



American Mayors and Businesses: Building Partnerships for a Low-Carbon Future Volume II

ALLIANCE FOR A SUSTAINABLE FUTURE

**a joint effort by The U.S. Conference of Mayors and the
Center for Climate and Energy Solutions (C2ES)**

January 2019

**THE UNITED STATES CONFERENCE OF MAYORS & THE CENTER FOR
CLIMATE AND ENERGY SOLUTIONS**



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About The U.S. Conference of Mayors: The U.S. Conference of Mayors is the official nonpartisan organization of cities with populations of 30,000 or more. There are nearly 1,400 such cities in the country today, and each city is represented in the Conference by its chief elected official, the mayor. Learn more at www.usmayors.org.



About C2ES: The Center for Climate and Energy Solutions (C2ES) is an independent, nonpartisan, nonprofit organization working to forge practical solutions to climate change. Our mission is to advance strong policy and action to reduce greenhouse gas emissions, promote clean energy, and strengthen resilience to climate impacts. Learn more at www.c2es.org.

We would like to thank Duke Energy and AECOM for their sponsorship of the Alliance for a Sustainable Future. We would also like to thank the cities of New York, Austin, and Chicago, and Celina Tebor for their contributions to this report. Please note that the views expressed by the authors of this report do not necessarily reflect the views of our sponsors. In addition, the case studies presented in this report illustrate the potential to bring together stakeholders and advance positive environmental outcomes. Each case is unique and though the projects are meant to be replicable, outcomes are never guaranteed. Their inclusion should not be considered endorsements by the sponsors of the Alliance.



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FOREWORD

Never have the stakes been higher to advance the cause of carbon reduction and climate protection. For more than a decade, cities have promoted climate protection strategies at all levels of government, and businesses have made great strides in their commitment to reduce greenhouse gases and to develop new, more cost-effective renewable energy technologies. But the recent intensity and destruction of Hurricanes Florence and Michael, coupled with wildfires like Camp Fire that consume our Western forests and threaten cities, make us all realize that the time for talking is over and time for greater climate action is now.

To respond to the need to expedite climate protection programs, the U.S. Conference of Mayors and the Center for Climate and Energy Solutions formed the Alliance for a Sustainable Future. The purpose of the Alliance is to promote greater partnerships between the public and private sectors in advancing climate solutions.

Expediting clean energy technologies almost always involves cooperation between the public and private sectors. According to the Alliance's recent city survey on sustainability, many cities already partner with the private sector and others are taking steps to do so. But the most important finding of the survey is that cities are poised to make even greater strides in the near future and are looking to their peers and businesses to help make that happen.

The summary case studies in this document illustrate how cities are partnering to achieve their clean energy goals and create resilient, low-carbon communities. Whether it is New York City's Retrofit Accelerator or Austin's carbon-neutral fleet plan, these model programs show that informed cooperation is the key to our mounting a sustained clean energy strategy from the local level up.

The Alliance will continue to promote such programs and others. Whether you are from the public or private sector, we hope you join us for this important work.



Tom Cochran
CEO and Executive Director
The U.S. Conference of Mayors



Bob Perciasepe
President
The Center for Climate and Energy Solutions

NEW YORK CITY RETROFIT ACCELERATOR

MAYOR BILL DE BLASIO

CITY OF NEW YORK

OVERVIEW

The NYC Retrofit Accelerator, a program launched by the City, is a one-stop resource that provides personalized assistance to private building owners, managers, board members, and operators to help them undertake energy and water efficiency and clean energy upgrades. The NYC Retrofit Accelerator provides independent, customized technical guidance and advisory services at no cost to participants. In addition, the Retrofit Accelerator seeks to prioritize assistance in ways that can help the City improve the lives of its residents by providing affordable housing to all New Yorkers, ensuring city buildings are resilient against extreme weather events, and that the city's air quality is the cleanest of any major U.S. city.

The Retrofit Accelerator was launched in 2015 as a part of the City's commitment to reduce its greenhouse gas (GHG) emissions 80 percent by the year 2050 (80 x 50), as compared to 2005 levels. Reducing building energy use will play a significant role in achieving the City's 80 x 50 goals, as buildings account for nearly 70 percent of NYC's annual GHG emissions. Reductions are especially important in the city's existing buildings, as 90 percent of the buildings that exist today will exist in 2050. The program was announced as a part of the One City: Built to Last 10-year plan to put the City's buildings on a pathway to 80 x 50.

NYC is home to a diverse and aging building stock made up of over one million structures. The multifamily and commercial sectors account for a vast majority of the built square footage and over two-thirds of its GHG emissions. Not only do nearly 70 percent of the city's GHG emissions come from buildings, but over half of those emissions come from just two percent of the city's largest buildings, those over 50,000 square feet. The City's landmark Greener, Greater Buildings Plan (GGBP), passed in 2009, was aimed at helping the owners of these buildings better understand how much energy their buildings consume and how it is used. In addition, the City requires all buildings burning the two heaviest heating oils to convert to cleaner fuels, with the deadline for the heaviest fuel in 2015 and the next in 2030.

Since 2013, the City has required all large buildings to conduct energy audits every ten years, which provide building owners with recommendations on how to reduce energy consumption. In the first few years of the law, the City found that many owners were not implementing upgrades as a result of this law. This was due to a combination of market barriers, including, but not limited to: a limited awareness of the benefits of energy efficiency, clean energy, and water conservation; confusion about the available financing, incentives, and other resources available for these projects; high opportunity costs of projects versus non-energy upgrades, due to limited capital resources and staff time; risk aversion on the part of building owners to



new technologies and strategies; mistrust of, and confusion where to find, quality service providers for these projects. The NYC Retrofit Accelerator strives to develop markets and directly assist decision-makers to overcome these barriers.

In addition, Mayor Bill de Blasio's commitment to the preservation of affordable housing in NYC provided an opportunity to help housing that is vulnerable to high operating costs implement upgrades to continue to keep housing affordable. In affordable housing buildings, many of the barriers listed above are exacerbated by a highly competitive real estate market and complicated ownership structures. These challenges required the NYC Retrofit Accelerator to develop specific initiatives to help affordable housing implement energy and water efficiency projects.

IMPLEMENTATION

The Mayor has been an unwavering advocate for reducing NYC's contributions to climate change and for the City continuing to be a leader in the fight against climate change. By committing to 80x50 and funding programs under One City and subsequent plans, the Mayor recognizes the importance of reducing energy consumption in buildings and has directed resources accordingly. The Mayor believes, particularly at this moment, that cities are more important than ever.

The NYC Mayor's Office of Sustainability (MOS) oversees the NYC Retrofit Accelerator, which is implemented by a third-party consultant. MOS is responsible for directing all strategies for the program's outreach, marketing, and technical guidance, as well as ensuring that these strategies reflect the policies and analysis that come out of the city's extensive research. MOS convenes stakeholder and advisory groups to guide these strategies. MOS also helps to develop relationships with external entities to ensure the program's success. In addition to MOS' program management, the program works closely with the City's primary housing agency, the Department of Housing, Preservation, and Development (HPD), to ensure that its asset managed housing stock has access to resources to reduce energy costs, and that all scopes of work that receive city financing include appropriate energy and water efficiency measures and applicable incentives funds. The City has also received funding for an expanded program that increases the number of buildings that can be assisted by the NYC Retrofit Accelerator and adds a new track to the program to assist with the design and construction of high performance buildings.

Building decision-makers are the Accelerator's primary audience. They are ultimately responsible for implementing improvements.

The Retrofit Accelerator's Efficiency Advisors dedicate a significant portion their time helping decision-makers navigate and gain access to incentives offered by local utilities, other city agencies, and the New York State Energy Research and Development Authority (NYSERDA). Many owners do not know that these opportunities exist, and those that do often find them confusing and ultimately not worth the hassle, leading to missed opportunities. The Retrofit Accelerator works closely with the entities that administer other programs to ensure that participants who are eligible to participate and are connected to the right service providers, and then to help unstick any roadblocks in participation. Beyond assistance for individual buildings, the Accelerator provides utilities with valuable insight into how their customers interact with their programs and provide ideas for improvement or for new initiatives.

TIMELINE

- **September 2014:** the Mayor commits to 80 x 50 and releases One City: Built to Last, which announces the development of the NYC Retrofit Accelerator
- **August 2015:** MOS contracts with a third-party consultant to provide outreach, marketing, technical guidance, and workforce development on behalf of the City

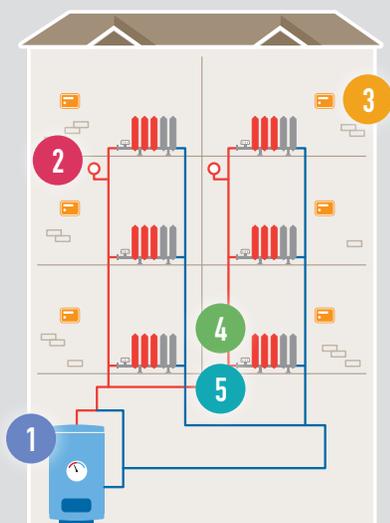


SMART STEAM HEATING UPGRADES

Most steam heating systems are decades old and haven't been updated. Outdated systems waste heat, cause apartments to be too hot or too cold, and lead to banging or hissing pipes.

There are cost-effective solutions to fix steam heating systems that can save between \$10,000 and \$30,000* a year on energy costs. The best approach is to address the system as a whole.

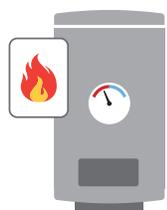
TWO-PIPE STEAM BUILDING



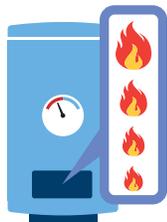
1 BOILER TUNE-UP

Enable burner modulation. Most boilers can vary their steam output to match the building's needs, but this ability is often bypassed.

BEFORE



AFTER



You can also:

- Clean and tune the boiler
- Regulate and reduce pressure for steam production
- Make sure steam is dry

READY TO GET STARTED? CONTACT US TODAY.

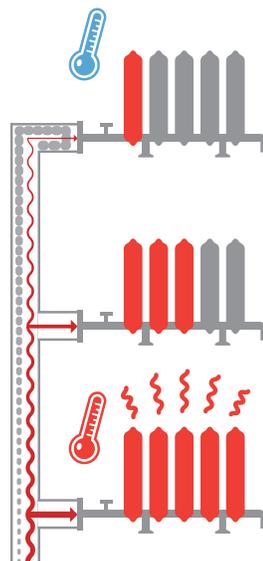
nyc.gov/RetrofitAccelerator

212.656.9202

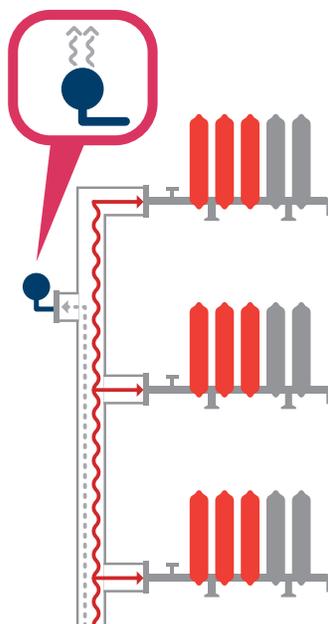
2 MASTER VENTING

Add master vents to pipes. Without master vents, air blockages in pipes prevent steam from being distributed evenly. This causes some apartments to get too hot, while others don't get enough heat. Adding vents to the tops of risers and at the ends of mains allows air out of the pipes so that steam can fill the pipes and be distributed evenly.

BEFORE



AFTER



3 CONTROLS AND SENSORS

Install smart boiler controls and sensors.

Most boilers operate based on the outside air temperature, which can lead to overheating. Installing wireless temperature sensors—and boiler controls that communicate with them—allows the boiler to read temperatures inside the building instead. This means units get the right amount of heat at the right time.

BEFORE



AFTER

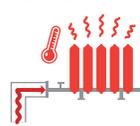


4 ORIFICE PLATES

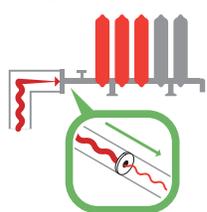
(FOR TWO-PIPE STEAM BUILDINGS ONLY)

End steam trap problems. Most radiators are too big and produce too much heat. Steam traps on radiators also break, which contributes to banging pipes. Adding orifice plates regulates steam flow and eliminates the need to repair steam traps.

BEFORE



AFTER

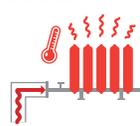


5 TRVs

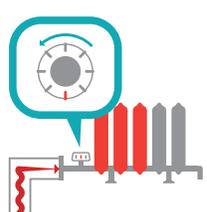
Add thermostatic radiator valves (TRVs) in apartments.

Without TRVs, there's no way for residents to turn down the heat when an apartment is getting too much steam. Adding TRVs enables residents to control the heat in their units.

BEFORE



AFTER



*Based on building size and heating fuel.

- **September 2015:** MOS announces the launch of the NYC Retrofit Accelerator
- **January 2016:** The NYC Retrofit Accelerator is fully staffed and developed
- **Spring 2017:** The NYC Retrofit Accelerator launches a “High-Performance Retrofit Track”
- **Spring 2019:** The current contract for the NYC Retrofit Accelerator contract expires and a new one starts

COSTS AND FINANCING

The NYC Retrofit Accelerator is primarily funded by the City tax levy budget and is contracted for ten million dollars over three years. Nearly \$1 million of those funds come from a grant from NYSERDA. The city has committed baseline funding for the Accelerator and other supporting services, about \$5 million a year through 2025.

RELEVANT POLICIES

The NYC Retrofit Accelerator builds on information collected from the City’s landmark Greener, Greater Buildings Plan, which includes a requirement that large buildings annually benchmark and disclose their energy and water usage (Local Law 84 of 2009 (LL84)) as well as conduct an energy audit and retro-commissioning every 10 years (Local Law 87 of 2009 (LL87)) and report this information to the city. This information allows the Retrofit Accelerator to provide customized advice to participants, while deploying a sophisticated data-driven targeting strategy. By combining this energy data with other city sources, the Retrofit Accelerator is able to prioritize properties for outreach and assistance based on consumption, upgrade opportunities, and financial, health, and resiliency needs.

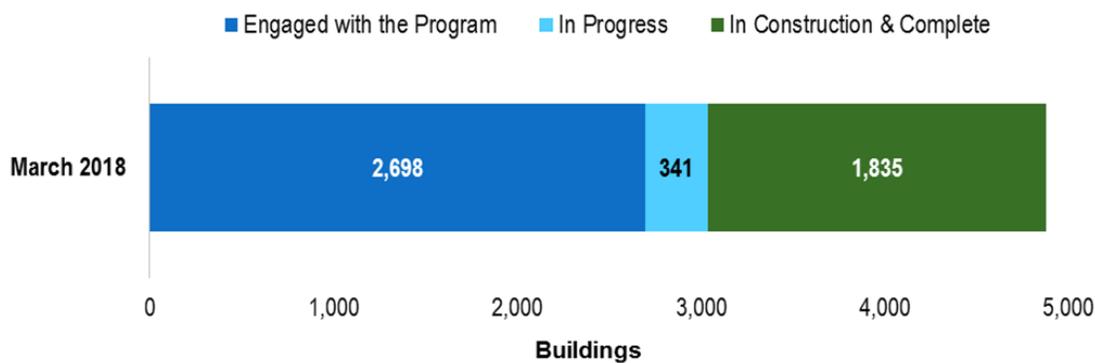
In addition, Local Law 43 of 2010 requires that all buildings burning the two heaviest heating oils, #6 and #4, convert to cleaner fuels. Buildings burning #6 heating oil had to convert by 2015, and those burning #4 must convert by 2030. The City launched the Clean Heat program in 2012, which provided similar one-on-one assistance to the Retrofit Accelerator, resulting in an unprecedented 100% compliance rate for #6 conversions.

KEY COLLABORATORS AND STAKEHOLDERS

- **ICF, Inc. (with subcontractors):** The NYC Retrofit Accelerator is administered by MOS, but implemented by a third-party consultant that was competitively procured by the city’s Economic Development Corporation. The program provides direct assistance through its “Efficiency Advisors,” who are ICF staff. ICF, supported by its subcontractors and overseen by MOS, are responsible for developing all of the program’s marketing and branding, analyzing data for the targeting strategy, conducting direct and public outreach for recruitment, providing technical guidance through its Efficiency Advisors – supported by engineers, holding training for building staff, and verifying completed projects and estimated savings.
- **Steering Committee (Building Energy Exchange (BE-Ex), New York City Energy Efficiency Corporation (NYCEEC), NYSERDA, HPD):** The Steering Committee is comprised of organizations and agencies that play a direct role in the Retrofit Accelerator. BE-Ex and NYCEEC are both non-profits that were created by the city, and also receive funds through NYSERDA and the city as a part of the Retrofit Accelerator. BE-Ex is the physical resource center for the program, holding exhibits and events related to building retrofits. NYCEEC acts as a financing advisor for program participants and also offers specialized energy efficiency loans to the market. The committee provides crucial feedback throughout the development of the program and its strategies through to today’s implementation.
- **Retrofit Accelerator Symposium Participants:** The Retrofit Accelerator invites over 100 people from nearly 50 organizations to bi-annual symposia that act as the primary vehicle to present outcomes, updates, and discussion forums for key program stakeholders. These stakeholders are primarily local to NYC and range from environmental/sustainability advocates, community organizations, industry organizations, housing advocates, utilities, government agencies, and large portfolio owners/managers.

- **Program Administrators:** As mentioned above, the city works extensively with other program administrators, including utilities, the State of New York, and city agencies to coordinate outreach and access to resources.
- **“One City Built to Last: Technical Working Group” members:** in 2015, the city convened a Technical Working Group (TWG), made up of over 45 real estate, environmental, engineering, housing, government, and other experts to develop a pathway to help the city’s building stock reach its portion of the 80 x 50 commitment. These stakeholders provided valuable input into the technical potential for a wide range of energy conservation measures and deep energy retrofit pathways, as well as barriers that must be overcome in the market. This group has continued to stay involved in the development of the Retrofit Accelerator.

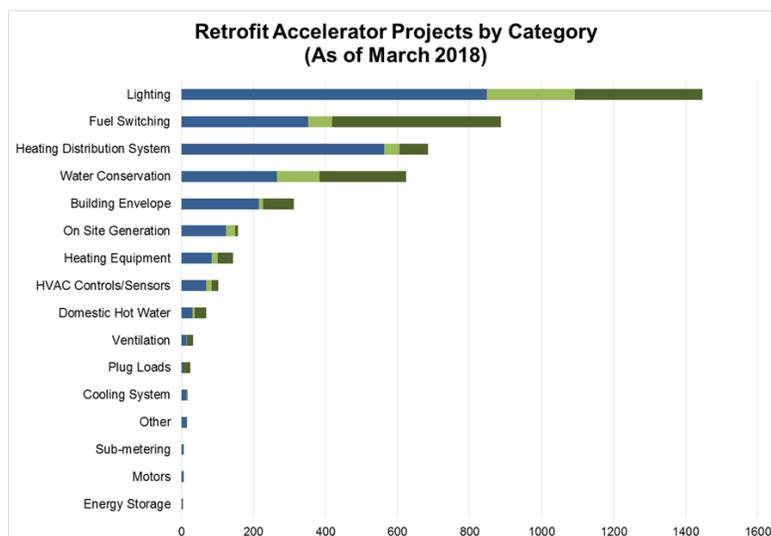
NYC Retrofit Accelerator Participants



OPPORTUNITIES TO INCLUDE VULNERABLE COMMUNITIES

Nearly 30 percent of the Accelerator’s pipeline is affordable housing buildings, and many more are in vulnerable areas, such as those threatened by flood or heat risk. The program’s data-driven targeting strategy allows it to prioritize resources toward these properties to ensure they can reduce costs and be better prepared for extreme weather events. MOS also runs a sister program, Community Retrofit NYC, which is aimed at providing assistance to owners of smaller buildings in an area of Brooklyn that is particularly vulnerable to increasing rents, and who require a higher level of guidance and support to implement energy and water upgrades.

In addition, the Retrofit Accelerator staff have developed deep relationships with a wide range of agencies and organizations that influence, manage, or own buildings in disadvantaged or vulnerable communities. In addition to HPD, the program works with staff at the state housing agency and the U.S. Department of Housing and Urban Development to help their buildings implement efficiency upgrades.



OUTCOMES

Note: these results are as of December 2018, with the program starting in September 2015.

- The program is working with decision-makers for over 5,500 buildings, with projects starting construction or completed in over 2,000 buildings.
- The projects that are in construction or completed have reduced:
 - Over 55,000 metric tons of carbon dioxide equivalent,
 - 15,700 pounds PM 2.5 (the primary pollutant that causes asthma), and
 - Saved over \$3.5 million in annual energy expenditures.
- The Retrofit Accelerator is working with over 1,000 affordable housing buildings that are subsidized by the city, state, or federal government.
- The Retrofit Accelerator assists projects across all of NYC's five boroughs, reflecting the number of large buildings in each of the boroughs.
- The Accelerator is working with building decision-makers for over 900 buildings in NYC's flood zones, many of whom are implementing projects that both reduce risk from extreme weather events and reduce energy consumption.

LESSONS LEARNED

- **Direct, one-on-one assistance is only part of the picture.** While the Efficiency Advisor's technical guidance is crucial to ensure that decision-makers receive the help they need to select a project, find a contractor, secure funding, ensure quality work, and track savings, developing a larger market for energy efficiency played a large role. Other cities should ensure that appropriate budget and staff resources are allocated for coordination and collaboration with private and public entities to ensure success.
- **Understand the primary audience to develop marketing that is engaging and informative.** In the first year of implementation, MOS contracted a firm to conduct market research into building owners, managers, and co-op/condo board members for large multifamily buildings to better understand their barriers to implementing energy upgrades, their priorities within the building (unrelated to energy efficiency), where they get their information related to building improvements, and what messaging is most effective. The Accelerator has already developed a brand and marketing materials that it was able to test and found that it was too vague and not catchy. As a result, the program underwent a rebranding focused on simple messaging that was engaging and included information that its main audience cared about. The Accelerator also prepared marketing campaigns around specific problems faced by many NYC buildings, with messages that were funny and related to non-energy benefits, such as comfort and air quality.
- **Target outreach and guidance based on specific project opportunities or technologies.** During the first year of the Accelerator, Efficiency Advisers realized that providing building owners with information on all potential efficiency projects within their buildings could be overwhelming for those unfamiliar with energy efficiency programs. With this in mind, the Accelerator developed targeted campaigns for specific building types, systems, or technologies that have a high impact and are engaging to participants. The comprehensive campaigns aim to develop a market for these targeted areas, from training service providers, to creating engaging marketing campaigns, coordinating incentive offerings, and providing general education and technical guidance. A significant amount of outreach to recruit building owners for these specific campaigns, which have included steam heat conversion (Better Steam Heat campaign) and building envelope improvements (Keep Out the Cold Campaign).
- **Conduct regular customer engagement through multiple venues.** Communicating through various channels helps to build relationships with building owners, resulting in a higher likelihood that those building owners will participate in future campaigns or programs. The program staff communicate electronically, via phone, and also facilitate in-person stakeholder meetings for the community (both hosted

by the city and by partner organizations). The Accelerator also has a recognition program for partner organizations that support and amplify the Accelerator, and ambassador organizations that have a local presence and facilitate Accelerator events.

- **Connect the dots and leverage partners.** The Efficiency Advisors serve as objective third-party consultants to building owners, providing them with analysis that shows the opportunities for projects that will save their buildings energy and money. Efficiency Advisors also build off of work done by other city agencies, private vendors and financiers in NYC. The Advisors can refer building owners to approved vendor lists, utility incentive programs, and financing tools to help move the efficiency projects from conversation to financing to implementation.
- **Understand the opportunities and challenges of administering the program as the city.** Cultivating trusted relationships is a key strategy for the Accelerator's success. Building decision-makers will only listen to Efficiency Advisors if they trust the information provided and that it is in the decision-makers' best interest. While some potential participants may see the city as an entity that acts in their best interest, other building decision-makers are inherently wary of the city due to past experiences of code violations and a multitude of city regulations. Accelerator staff have found that it is important to convey the positive aspects of being a city-led program.

KEY COMPONENTS FOR REPLICATION

- **Develop trusted relationships with other programs.** Often, in today's market, participating in local utility and state incentive programs is the most confusing part of doing a building retrofit. As a public entity, unbound by restrictions of certain fuel types and private interests, cities have an opportunity to work with the administrators of these programs to make the process easier for participants and gain access to new participants and leads. It is crucial to ensure that these administering entities understand that a program like the Accelerator exists to complement their efforts and make them more successful, rather than as a competing initiative.
- **Dedicate time and resources to marketing, outreach, and education.** Building owners and decision-makers are busy with a wide range of responsibilities related to maintaining their buildings. They often do not have time to deeply understand the technical details of energy upgrades. Clear, simple messaging and short, but informative, educational materials can go a long way in helping decision-makers feel comfortable implementing an upgrade.
- **Ensure funding is allocated over a sufficient amount of time to both generate leads and follow through on retrofits.** Participants often ask Efficiency Advisors if they can work with the advisor throughout the lifetime of the project, and express worry that the program will go away before their projects are completed. The Accelerator is a ten-year program, which provides participants with the comfort that they will receive assistance when they need it.
- **Develop a program structure that is flexible to market needs.** As a city program unbound by certain regulations that govern utilities, the Accelerator has the flexibility to listen to the market and participants to tailor its services and develop new campaigns that address their needs.



CONSIDERATIONS FOR SCALING UP THE PROGRAM

Beyond scaling up the program goals or budget, a city may consider scaling up the scope of services provided by a similar program. The NYC Retrofit Accelerator was developed to assist owners required to conduct energy audits to implement those recommendations. While the program has expanded beyond those properties, the Accelerator does not provide engineering or deep project-scoping services, which require much more intensive assistance. Some cities may evaluate their market's needs to find that providing low- or no-cost audits, or a lighter version of an audit, is necessary to help their constituents implement retrofits.

CONSIDERATIONS FOR SCALING DOWN THE PROGRAM

The NYC Retrofit Accelerator is open to all building types over 50,000 square feet, that are still burning #4 oil, and any sized affordable building. These segments were chosen due to GHG emission impact and affordable housing goals. Other cities may find that there are narrower segments of their buildings that need assistance more than others, or that have the highest impact on GHG emissions than others. Benchmarking and audit data, combined with other data points that demonstrate a need for assistance, can help cities to further segment the market to target a similar program.

ADDITIONAL RESOURCES

- The Community Retrofit NYC website can be found [here](https://retrofitaccelerator.cityofnewyork.us/). <https://retrofitaccelerator.cityofnewyork.us/>
- The One City: Built to Last - transforming New York City's Buildings for a Low-Carbon Future Report can be found [here](http://www.nyc.gov/html/builttolast/assets/downloads/pdf/OneCity.pdf). <http://www.nyc.gov/html/builttolast/assets/downloads/pdf/OneCity.pdf>
- The One City: Built to Last Technical Working Group Report can be found [here](http://www.nyc.gov/html/builttolast/assets/downloads/pdf/OneCity.pdf). <http://www.nyc.gov/html/builttolast/assets/downloads/pdf/OneCity.pdf>

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AUSTIN'S CARBON-NEUTRAL FLEET PLAN

MAYOR STEVE ADLER

CITY OF AUSTIN, TEXAS

OVERVIEW

Austin, Texas, has been setting the pace in sustainable practices in cities across the United States for years. Adding to that effort is the development of a carbon-neutral fleet plan designed to green the city's municipal fleet.

A 2007 Council resolution set a goal to make all City of Austin facilities, fleets, and operations carbon-neutral by 2020. This effort will be achieved through various measures across departments and industries, including the entire city fleet of vehicles. An additional resolution was adopted in 2016 further establishing targets and goals, as well as encouraging electrification of the fleet. Since the adoption of these resolutions, the City of Austin's Fleet Services Department has been working diligently to replace the city fleet with alternative fuel and electric vehicles.

While in the past the primary focus was on the use of alternative fuel which was successful, to offset the city's carbon footprint, with the increase in electric vehicles options on the market the city has refocused its efforts. As a result, the City Council passed a resolution tasking staff to conduct a feasibility study on transitioning the fleet to electric vehicles.

The city identified 330 light-duty vehicles that would be eligible to be replaced by plug-in hybrid and battery electric vehicles that are charged at city facilities by the end of 2020 along with the related charging infrastructure. It has an in-depth replacement process to determine the eligibility for the purchase of new and the replacement of existing vehicles and works closely with the Office of Sustainability and Austin Energy, the municipal utility, to determine environmental impact and charging infrastructure roll-out.

Through a cost-benefit analysis using data gathered from the City of Austin's fleet management system, the Fleet Services Department found that over the course of 10 years, \$3,500,000 in savings could be achieved by moving toward electric vehicles. Since the implementation of the program, the City of Austin has seen significant improvements in the sustainability of its fleet. Although fleet size and fuel use have increased through the purchase of alternative fuel and electric vehicles, the output of carbon emissions has steadily fallen.



Mayor Steve Adler



The city attributes much the success to the centralization of Fleet operations along with city-owned internal fuel infrastructure. This approach consolidates control over vehicle and fuel purchase and allows for a centralized message from leadership to reach key departments stakeholders. This message is communicated citywide allowing for a smooth, simple and collaborative replacement process for its vehicles. It also provides resources such as driver education to city employees in order to enhance employee familiarity with newer technologies and the city's investment in them.

IMPLEMENTATION

The City of Austin's Fleet Services Department manages the replacement of vehicles within the fleet and uses the AssetWorks fleet management system. AssetWorks tracks everything about the vehicles: purchase, cost, type of fuel uses, whether it is an electric vehicle or not, and also determines the fleet's carbon footprint. The city is able to determine the eligibility of cars to be replaced through the system's mileage tracking (there are different criteria for the replacement of different vehicles within the fleet, but in general, replacement eligibility is measured by mileage).

When a vehicle reaches 100,000 miles, it is brought in for inspection and maintenance. The City inspects the vehicle and determines if it needs to be replaced immediately, or if it can be extended by one or two years; if it needs to be replaced in the next budget cycle, it is added to a list which is accumulated throughout the year. It is then turned over to the budget office prior to the budget going to the Council.

Internal collaboration is a critical part of the implementation of the program. The city works with its departments after determining which vehicles need to be replaced: they discuss operational fees and meeting the operational needs of the departments as the first priority.

Driver education is another aspect of the implementation of this program. The city has close to 15,000 employees, and ensuring the workforce has the knowledge to operate newer technologies is a critical part of the success of this initiative. Austin produced a driver education video for its employees regarding the city's efforts to reduce its carbon footprint and green the fleet. The video teaches city employees not only about the different types of vehicles, but also how to operate regular vehicles to limit hard braking, idling, speeding, and other practices that lower the efficiency of the vehicles.

To familiarize the citizens of Austin to the fleet's alternative fuel and electric vehicles, the city decals vehicles to display them as alternative fuel or electric vehicles. Additionally, the city focuses on placing the vehicles and city-owned charging stations in public areas with a high volume of people, so citizens can become more accustomed to and interested in alternative fuel or electric vehicles.

It should be noted that the original estimate of 330 vehicles included only light duty vehicles due to what was available on the market (i.e. class, range); however, the replacement policy is designed to take advantage of new technology as it emerges on to the market. The city intends to take advantage of the heavier vehicles as these units go into full production.

TIMELINE

Policy Timeline

- **February 15, 2007:** City Council passes a resolution to make all City of Austin facilities, fleets, and operations carbon-neutral by 2020.
- **May 5, 2016:** City Council passes a resolution directing the City to look at feasibility and transitioning to an electrified fleet.

Management Timeline

- **March-May:** The city works with its departments on replacing units that are on the annual replacement list, and through that vetting process works with the sustainability office in determining the type of vehicles that are available on the market.

Goal Timeline

- **2017:** Have 35 plug-in hybrid and battery electric vehicles that are charged at city facilities.
- **2018:** Have 134 plug-in hybrid and battery electric vehicles that are charged at city facilities and add 100 charging stations.
- **2019:** Have 229 plug-in hybrid and battery electric vehicles that are charged at city facilities.

COSTS AND FINANCING

The fleet department manages the general fund vehicle budget and all other enterprise departments are responsible for funding their vehicles in their individual budgets.

The City of Austin strives to implement sustainability goals in a way that minimizes costs. We look for opportunities to streamline costs through different methods, however in general, while the cost of converting to alternative fuels was minimal, moving to electrification can appear to be costly. The electric feasibility study done in 2016 revealed that the incremental cost associated with the purchase and the associated charging infrastructure is offset over the life of the vehicle. The main factors included lower lifetime cost related to fuel and maintenance.

Additionally, Austin Fleet is participating as one of the founding cities of the Electrification Coalition and Climate Mayors Electric Vehicle Purchasing Collaborative. The Collaborative is a one-stop online procurement portal providing municipalities across the country equal access to competitively bid electric vehicles and accompanying charging infrastructure.

Another tool used by the city especially when pursuing new technology in its early stages when incremental costs are at their greatest, is to take advantage of grant funding. Since 2008, Texas and the federal government have awarded over \$9 million in grant funding to Fleet Services in particular to assist with the conversion of our fleet to electric, hybrid, and alternative fuel vehicles. Nearly \$8 million has come from the Texas Commission on Environmental Quality (TCEQ) under its Texas Emissions Reduction

Program, an initiative with the goal of reducing pollutants and improving state air quality. TCEQ grant funding supported our expansion of the city Compressed Natural Gas (CNG) station, the construction of a bio-diesel station at a South Austin Fire/EMS facility, the installation of anti-idling devices on city vehicles, and the replacement of garbage trucks, sweepers, and bucket trucks with alternative fuel vehicles.

In November 2018, TCEQ finalized its plan for administering the Texas Volkswagen Beneficiary Mitigation Plan. Under this plan, the Austin area is allocated over \$16 million for the replacement of vehicles with those that result in a 25 percent NOx reduction. Also, under the plan, over \$31 million is available statewide for zero emission vehicle charging stations. The City of Austin Fleet Services seeks to optimize our opportunity to replace high-emission vehicles and to install electric charging infrastructure.

Fleet Services has also received over \$1 million in grant funding during the last ten years from the U.S. Environmental Protection Agency, the Texas Railroad Commission, and the Texas Comptroller for the replacement or retrofitting of old vehicles for electric hybrids or alternative fuel vehicles, the conversion of City vehicles to Plug-in Electric Hybrid Vehicles (PHEVs), and the installation of 33 electric charging stations at various City-owned sites to support the new PHEVs.

RELEVANT POLICIES

The City of Austin's fleet carbon-neutral plan is built upon two City Council resolutions. The first, passed in 2007, directed all City of Austin operations carbon-neutral by 2020 through measures including making the entire city fleet of vehicles carbon neutral through the use of electric power, non-petroleum fuels, new technologies, mitigation, and other measures as necessary, prioritizing the earliest possible conversion to such fuels and technologies and establishing timelines and benchmarks for such conversions.

The second City Council resolution was passed in 2016, reaffirming the notion of making the city fleet of vehicles carbon neutral by 2020, in addition to directing the fleet department to look at the feasibility of electrifying the fleet.

KEY COLLABORATORS AND STAKEHOLDERS

- **City Council, State Manager, and Mayor:** The Council resolutions passed in 2007 and 2016 set the standard for the greening and electrifying of the fleet. The City of Austin has a strong manager form of government, so the council puts forward resolutions, and then the city manager develops policy to bring about that initiative. Processes and procedures are then developed to bring forth the desired outcome, including discussions with departments.
- **Austin Energy:** The city's municipal utility, Austin Energy works closely with the city and helps it with placing charging stations and the electrification of vehicles.
- **Department of Sustainability:** The Department of Sustainability works closely with the Fleet Services Department to determine the type of vehicles on the market and determine the fleet's carbon footprint.

OUTCOMES

- The City fleet size has increased by 40 percent over the last 12 years — from 4,746 to 6,647 units, yet total carbon output continues to fall. During this time the fleet has made a significant transition to alternative fuel vehicles; today, more than 80 percent of the fleet vehicles are alternative fuel capable, hybrid, or electric vehicles.
- In 2006, usage of alternative fuel was 9 percent of total fuel used (428,000 gallons out of 4.6 million). It now accounts for 72 percent of total fuel used by the City (4.0 million out of 5.6 million gallons).
- Total annual carbon emissions are 4,200 metric tons lower than 2006 levels due to alternative fuel usage, with average annual carbon emissions per vehicle 37 percent lower than in 2006.

LESSONS LEARNED

Owning the fuel infrastructure can simplify the process. The City of Austin owns its own fuel infrastructure, which does not force it to depend on private utilities and allows the city to use whatever fuel it chooses for its vehicles.

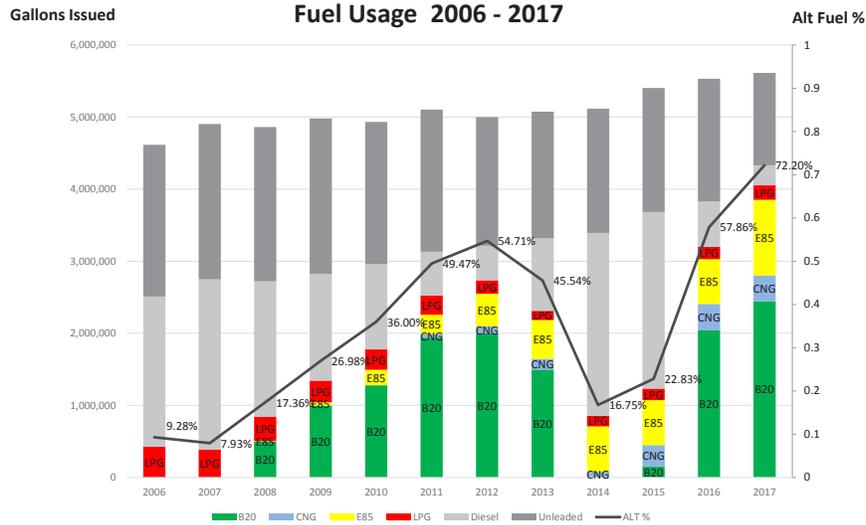
The market changes every day. The Fleet Services Department works with the Office of Sustainability to determine the types of vehicles on the market, but with the ever-improving market, new technology is always on the horizon. It can be difficult to invest in models while new ones with better ranges are being produced every day.

Develop the relationship, then let the technology come. Although new technology is always being developed, there are limited options for medium- and heavy-duty vehicles on the market, which can limit the

2018 FLEET SERVICES

Austin’s Use of Alternative Fuels History

- In 2007 Council passed an resolution to become carbon neutral by 2020
- Alternative fuel progress: In 2006 usage was only 9% of total fuel (428,000 gal out of 4.6M), and has increased to 72% of total fuel today (4.0M out of 5.6M gallons)

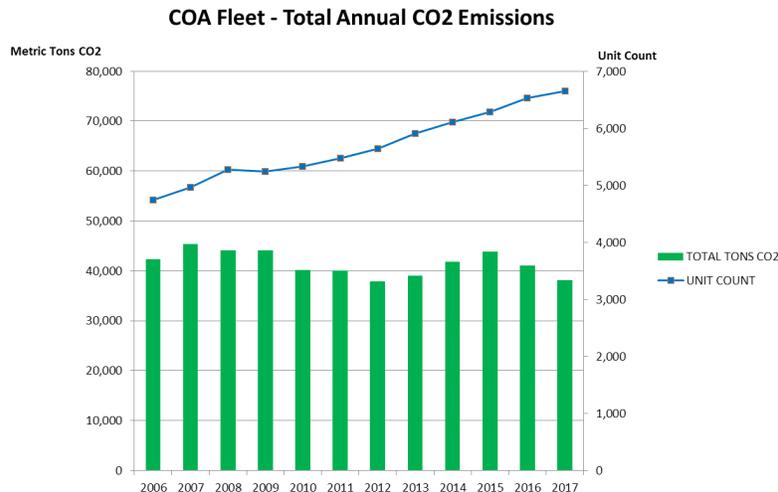


1

2018 FLEET SERVICES

Austin’s Use of Alternative Fuels (continued)

- Fleet size has increased by 40% over last 12 years – from 4,746 to 6,647 units yet total CO2 output continues to fall
- Total CO2 emissions lower 4200 metric tons since 2006 levels due to alternative fuel usage
- Average annual CO2 emissions per vehicle is 37% lower than 2006



2



Organizational Sustainability: 2017 Key Performance Indicators



www.austintexas.gov/sustainability

As a best-managed city, Austin is committed to integrating sustainability into our day-to-day operations. This report card tracks 10 focused indicators of the City of Austin’s sustainability performance, including impacts related to our employees, facilities, fleet, and purchases. The measures reflect sustainability as a balance among prosperity and jobs; conservation and the environment; and health, equity, and cultural vitality.

Measuring and sharing information about our performance as an organization helps us showcase our achievements and challenges so we can track progress and manage change.

PERFORMANCE KEY

- TARGET MET** ▶ Stated performance goal achieved or exceeded.
- TARGET NOT MET** ▶ Stated performance goal not achieved.

CARBON FOOTPRINT

CO₂e Emissions from City Operations¹
■ Carbon Offset Purchase



GOAL: 5% EMISSIONS REDUCTION PER YEAR

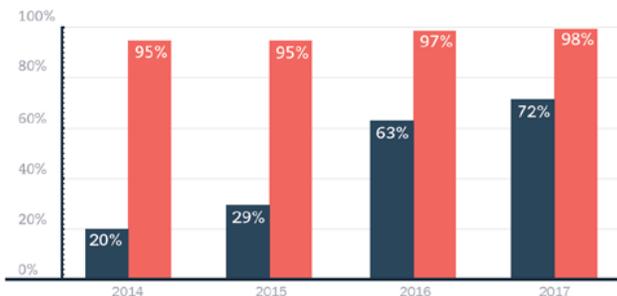
PERFORMANCE TARGET MET

VEHICLES & EQUIPMENT

% Alternative Fuel or Hybrid Fleet Vehicles
 Purchased / % of Alternative Fuel Used



● Purchased ● % of Alt. Fuel Used



GOAL: 95% OF ALL NEW VEHICLE PURCHASES ARE ALTERNATIVE FUELED OR HYBRID

PERFORMANCE TARGET MET

growth of the program. However, by building trusting relationships with the departments through honest and frequent communication, it will be easier to transition new vehicles into those departments when the new technology is available on the market.

KEY COMPONENTS FOR REPLICATION

Have control over the municipal fleet and start with buy-in from the top down. The City of Austin has a consolidated fleet, and has control over the buying process and management of the initiative. This funnels all acquisition through one department that has the sustainability initiative and purchases are vetted through that lens. This prevents every department from managing the initiative through its own lens, which could lead to miscommunication and reduce the efficiency of the program.

Have a good source of data. Austin uses AssetWorks for its fleet management system, which tracks all fleet vehicle data. Tracking and controlling concrete data helped the city perform an accurate cost-benefit analysis in order to prove the cost-effectiveness of the program.

Know the customer and build trust with them. The City of Austin's departments have missions and completing them is the first priority of the city, which can lead to worries when introducing new and innovative technology. In some cases, the departments in Austin were allowed to keep their old technology in the event something went wrong with the new – this made it easier for them to transition to the new technology, as they felt more comfortable with having an alternative. Once that basic trust is established, it will be much easier to navigate communication with the customer.

CONSIDERATIONS FOR SCALING THE PROGRAM UP OR DOWN

There are no specific considerations for scaling the program up or down for other cities, but one of the most critical aspects is understanding the makeup of the fleet, including its size. Unless the city buys based upon its customers and their needs, the benefits of the program can easily be lost if the vehicles are not being driven. Austin Fleet has recently explored the role of telematics in gaining valuable knowledge on daily vehicle operations. This technology can be leveraged to gain more data-driven insight into department operational need and ultimately vehicle selection. Regardless of program size, the more the city fleet understands its customers and their needs, the more options there are to expand the program.

ADDITIONAL RESOURCES

- To view the Fleet Electrification Study and Plan, visit: <http://www.austintexas.gov/edims/document.cfm?id=264039>
- To view 2007 Council Resolution, visit: https://austintexas.gov/sites/default/files/files/Sustainability/ACPP_resolution_20070215-023.pdf
- To view 2016 Council Resolution, visit: <http://www.austintexas.gov/edims/document.cfm?id=255026>
- To learn more about the Climate Mayors Electric Vehicle Purchasing Collaborative, visit <https://driveev-fleets.org/>

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ADVANCING RESILIENCE IN CHICAGO AND COMED'S COMMUNITY OF THE FUTURE INITIATIVE

AECOM

CHICAGO'S BRONZEVILLE NEIGHBORHOOD

OVERVIEW

As part of its participation in the Rockefeller Foundation's 100 Resilient Cities (100RC) program, the City of Chicago began developing a Resilience Strategy for a more resilient, connected Chicago. This work, conducted under the leadership of the Mayor's Office, required assessing the key resilience challenges faced by Chicago and its diverse neighborhoods. To more effectively execute this work, the City formed partnerships with AECOM, ComEd (Exelon's electric utility serving the Chicago region) and other organizations already working to advance sustainability and resilience goals throughout the city.

Strategic partnerships allow the City to further priorities by leveraging resources and building off of ongoing initiatives to expand their reach and impact. Additionally, they provide a platform to integrate resilience initiatives into a more cohesive and unified vision. Such partnerships include collaboration with AECOM, who was selected by the Rockefeller Foundation 100RC program to serve as the primary consultant and strategy partner for the City in developing its Resilience Strategy. AECOM has assisted approximately one third of the global cities that are participating in 100RC. AECOM also supports ComEd, as that utility implements its innovative Community of the Future (COF) program in Chicago's historic Bronzeville neighborhood.

This case study focuses on best practice examples where the City, ComEd, and AECOM are working together to accelerate progress on sustainability, carbon reduction, and resilience. It focuses specifically on Chicago's Resilience Strategy and ComEd's Community of the Future in Chicago's Bronzeville neighborhood, which aims to make Bronzeville one of the most connected, green and resilient communities in the nation.

IMPLEMENTATION

Both the City's Resilience Strategy and the Bronzeville Community of the Future initiative are notable for their comprehensive and collaborative approaches that have prioritized community engagement. Key to the successful development and implementation of Chicago's forthcoming Resilience Strategy is developing partnerships with organizations already working to advance resilience in the city and including them in an ongoing process aimed at innovation and advancement. ComEd, Chicago's electric distribution utility, is an essential partner in advancing Chicago's sustainability and resilience goals. Together, the City, ComEd, and AECOM have partnered to align efforts and create additional resilience value for communities and the city overall. The formalized collaboration approach is replicable and scalable and demonstrates how a programmatic strategy can make a difference in neighborhoods at the same time that it contributes significantly to city and region-wide carbon reduction and resilience goals. To do this, the three partners identified key areas of opportunity in the Bronzeville community to advance both City and ComEd goals. In order to further identify areas of collaboration in these areas, AECOM, ComEd, and various representatives from City Departments, Sister Agencies, and the Mayor's Office conducted a series of working sessions in the summer of 2018, focusing on three themes:

1. Distributed energy resources and resilience
2. Partners in building resilience
3. Income-eligible energy efficiency programs

The partnership supports the deployment and testing of new energy-related technologies and business models to develop expertise and resources, establish lasting collaborations, and improve community resilience together. The collaborative working sessions began by identifying projects and investments already ongoing in the Bronzeville community through ComEd’s Community of the Future and exploring how to advance and leverage them. These initiatives include:

- a microgrid and development of approximately 1.25 MW of advanced distributed energy resources (DER) including solar power and storage and additional investments in DER;
- a comprehensive energy efficiency plan to reduce energy use by 20% across the entire community;
- an electric vehicle mobility program serving neighborhood seniors;
- STEM-based initiatives for neighborhood students, and job training and outreach programs to connect residents with the job opportunities created by the smart energy investments;
- community kiosks with public wifi for information on energy efficiency, public services and community events;
- smart sensors to measure air quality, soil moisture and solar intensity, etc.; and
- solar-and wind-powered safe passage lighting in partnership with Chicago Public Schools and Chicago Housing Authority.



WHY BRONZEVILLE?

The partners chose the Bronzeville neighborhood to be the pilot community for several reasons:

- A concentration of investments and initiatives in Bronzeville by ComEd and Elevated Chicago could be leveraged to test new concepts.
- Bronzeville is a diverse and historic neighborhood and community leaders indicate that smart technology and sustainable energy investments have the potential to be key differentiators for the community and its economic development strategy.
 - The annual median income in Bronzeville (\$25,175) is significantly lower compared to that of the City of Chicago is (\$61,367).
 - Nearly 90 percent of Bronzeville residents are minority with African-Americans accounting for almost 80 percent of the total population.
 - Of the total population, 35 percent of residents are below 25 years old while 14 percent of residents are 65 or older.
- Access to employment presents a challenge for Bronzeville residents:
 - Bronzeville has a higher than average commute distance (5.7 miles) than the City of Chicago average, and the vehicle miles travelled (VMT) is greater across all family types.
 - Overall Employment Access Index is lower; retail jobs access is lower than other Chicago neighborhoods.
 - Average transportation costs as a percentage of income for a very low-income family stands at 34 percent –higher than the City of Chicago average.
- Bronzeville has a diverse, historically significant building stock, which is beneficial for testing out a comprehensive strategy such as this. The table below captures the building stock profile for the neighborhood:

Commercial			Institutional			
Hospitality	Industrial/Flex	Office	Retail	Health Care	Specialty	Sports & Entertainment
5%	10%	12%	13%	19%	40%	0%

COSTS AND FINANCING

Implementing the resilience initiatives in Bronzeville is accomplished by leveraging several sources of funding. These include direct investments by ComEd, which has committed significant resources for infrastructure and programmatic investment. These utility investments include microgrid and distributed energy resource integration, safe passage lighting, community smart kiosks and energy efficiency enhancements including the allocation of resources towards energy efficiency initiatives targeting lower income customers (i.e., income-eligible) through programs, partnerships, and research and development expenditures. This allocation builds on their other comprehensive ongoing energy efficiency efforts in their service territory. Additionally, funding sources include multiple Department of Energy awards including the S.H.I.N.E.S. (Sustainable and Holistic Integration of Energy Storage and Solar PV) grant secured by ComEd, and coordination with grant-funded organizations such as Elevated Chicago, an organization with grant-funded projects focusing on equitable transit-oriented development (TOD) specifically around the 51st Street and Garfield Green Line train stops, which serve Bronzeville residents. Together, these sources represent a diverse funding strategy that supports the comprehensive initiative and represents the interest in such work across sectors.

TIMELINE

- **February 2016:** ComEd announces its Community of the Future in Bronzeville
- **August 2016:** City kicks off Resilience planning efforts through 100RC
- **September 2017:** Chicago's Chief Resilience Officer, ComEd, and AECOM begin discussions to identify opportunities for enhanced collaboration. Together, the City, ComEd and AECOM develop a Resilience through Collaboration approach that prioritizes and formalizes opportunities to work together to reduce carbon emissions and build more resilient and sustainable communities.
- **January 2018:** Three priority opportunity areas are identified and background research begins.
- **February 2018:** Illinois Commerce Commission approves ComEd's Bronzeville Community Microgrid plan.
- **Summer 2018:** Working sessions expand on key areas of opportunity for collaboration and work to formalize agreements with specific action scopes.
- **Early 2019:** The City will finalize its Resilience Strategy, with this collaboration as a critical element.
- **2019:** Implementation is underway and will continue through the year.

RELEVANT POLICIES

The City of Chicago has outlined aggressive goals for reducing carbon emissions and launched innovative initiatives to implement programs that increase the resilience, sustainability, and livability of individual neighborhoods and the city as a whole. The City has consistently publicly reaffirmed its commitments to these priority areas in policy documents such as the Chicago Climate Action Plan, the Chicago Climate Charter, Sustainable Chicago, and the 100RC Resilient Chicago Strategy. As importantly, it has implemented its commitments through innovative programs like Retrofit Chicago and the Resilient Corridors Initiative.

Additionally, passage of legislation such as the Illinois Future Energy Jobs Act (FEJA) in 2016 has dramatically expanded resources for energy efficiency and renewable energy.

These commitments and policies represent an opportunity and need for partnerships that can accelerate implementation of initiatives that meet community needs.

KEY COLLABORATORS AND STAKEHOLDERS

Collaboration is critical to meeting the City's aggressive climate goals, and that collaboration is most effective when it is broad based and leverages the leadership and resources of key stakeholders like governments, utilities, private business, and civic and community leaders. For example, at the same time that Chicago has advanced aggressive carbon reduction and resilience goals, ComEd has implemented some of the most advanced and forward thinking grid modernization and energy efficiency initiatives in the nation. Its grid modernization work includes the nation's first utility operated microgrid cluster designed to improve the resilience of the city, including by continuing to provide power to Chicago's public safety headquarters and other critical facilities in the Bronzeville neighborhood.

As one of the world's leading engineering and infrastructure firms, AECOM is a leader in integrated planning and engineering solutions for a sustainable energy future. The company's mission is to help its clients reduce energy and water consumption, develop renewable sources, cut carbon emissions, and improve infrastructure and community resilience. AECOM has worked closely with the City and ComEd to implement initiatives that advance Chicago and the Utility's ambitious climate and resilience objectives.

Across the initiative, there are a variety of relevant stakeholders including:

- **Mayor:** The Mayor’s Office is responsible for overseeing the development of Chicago’s Resilience Strategy as part of the grant received from the Rockefeller Foundation’s 100RC program, implementing the current C40 commitment, and committing to achieving 100% renewable energy in all public facilities by 2025. The Mayor’s Office is collaborating with ComEd and other stakeholders to accomplish these initiatives.
- **City Government:** The City government includes several active departments and sister agencies, including the Chicago Department of Public Health (CDPH), Department of Planning and Development (DPD), Chicago Department of Transportation (CDOT), Chicago Transit Authority (CTA), Chicago Office of Emergency Management and Communications (OEMC), Fleet and Facility Management (2FM), Chicago Police Department (CPD). These departments facilitate, implement, review, and engage on furthering various strategies, policies, plans, and initiatives.
- **Technical Partners:** Technical partners in this work provide support including engagement efforts, technical analysis, and subject matter expertise. For this work, AECOM serves as the technical partner supporting the identification and implementation of a deeper collaboration between ComEd and the City, as well as providing technical support to the City and ComEd in analyzing key resilience opportunities. Additionally, Elevate Energy and the Chicago Council on Global Affairs, with funding support from the Chicago Community Trust, have worked with AECOM, the City, and ComEd to model and document the impact of programmatic investments on accelerating carbon reductions in Bronzeville. The list of supporting technical partners continues to expand as new projects are identified and moved to execution.
- **ComEd:** Chicago’s electric distribution utility, serves as a partner to the City in identifying and leveraging existing assets for new initiatives and building Chicago’s resilience by implementing energy projects and programs, collaborating with the City on the siting of new assets, and working with Communities to improve quality of life. ComEd works closely with the Mayor’s Office and other City entities in developing and implementing these initiatives. ComEd has also established an Advisory Committee of local Bronzeville community leaders that actively work with the utility in the development and implementation of all Community of the Future initiatives.
- **Product manufacturers:** Product manufacturers support this work by providing product expertise, operations and maintenance information, and product implementation guidance for specific implementations of pilot and full-scale programs. This support includes electric vehicle (EV) charging companies, mobility service operators, and developers of Internet of Things sensor technologies.
- **Non-Technical Partners:** Non-technical partners include community organizations, such as Elevated Chicago, whose work focuses on equitable transit-oriented development and addressing first and last mile mobility issues and Bronzeville Community Development Partnership, a community economic development organization revitalizing Bronzeville. These partners support ComEd and the City by aligning priorities within the Bronzeville community.
- **Academic Partners:** Illinois Institute of Technology (IIT) is a university in Bronzeville that has partnered with ComEd on emerging energy technologies, such microgrid and nanogrid technologies. It is also partnering on other innovations including smart streetlights, smart metering, and EV charging stations. Additional academic partners will be added as new projects develop.

A HISTORY OF COLLABORATION WITH RETROFIT CHICAGO

In addition to the Community of the Future collaboration, AECOM has worked alongside the City and ComEd before. Retrofit Chicago, a city-wide initiative in partnership with ComEd, AECOM, and others, expands energy efficiency in large buildings across the City. One of Chicago’s signature carbon reduction programs, the Retrofit Chicago Energy Challenge is helping drive continuous improvement in energy efficiency with-

in buildings. Property owners make a public commitment to voluntarily reduce their energy use by 20% or more within five years. AECOM team members were a core part of the group that designed the Challenge and enrolled the inaugural class of participants. AECOM's energy efficiency team (formerly Sieben Energy) has worked with approximately one third of the participating buildings to help them achieve their reduction targets, including landmark structures such as Merchandise Mart, Inland Steel Building, The Franklin, 333 North Michigan Avenue, 205 and 225 North Michigan Avenue, and One North Franklin Street.

OPPORTUNITIES TO INCLUDE VULNERABLE COMMUNITIES

Bronzeville is a storied neighborhood with a legacy of creativity and art. It is home to many critical public infrastructure facilities including hospitals, police headquarters, and fire departments, as well as the Illinois Institute of Technology. Bronzeville is also a diverse community, including a large senior population and low-income residents that will benefit from many of the planned initiatives. For example, the Community of the Future program will link energy efficiency programs to the Healthy Chicago 2.0 plan that focuses on the relationship between reduced housing cost burden for at-risk populations and improved public health.

Engagement of the Bronzeville community is a critical component of this work and is occurring throughout the process through various outreach efforts such as community meetings and workshops. The engagement centers around gathering opinions on community priorities, ideal locations for new services, and opportunities for development. ComEd has established a comprehensive Community Advisory group that actively engages community leaders, businesses, residents, civic groups and local schools in the design and implementation of the initiative. Additionally, ComEd has implemented programs targeted at local Bronzeville high schools through Ideathon, a program centered on providing students with resources to develop smart city ideas using resilience concepts and technology kits. ComEd is contributing to development of the next generation work force through tangible outreach efforts that engage them and build interest and understanding of emerging energy technology that is shaping their future.

OUTCOMES

All projects are developed with success indicators and metrics such as cost savings realized, reduced energy cost burden, reduced housing cost burden, improved mobility access, reductions in energy usage, and other community and livability benefits. Specifically, as part of the Bronzeville Community Microgrid, ComEd, with support from AECOM, developed comprehensive performance metrics that will measure resilience holistically. Holistic resilience includes the ability of the electric grid to respond to large-scale disruptions in the electric supply, broader community and urban resilience, reduction in greenhouse gas emissions and impact on community economic indicators. In total, the microgrid project will track more than four dozen different metrics from carbon reductions and energy reliability to safety and health.

Multiple initiatives are already underway and are demonstrating a positive impact in the community. One of the first implemented initiatives, the ComEd DASH Electric Vehicle ride sharing program launched in December 2017. The program currently serves three senior resident buildings in Bronzeville by providing a cost-effective first/last-mile mobility solution while employing community residents as drivers and reducing carbon emissions.

Likewise, ComEd has set a 20% energy efficiency goal for Bronzeville and launched comprehensive neighborhood specific energy efficiency programs in 2018 that will have positive community impacts. For example, AECOM modeled the impacts of achieving accelerated energy reductions approaching 20% - this rate of savings will reduce community carbon emissions by approximately 21% and support over 3,500 jobs.

LESSONS LEARNED

Throughout this project, AECOM has identified several lessons for other communities wishing to pursue similar efforts.

- **Identify quick wins.** Identifying quick wins can help motivate various parties and stakeholders to invest time, money, and other resources. By identifying the clear overlaps in goals and commitments between parties early, stakeholders can more quickly capitalize on win-win situations for cost sharing, savings, and greater community impact.
- **Formalize partnerships.** Formalizing collaborative partnerships, including establishing performance metrics, is critical to success. AECOM is exploring expanding the use of collaboration agreements with the Chicago Council on Foreign Affairs, Elevate Energy, ComEd, and the Chicago Community Trust as a tool for replicating the successful initiative.
- **Community engagement is key.** Early and ongoing structured community engagement is essential in directly shaping program priorities.
- **Collaboration is a two-way street.** Private sector partners must recognize and address the organizational structure of cities and the role of specific departments and agencies in implementation. Additionally, governments must understand and accommodate the regulatory constraints that utilities work under. Brokering working relationships between city government and utilities and other stakeholders requires a sufficient lead time in order to appropriately navigate the complex regulatory and other requirements of both types of organizations.
- **Learn from others and identify best practices.** AECOM drew lessons from the City of Chicago Resilient Corridors Initiative, Boston Smart Utilities Vision, and the San Francisco Public Utilities Commission Triple Bottom Line Green Infrastructure Program among others for some of their work.

KEY COMPONENTS FOR REPLICATION

As pilot initiatives and programs, one of the key components of this work is scalability and the ability to reproduce such collaborations and programs in other cities that meet local needs. There are several essential strategies for successful replication in other locations.

- Engage the community during early planning and visioning stages.
- Address scalability and cost recoverability aspects during the earliest phases of planning.
- Develop a playbook that addresses program phasing, deployment strategies, partnerships, milestones, how obstacles and challenges should be addressed, and necessary requirements elicitation.
- Clearly identify and quantify project co-benefits to facilitate collaboration and co-investment.
- Keep partners and community engaged throughout the process.

ADDITIONAL RESOURCES

To learn more about the Community of the Future Initiative, visit: <http://bronzevillecommunityofthefuture.com/>

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