https://www.sciencedirect.com/science/article/pii/S016041202031970X

[45] Consumer Reports. "EVs Offer Big Savings Over Traditional Gas-Powered Cars": https://www.consumerreports.org/hybrids-evs/evs-offer-big-savings-over-traditional-gas-powered-cars/

[46] U.S. Department of Energy. "Costs Associated with Non-Residential Electric Vehicle Supply Equipment:" https://afdc.energy.gov/files/u/publication/evse_cost_report_2015.pdf

[47] Consumer Reports. "Electric Vehicle Ownership Costa: Today's Electric Vehicles Offer Big Savings for Consumers:" https://advocacy.consumerreports.org/wp-content/uploads/2020/10/EV-Ownership-Cost-Final-Report-1.pdf

[48] Edmunds. "Electric Vehicle Tax Credits: What you Need to Know:" https://www.edmunds.com/fuel-economy/the-ins-and-outs-of-electric-vehicle-tax-credits.html

Category	Methodology	Results
Increase in Electricity-Related Costs	• Central Hudson energy-based charges for residential customers is around $0.15/kWh. • This value was applied to the modeled increase in electricity consumption from increased EV charging in 2030.	• In 2030, 232,000 kWh will be required to meet the electricity needs for 900 EVs. • The total cumulative costs associated with 232,000 kWh of electricity consumption, which will be borne by residential utility customers with onsite EVSE charging, would amount to around **$35k.**

Strategy 20: Increase local food production and self-reliance.

Qualitative Assessment

Category	Methodology	Results
Strategy Benefits		
Environmental Co-Benefits	The Project Team reviewed available external resources to qualitatively evaluate the benefits associated with this strategy.[50]	Urban stormwater runoff leads to increased flooding and the degradation of local aquatic habitat. Better quality urban soil provides more infiltration and carbon sequestration capability.[49]
Mitigate Urban Heat Island Effect		A 10% increase in the number of green spaces in cities can help reduce surface temperatures in urban environments up to 4º C.[49]
Health Benefits		An increase in vegetation contributes to mitigating urban CO2 and other co-pollutants associated with adverse health effects (e.g., PM2.5) via heightened levels of plant photosyntehsis.[49]
Reduce Transportation-Related Emissions		Impacts will vary depending on substituted food's origin, existing distribution, and other factors.[49]
Strategy Direct Costs		
Administrative Resources	A qualitative assessment was conducted based upon the Project Team's previous experience with projects for cities of a similar size.	Costs will vary depending on the City's role in the organization of educational campaigns and setting up community gardens.
Project Costs		Costs will vary depending on number of factors, including the site selection (e.g., site size, potential remediation costs), staffing approach (e.g., hiring FTs versus relying on volunteers), and materials used, among other factors.

[49] Edmunds. "Electric Vehicle Tax Credits: What you Need to Know:" https://www.edmunds.com/fuel-economy/the-ins-and-outs-of-electric-vehicle-tax-credits.html

[50] Heather. 2012. "The Environmental Benefits of Urban Agriculture on Unused, Impermeable and Semi-Permeable Spaces in Major Cities with a Focus on Philadelphia, PA:" https://repository.upenn.edu/cgi/viewcontent.cgi?article=1044&context=mes_capstones

Appendix B: Summary of Community & Stakeholder Engagement for CAP 2030

Overview

Throughout the CAP 2030 process, the Project Team conducted a series of community and stakeholder engagement efforts to ensure local input and priorities are represented throughout the plan. A summary of these efforts can be found below. It should be noted that, given the COVID-19 pandemic, all of these efforts were conducted via online platforms to ensure the health and safety of participants.

Initial Community Engagement

At the outset of the project, Citizens for Local Power (CLP) conducted a series of community engagement efforts to provide community members with an overview of the project process, to solicit feedback to inform the strategy identification process, and to share opportunities for community members to get involved. Key efforts are summarized below.

- **CAP 2030 Kickoff Event:** CLP hosted a public CAP 2030 kickoff event on January 14, 2021, to provide an overview of the project and initial proposed strategies, as well as to discuss community feedback and questions. This event was well-attended and provided simultaneous Spanish-language translation. It has since been posted on YouTube and has attracted over 100 views.
- **CAP 2030 Survey:** CLP also developed and distributed a survey to solicit additional community feedback to inform the strategy identification process. The survey received 230 responses and results have been posted on the Engage Kingston CAP 2030 landing page.
- **Additional Efforts:** Other efforts conducted by CLP at the outset of the project included supporting the development of an interactive CAP 2030 webpage, which is housed on the Engage Kingston website, as well as proposing individuals to serve on the CAP 2030 Project Advisory Committee (PAC), with attention to ensuring the diversity and representativity of the community.
- **Incorporating Prior Feedback:** CLP provided input into the strategy analysis based on the above activities as well as prior engagement conducted in the community. Further information on these earlier efforts can be found in Appendix C.

Project Advisory Committee (PAC) Meetings

In addition to broader community engagement, the City of Kingston also established a Project Advisory Committee (PAC), composed of community members with deep experience and knowledge of sustainability issues, to provide strategic guidance throughout the development of the Plan and further ensure local priorities were represented. Members of the PAC were selected by the City with input from CLP and are listed in the table below:

Project Advisory Committee Members

Betta Broad	Susan Gillespie
Jessica Clegg	James Childs
Rennie Scott-Childress	Melinda Herzog
Cal Trumann	Troy Ellen Dixon
Kevin McEvoy	Jeff Domanski
Rita Worthington	Pat Courtney-Strong
Gwenn Sorensen	Lisa Mitten
Meg Clark	

The PAC met five times throughout the project. Meeting dates and key agenda topics are listed in the table below:

Meeting #	Date	Agenda Topics
1	October 15, 2020	• Background on Kingston CAP 2030 • Overview of the Project Team's goals and process • The role of the PAC • Project timeline and schedule • Q&A • Next steps
2	November 10, 2020	• Review of 2010 vs. 2019 community greenhouse gas inventory results • Review of the 2030 emissions forecast results • Review and discuss feedback on draft CAP strategies • Review community engagement plan • Q&A • Next steps
3	May 17th, 2021	• Overview of CAP 2030 Process • Review of CAP Progress to Date • CLP Community Outreach Presentation • Review of Community Survey Results • Next Steps
4	June 2, 2021	• Summary of project status to-date • Review of CAP 2030 strategy prioritization analysis approach and findings • Discuss PAC feedback on strategy prioritization • Next steps
5	October 13, 2021	• Summary of project status to-date • Review of CAP 2030 draft • Discuss PAC feedback on CAP 2030 draft • Discuss next steps and process for providing additional written feedback

Additional Community Engagement

Following the public release of the CAP 2030 draft, the Project Team held two additional community meetings on November 8th, 2021. The first meeting was held in the afternoon and the second was held in the evening to ensure community members had multiple options for participating. The evening meeting also provided simultaneous Spanish-language translation. Agenda topics included an overview of the CAP 2030 draft, a summary of Kingston's climate action progress to date, a review of the CAP 2030 strategies, and discussion of next steps. Throughout these meetings, participants had the opportunity to provide feedback verbally or via the chat function.

Following these meetings, the Project Team held a three-week public comment period to solicit additional input on the CAP draft. Feedback received through these various efforts was reviewed by the Project Team and integrated into the final CAP draft. Below is a summary of key feedback themes with high-level responses.

1. **Community Feedback:** Several community members felt that there was a need to further define implementation steps of strategies. Some specific examples include strategies that are imposing new requirements for new construction, commercial, and multifamily buildings, such as Strategies 4, 7, and 17.

   Project Team Response: CAP 2030 is intended to identify a set of strategies for Kingston to focus on over the next decade to help meet its 2030 goal and to provide foundational information about each of these strategies. However, detailed implementation information about each strategy is expected to be developed in a later plan with additional stakeholder and community input. The updated CAP 2030 draft has additional language clarifying this process.

2. **Community Feedback:** Several community members raised the importance of additional climate strategies that were not included within CAP 2030, such as limiting non-biodegradable containers and enhancing the stormwater system.

   Project Team Response: It should be noted that CAP 2030 is specifically focused on a set of strategies that will reduce community-wide greenhouse gas emissions but does not encompass all of the City's current or future environmental initiatives. For a broader list of current initiatives, please see the City's Energy and Sustainability webpage. The City has noted additional suggestions beyond initiatives already underway and remains open for ongoing input into future priorities.

3. **Community Feedback:** In addition to providing feedback, some community members inquired about opportunities to support the implementation of strategies outlined in the CAP 2030.

   Project Team Response: CAP 2030 currently provides initial information on how to get involved or find out more information about each strategy. As strategy implementation moves forward, the City will provide more specific details on how the community can get involved in each strategy. More information will also be included in the forthcoming implementation plan.

4. **Community Feedback:** Community members requested additional details about the greenhouse gas inventory methodology and confirmation that the strategies included in this Plan will ensure Kingston meets its targets.

   Project Team Response: Additional details about the greenhouse gas inventory methodology can be found in Appendix A: Quantitative Methodology. Modeling the cumulative impact of the strategies on community-wide greenhouse gas emissions was beyond the scope of this report. However, the Project Team intentionally selected strategies that would target emissions from high-emitting sectors to ensure Kingston is on track to meet its targets, including the transportation sector (addressed by strategies in the Sustainable Mobility and Land Use category), the built environment (addressed by strategies in the Clean Electricity Supply and Decarbonized Buildings categories), and the waste sector (addressed by strategies in the Managing Resources Sustainably category). information will also be included in the forthcoming implementation plan.

Appendix C: Summary of Citizens for Local Power Outreach and Engagement Prior to and in Support of Kingston's Climate Action Plan 2030

The below summary was developed by Citizens for Local Power

Citizens for Local Power's (CLP) work to engage Kingston communities in the development of the City's CAP 2030 built on more than a year of intentional meetings with leaders of grassroots, faith-based, arts, and service organizations. The purpose of the meetings was to share information about priorities, gauge interest in energy issues/projects, and erect a foundation for cooperation on energy transition and climate justice issues. Meetings were held in person and typically included leaders of 2-3 organizations. We followed a script and systematically invited responses from all participants. We found that there was, indeed, a general awareness of energy and climate issues, that quite a few organizations had taken measures to reduce their energy usage, or planned to do so, and that the leading concerns – by far – were 1) housing and 2) jobs. This helped CLP hone our own plans for future actions and led us to develop the Empower Kingston Green Jobs Internship Program, which we created and offered together with a group of local contractors. In all of this, CLP sought to reach beyond the circle of the initiated and climate activists, and to involve communities of color, the Spanish-language population, and energy justice communities.

The pandemic confronted us and our allies with a host of immediate survival issues. CLP moved online and conducted a series of activities focused more directly on the CAP 2030. These included:

- Proposing individuals to serve on the CAP 2030 Advisory Committee, with attention to ensuring the diversity and representativity of the Committee.
- A survey, using QR codes, that attracted 230 responses; the survey results are posted on the Engage Kingston site.
- A kickoff event on 1/14/21, with simultaneous Spanish-language translation, which was well attended and has since attracted 133 views on YouTube.

Organizations Consulted

A.J. Williams Myers African Roots Library
Catholic Charities
Center for Creative Education
Center for Creative Education
Family of Woodstock
Fresh Start for Women
Go Beyond Greatness
Good Work Institute
Harambee
Idea Garden
Kingston Land Bank
Kingston Land Trust
Kingston Real Tenants Union
Kingston Tenants Union
La Voz
LGBTQ Center
Midtown Arts District (RAW)
New Progressive Baptist Church
Nobody Leaves Mid-Hudson (The Many)
O Positive Festival
Pointe of Praise Church
Rise up Kingston
RUPCO
SunCommon Solar
SUNY Ulster
TMI Project
United Way
YMCA
YouthBuild

Contactors Consulted

Energy Conservation Specialists (ECS)
John Hallstein
J's Painting Service
Marco Ochoa
RUPCO
RYCOR