

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



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 2020

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

ALLIANCE FOR A SUSTAINABLE FUTURE

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Introduction

Cities across the country are increasingly interested in partnerships to advance energy efficiency, renewable energy sources, and low-carbon mobility. Collaborative partnerships between cities and utilities serve as opportunities to advance these goals and can lay the foundation for clean energy solution implementation, policy change, and community engagement. Through collaboration, cities and utilities can leverage a diverse set of resources and connections to take a holistic approach in addressing climate issues that satisfy community needs, increase resource access, create supportive regulatory environments, and help utilities grow.

To reach these goals, more than 60% of cities that responded to the 2018 Survey of Mayors¹ launched or significantly expanded a climate initiative or policy in the past two years. The actions are a concerted effort on the part of local government to address the challenges their cities are experiencing related to climate impacts: In the past 5 years, 95% of American cities surveyed have experienced a change related to at least one climate impact. From Chicago's goal to

reach 100% renewable energy for municipal buildings by 2025 to Salt Lake City's goal to reach 100% municipal renewable energy supply by 2032, the undertakings are significant, and cities have found themselves working with their communities and utilities to accomplish their goals. Time and time again, these partnerships have been instrumental in enabling communities to meet their climate targets and spur development for a clean energy future.

The Alliance for a Sustainable Future, a collaboration between the U.S. Conference of Mayors (USCM) and the Center for Climate and Energy Solutions (C2ES), has captured a collection of case studies to demonstrate the impact of city-utility partnerships on addressing the growing impacts of climate change and promoting collaboration. From different regulatory environments to different community priorities, each city-utility partnership has a unique story. However, they all demonstrate a commitment to improving their communities through innovative collaborative efforts.

1. Alliance for a Sustainable Future. 2018. *Mayors Leading the Way on Climate*.
www.c2es.org/site/assets/uploads/2018/09/mayors-leading-way-on-climate-2018.pdf.



This portfolio of case studies features highly effective city-utility partnerships that have and will continue to accelerate clean energy, transportation electrification, and climate action in their communities. This case study collection features the following four partnerships:

1. **Chicago & Commonwealth Edison (ComEd):** Leveraging Utility Investments in a Community of the Future
2. **Detroit & DTE Energy (DTE):** Advancing Electrification & Sustainability in Detroit
3. **Los Angeles (LA) & Los Angeles Department of Water and Power (LADWP):** LA Commits to 100% Clean Energy
4. **Salt Lake City & Rocky Mountain Power:** A Partnership for a Carbon Negative Future

The purpose of this collection of case studies is to give both cities and utilities an overview of partnerships that have been beneficial in advancing sustainability goals and how these partnerships are created and evolve. The case studies address the following questions:

1. How are these collaborative efforts tackling clean energy and transportation issues?
2. What approaches are replicable and accelerate success?
3. How are equity, workforce development, and resilience goals woven into the collaborations?

These case studies were selected to provide examples of partnerships between both small and large cities and municipally-owned utilities (MOUs) and investor-owned utilities (IOUs) in a variety of geographies and regulatory environments. They demonstrate how city governments and utilities are implementing renewable energy, energy efficiency, grid modernization, and mobility electrification initiatives to drive positive community change and progress towards city targets.



Establishing Measures of Success: Targeted commitments to improving climate outcomes

City	Target
Chicago	<ul style="list-style-type: none"> ▪ Reduce GHG emissions by 80% by 2050 from a 1990 baseline ▪ Reach 100% renewable energy for municipal buildings by 2025 ▪ Reach 100% renewable energy for all buildings by 2035
Detroit	<ul style="list-style-type: none"> ▪ Reduce community-wide GHG emissions by 30% by 2025 from a 2012 baseline ▪ Reduce municipal GHG emissions by 35% by 2024 and 75% by 2034 from a 2012 baseline ▪ Increase solar generation capacity to 10 MW by 2029
Los Angeles	<ul style="list-style-type: none"> ▪ Reach 55% renewable energy by 2025 ▪ Reach 80% renewable energy by 2036 ▪ Lead CA to 100% renewable energy by 2045
Salt Lake City	<p>Climate Positive 2040:</p> <ul style="list-style-type: none"> ▪ 100 X 2032: 100% Renewable energy for community electricity supply by 2032 <ul style="list-style-type: none"> - Goal includes 50% renewable electricity for municipal operations by 2020 ▪ 80% Reduction in community greenhouse gas emissions (GHG) by 2040, compared to 2009 baseline <ul style="list-style-type: none"> - Goal includes at least 50% reduction in community footprint by 2030

In developing this document, USCM, C2ES, AECOM, the Institute of Electrical and Electronics Engineers (IEEE), and ComEd interviewed each city-utility partnership to gain a better understanding of how partnerships are developed and executed, enabling factors and challenges, impacts of efforts, lessons learned, and keys for project replication.

While each case study represents unique lessons learned, there were also several key themes that cut across successful city-utility partnerships. The following themes were keys to success across the four case studies.

Keys to Success

Laying the Groundwork: The city, utility, and key stakeholders all play an important role in laying the groundwork for partnership success. In some cases, city-utility partners should focus on gaining local government support and experience from pilot projects before kicking off their partnership efforts. In other cases, movement building and advocacy efforts from all partners and stakeholders can set the stage for partnership development.

Supportive Regulatory Environment: While regulation and policies differ from state to state and city to city, having a supportive regulatory environment allows partnerships to make quicker progress towards goals. Supportive environments can look different from location to location, and if a supportive regulatory environment does not yet exist, city-utility partnerships can be impactful advocates for and accelerate change in the regulatory environment to better support their clean-energy goals and initiatives.

Creating a Shared Vision: Identification of a clear vision and strategic objectives is foundational for city-utility partnerships. A shared vision is critical to connect varying entities and align on a targeted approach that benefits all parties.

Establishing Metrics for Success: Early

establishment of clear targets and metrics for success is necessary for city-utility partnerships to track progress and identify areas for improvement. Metrics can also be shared with stakeholders and ensure progress towards goals.

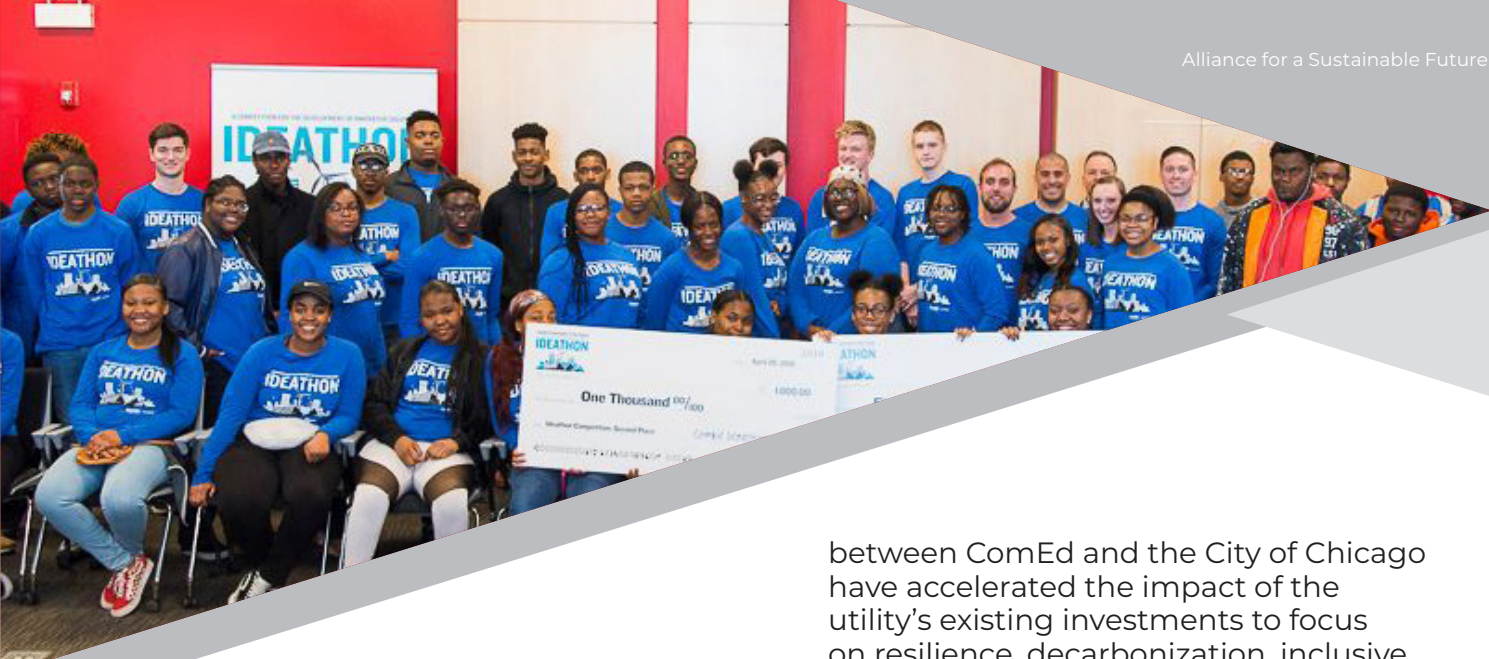
Partnering with Diverse Stakeholders:

Working with a diverse set of stakeholders is key for city-utility partnerships to implement successful initiatives. This includes working across city and utility departments to break down silos as well as collaborating with a wide-range of external stakeholders. Collaboration with groups such as non-profit organizations, local businesses, community leaders, education institutions, health institutions, and technical experts enables partnerships to take a holistic approach, develop a shared vision, and leverage a variety of technical and financial resources for planning and implementation.

Listening to Community Feedback:

Ongoing community engagement drives long-term support for city-utility initiatives. These partnerships thrive when they not only engage their communities, but also listen to and make communities an active partner. A bottom-up approach helps ensure initiatives address community needs and wants. Partnerships with local organizations help build connection and trust with the community as well as identify co-benefits, especially for vulnerable community groups.

Building on Success: Progress towards initiatives born from city-utility collaborations should be regularly communicated to stakeholders and the community. As initiatives are implemented and successes realized, these partnerships can evolve to encompass new projects and goals. The relationships developed through these partnerships are fundamental for implementing other sustainability related initiatives. By building on initial successes, partnerships can expand their impact and reach.



Chicago & ComEd:

Leveraging Utility Investments in a Community of the Future

The electric grid has long been the foundation of a modern economy and society, but what if it can do more? This is what brings the City of Chicago and ComEd together to leverage the possibilities of the advanced electric grid.

Today, as electrical system demands change and disruptive events such as extreme weather caused by climate change challenge resilience, grid modernization becomes imperative. Utilities must ensure that energy systems are equipped with the advanced technologies needed to enhance capabilities, increase sustainability and resilience. Beyond this, for cities, a modern grid can also serve as a focal point to support job creation, local STEM development, decarbonization efforts, and improve community liveability. This case study highlights how partnerships

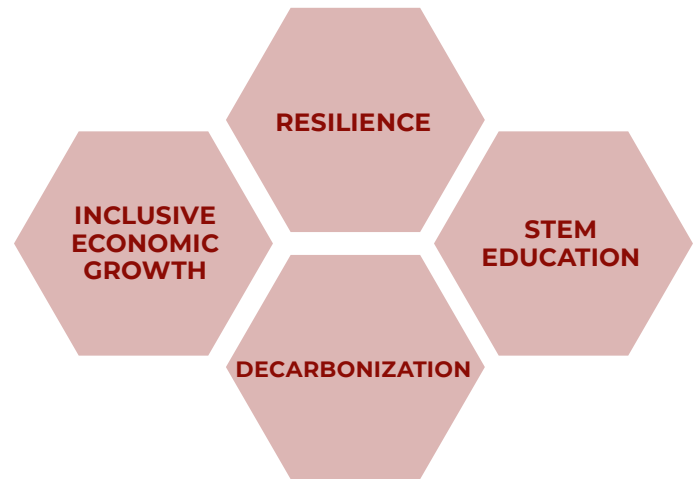
between ComEd and the City of Chicago have accelerated the impact of the utility's existing investments to focus on resilience, decarbonization, inclusive economic growth, and STEM education in the Bronzeville community, on the South Side of Chicago, through what has been termed the "Community of the Future".

It is a sunny April day and ComEd's Chicago Training Center, located in Chicago's South Side, is bustling with activity. Local high school students outfitted in matching "Ideathon" blue shirts proudly stand by tables waiting to demonstrate the prototypes they developed as part of the projects to the judges. Team "Four Lions" is confidently explaining their team's "Digital Playground" to Shay Bahramirad, Vice President of Engineering and Smart Grid at ComEd. They show her and the other judges the Raspberry Pi-coded prototype of a playground where sensors tell children whether swings and basketball courts are occupied. Across the room, another student explains how her gunshot detector will help keep students in her neighborhood safer.

This initiative is the result of a partnership between ComEd, Chicago Public Schools, and other stakeholders to provide Bronzeville students with first-hand access to cutting-edge technology. Beyond this, it also represents one way in which ComEd, the City of Chicago, and its sister agencies are partnering to leverage ComEd investments and resources to spur a future of decarbonization and community liveability as part of the Community of the Future.

At the center of the Community of the Future is ComEd's investment in the first utility-operated microgrid cluster designed to support an area that includes critical city facilities, such as Chicago's public safety headquarters, schools, and libraries. The microgrid has the capability to operate independently from the rest of the grid and once complete, it is expected to directly serve more than 1,000 local households and businesses using more than 7 MW of distributed resources that include solar panels, battery storage, and dispatchable generation. Essential for deep carbon reductions, the microgrid is designed to serve as a foundational core for inclusive carbon solutions that strengthen the grid as well as surrounding communities.

"When I speak about 'inclusive economic development', I'm not only talking about growth. I'm also talking about our need to rebuild our communities with equitable and modern infrastructure investments", said Chicago Mayor Lori Lightfoot. The Mayor's call for larger scale community revitalization is reflected in the Community of the Future. In fact, the Community of the Future initiatives align with the City's ongoing INVEST South/West initiative, an unprecedented community improvement initiative spearheaded by Mayor Lightfoot. The effort is intended to leverage partnerships with local government, philanthropic organizations, community leaders, and others to invest capital in re-activating neighborhoods in Chicago's South and West Sides. The objective is to achieve inclusive and measurable growth. This ambitious 'Marshal Plan' starts with providing these areas with improvements to their physical transit infrastructure, as well as access to broadband and 5G, improvements to schools, libraries, and other institutions and increased housing equity.



Innovative Partnerships

A key stage in the collaboration between the City of Chicago and ComEd began as part of the City's participation in the Rockefeller Foundation's 100 Resilient Cities (100RC) program in which the City engaged with ComEd, AECOM, and other organizations to address key resilience challenges faced by Chicago and its diverse neighborhoods. Starting in Summer 2018, the Mayor's Office led a series of working sessions focusing on themes of distributed energy resources and resilience, coordination of overlapping initiatives, and income-eligible energy efficiency programs. Since then, this partnership has become more focused, allowing the implementation of a robust set of scalable pilots with measurable impacts as part of the "Bronzeville Community Microgrid". These efforts have successfully engaged a number of City departments and sister agencies such as the Chicago Housing Authority, Chicago Public Schools, City Colleges of Chicago, the Chicago Park District, and community organizations.



Program	Total Customers	Customer Project Goal	Customer Projects/ Participation	Estimated Savings
Single Family	2,042	100	499	0.6 Gigawatt hours
Multi Family	13,817	1,100	6,255	7.7 Gigawatt hours
Small Businesses	1,385	55	113	2.8 Gigawatt hours
Large Customer	57	2	0	0

More Resilient Neighborhoods

To advance the decarbonization goals of the microgrid, ComEd partnered with the Chicago Housing Authority to focus on siting renewables which supply generation to the Microgrid as well as an Energy Roadmap Pilot Project focused on energy efficiency. The effort led to a public and private sector innovation project with the Chicago Housing Authority to site a 750 kW solar PV array at Dearborn Homes, a Chicago public housing development that serves more than 600 families. However, leveraging renewable energy is just half of the equation. The Energy Roadmap Pilot outlines methods for Dearborn Homes to meet a 20% energy reduction commitment in line with the Retrofit Chicago Energy Challenge. The assessment of lighting and HVAC retrofit opportunities identified nine measures to achieve a 17% energy reduction. The lighting measures identified represent more than 50% of electricity savings with a less than four-year payback. Additionally, private solar panels have been located on the rooftops of the property to help power its buildings and feed power back to the microgrid. The effort is in part funded through a \$4 million grant from the U.S. Department of Energy.

Another energy efficiency initiative being piloted in Bronzeville is a unique geothermal

incentive program to incentivize small businesses and building sites to move towards efficient geothermal heating and cooling systems. Two pilot projects have been installed in Bronzeville, each with four tons of geothermal capacity in partnership with the Geothermal Alliance of Illinois and Inova. One of the sites is a small local business and the other is a non-profit organization. The geothermal even enabled the building owner to install rooftop solar, for which there had previously been no roof space: By removing the old rooftop HVAC units, roof space was made available for rooftop solar. For each ton of geothermal capacity, ComEd provides an incentive of \$1,000. As a part of this work, a partnership with the University of Illinois at Chicago and the academic community developed guidelines for calculating appropriate incentives for geothermal energy efficiency measures.

Thirty-foot tall Remote Power Units (RPU) – miniature self-sustainable power units that are not connected to the electric grid but draw energy from a wind turbine, solar panels, and battery storage – illuminate the outside of Beethoven Elementary School. These off-grid lights are powered by renewable energy and installed by ComEd at the Chicago Public School. The unique wind turbine enhances airflow into the blades, causing a generator to efficiently produce energy and power the LED lighting.

It combines the potential for wind at any hour of the day with daytime solar and a battery storage unit large enough to power the lights for up to five days without any generation. The RPU powers its own internet connectivity to monitor and control its operation. Most importantly, ComEd and Chicago Public Schools collaborated to ensure that lighting was placed along a Safe Passage Route to better light the route and help keep students safe as they walk to and from school. At the ribbon cutting, Beethoven Elementary School Principal, Dr. Mellodie Brown, thanked the initiative for “enhancing the safety of our campus with leading edge renewable energy-powered lighting” and acknowledged the impact of tangible technology at the school by saying “our science teachers will enjoy using the lights and the data collected from the solar and wind production and battery charging to design class lessons related to environmental science and sustainability.”

ComEd and the City of Chicago are also working together to achieve targeted energy efficiency goals and accelerate decarbonization. Two Chicago Housing Authority buildings with 685 units were retrofitted with an annual projected savings of 1.8 GWh. Additionally, virtual commissioning analyses identified strategic opportunities within the Community of the Future boundaries representing more than 4.5 GWh of potential savings. Lastly, the Smart Streetlights program has upgraded streetlights and resulted in more than 2.9 MWh in savings with the expectation of completing the remaining phases of streetlight replacement by 2020.

Clean and Accessible Mobility

A sustainable future also includes greener transportation options. ComEd has partnered with the Bronzeville Community Development Partnership (BCDP) and



Innova EV to provide greener transportation options. The DASH Mobility Pilot Program was designed to study the demand for a first-mile/last-mile mobility program, measure the impact of electric vehicle adoption on ComEd’s grid reliability, and identify potential opportunities to leverage the charging technology in supporting demand response programs. Phase I was launched in December 2017 and provided transportation for senior residents at three senior buildings for a total reach of approximately 350 residents. In addition to working with the City throughout the permitting process, the DASH stops include connections to Chicago Transit Authority train and bus stops.

The pilot’s success is being tracked in terms of economic and environmental impact. Economic benefit to date has been estimated at nearly \$40,000 for the community through resident transportation savings, wages earned by locally hired staff (which include drivers and ticket agents), and rent for storing the vehicle at the garage of a local business. Reductions in greenhouse gases have recently begun to be realized.

Phase II of the mobility pilot is engaging additional partners, specifically from the local academic community at the Illinois Institute of Technology, to provide students and faculty access to safe and reliable and low-carbon transportation.

Inclusive Economic Growth

Central to ComEd's and the City of Chicago's partnership is the revitalization of neighborhoods through economic growth and job creation. Collaborative discussions between ComEd and the City identified areas of economic opportunity of the future in which jobs are expected to be created, such as in clean energy and technology fields. In response, a partnership was created with Dawson Technical Institute to implement a job training program in Bronzeville. Part of the City Colleges of Chicago system, Dawson Technical Institute offers industry validated training in the construction and utility industries. Developed with ComEd, the Dawson Overhead Electrical Line Worker (OELW) Program is a training program for those interested in careers as ComEd overhead linemen. Additional opportunities allow local residents to obtain certification in solar panel installation and energy management that previously had only been available outside of Chicago. The program currently has a 93% graduation rate and 90% job placement rate.

With the support of local aldermen, smart kiosks are also being installed within the Bronzeville community. The kiosks provide residents with emergency alerts, transit updates, and local information. The kiosks leverage investments to provide community with critical information including energy efficiency information, public notifications, and public Wi-Fi.

STEM as a Community Development Driver

Despite the demand and high earning potential of STEM careers, hundreds of thousands of jobs in these fields remain unfilled with significant underrepresentation among minorities and vulnerable populations. The energy industry itself is



Above: Bronzeville residents using the smart kiosk to find local restaurants, shops, and activities.

ground zero for STEM careers, evidenced by ComEd's grid modernization efforts that use innovative digital technologies to improve reliability and service and require engineers and trained individuals to operate and advance the modern grid. ComEd, Chicago Public Schools, and City Colleges of Chicago have partnered to provide educational and training opportunities that prepare students for these and other jobs of the future. The Energy Academy offers students paid apprenticeships to prepare them for job opportunities and further education. HFS Scholars provides financial assistance to lower socioeconomic background students to attend top area high schools by immersing them in a four-year electrical engineering program to introduce them to key technical concepts. Ideathon has en-

gaged local high school students to develop ideas and prototypes to make their communities more green, connected, and resilient.

The programs have only been in place for a couple of years, but metrics and student surveys have provided promising insights into the immense success of the efforts. Nearly 70% of students said that they would participate in Ideathon again, with virtually all remaining students indicating that they would not be eligible to participate again due to senior standing. Metrics also tracked skills learned and include what students wish they had spent more time learning and what were their favorite areas of study. As part of the partnership with Chicago Public Schools, local teachers were engaged to encourage their students to sign up for programs and some teachers have even served as mentors. Additionally, schools offered up their spaces as meeting spots so that students had local and easily accessible spaces to come work on their projects.

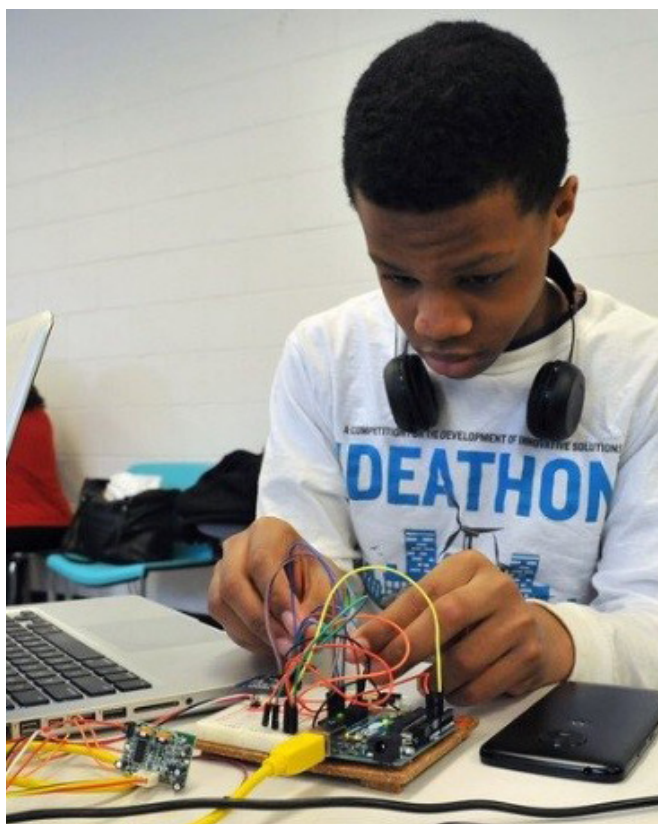
A Net Zero Future

Critical to a clean energy future is working with communities to enable them to reduce their carbon footprint. In Bronzeville, plans for a neighborhood area with low carbon emissions and climate resilient features are under development. Leveraging vacant city-owned lots with green technologies such as solar panels, smart sensors, rainwater collection, storm-water management, and geothermal energy can activate the spaces by drastically reducing the carbon footprint while also creating green space for use by the community. The power generated at these spaces is expected to support neighboring facilities into becoming net-zero buildings. There are also plans to develop a solar job training site for Dawson Tech students, part of the City Colleges of Chicago system, and serve as a STEM Learning Center for neighborhood high schools.

Initiatives focused on making technology an accessible part of the community include augmented reality and artificial intelligence efforts. An augmented reality mural that will be painted by local artists will feature virtual reality technology that allow users to scan their phone on the mural and learn more about the investments in Bronzeville, the technology drivers within the community, and the importance of green, resilient, and connected neighborhoods. This initiative is the result of a partnership with the non-profit arts organization founded out of MIT and based in Miami, who was responsible for a similarly tech-equipped mural in the Wynwood Art District of Miami. As a part of this effort, ComEd has engaged the South Side Community Arts Center and the art-focused Chicago Public School, Little Black Pearl Art and Design Academy, to have local students participate in the creation of the Mural. In addition, artificial intelligence and machine learning pilots are being implemented to enhance asset management that will include an artificial intelligence focused hackathon with local students and a collaboration with industry-leading technology providers.

A Roadmap For Other Communities

The ComEd and City of Chicago partnerships are not only an innovative case study in city-utility partnerships to leverage existing investments, but also one in scalability. By implementing a series of phased pilots with trackable metrics, ComEd and the City have been able to optimize their successes and advance key community priorities. More importantly, targeted partnerships with specific City departments and sister agencies have been formed in order to leverage their areas of focus and expertise to achieve significant impact within Bronzeville. As a result, these efforts are intended to be scaled and replicated in other communities. Ultimately, ComEd and the City aim



to develop future connected communities, including identifying parameters that make for successful candidate communities. Rooted in the technical need to modernize a 100-year-old electric delivery system and provide customers with improved reliability and programs, Bronzeville has become a tangible example of connecting with people and piloting programs that work to meet their unique community needs and enable cities to learn from systemwide opportunities that can benefit other communities.

Lessons Learned

This partnership offers several lessons for other communities wishing to pursue similar efforts:

Focus on partnerships: Utility partnerships with local government can be a critical building block for neighborhood revitalization. Identifying specific roles on

initiatives and pilot efforts that are closely aligned with individual partners' existing resources and skill sets can ensure leveraged expertise, optimal allocation of resources, and a greater likelihood of successful implementation. These partnerships can be used to advance goals of both the utility and City government.

Plan for scalability: From the very beginning of planning, it is important to establish intended scalability goals and keep them in the forefront of planning as pilots are implemented. This can help determine the metrics used to track success and influence pilot selection.

Engage the community: Decarbonization can be accelerated through community engagement and economic development initiatives. Early and ongoing community engagement is essential to directly shaping program priorities and should be connected to community economic development priorities. This will optimize co-benefits of proposed decarbonization strategies and enhance feasibility and adoptability. Incorporating STEM components, workforce development opportunities, and job training is not only a way to ensure successful community engagement but can also provide opportunities to train community members in necessary skillsets for the jobs of the future.

Develop metrics: Instrumental to success is being able to measure areas of strength and areas where programs and pilots can be improved for future efforts. In order to do so effectively, metrics should be recorded and measured throughout the program. Planning for metrics during the early stages of program and project design can also increase the likelihood that the initiative meets intended goals.

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Above: Councilman Scott Benson discusses the importance of sustainability in Detroit at the announcement of the Sustainability Action Agenda Process. Detroit's pilot EV is shown in the background.

Detroit & DTE Energy:

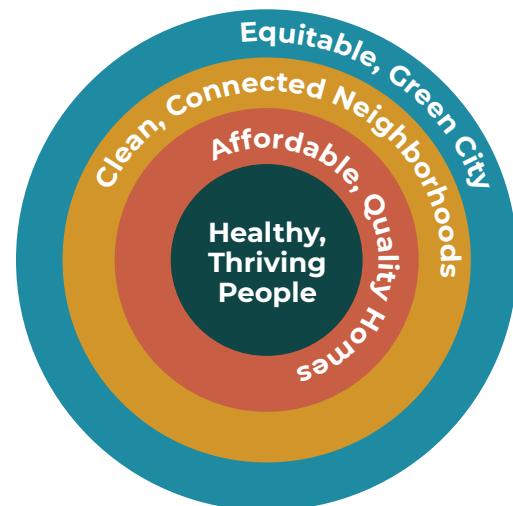
Advancing Electrification & Sustainability in Detroit

Over the past decade, Detroit has been doubling down on sustainability. From the development of the Detroit Food Policy Council, to expanding recycling access, greening demolitions, and creating safer mobility options, the City has worked to improve the quality of life for Detroiters. Central to many of the sustainability advancements in Detroit is the energy system. Detroit became the largest U.S. city in 2016 to convert all streetlights to LEDs, invested \$9.5 million in energy efficiency and conservation upgrades in City buildings, and built the city's first urban solar park. Through these successes, the partnership between Detroit City government and DTE Energy (DTE) – the electricity provider serving – was essential. This partnership has continued to drive forward sustainable initiatives with a recent focus

on transportation electrification. Through the creation of ongoing transportation electrification working groups co-chaired by the City and DTE, Detroit will continue to accelerate towards an electrified future.

This formalized partnership sprang from the City of Detroit's Sustainability Action Agenda. In 2017, the City recognized that it could achieve more for its residents by developing and implementing a unified vision and coordinated approach to sustainability. Under the leadership of Detroit's Office of Sustainability, the City launched the development of its Sustainability Action Agenda (Agenda) in 2018. The resulting strategic roadmap works towards creating a Detroit where:

All Detroiters thrive and prosper in an equitable, green city; have access to affordable, quality homes; live in clean, connected neighborhoods; and work together to steward resources.



Above: Detroit is committed to achieving four key outcomes through the Sustainability Action Agenda.

The advancement of electrified mobility is a focus of the Agenda to achieve this vision. Specifically, the Agenda includes two mobility electrification-focused actions.

1. Green the City fleet to improve local air quality and reduce exposure to pollution (Action 9).
2. Develop an electric vehicle (EV) infrastructure strategy to reduce municipal and citywide greenhouse gas (GHG) emissions (Action 43).

At the same time that the City began developing its Agenda, DTE was also assessing the potential of mobility electrification and exploring the energy company's role in its advancement. The company is poised to invest \$12 billion into generation and distribution assets, including investments to achieve 80% clean energy generation by 2040. In an effort to reduce rate pressure and grow load in an affordable and sustainable way, DTE turned its attention towards transportation electrification, since the majority of EV load can be shifted to hours when there is excess capacity on the system. Until this point, the City and DTE had been partnering on electrification around individual projects such as charging station installations at City parks and facilities. The development of the Sustainability Action Agenda provided a platform from which DTE and the City could formalize an ongoing collaboration and dialog around shared mobility electrification goals. In spring 2019, DTE and the City began meeting to formalize working groups that will build the foundation for accelerated mobility electrification in Detroit.

DETROIT SUSTAINABILITY ACTION AGENDA²

Action 9: Reduce emissions from City vehicles

The City of Detroit owns and operates more than 2,700 vehicles, including police pursuit vehicles, fire apparatuses, ambulances, dump trucks, street sweepers and ride-on mowers. While this represents a small percentage of the overall on-road vehicles driving in the city, Detroit City government is committed to leading by example and fully-leveraging its assets to achieve the goals outlined in the Agenda. The City has committed to reducing vehicle fleet emissions by right-sizing the City's fleet, integrating electric, clean-diesel, hybrid, and other low-emissions vehicles into future vehicle purchases, retrofitting heavy trucks with clean diesel technology, and pilot testing alternative fuels.

Action 43: Develop an electric vehicle infrastructure strategy

In 2018, the Environmental Protection Agency declared seven southeast Michigan counties in violation of ozone pollution standards, including Wayne County. Air pollution in Detroit is largely caused by emissions from industrial facilities and motor vehicles. EV offer an opportunity to reduce harmful emissions from the transportation sector, which contribute to local asthma rates and other health issues and climate change. The City has committed to convene government, local electric provider, and third party stakeholders to identify the roles of each entity in the operation and maintenance of EV infrastructure in the city. They will work with this group to develop a comprehensive EV strategy to support and accelerate widespread adoption of clean energy transportation including identifying priority locations for new EV infrastructure; the necessary upgrades to existing infrastructure to support EVs; and local policies, codes and incentives needed to support adoption.

2. <https://detroitmi.gov/government/mayors-office/office-sustainability/sustainability-action-agenda>

Formalizing the Partnership

DEFINING A SHARED VISION

Early on in the development of the City's Sustainability Action Agenda, a robust community engagement process was undertaken to identify priorities of existing Detroiters. Through an extensive community engagement campaign that reached over 6,800 Detroiters, it became clear that Detroit's air quality and reducing GHG emissions were community priorities. In response, the City identified nine actions to address these goals. The actions included increasing tree plantings, redesigning truck routes, improving energy usage at buildings, increasing the use of renewable generation, and advancing transportation electrification. The City also specifically identified the need for City government to right-size its fleet, integrate low- or no- emissions vehicles into future vehicle purchases, retrofit their heavy trucks with clean diesel technology, and pilot test alternative fuels. Additionally, the actions commit the City to developing a strategy for EV charging infrastructure.

Understanding that work to advance transportation electrification was already underway within Detroit by government, DTE, community groups and other stakeholders, the City decided to convene a group of these stakeholders to align on a shared vision and create a formal forum for collaboration. Key stakeholders included the Michigan Department of Environment, Great Lakes, and Energy, the Michigan Governor's Office, the Downtown Detroit Partnership, the Ecology Center, internal City departments relating to fleet procurement and infrastructure build out, and third-party experts to facilitate discussions.

All of these stakeholders brought different expertise, ongoing initiatives, and strategic priorities to the collaborative efforts. At the first meeting of this working group held

in May 2019, the City's consulting partner, AECOM, facilitated a discussion to focus efforts and align priorities. The group was able to build off of the City's vision and strategic goals identified in the Sustainability Action Agenda as a starting point for creating a shared vision. Through the discussion, two specific priorities were identified:

1. *Create a Fleet Electrification Working Group* tasked with working to integrate EVs into the City's 2020 vehicle procurement process
2. *Create a Public Charging Infrastructure Working Group* tasked with developing a strategy to deploy EV infrastructure that supports residents and visitors and supports accessible and affordable development.

The stakeholders agreed to gather and analyze supporting materials such as fleet usage data or locations of existing charging infrastructure in advance of the next working group meetings. Then, in July 2019, the two working groups met to further define group charters and next steps based upon the more detailed information at hand. Refined areas of focus included:

- Fleet Electrification Working Group
 - Setting targets for converting the City fleet to electric
 - Identifying specific vehicle classification types for a pilot EV program for City's 2020 vehicle procurement
- Public Charging Infrastructure Working Group
 - Determining ways to raise awareness of DTE's new "Charging Forward" EV infrastructure program launched in June 2019
 - Identifying policy barriers to EV infrastructure build out

CHARGING FORWARD

DTE's Charging Forward Program seeks to facilitate EV adoption in Southeast Michigan. It has three key components:

Customer Education and Outreach: Increase EV awareness through customer education in order to inform and recruit potential site hosts and engage EV drivers.

Residential Smart Charger Support³: Provide \$500 residential rebates for installation of a Level 2 smart EV charger with enrollment in a year-round electric time-of-use rate.

Charging Infrastructure Enablement⁴: Provide \$20,000 rebates for DC fast chargers and \$2,500 rebates for Level 2 charging ports in addition to supporting the deployment of charging infrastructure for fleets.

BUILDING CAPACITY AND DRIVING ORGANIZATIONAL CHANGE

Both DTE and the City recognized the need to align internal resources and build internal support in order to better collaborate towards the identified priorities and support the defined visions. In the latter half of 2019, DTE focused on assessing the electrification market, customer needs, and new business models. The result was the formation of DTE's Electrification Team which focuses specifically on transportation electrification. Specifically, DTE identified five focus areas to prioritize: Light duty Passenger Vehicles, Public Transit Buses, School Buses, E-Fleets, and Airports and Ports.

PROMOTING STEM EDUCATION THROUGH ELECTRIC VEHICLES

DTE is partnering with two Southeast Michigan communities, Ann Arbor and Roseville, to pilot the deployment of 6 all electric school buses. As part of this pilot, DTE and the schools will create a STEM program for K-12 students to build awareness about EV technologies. The pilots will be used as a living lab for the communities.

DTE has the Charging Forward program in place to support adoption of Light-duty Passenger Vehicles, and its goal is to support a seamless solution for customers in the other four sectors. Their approach relies on educating customers and building partnerships through pilots, which are still in the planning or early deployment phases. However, designing and implementing pilots is central to DTE's strategy to allow customers to experience new technology and DTE to collect necessary data to better support infrastructure deployments. DTE has found it helpful to work towards understanding the motivations of and barriers faced by potential EV purchasers in their different customer classes. While DTE's ultimate role in supporting EV adoption is through infrastructure provision, it is important for the energy company to understand broader customer motivation and barriers during the pilot testing phase. This allows the company to identify ways they can contribute to or explore overcoming barriers and helps develop lasting partnerships. These pilots and partnerships can eventually be leveraged to build a more supportive regulatory and political environment for EV adoption.

While DTE works to better understand the motivations of and barriers faced by customers, like the City of Detroit, the City of Detroit has also been working to understand their own needs, motivations and

3. www.dteenergy.com/chargingforward

4. www.dteenergy.com/chargingforwardbiz



Above: Detroit's Sustainability Ambassadors invite their fellow Detroiters to ask them about sustainability at the announcement of the Sustainability Action Agenda process.

barriers to be a more collaborative partner with DTE. An important outcome of the early meetings of the working groups was a deeper understanding between the City and DTE of each other's needs. In order for DTE to support the City in building out fleet charging infrastructure and procuring EVs, the City needs to understand how it currently uses its fleet, from driving patterns and fuel usage, to where vehicles are stored and what types of equipment they carry. Likewise, for DTE to better support the deployment of public charging infrastructure in the City, the City needs to understand possible public charging needs including locations, user profiles, and demand.

In the latter half of 2019, the City focused on analyzing its current fleet and building a business case for EV procurement. Securing the necessary internal support for a pilot EV procurement required the City of Detroit Office of Sustainability and General Services Department – which manages the majority of the fleet – to shift internal gears. A key tool towards achieving this has been defining the holistic value of the new investment. For EV procurement, the City achieved this through the use of a holistic total cost of ownership (TCO) model.

TCO = *Acquisition Cost*
(Vehicle and Infrastructure)
+ *Lifetime Maintenance Cost*
(Vehicle and Infrastructure)
+ *Lifetime Fuel Cost*

The TCO model has allowed the City to better articulate the true value of EVs in comparison to internal combustion vehicles. This approach, coupled with political support from Detroit leaders including the Office of the Mayor through the Sustainability Action Agenda and the Detroit City Council, has allowed the City to start scoping the implementation of a 2020 EV procurement pilot.

Next Steps

With the formalization of the DTE Electrification Team and the buildup of internal support at the City of Detroit, the Fleet Electrification and Public Charging Infrastructure working groups are expected to reconvene in early 2020. Their first order of business will be to support the City's plans for EV procurement. There are two key procurement efforts:

1. *Procuring EV light-duty passenger vehicles for the Municipal Parking Department:* Based on the usage patterns and type of vehicles used by Municipal Parking and where these vehicles are in their replacement lifecycle, these vehicles are the ideal candidates for a pilot study. The procurement of these EVs will be funded through the standard vehicle procurement funds.
2. *Partnering to deploy EV buses with the Detroit Department of Transportation (DDOT):* This partnership is working to pilot EV public transit buses in Detroit. The pilot would include 500 kW of en-route charging. The City and DTE are working to address barriers to pilot implementation which include land easements for en-route charging.

Next, the group will focus its efforts on the siting of EV charging infrastructure and educational campaigns. This work will be centered around promoting equitable and affordable access to electric mobility options and may include the exploration of electric mobility hubs – the co-location of different electric mobility options such as bike share, scooters, buses, and personal vehicles – in addition to the siting of public charging units.

Lessons Learned

Strategic Planning Activities Help External Partners: By articulating a clear vision related to electrification, the City of Detroit made it easier for DTE to identify ways to help the City meet its goals. Developing a strategic vision allows cities to more easily bring partners to the table. Additionally, a strategic planning process that involves diverse stakeholders early opens new lines of communication between City departments and energy companies/providers, including utilities. These informal connections allow for quicker identification of opportunities and more successful implementation.

Take an Iterative Approach: There are several ways for energy companies and cities to advance transportation electrification. To make tangible progress, it is important to take an iterative approach by identifying pilots that build trust in technology, form important partnerships, and collect necessary data to understand impacts. This allows cities and energy companies to learn quickly from failures and build on successes. It can also allow cities and energy companies to capitalize on early and easy wins.

Build Internal Support: Energy companies and cities should both build internal support during the planning phase to better prepare themselves for successful project collaboration. Energy companies should conduct due diligence through market assessments and demonstrate success through pilots to gain internal and external political and regulatory support. Similarly, cities need to gain the support of senior leaders such as the Mayor and Council Members as well as departmental-level support. This process takes time and persistence. It can be supported through inclusive engagement, holistic investment valuation and alignment with planned capital investments.

Identify Holistic Investment Value: To build buy-in and secure funding for new technologies, it is important to articulate the holistic value of the investment. For EVs and supporting charging infrastructure, this means comparing the TCO between EVs and internal combustion engine vehicles.

Identify Opportunities to take Advantage of Planned Capital Investments: Aligning the procurement and installation of new technologies with asset replacement cycles or planned infrastructure investments can reduce the overall cost and improve the total project economics. It is important to understand planning and investment timelines to identify easy wins and align funding streams.

Public-Private Partnerships are Key: Partnership between energy companies, cities, and communities is key to implementing successful pilots and full-scale deployments. Energy companies can provide the necessary infrastructure support, but only through working with the cities and communities can they understand city assets and needs and determine optimal infrastructure deployment. Working together to site charging infrastructure allows chargers to be installed at the lowest cost with the greatest community benefit.

Work with Existing Programs: Existing energy programs, like DTE's Charging Forward, can be used to reduce the cost of installing EV charging for cities and communities. Promoting these programs through existing education and communication pathways is a low-cost method to accelerate EV adoption and increase program participation.

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Los Angeles & Los Angeles Department of Water and Power:

LA Commits to 100% Clean Energy

California has long been a national leader in implementing renewable energy production supported by a legislative and regulatory environment that prioritizes clean energy. Senate Bill 350, signed in 2015, enacted the Clean Energy and Pollution Reduction Act into law. The legislation targets a 40% reduction in the state's greenhouse gas (GHG) emissions by 2030, as well as a goal of obtaining 100% of its electric power from renewable sources by 2045, an increase on the initial goal of 33% by 2020 and 50% by 2030. To meet this goal, the state is rapidly scaling up its renewable energy usage. Integral to the state's efforts to advance renewable energy usage are cities like Los Angeles (LA), whose leadership with the LA Department of Water and Power (LADWP) has not only prioritized solar, storage and smart grid development, but also relied on community engagement to shape the future of the utility and enhanced the ability to effectively and holistically meet City goals.

LADWP is the nation's largest municipal utility and supplies LA with all of its power, an annual average of over 26 million megawatt hours of electricity. Collectively, three coastal natural gas plants – Scattergood, Haynes, and Harbor – represent 38% of the City's current natural gas portfolio and sit in some of the state's most polluted communities. In February 2019, Mayor Eric Garcetti took a powerful step forward and announced the phase out of some of these units by 2029 in favor of investing in renewable, battery storage and other low carbon resources to accelerate LA's transition to 100% renewable energy and put the City on track to meet its carbon-neutral target by 2050.

The announcement is only the latest phase in a history of successful goals by the City and LADWP. In 2017, LADWP, with City support, was able to meet targets in GHG reductions 14 years ahead of the state's 2030 deadline. The collaboration has focused on increased transparency with communities and customers, job creation, allocation of financial resources to explore innovative alternatives to non-renewable energy sources, development of public-private partnerships, transmission and distribution system upgrades, and investment in microgrid technologies and enhanced energy storage projects.

Implementation & Partnership Development

BUILDING A FOUNDATION

In April 2019, Mayor Garcetti released Los Angeles' Green New Deal: 2019 Sustainable City Plan. The innovative strategy set aggressive goals for the City's sustainable future that tackle the climate emergency with accelerated targets, commits to strengthening the economy and middle class by providing green jobs, and sets Los Angeles on course to be carbon neutral by 2050. The Green New Deal leads with bold action to zero out Los Angeles' primary sources of harmful emissions: buildings, transportation, electricity, and trash. The accelerated goals and targets include:

- Building a zero-carbon electricity grid – reaching an accelerated goal of 80% renewable energy supply by 2036 to lead California toward 100% renewables by 2045.
- Creating a Jobs Cabinet to bring City, labor, educational, and business leaders together to support the City's effort to create 300,000 green jobs by 2035 and 400,000 by 2050.
- Mandating that all new municipally owned buildings and major renovations be all-electric, effective immediately, and that every building in Los Angeles – from skyscrapers to single family homes – become emissions free by 2050.
- Achieving a zero-waste future by phasing out styrofoam by 2021, ending the use of plastic straws and single-use takeout containers by 2028, and no longer sending any trash to landfills by 2050.
- Recycling 100% of wastewater by 2035, sourcing 70% of water locally – a significant increase from the existing

pathway – and nearly tripling the maximum amount of stormwater captured.

- Planting and maintaining at least 90,000 trees citywide by 2021 – which will provide 61 million square feet of shade – and increasing tree canopy in low-income, severely heat impacted areas by at least 50% by 2028.
- Reducing GHG emissions to 50% below 1990 levels by 2025; 73% below 1990 levels by 2030, and becoming carbon neutral by 2050 through the Green New Deal Pathway.

LA's Green New Deal is intended to guide the City's transition to an equitable and abundant economy powered by 100% renewable energy. The plan, which will support the creation of hundreds of thousands of green jobs in nearby communities, was prepared with extensive input from stakeholders, including community organizations, businesses, academia, labor groups, and City departments. Included in the effort was an unprecedented feasibility analysis with LADWP to study an equitable transition from fossil fuels to 100% renewable energy.

ELAND SOLAR AND STORAGE CENTER

The City of Los Angeles is already on its way to accelerating goals and targets set in the Green New Deal with the November 2019 announcement of their partnership with 8minute Solar Energy, LLC, the largest independent solar and storage power plant development company in the U.S. 8minute will develop the Eland Solar and Storage Center in Kern County, California, which will support LA in achieving 100% renewable energy supply by 2045, decrease GHG emissions, and create green jobs. The project is expected to commence no later than December 31, 2023.

The Eland Solar and Storage Center will deliver affordable, renewable power to over one million people throughout Los Ange-

les. When completed, it will be the largest municipal photovoltaic operation in the world with the lowest prices ever recorded in the U.S. at less than 2 cents per kWh. The Eland Solar and Storage Center is connected to the grid via the 1,000 MW Barren Ridge Transmission Line that LADWP began developing over 10 years ago to increase the production and use of renewables in the City. The center is projected to capture 400 MW of solar energy and store up to 1,200 MWh of energy. Through these efforts, LADWP will boost its renewables portfolio from 32% to 39.1%, a 7.1% total increase.

By replacing natural gas energy sources with renewables, it will prevent up to 727,360 metric tons of GHG, the equivalent of taking 148,700 cars off the road. The Eland Solar and Storage Center will also help LA reduce emissions to accomplish their Green New Deal Pathway and promote cleaner air and healthier living environments for all Angelenos.

8minute has negotiated with the labor unions in Kern County to ensure jobs for workers and will create about 700 jobs during the construction period and 40 jobs for long-term operations and maintenance. With projects like 8minute's Solar and Storage Center, the City, LADWP, and its citizens will work together to create an equitable green economy.

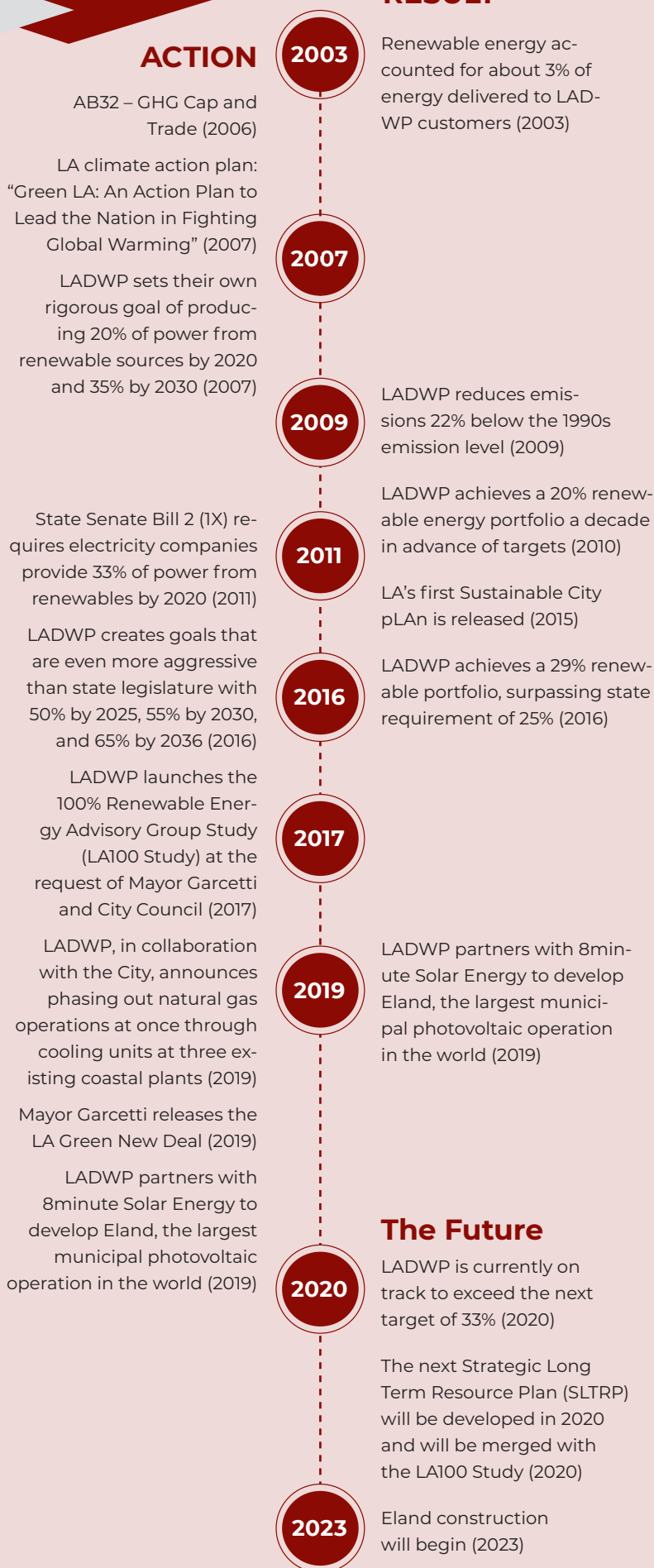
SMART GRID INITIATIVES

LADWP is working to propel Los Angeles to a low-carbon, green energy future by collaborating with a diverse consortium of research institutions to develop smart grid technologies. To help accomplish renewable energy targets set in the City's Green New Deal, these smart grid advancements will address the need for grid modernization and advancement to support investment in renewable energy resources. These initiatives include:

- *A Demand Response (DR) Program:* An integrated program of Smart Grid operations and technology with test bed sites that can investigate a full range of user environments, such as residential, commercial, light industrial, and institutional.
- *Electric Vehicle (EV) Integration into the LADWP Grid:* Initiatives include smart charging and battery aggregation; renewables and EV battery integration, an operational microgrid, a ride/car share program at LADWP, and EV test bed sites at USC and UCLA.
- *Customer Behavior:* Plan to execute a comprehensive portfolio of studies related to the impact of Smart Grid communication systems and processes on customer usage, energy savings from using Smart Grid enabled interfaces, pricing options and programs, and effective messaging and incentives regarding electric vehicles.
- *Next-Generation Cyber Security:* Plan to implement technologies focused on enhancing grid resilience and protecting against physical and cyber-attacks.

RESULT

ACTION



The Future

Action

Purpose

Green LA

Established goal for LA to reduce 33% of emissions below 1990 levels by 2020

SB 2 - 1X (Simitian 2011)

California Renewable Energy Resources Act set a new Renewables Portfolio Standard (RPS), targets, and requirements:

- Average of 20% renewables between 2011 and 2013
- 25% RPS by 2016
- 33% RPS by 2020

LA100 Study

This study will determine what investments should be made to achieve 100% renewable energy for the City

LA Green New Deal

Outlined ways in which LA can reduce emissions within the buildings, transportation, power, water, and waste while simultaneously committing to an inclusive green economy and job creation

Community Engagement

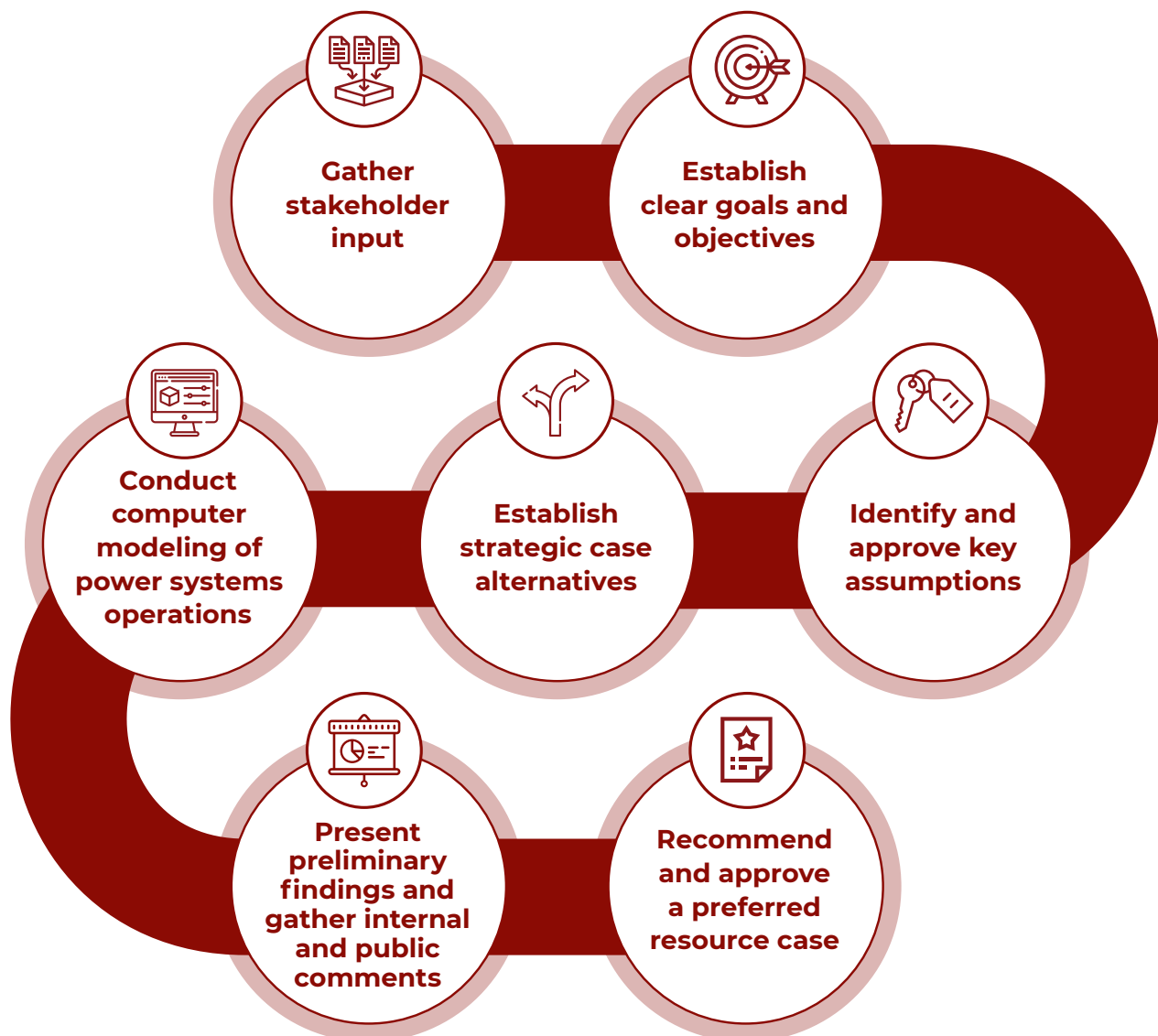
The Eland project was unanimously approved by LADWP in September 2019 following 45 public comments urging the board to approve. The project initially failed to pass vote by the LADWP Board of Commissioners a month earlier in August due to labor concerns expressed by a local Los Angeles labor union, The International Brotherhood of Electrical Workers Local 18 (IBEW Local 18). During the weeks following, 8minute and LADWP collaborated with the local labor unions to reach an agreement to operate under a project labor agreement and preserve jobs.



Left: Dozens of clean energy advocates testified in support of the project. (Credit: Julian Spector/Greentech Media)

In addition to the clean energy goals featured in the SB 350 (DeLeon 2015), the bill requires large utilities to develop and submit integrated resource plans (IRPs).

LADWP's IRP is one of the most transparent and thorough in the industry and is developed annually with a defined process focusing on stakeholder input, strategic development, and benchmarked success. LADWP's IRP process is below.



Stakeholder input is used to establish goals and objectives for the IRP analysis and preliminary findings are shared with the public for initial feedback. Every other year, LADWP conducts a public review process of its IRP. A series of public outreach workshops are held to collect comments and address concerns. Example comments from outreach have included eliminating coal and decreasing natural gas from LADWP's energy portfolio, increasing renewables and energy efficiency initiatives, promoting transportation electrification, and reducing GHG emissions. This input has served as a baseline for LADWP to change the future of its utility in terms of meeting customer goals as well as those of local government.

The review process includes the formation of a new IRP Advisory Committee. The Committee is comprised of a variety of stakeholders including neighborhood councils, the mayor's office, and student/staff representation from UCLA. The Committee meets five times throughout the year and provides input on the preliminary cases analyzed for the final IRP case. The Office of Public Accountability, a ratepayer advocate, attends and observes most of these meetings. As a whole, the process provides multiple opportunities to engage the community and solicit feedback from the groups that are directly affected by clean energy initiatives.

In addition to the IRP, the LA100 study that began in 2017 was significant for the way it involved the community. The advisory group is made of community members, students, scientists, engineers, and policy-makers that have expertise in the following:

- Power systems
- Policy
- Transportation
- Economic development

- Energy systems
- Sustainability

A few groups involved in the advisory group include Environment California, LA Metro, Environmental Defense Fund, Neighborhood Council Sustainability Alliance, California ISO, Southern California Gas Company, USC, UCLA, and IBEW Local 18. The National Renewable Energy Laboratory (NREL) is the research partner for this study and is responsible for conducting an objective economic/reliability analysis of opportunities for reaching the goal of 100% renewable energy.

Supportive Policies

LADWP's renewable energy goals were developed starting in the early 2000s in accordance with LADWP's renewable policy. As a national leader in renewable energy production, California has repeatedly passed major legislation that has strongly impacted LADWP's renewable energy goals and policies. Most importantly, they have enabled LADWP to successfully implement initiatives outlined in their goals by creating a supportive regulatory environment.



Above: LA100

SB 1 (Murray 2006): Eligibility Criteria and Conditions for Solar Energy System Incentives	Mandated that all California electric utilities (including municipalities) implement a Solar Incent Program by January 1, 2008 with a goal of installing 3,000 MW of net-metered solar energy systems over 10 years. LADWP's cap on expenditures was \$313 million.
AB32 (Nunez 2006): Global Warming Solutions Act of 2006	Required California to reduce GHG emissions to 1990 levels by 2020 through development and use of a Scoping Plan for achieving maximum cost-effective and technologically feasible solutions.
SB 32 (Pavley 2006): The California Global Warming Solutions Act of 2006: emissions limit	Required LADWP to make a tariff available to eligible renewable electric generation facilities until LADWP could meet its 75 MW share of the California target.
SB 32 (McLeod 2009): E-ReMAT Feed-in Tariff Addition	Required publicly owned utilities to establish a Feed-in Tariff (FIT) where owners/operators of renewable energy systems could sell their energy directly to LADWP and have it count towards LADWP's 50% renewable energy requirement.
SB 2-1X (Simitian 2011): The California Renewable Energy Resources Act	Set new Renewables Portfolio Standards (RPS) of 25% RPS by 2016 and 33% by 2020.
SB 350 (De León 2015): The Clean Energy and Pollution Reduction Act of 2015	Requires utilities to procure 50% renewable energy resources by 2030 with interim targets of 40% by 2024; 45% by 2027; and 50% by 2030, large utilities to develop and submit IRPs, and requires doubling energy efficiency and conservation savings by 2030.
SB 350 (De León 2015): The Clean Energy and Pollution Reduction Act of 2015	Requires utilities to procure 50% renewable energy resources by 2030 with interim targets of 40% by 2024; 45% by 2027; and 50% by 2030, large utilities to develop and submit IRPs, and requires doubling energy efficiency and conservation savings by 2030.
SB 100 (De León 2018): The 100 Percent Clean Energy Act of 2018	Sets a target for 60% renewable energy by 2030 and 100% carbon-free electricity by 2045.

Cost and Financing

THE ELAND SOLAR AND STORAGE FACILITY:

The Eland project is being funded by LADWP, the Glendale utility, and 8minute Solar through the Southern California Public Power Authority (SCPPA). The solar energy generated will cost 2 cents/kWh, the lowest price for solar on record in the United States. With the addition of battery storage,

the total price will come to 3.3 cents/kWh. 8minute Solar will be funding the development, maintenance, and operation costs of the facility. The contract will cost less than \$5/year for each LADWP customer. Glendale utility has partnered with LADWP, purchasing a 12.5% share of the project which will deliver 25 MW of solar energy and 18.75 MW of battery storage for the City of Glendale, CA. Below is a summary of the cost breakdown for each phase of the project.

	Eland Phase 1	Eland Phase 2
Term	25 years	
Total Solar Capacity	200 MW	200 MW
Solar Price	\$19.97/MWh (1.997 cents/kWh)	
Battery Storage Size	100 MWh (100 MW/4-hour)	100 MWh (100 MW/4hours)
Battery Storage Price Addition	\$13/MWh (1.3 cents/kWh)	
LADWP Share	87.5%	100%
Glendale Share	12.5%	N/A
RPS % in 2025	3.1%	3.5%
Early Buyout Option	15, 20, and 25-year anniversary of Commercial Operation Date	
Early Buyout Price	Based on Fair Market Price	

Source: <https://pv-magazine-usa.com/2019/06/28/los-angeles-seeks-record-setting-solar-power-price-under-2%C2%A2-kwh/>

SOLAR INCENTIVE PROGRAM

In 2019, LADWP was recognized for having the most installed solar power of any city in the United States for 2018, largely attributed to the Solar Incentive Program (SIP). The program began in 1999 but was updated in 2007 to meet criteria established by California state legislature to support the installation of 280 MW of solar

power. In 2007, LADWP pledged to distribute \$313 million in rebates for PV projects. The program was extended until the end of 2018. For every watt a resident installed, LADWP would send a check for \$0.25/W. The following table summarizes the rebate amount a customer who installs 7 kW (the average home requirement per month) would receive from the utility.

Project Type	Rebate Rate	Example Rebate for a 7 kW System
Residential	\$0.25/W	\$1,750
Commercial	\$0.30/W	\$2,100
Government, non-profit, affordable housing	\$0.95/W	\$6,650

ENERGY EFFICIENCY PROGRAMS

LADWP has ambitious goals to achieve 15% of retail electricity sales through energy savings by 2020 and to continue the pace of energy savings through 2030. LADWP offers energy savings incentives and programs to its residential, commercial and industrial customers, including rebates for efficiency appliances, direct install of efficiency measures and custom programs that provide an incentive per kWh saved. In FY 2017-18, LADWP's customers saved 476,361 MWh cumulatively, equivalent to the electricity needed for 79,394 homes.⁵

LADWP also provides funding opportunities for community groups. In July 2019, it opened its seventh round of Community Partnership grants to local 501(c)3 non-profit organizations for new community outreach and public education activities to improve energy efficiency and water conservation throughout Los Angeles. LADWP plans to fund 17 grants totaling \$860,000. The latest round of grantees, awarded in September 2019, included community groups such as Strategic Actions for a Just Economy (SAJE), Boys & Girls Club of Santa Monica, High Sierra Energy Foundation, Foundation for LA Community Colleges, Granada Hill Charter High School, Pacific Asian Consortium in Employment (PACE), Climate Resolve, Barrio Action Youth and Family Center, and U.S. Green Building Council Los Angeles.

LADWP's allocation of financial resources not only demonstrates a commitment to clean energy goals but affirms the City's commitment to an inclusive green economy that is equitable and accessible for all Angelenos.

Lessons Learned

Supportive regulatory environments can drive innovation: Having supportive regulatory environments, legislative require-

ments, and overarching city goals are key to enabling actions that enhance resource procurement, reliability investments, and addressing rate concerns as utilities and cities work together to meet targets.

Transparency with the City and community is critical for utilities to develop support for innovative actions and reforms:

Not only does transparency create more opportunities to address concerns early on in the process, it is also an effective way to build trust, communicate initiatives, garner support for goals, and share progress. Regular and inclusive reviews of IRPs can be an effective way to maintain transparency.

Prioritizing job creation enables inclusive growth:

As utilities and cities continue to move forward with investments focused on clean energy, it is imperative that emphasis is placed on developing an inclusive economy that is accessible and equitable and accounts for green jobs. By doing so and ensuring jobs, cities and utilities can establish good relations and work well with local labor unions, ensuring an additional degree of support for work.

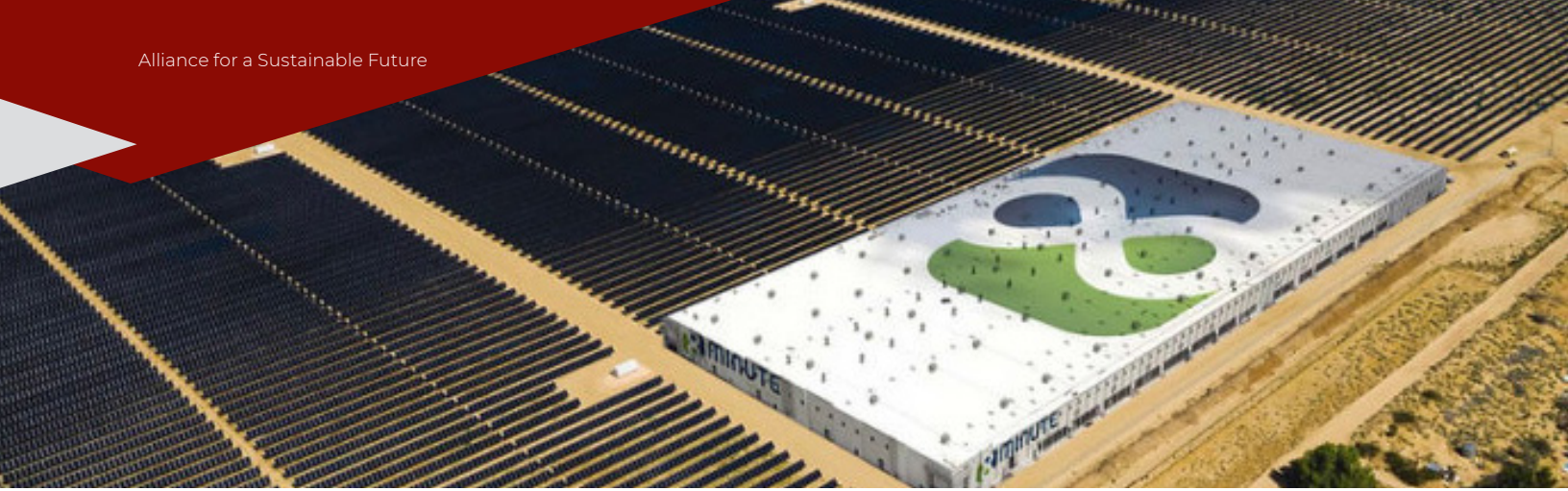
Aggressive and deliberate benchmarking is necessary to track progress:

By setting intentional targets for renewable energy sources, cities and utilities can work together to determine the investments that need to be made to reach the targets as well as measure progress against the benchmarked targets as initiatives continue to be implemented. Measurable findings can be shared with community groups and stakeholders to encourage additional support.

Invest in diverse collaboration to ensure success:

Regular collaboration between groups leads to successful projects that are able to achieve energy efficiency goals in a manner that addresses community needs and priorities with wide support.

5. LADWP 2018 -2019 Briefing Book.



8minute plane for Eland

What's Next

The City of Los Angeles and LADWP's joint efforts are actively contributing to keeping Los Angeles on the forefront of carbon reduction, energy efficiency, and environmental policy. With the Green New Deal as the guiding light and clear plans for necessary investments, Los Angeles continues to tackle aggressive energy and climate goals to reach their carbon neutral, green economy future. Both California and Los Angeles have provided a supportive regulatory environment that continue to enable utilities, such as LADWP, to embrace emerging business models and take bold action towards meeting renewable energy targets. With community support and involvement, the City and LADWP will create a low-carbon energy future while prioritizing vulnerable communities, creating jobs, and developing a healthier living environment for all. Building on the significant progress made to date, Los Angeles and LADWP's will continue to partner towards accomplishing targets set in the Green New Deal, starting with the next steps below:

- The Eland Solar and Storage Center will commence operation no later than Dec 31, 2023.
- LADWP is developing national protocols to monitor GHG emissions related to water management. They will be used in The Climate Registry's new reporting program for the Water Energy Nexus Registry that launched in May 2019.
- LADWP is focusing on fleet electrification initiatives, which among other initiatives,

also include plans to contract bus chargers for up to 520 new electric buses between now and 2025.

Additional Resources

To learn more about Los Angeles' Green New Deal, visit: <https://plan.lamayor.org/>

To learn more about Los Angeles' 100% Renewable Energy Study, visit: <https://www.ladwp.com>

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Above: Installation of RE sources on City properties
(Source: <https://www.slc.gov/sustainability/climate-positive/>)

Salt Lake City & Rocky Mountain Power:

A Partnership for a Carbon Negative Future

Salt Lake City and Rocky Mountain Power have jointly pushed forward to meet renewable energy and emission goals outlined in Salt Lake City's Climate Positive 2040 plan since the plan was released in 2017. The efforts build off of the City's goals to propel communities throughout Utah towards a carbon negative future and represent a mutual commitment to partner with communities to achieve goals in a cost-effective and reliable way. The successful city-utility partnership has included collaboration with community organizations, businesses, and non-energy focused institutions to leverage strengths, audiences, and resources and improve community reach and impact. The partnership has enabled both Salt Lake City and Rocky Mountain Power to install solar capacity, advance mobility electrification, promote models for other communities to advance their sustainabil-

CLIMATE POSITIVE 2040

Climate Positive 2040 is a holistic plan focused on long-term climate and energy goals that was published in 2017. Through this plan, Salt Lake City will document its progress towards two main goals:

- 100 X 2030: 100% Renewable Energy for Community Electricity Supply by 2030
 - Goal includes 50% renewable electricity for municipal operations by 2020
- 80% Reduction in Community Greenhouse Gas Emissions by 2040, compared to 2009 baseline
 - Goal includes at least 50 percent reduction in community footprint by 2030

ity goals, and impact state legislation.

Salt Lake City and Rocky Mountain Power, together with their community partners, helped pass Utah's Community Renewable Energy Act of 2019 – a groundbreaking legislation that creates a prescriptive framework for communities throughout Utah to set cross-community goals and timelines to achieve net 100% renewable energy supply by 2030. Currently, other communities across Utah are joining Salt Lake City to move forward towards a climate-positive future, in which activity goes beyond net zero carbon emissions and targets environmental benefits by removing additional carbon dioxide from the atmosphere. The legislation provides a framework for other communities.

Progress in Salt Lake City

The Salt Lake City and Rocky Mountain Power partnership has set target dates for municipal facilities, spurring the installation of solar capacity and implementation of mobility electrification initiatives. In collaboration with Summit County, Park City, Vail Resorts, and a local university, the utility was able to develop two 40 Megawatt (MW) solar photovoltaic (PV) installations to supply the partners with 80 MW of regional solar energy. Once online in 2022, approximately two-thirds of the electricity produced will be attributed to Salt Lake City. The approximately 50 MW of solar energy provided will be in addition to both the 3 MW solar power purchase the City secured through Rocky Mountain Power's Subscriber Solar program and on-site solar PV installations at City facilities.

Rocky Mountain Power secured U.S. Department of Energy (DOE) funding to for charging infrastructure installations. To date, they have used these grant funds to install over fifty charging stations and supported over 25,000 individual vehicle charging sessions throughout Utah. In addition to the efforts by Rocky Mountain Power, the City has built upon its commitment to community use of electric vehicles (EV) and provides free public charging at the stations it owns.

The City has also made measurable progress towards decarbonizing its municipal vehicle fleet by expanding EV and hybrid EV purchases over the last two years. Specifically, the City focused attention on purchasing EVs for the Parking Compliance fleet and hybrids for the Public Services fleet. Additionally, in Fall 2019, the City announced that their upcoming budget would include funding to purchase 110 electric-hybrid police cruisers, a significant source of the City's vehicle emissions.

Engaging Vulnerable Communities

Throughout planning and implementation of the Climate Positive 2040 plan, significant focus has been placed on engaging vulnerable communities and bringing resources to local communities to ensure their unique challenges and opportunities are accounted for as the City progresses towards a decarbonized future. Rocky Mountain Power's grant program and the City's Empower SLC partnership are examples of innovative programs focused on vulnerable communities and are supported by the State's legislative requirements to include programmatic elements focused on benefitting low-income populations.

INNOVATIVE PROGRAMS FOR VULNERABLE COMMUNITIES

Blue Sky Program: A utility-funded and run solar installation program that provides opportunities for customers to purchase solar energy and grant funding to incentivize on-site solar installations.

Empower SLC: A community engagement partnership by the City and non-profit Utah Clean Energy focused on energy efficiency and non-energy benefits education and support for Salt Lake City homeowners, renters, small businesses, schools, and community programs.

State cost control requirements: Utah state laws and regulations require that participating communities to adopt programs that benefit low-income communities. State policies implement a rider on community's bills that contain a 90-day window for individuals to opt-out of the new community renewable energy program.

Rocky Mountain Power's nationally-recognized Blue Sky program not only provides opportunities for customers to support the purchase of Renewable Energy Credits (RECs), but it also supports grant funding to incentivize on-site solar installations for a number of non-profit organizations. The largest of these installations was directed to three homeless resource centers (one for families, one for men-only, and one for women-only). These homeless resource centers were erected in response to the state's re-evaluation of its approach toward people experiencing homelessness and a reinvestment in housing and support resources. The Blue Sky program partnered with Auric Energy, a local solar company, and the S&P Andersen Foundation to provide enough solar panels to cover the roofs of the City's three homeless resource centers at no cost to the centers.

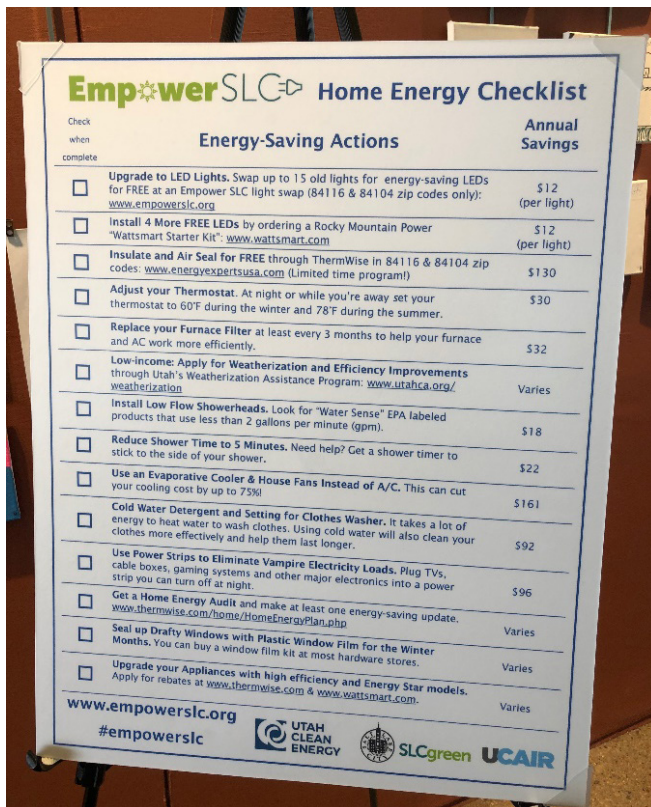
Empowering Salt Lake City

The City also expanded outreach and engagement with local vulnerable communities by partnering with community and mission-based organizations already engaged with these important populations. Utah Clean Energy, a non-profit focused on expanding clean energy access throughout Utah, was selected by the City to administer the Empower SLC program and engage both businesses and residents in target communities. This program empowers homeowners, renters, small businesses, schools, and community programs with the tools and education they need to save energy, lower bills, and reduce pollution. Through this partnership, an emphasis was placed on finding organizations acting to address challenges within the community and finding common ground with them to integrate energy efficiency and conservation efforts. This emphasis on finding common ground has proven invaluable in the program implementation to date. Particular-

ly, partnerships with the International Rescue Committee and Salt Lake County's Aging and Adult Services illustrate the benefits and overlap this approach has generated.

The partnership's work with the International Rescue Committee (IRC), which assists newly-arrived refugees fleeing armed conflicts and natural disasters, is especially unique. The program works with IRC to ease the resettlement process for refugees by providing supportive services such as helping with routine activities like grocery shopping, waste and recycling collection, and accessing local transportation services. IRC provides these services through in-person and in-home visits of recently resettled families. Through a partnership with the City, IRC was able to integrate tutorials on how to program a thermostat, teach refugees about efficient lighting, and provide information about energy and cost saving behaviors and products. This connection, previously unexplored by utility and City energy efficiency outreach programs, provides a new avenue for energy education to some of the City's newest residents through a trusted third-party organization. Additionally, it demonstrates a vantage point of working to bring innovative technology to an often-overlooked and underserved population.

Salt Lake City and Rocky Mountain Power also partnered with Salt Lake County's Aging and Adult Services, which provides support to the local elderly population, to expand outreach and education efforts. This partnership focused on education about how to update thermostat programming and how utility programs can help improve energy efficiency. This partnership realized and expanded upon non-energy benefits for comfort and inclusion. The Aging Services partnership illustrated how WiFi-enabled devices such as smart thermostats may have convenience benefits for the general city population. They also identified inclusion and independence benefits for populations with special needs, such



as mobility restraints that prevent them from accessing their own thermostats.

In addition to targeted partnerships with community organizations such as the IRC and Salt Lake County Aging and Adult Services, Utah Clean Energy has attended over 20 community events in the targeted neighborhoods where they educate community members about energy efficiency and air quality, distribute Home Energy Checklists and host LED lightbulb exchanges where residents can exchange incandescent and CFL lightbulbs for more efficient LED lightbulbs.

These partnerships not only expanded energy efficiency offerings to a local community, but also increased the quality of daily life for community members.

A Changing Regulatory Environment

Legislative and regulatory environment advancements in the state, resulting from Climate Positive 2040 as well as collaboration and partnership efforts related to the plan, are laying the groundwork for a number of innovative initiatives and different programs. The recent passage of Utah's Community Renewable Energy Act of 2019 (House Bill 411) was achieved only through the concerted and collective effort and advocacy of a diverse set of stakeholders that included Salt Lake City, Rocky Mountain Power, and community and municipal stakeholders such as Summit County and Park City. This first-of-its-kind legislation provides a framework for interested communities to collaboratively set cross-community guidelines and timelines to achieve net-100% renewable energy supply by 2030.

The legislation and subsequent implementing rules were negotiated among state regulators, Rocky Mountain Power, and early adopter 100% communities. Together, they create a regulatory pathway for interested communities to band together to purchase electricity from new, large-scale renewable power plants – creating new jobs and economic development while displacing emissions from fossil fuel generators. Importantly, the pathway provides several off-ramps for communities who may ultimately decide not to participate as well as opt-outs for customers who may not wish to participate once their community joins. The law specifically requires participating communities to adopt plans to engage low income customers.

This unique legislation provides for a standard regulatory process while giving participating communities the opportunity to make joint renewable energy procurement decisions. All plans developed by the collaborating communities and Rocky Moun-

tain Power are still subject to the standard regulatory review process with the State's Public Service Commission for cost. Also, any community may exit prior to program implementation and any customer may opt-out without financial penalty during the opt-out period. The framework encourages communities to collaborate to achieve shared goals while minimizing risk. The more communities that join the effort, the greater the economic benefits and transformation of the energy supply. The regulatory processes create accountability while the flexible agreement gives communities a wealth of information before deciding whether to commit or not.

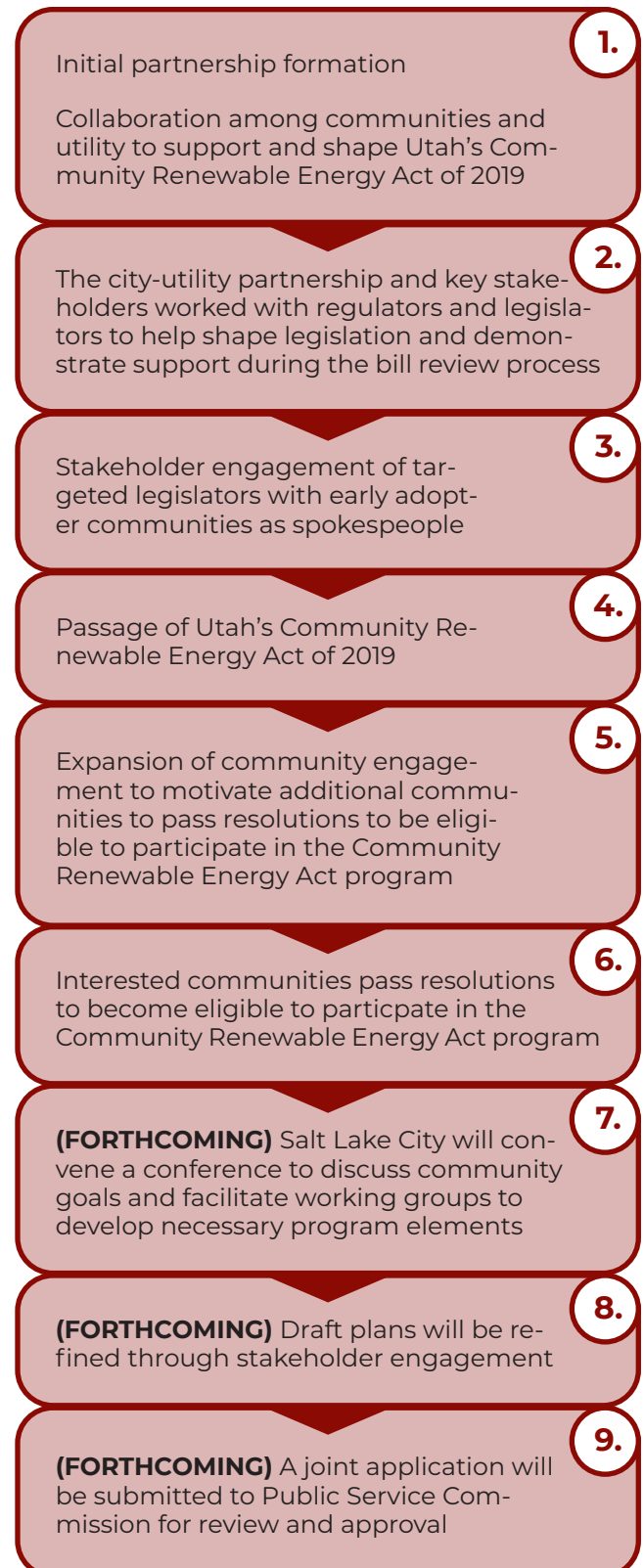
Cross-Community Collaboration

Municipalities interested in collaborating with other Utah communities to establish goals and make implementation plans to achieve net-100% renewable energy supply by 2030 need only to pass a resolution to be eligible. To date, at least two dozen municipalities, including Salt Lake City, have passed resolutions to enter the agreement with Rocky Mountain Power. The communities that adopted a resolution may opt-out of the agreement with Rocky Mountain Power prior to any changes to customer power bills.

Salt Lake City will convene a meeting in early 2020 to bring participating stakeholders together. At this meeting, communities will seek to develop a common implementation plan that will ultimately lead to a joint filing with Rocky Mountain Power to the Public Service Commission.

Utah's Community Renewable Energy Act: A Partnership Process

PROCESS MAP:



Costs and Financing

To leverage available financial resources and expand impacts, multiple funding sources were pursued and secured to support the Climate Positive 2040 plan's goals.

	Blue Sky	Empower SLC	EVs Expansion
Administering Partner	Rocky Mountain Power	Utah Clean Energy	Salt Lake City; Rocky Mountain Power
Funding Source	DOE Grant Funding; Utility Funds	Salt Lake City obligated funds; lightbulbs for exchange program provided by utility	DOE Grant Funding; Utility Funds; Salt Lake City obligated funds; small grants
Utilization	Funding utilized to support solar installations for applicant customers	Funding administered to expand local engagement and resources dedicated to energy efficiency and renewable energy benefits	<ul style="list-style-type: none"> Public charging infrastructure supported by DOE grant funding and utility funds; City EV and hybrid fleet expansion leverages City funding



Above: Members of Utah Clean Energy and the City pose for a picture at the Empower SLC launch event (initiated with a \$200k investment from the City).⁶

Outcomes

The Climate Positive 2040 plan has already yielded results throughout the community. By building upon existing partnerships and developing new ones, the City has forged a collaborative pathway toward achieving their goals. Some notable outcomes from the program, thus far, include:

- Developed a collaborative network of community partners to foster overlapping outreach and engagement efforts;
- Formed innovative partnerships with organizations that do not primarily focus on energy issues to illuminate non-energy benefits for vulnerable community groups; and,
- Developed strong regional partnerships for renewable energy development and state-wide collective advocacy.

6. <https://slcgreenblog.com/2019/04/12/empower-slc-energy-efficiency-launch/#more-11286>

These outcomes and other program achievements highlight the additive power created when stakeholders collaborate on shared goals and provide support through innovative approaches to community challenges.

Lessons Learned

The Climate Positive 2040 implementation and the partnerships developed through it, offer several lessons learned for similarly positioned or inclined communities to adopt and scale for their own efforts:

Find community advocates: In implementing the Climate Positive 2040 plan, the City primarily took a leadership role in facilitating conversations, forming partnerships with both energy and non-energy focused organizations, and developing regulatory strategies with Rocky Mountain Power. This approach enabled the City to expand its reach, increase community trust of the information presented, present energy efficiency information in less technical terms, and capitalize on overlapping community goals.

Find common ground: Salt Lake City and Rocky Mountain Power found that they needed to identify overlapping goals and common challenges in order to form effective partnerships with community organizations and other communities. The City, utility, and community organizations worked together to leverage and share resources to create solutions that benefit all parties. Likewise, Salt Lake City and Rocky Mountain Power provided an opportunity for interested communities across Utah to participate in the Community Renewable Energy Act to overcome common challenges and create energy solutions for Utah citizens.

Measure and publicize all benefits: In the course of the Empower SLC program and community engagement projects, the City monitored all projects for non-energy benefits, such as the mobility and independence benefits experienced by the elder community served by Aging Ser-

vices. By doing so, the City remains in tune with the less tangible benefits of the ongoing Climate Positive 2040 work. This allows the City to better describe the full impact of this work for the community.

Capitalize on every interaction: Whether through community engagement or the initial discussions with Rocky Mountain Power, the City adopted an early strategy of treating every interaction as an opportunity to discuss clean energy and development goals. For example, while community organizations like the International Rescue Committee and Salt Lake County's Aging and Adult Services do not focus primarily of clean energy, partnerships with these organizations allowed Salt Lake City and Rocky Mountain Power to make progress towards renewable energy and carbon emission reduction goals by connecting with vulnerable communities.

Advocate for supportive regulation: United by a common vision and plan, the City, utility, and key collaborators were able to present community desires to regulators and legislators. Through coordinated efforts and advocacy, partners, and key stakeholders helped shape a supportive regulatory environment for renewable adoption.

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