



Mayors Climate Protection Center

Taking Local Action

Mayors and Climate Protection Best Practices

June 2022

16th Anniversary Winners
Mayors' Climate Protection Awards



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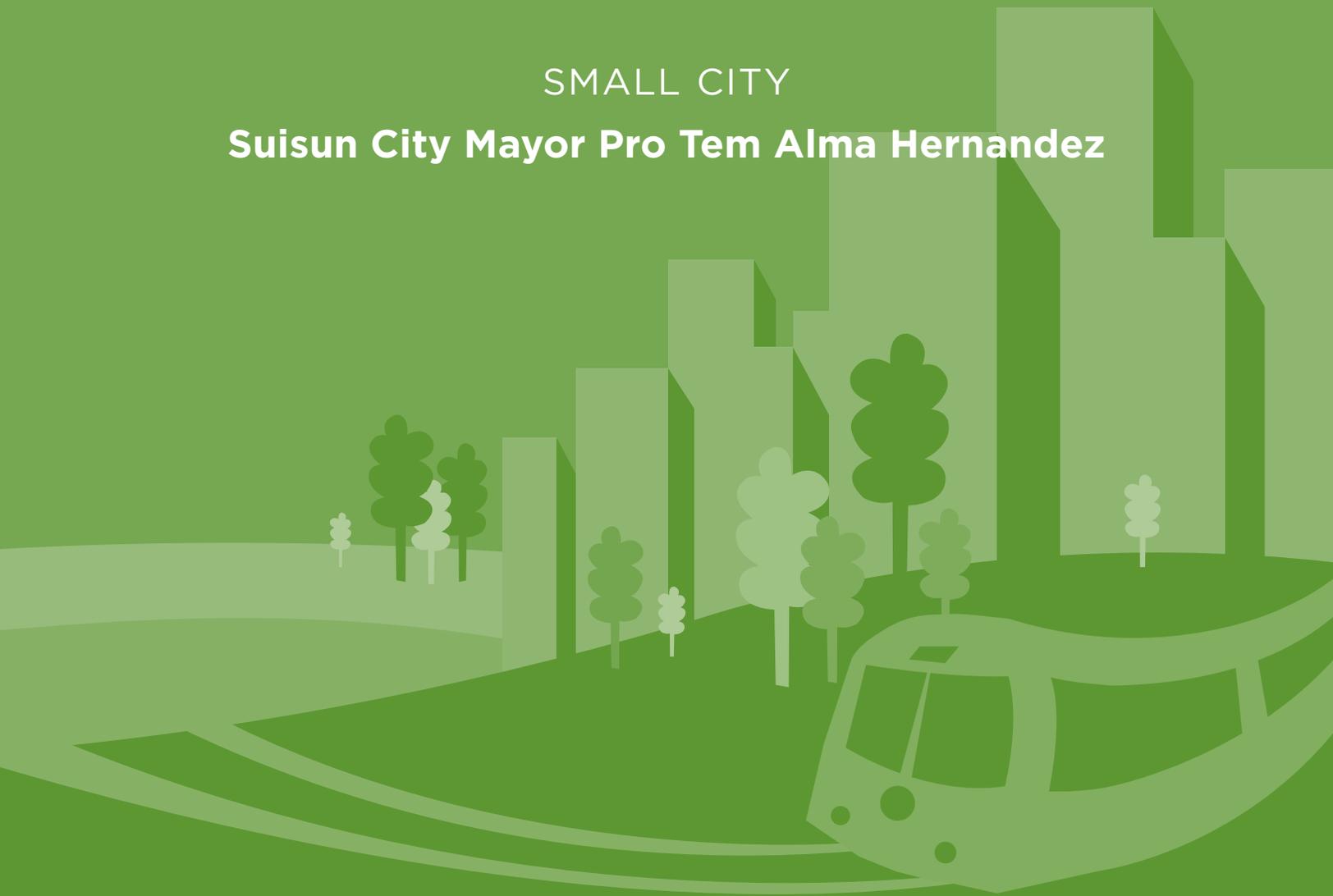
First Place Award Winners

LARGE CITY

Kansas City Mayor Quinton Lucas

SMALL CITY

Suisun City Mayor Pro Tem Alma Hernandez



Kansas City Mayor Quinton Lucas

Zero Fare Transit

Kansas City (MO) has implemented a *Zero Fare Transit* initiative which provides free public bus and Streetcar transportation for all riders and enhances resiliency and equity through a safe, efficient, convenient, inclusive, accessible, and sustainable multi-modal transportation system.

Zero Fare Transit offers improved access to health, nutrition, and financial opportunities, and is most impactful to low-income residents. According to the U.S. Census Bureau, the average American spends more than four hours every week in transit for work. Americans are spending around 15.9 percent of their budgets on transportation costs, according to the Bureau of Labor Statistics, and married couples with children spend closer to 17.1 percent.

Kansas City Mayor Quinton Lucas implemented the program stating, “Free public transportation allows Kansas Citians to access opportunities for employment and education, which leads to better quality of life, and better health for our community.”

Based on Kansas City’s most recent greenhouse gas inventory, transportation makes up 34 percent of our GHG emissions (3 million MT CO₂e). The fastest way to decrease these emissions is to drive less, followed by transportation electrification.

Post pandemic, Zero Fare Transit will increase ridership between 20 percent and 60 percent. Based on data from the Mid-America Regional Council, the program is expected to reduce GHG

emission by more than 5,000 tons annually. Kansas City has also begun a full transition to a Zero Emissions City-owned vehicle fleet that will create greater reductions.

As the first large city to implement Zero Fare Transit, Kansas City was able to adapt quickly during changing economic times. Zero Fare began with veterans, then high school students. Months prior to COVID-19, City leaders expanded the program to all riders. This decision resulted in less volatility in ridership during the pandemic. In October 2020, ridership was at 80 percent of its 2019 level, while nationally, transit ridership remained at 40 percent of pre-pandemic levels.

Zero Fare Transit has improved the safety and efficiency of public transportation and the financial health of the community. Removing fares has eliminated the cause of more than 90 percent of the disputes seen on buses. It has improved efficiency by removing the exchange of money or bus passes, allowing faster boarding times, and resulting in more busses running on schedule.

The transit system now saves over \$750,000 in administration costs associated with fee collection. And more than 30,000 rides are taken daily, which translates into \$1 million a month that is returned to Kansas City families’ pockets.

Suisun City Mayor Pro Tem Alma Hernandez

Citywide Energy Infrastructure and Efficiency Program

The City of Suisun City teamed with sustainability partner ENGIE to develop and implement a city-wide energy infrastructure and efficiency program that included: 365kW of Solar Photovoltaic systems; 2,167 streetlight replacements; LEDs at all city sites, including sports stadium lighting; solar and wind-powered park lighting; 21 new HVAC units and upgraded thermostats; and energy efficient window replacements.

The city has a tight budget and is constantly looking for ways to manage budgetary risk; rapidly rising utility expenditures needed to be controlled. It also had a deferred maintenance list, including end-of-operational-life HVAC systems, and outdated streetlight infrastructure that needed to be expanded.

Having a lean staff means there are capacity limitations at times. The city solved this by teaming with ENGIE which developed and managed the project, as well as supported City communications and public relations. The city made these much-needed infrastructure upgrades while responding to community wishes to retain the historic look, feel, and charm of our neighborhoods. It piloted multiple lighting solutions (including shapes, color temperatures, etc.) and invited resident input via informational signage and community events. The city then installed the community-selected solutions throughout the city.

Onsite electricity generation from solar, lighting improvements throughout the city, and HVAC upgrades will avoid 1,533,287 metric tons of CO₂ annually. This is the equivalent of 2,697,199 miles driven by a passenger vehicle or 1,202,239 pounds of coal burned.

The city's off grid, solar and wind powered, smart lighting pilot has been recognized as a *Smart City 50 Award* winner for 2022. This lighting is cost efficient, clean, and is capable of community WiFi coverage and video surveillance of public areas with vandalism problems.

Bundling these upgrades and leveraging rebates and incentives achieved more of our deferred maintenance and critical upgrades than we expected. This project gave us new infrastructure, money back to our general fund, and freed up staff time previously needed for maintenance issues across the city.

The city is on track to achieve \$12 million in gross savings over the project life, secured through a reduction in annual electrical expenditure of \$464,000, and net \$3 million in savings over the life of the project. The city secured financing for the project at 3.923% interest. Rebates and incentives from Solano County Energy Watch and PG&E of \$84,627 were also leveraged. Qualifying streetlights were funded through PG&E's on-bill financing program.

The new HVAC systems and lighting have increased comfort levels in municipal buildings and resulted in fewer maintenance calls. With streetlighting now brighter, and covering previously unlit areas of the city, Police and Fire Departments are better able to work at night, and citizens feel safer on our streets. The innovative off grid park lighting pilot is designed for WiFi and video surveillance to be sent directly to police dispatch providing greater public safety and park access for residents.

The project reached city youth with STEM programs bringing energy and engineering concepts to local students through our afterschool and summer programming. This program positively impacted the environment, our community, and our budget.

This program positively impacted the environment, the community, and the city's budget.

Large City Honorable Mentions

Population Over 100,000

Charlotte Mayor Vi Lyles

Denver Mayor Michael B. Hancock

Fresno Mayor Jerry Dyer

Louisville Mayor Greg Fischer

Washington DC Mayor Muriel Bowser



Charlotte Mayor Vi Lyles

PoleVolt™

PoleVolt™ is a new and innovative electric vehicle charging station pilot program in the City of Charlotte, created by a partnership among the City of Charlotte, Duke Energy, Centralina Regional Council and the University of North Carolina at Charlotte (UNC Charlotte). The charging station uses existing streetlights to provide curbside charging for electric vehicles (EVs), expanding the availability of charging infrastructure for people who do not have access to dedicated off-street parking.

PoleVolt™, the first intelligent curbside electric vehicle charging station of its kind in the country, provides a solution for those who may lack the off-street parking needed for home charging systems. Nearly 90% of electric vehicle charging is expected to happen at home, but only about 50% of vehicles in the United States are parked at residences with easy access to electric power. Plus, many vehicles park curbside in urban areas.

Placing charging stations in the public right-of-way, along the curb, can be expensive and difficult because of the potential need to run underground wiring and install new equipment in or near sidewalks. In addition, the cables from curbside stations have the potential to get tangled and create trip hazards. Funding from the U.S. Department of Energy's Vehicle Technology Office allowed this project team to explore how to address this access disparity in a cost-effective manner. The charging station lowers installation costs by utilizing existing infrastructure because PoleVolt™ can be installed on existing streetlights. The retractable cable system helps improve site aesthetics and prevent cable hazards.

UNC Charlotte's Energy Production and Infrastructure Center (EPIC) was awarded a \$942,000 grant from the U.S. Department of Energy to develop an innovative solution related to curbside charging of electric vehicles. This money has funded the development of 2 PoleVolt™ charging stations. The federal grant awarded EPIC is part of an \$80 million investment in advanced vehicle technologies research to enable more affordable mobility, strengthen domestic energy security, reduce the nation's dependence on foreign sources of critical materials and enhance U.S. economic growth. This work supports the U.S. Department of Energy's (DOE) goal to invest in early-stage research of transportation technologies that can give families and businesses greater choice in how they meet their mobility needs.

EPIC is responsible for the overall project management and performs testing and validation of the communications, electric and structural subsystems before delivery to Duke Energy's Mount Holly Emerging Technologies facility for final assembly as well as full system testing. Centralina Council of Governments assists in community relations during the planning and execution of the demo. The City of Charlotte provides in-kind support to work through and navigate permitting in the city's right of way, as well as funds to ensure ADA accessibility, such as a ramp and pavement markings.

The key challenges the city faced to date in deploying this new infrastructure was figuring out how to navigate local permitting processes to do something that has never been done before. EV charging is a relatively new technology and there are many issues to address in deploying these charging stations, including determining how city requirements related to ADA accessibility apply. By engaging multiple stakeholders at every step of the process, the city and partners continue to address key issues related to the future scalability of this new energy infrastructure.

The unit was installed at the Ritz at Washington Heights, a new park developed in Charlotte's Historic West End. In 2018, several community leaders formed the Historic West End Green District, an initiative designed to improve air quality, reduce carbon emissions, and improve health." PoleVolt™ allows us to look at new innovation through the lens of equity," said Charlotte Mayor Vi Lyles. "This new station is an example of the city's commitment to both sustainability and to the residents in our vital Corridors of Opportunity, areas of our city that have been under-represented in the past." And to support the Historic West End Green District initiative, the team worked to leverage the intelligent PoleVolt™ design to power and provide connectivity for an air quality sensor.

Another City initiative happening simultaneously is The Renewable Energy and Efficiency Workforce (RENEW) Training Program, designed to train residents in sustainable technologies to advance the clean energy economy in Charlotte. Currently, RENEW cohorts are focused on HVAC and sustainable building technologies, but as other industries continue to grow, the city is exploring an expansion of the program to include electric vehicle related occupations.

By leveraging public-private-plus partnerships, breakthrough technologies, and workforce development, the city is working to catalyze a low carbon future for residents.

Denver Mayor Michael B. Hancock

Climate Protection Fund

The Denver *Climate Protection Fund* is one of the first of its kind in the nation, with this annual taxpayer-supported fund dedicated solely to climate action. Providing about \$40 million dollars each year, the *Climate Protection Fund* is used to make investments in the areas of Adaptation and Resiliency, Buildings and Homes, Environmental Justice, Renewable Energy, Sustainable Transportation, and Workforce Development. Across each of these focus areas, the *Climate Protection Fund* must also ensure at least 50 percent of the investments go to climate vulnerable communities or those that have been under-served on the front lines of climate change impacts.

Climate change is at our doorsteps, already causing health, social, economic, and environmental impacts in communities worldwide. It is broadly understood that the global climate crisis is driven by cities, which account for 70 percent of the world's population; therefore, cities must lead the charge in rapidly reducing greenhouse gas emissions and transitioning to renewable energy sources. Cities must also be mindful that those least equipped to respond to and weather the impacts to come are at the highest risk, and local governments need to be prepared to adapt and absorb those shocks. Climate action strategies often come with costly upfront investments that are out of reach for many, if not most, residents. The *Climate Protection Fund* bridges that gap by proving funding and resources to support the city's ambitious climate, adaptation, and mitigation goals, with direct and measurable benefits that go first to those most in need.

Denver is truly blessed with a population that is largely supportive of climate action, driving the city towards a healthier and more sustainable future. Given this consensus view on the climate challenges before cities, this program was given a stamp of approval by Denver voters. However, agreeing on a vision and a goal is much different than agreeing on how to get there. City governments are not always known for being flexible, nimble, and adaptable. Asking sister agencies and other partners to help and cooperate in this work and to do things differently is tough in any organization. Like any new initiative, localized and government-led climate action takes time to have influence and shake up the status quo. The Office of Climate Action, Sustainability and Resiliency continues to build good working relationships, focusing on getting to a 'yes' through mutual understanding and compromise. It's also a challenge to build out a new program from scratch, with no foundation to build upon. While climate action strategies have

often been carried out piecemeal, a holistic effort that looks at mitigation, adaptation and resiliency alongside equity, justice and social factors is a new field. Early successes in *Climate Protection Fund* investments, for example, have been able to advance renewable energy through community solar, while creating green jobs for under-served communities and providing financial relief for lower-income families. Overall, applying climate solutions to existing community needs has helped to focus and guide the city's work.

One of the key challenges has been building out a new office to advance this innovative and groundbreaking work, supported by the *Climate Protection Fund*. Most local governments have a sustainability office with just a handful of staff; Denver's office has grown to nearly 40 staff members, many of which hold a title we might categorize as 'jobs that didn't exist ten years ago.' The solution to these growing pains has been to hold a culture of innovation to try new things, reorganize, recalibrate, and learn from both successes and failures. No one has solved climate change yet, but we believe a spirit of continual innovation will help get us there.

The standout and stellar example of tackling greenhouse gas reductions comes from our *Energize Denver* policy. *Energize Denver* is the collaborative effort of government, non-profit, education, community, and business interests to find a new solution to the climate crisis. The City and County of Denver launched an in-depth and thorough stakeholder engagement process through a series of several task force meetings designed to forge a path toward drastically reducing greenhouse gas emissions. Denver's buildings and homes account for 49% of all carbon emissions in the city, making building decarbonization one the quickest ways to dramatically improve our air quality and meet GHG reduction goals. *Energize Denver* will require building owners and managers to meet energy performance standards at interim targets to reduce carbon emissions 80% by 2040. The *Energize Denver* ordinance passed unanimously by City Council vote, making Denver the first city in the nation to pass such a bold, landmark policy that will serve as a model for others. *Climate Protection Fund* dollars will provide resources, support, incentives, and rebates to make compliance easier and cost-effective. Without leveraging the support of *Climate Protection Fund* dollars to enact this policy, passing such a monumental piece of legislation would have been a hard sell to the community given the high price tag.

Denver is only the second city in the United States to have a taxpayer-supported fund dedicated to climate action. The 0.25% sales tax creating this fund was overwhelmingly approved by Denver voters, delivering new resources and space to enact policy, stand up programs, and deliver benefits that will protect residents and even help them to thrive in the face of climate change. An outstanding aspect of the fund is its flexibility in addressing the city's diverse demographics. In neighborhoods with less access to transportation options, the *Climate Protection Fund* can provide microtransit shuttles or e-bike libraries. In communities experiencing the effects of extreme heat due to heat islands created by fewer trees, the program can provide tree planting. In areas where residents are closer to industrial or heavy traffic, it can fund air filters for homes. The *Climate Protection Fund* is now poised for broader, transformative projects, similar to the *Renewable Community Solar* program that advances Denver's 100% renewable energy goals or its *Climate Action Rebates*, which now provide any resident with instant savings of up to \$10,000 for electric home upgrades or up to \$1200 off the purchase of an e-bike.

"I heard about the e-bike program through Prodigy Coffee House, my employer. They knew I was having issues with my transportation. Walking all the way to the train and having to wait was making me late. The mental health benefit, it's really good, like you're freeing your mind when you're on the bike. You can clear your thoughts while you're riding. When I first got the bike, I wasn't really thinking about climate change, but now that I know that it benefits that, it makes me feel better." This quote is from Virgil, one of the first regular users of CASR's E-bikes for Essential Workers program. The fund's promise for a healthier, brighter future for the city has begun in earnest. This story is certain to be the first of many as the *Climate Protection Fund* investments come to life in the community as they go beyond emissions reductions.

Here's more:

- E-cargo bikes provided to Denver Food Rescue allowed the organization to ditch cars and deliver fresh food directly to residents in food deserts.
- Renewable Community Solar gives financial relief to families in need of help paying their energy bills.
- Climate Action Rebates make costly investments in electric upgrades either free or within reach, improving the health of their family and community.

- Promotoras Climacticas provides education, awareness and giveaways that increase climate literacy in vulnerable populations while arming them with resilience and adaptation strategies.
- Environmental Justice empowers the community to have a voice, amplifying the urgent need to improve the health and quality of life through mitigation.
- Free and on-demand EV shuttles close the gap between home and transit, expanding the mobility of an entire under-resourced neighborhood in Denver.

The city's goal is to reduce the emissions that cause climate change by meeting the most pressing needs of our community in ways that improve the quality of life. The Office of Climate Action, Sustainability and Resiliency is charged with the important task of aggressively reducing greenhouse gas emissions and delivering human-centered benefits and solutions to the community – for today and in the years to come.

Denver was one of more than 100 U.S. cities and counties to be recognized in the *Race to Zero* at the United Nation's 26th international climate conference of the parties (COP26) in Glasgow, Scotland. Only a few of these communities have formally adopted a science-based target. Denver is one of them. The current science-based target was endorsed by the Sustainability Advisory Council, an advisory board made up of local advocates and activists. Denver Mayor Michael Hancock accepted this recommendation and increased the ambition of the goal to a 65% reduction in emissions by 2030 from a 2019 baseline. Denver aims to cut emissions 65% by 2030.

Additional actions at the federal, state, and local level will be needed to achieve these goals, including net zero energy building codes, accelerated EV adoption, stringent federal clean car standards, accelerated multi-modal transportation infrastructure, changes to land use and planning, and widespread renewable energy deployments. In short, climate change does not stop at Denver borders. While the city works to advance its climate action goals aggressively and ambitiously, it cannot do it alone. The city hopes the *Climate Protection Fund* will inspire and motivate others, serving as a model for other cities, states and even nations to accelerate the fight against climate change.

Fresno Mayor Jerry Dyer

Citywide Energy Sustainability Program

The City of Fresno's *Citywide Energy Sustainability Program* features two major target areas – energy efficiency and renewable energy. The Program is making significant strides in implementing the city's Climate Action Plan (CAP), which calls for a reduction in GHG emissions and an increase in renewable energy supporting city facilities. This program achieves both by upgrading existing facilities to reduce the city's kWh usage and increasing solar power and battery storage. The energy efficiency work includes upgrading streetlights and facility lighting to LED, system controls, HVAC, and transformer upgrades. The initial focus has been to reduce energy usage, which is the most efficient and cost-effective way to reduce emissions. So far, the city has reduced its annual electricity usage by more than 15 million kWh, resulting in \$3.3 million in annual utility bill savings, and an anticipated savings of more than \$66 million over the next 20 years.

The second part of the city's program includes solar and battery storage at facilities with the highest electricity usage. During the past two years, the City of Fresno has become a renewable energy leader by developing and approving more than 32 megawatts of combined solar and energy storage across nine city-owned facilities, with an additional nine locations in the final development stage. The projects are projected to save more than \$2 million in the first year, and \$100 million over the next 20 years.

The program is especially critical because in addition to our CAP goals, Fresno endures some of the most significant air quality challenges in the nation, as well as skyrocketing electricity prices – which is an issue of grave concern. The City of Fresno, as a municipality, is our utility's single largest user. The State of California has some of the highest electricity rates in the nation, and the utility's unprecedented rate increases are putting a strain on Fresno's finances that could ultimately affect the city's ability to fund public safety and other vital core services.

Among the challenges before the city was the lack of capital and significant funding assistance given Fresno's size. To overcome this, the city implemented a variety of funding and incentive methods, all of which were budget neutral. It was important to the city that the projects all pay for themselves with savings, which eliminated the need for out-of-pocket costs or general fund obligations.

These efforts to date have resulted in significant reductions in GHG emissions. The energy efficiency projects alone have reduced electricity

use by more than 15 million kWh, which is equivalent to 175,000 trees grown for 10 years or removing over 2,200 vehicles off the road. The solar and battery storage results are even more significant. The clean power produced and consumed from these projects in the first year will have the equivalent of eliminating 36,342 Metric Tons of Carbon Dioxide from entering our atmosphere. This equates to more than 600,000 trees grown for 10 years, or annually removing more than 7,900 vehicles from the road.

Fresno's program is particularly outstanding because it continued in the face of competing priorities and the Covid-19 pandemic. The need to move forward with little to no resources called for innovation and creativity in identifying funding and incentives. The city was able to deliver on its commitment to continue implementing the program.

In financing these efforts, the city embraced several methods, including grant incentives. The streetlight portion was financed using a 0% interest loan through our utility, which is repaid by bill savings. The \$11.4 million 0% loan includes a 7-year pay-back period. The city also obtained low-interest energy loans, which are paid by energy and maintenance savings and do not affect the city's debt burden or general fund. The renewable energy power purchase agreement (PPA) component includes low fixed rates for 20 years, which will provide much needed utility bill stability. The city also received a \$3 million "Equity Budget Self Generation Incentive award" (Grant Incentive) for battery storage.

Beyond the significant environmental benefits from these efforts, the citywide lighting improvements resulted in immediate positive feedback from residents who said the improved lighting looks great and improves safety. It also has created local energy construction jobs and expanded local business opportunities. The longer-term quality of life benefits will be gained from the millions of dollars saved – money that will be used to fund critical public services.

The program also delivers on the *One Fresno* promise by treating all parts of the city equally. As Central California's largest city, it provides a great example for communities that now struggle with how to successfully implement their own climate action goals. Our combined program not only saves more than \$166 million of taxpayer money over 20 years, but it also has the GHG equivalent of removing more than 10,000 vehicles off the road annually or growing 775,000 trees for 10 years.

Louisville Mayor Greg Fischer

Cool Roof Incentive Program

Under Louisville's *Cool Roof Incentive Program*, the Office of Advanced Planning and Sustainability offers \$1 per square foot for new or retrofit steep-slope and flat or low-sloped cool roofs up to the maximum incentive of \$2,000 for residential buildings, including multi-family. Condominiums with 10 units or less qualify for a maximum incentive of \$2,000. Condominiums with more than 10 units can receive a maximum of \$5,000. For non-residential properties, there is a \$1 per square foot of new or retrofit flat or low-sloped cool roofs up to the maximum incentive of \$5,000 and for steep-sloped cool roofs up to the maximum incentive of \$10,000.

In April 2016, Louisville released its Urban Heat Management Study, the first comprehensive heat management assessment undertaken by a major U.S. city. This report assessed the extent to which Louisville Metro is warming due to urban development and deforestation, estimated the extent to which rising temperatures are impacting public health, and presented a series of neighborhood-based recommendations for moderating this pace of warming. The report found that Louisville had the fastest growing urban heat island in the nation, resulting in serious public health impacts. In addition to heat exhaustion and heat stroke, individuals with preexisting medical conditions, particularly cardiovascular and respiratory disease, are at higher risk for mortality during periods of high and/or prolonged heat. Heat waves can deter outdoor activity by lowering thermal comfort levels. Individuals are less likely to participate in outdoor activities when the weather is too warm, and those that do may experience symptoms of heat illness during periods of high temperatures. Extreme heat may also influence the work schedules of those in outdoor occupations, such as construction, as outside exertion during peak heat levels can be unhealthy. Not all members of a community are equally affected by extreme heat. The ends of the age spectrum, i.e., the young and the old, are most vulnerable to heat waves due to lower physiological capabilities to regulate heat and a lack of mobility. The sick are vulnerable to elevated temperatures because of relatively weak immune systems compared to healthy adults, while low income individuals may lack the resources to escape high temperatures. And some minority groups carry an unequal share of the heat burden (those both older and less affluent than the general

population), raising environmental justice concerns. Additionally, individuals living in social isolation are more vulnerable to heat because of the absence of a social network to contact during heat waves. By determining how many additional deaths result in the region for every one-degree increase in temperature, it is possible to estimate the number of heat-related deaths likely to occur on each day in the May through September warm season. Applying this approach, 86 residents of the Louisville Metro area are estimated to have died from a heat-related cause during the 2012 warm season.

In addition to public health impacts, urban transportation infrastructure is increasingly stressed with rising temperatures. Most transportation infrastructure is designed to last several decades, but with continued warming and an increase in the frequency, intensity, and duration of heat waves over time, significant stress will be placed on these systems. Extreme heat can also cause electricity and water delivery systems to fail during periods of peak demand. Extreme heat causes metal power lines to expand and impedes the efficiency with which transducers shed heat, lowering the overall efficiency of the system. The increased demand and inefficiency of the power system may overwhelm the power generation capacity of a region, leading to unplanned blackouts or intentional power outages by electric utility companies referred to as rolling blackouts.

While some localities can include cool roofing requirements in their building code, Louisville does not have local control of building codes and would need change at the state level. Thus, Louisville had to develop and fund an incentive program to encourage the use of cool roofing materials.

According to the U.S. Department of Energy, conventional roofs can reach temperatures of 150 degrees F on a sunny day. Cool roofs, by comparison, stay more than 50 degrees F cooler. This reduces energy use by decreasing air conditioner needs. In Louisville, where the majority of our energy comes from fossil fuels, any reduction in energy use not only prevents blackouts during periods of high heat but by reducing demand, also reduces the fossil fuels burned, thus reducing greenhouse gas emissions.

Louisville's cool roof rebate program is one of the most robust cool roof programs in the country, offering \$1 per square foot, compared to most cities which offer only up to \$0.30 per sq ft. The average incentive in Louisville is \$2,206.

Through this program, the city has incentivized the installation of over 1 million sq ft of cool roofs throughout Louisville. The city's Cool Roof Incentive Program Dashboard -- <https://lojic.maps.arcgis.com/apps/dashboards/8cd5f56c19c2494a8b2e1a0990196ad8>) -- shows the distribution of incentives on a county map and also by council district. High heat districts identified in the Heat Management Report are prioritized to ensure the funding goes to the neighborhoods that will benefit most. Since its inception, the Cool Roof Incentive program has incentivized over 1 million square feet of cool roofs in Louisville. The Cool Roof Rebate Program has been funded through a budget allocation of \$100,000 annually from the city's general funds since 2017.

In addition to reducing fossil fuel use by lowering energy demand, this program actively cools the warmest parts of our city by prioritizing areas where they are most needed. The majority of the program's funds have been distributed in the high-heat districts identified in the 2016 Urban Heat Management Study. Combined with other cooling strategies recommended in the Heat Management Report, such as tree plantings and energy efficiency programs, cool roofs help to lower the temperatures experienced by residents, which can be 10 degrees F warmer in the city than surrounding rural areas. This increases the safety of outdoor activity such as walking and biking, which contributes to better health outcomes, reduces heat-related illnesses, and saves residents money on energy costs. Cooler temperatures also prevent maintenance and repair costs of urban infrastructure, saving taxpayer dollars and preventing transportation and delivery delays. Cool roofs, by reducing energy use, also lowers peak demand which reduces the risk of power loss through blackouts.

Learn more here: <https://louisvilleky.gov/government/sustainability/cool-roof-incentive-program>. To see the city's dashboard showing where cool roofs have been installed, go to: <https://lojic.maps.arcgis.com/apps/dashboards/8cd5f56c19c2494a8b2e1a0990196ad8>.

Washington DC Mayor Muriel Bowser

Affordable Housing Retrofit Accelerator

The District of Columbia's (DC) Department of Energy and Environment (DOEE) has created the Affordable Housing Retrofit Accelerator (AHRA) to make meaningful improvements in DC's affordable housing stock and address issues of equity, health, and energy efficiency. It offers a suite of services to affordable housing buildings across DC to assist them with meeting the District's Building Energy Performance Standards (BEPS) requirements.

DC's climate and affordable housing goals are some of the most ambitious in the country. Substandard living conditions plague many low-income, predominantly Black neighborhoods. With bold, but distinct, climate goals of reducing greenhouse gas emissions and energy use by 2032, and housing goals of building and preserving 18,000 affordable housing units by 2025, the District saw an opportunity to align efforts by prioritizing the needs of affordable housing in the development of the AHRA.

The first of several challenges to implementing the AHRA was understanding the unique constraints that affordable housing buildings face when pursuing deep energy retrofits. Consequently, DOEE hosted working group sessions in mid-2019 to meet with affordable housing stakeholders across the District and collect feedback. Funded through the American Cities Climate Challenge and conducted in partnership with the National Housing Trust (NHT) and the Housing Association of Nonprofit Developers (HAND), a report from these meetings served as a roadmap for DOEE to build out the AHRA program. Another challenge was identifying the list of properties that met the definition of affordable. DOEE worked closely with its sister agencies and the community to identify these properties and direct their outreach efforts. Lastly, to stand up the program, DOEE had to quickly deploy the resources from American Rescue Plan Act (ARPA) funding. DOEE was able to leverage two existing partners, the DC Sustainable Energy Utility (DCSEU) and the DC Green Bank (DCGB) to swiftly build out an implementation and launch plan for the program.

BEPS is a key piece of Mayor Muriel Bowser's Clean Energy DC plan and is projected to reduce energy usage in its commercial buildings by more than 20 percent citywide and reduce greenhouse gases by more than 1 million metric tons. For buildings participating in the AHRA, DOEE is providing no-cost energy audits, assistance with BEPS reporting requirements, and direct installation of energy

efficiency upgrades. Across the approximately 140 eligible buildings, this program could impact more than 20 million square feet, representing more than 22,000 housing units.

DC is the first city in the nation to implement a BEPS policy and is unique in that it has not exempted or created separate standards for multifamily affordable housing buildings. These efforts are supported by affordable housing advocates who also believe that low-income residents deserve as much of a fair shot at the benefits of the BEPS program as any other District stakeholder. The District has put significant resources and funding behind this idea so that BEPS, at a minimum, does not exacerbate the disparity in housing conditions across the city, but instead will provide an opportunity to improve housing conditions.

AHRA leverages more than \$30 million of federal stimulus ARPA funds and \$3 million from the Sustainable Energy Trust Fund (SETF) annually.

The goal of the AHRA is to make meaningful upgrades and investment in DC's affordable housing stock by creating high-performing and healthier buildings for residents. Improved efficiency should lead to lower utility bills for building owners and/or residents, improved indoor and outdoor air quality from reduced on-site fossil fuel combustion, and better comfort and protection from extreme heat through upgrades or conversion to air conditioning via efficient heat pumps. DOEE is building relationships with the owners, operators, and residents of these buildings by working collaboratively to develop and implement AHRA and BEPS and work together towards the city's ambitious climate goals.

For more information, visit these links:

- Affordable Housing Retrofit Accelerator - <https://www.dcseu.com/RetrofitAccelerator>;
- District's Building Energy Performance Standards - <https://dc.beam-portal.org/helpdesk/kb/BEPS/>;
- DC Sustainable Energy Utility - <https://www.dcseu.com/>;
- DC Green Bank - <https://dcgreenbank.com/>; and
- Clean Energy DC plan - <https://doee.dc.gov/cleanenergydc>.

Small City Honorable Mentions

Population Under 100,000

Goleta Mayor Paula Perotte

Littleton Mayor Kyle Schlachter

Palo Alto Mayor Pat Burt

Redmond Mayor Angela Birney

Santa Fe Mayor Alan Webber



Goleta Mayor Paula Perotte

Strategic Energy Plan: A Roadmap to 100% Renewable Electricity and Regional Resilience

Goleta's *Strategic Energy Plan* (SEP), adopted by the City Council in 2019, is a roadmap to meet the city's goal of 100 percent renewable electricity supply for the community by 2030 and interim goal of 50 percent renewable electricity for municipal facilities by 2025. For a small city with limited resources, such as Goleta, these were bold, progressive goals for the city to undertake. By collaborating with other nearby jurisdictions impacted by the same vulnerabilities to share costs and coordinate outreach, the city was able to create an impactful, visionary SEP that will shape the energy future of the community for years to come.

Developed cooperatively with three regional partners, the SEP is designed to improve the resiliency of the local electricity system. The SEP identifies barriers to renewable energy development and energy efficiency deployment and strategies to overcome those barriers for successful implementation.

South Santa Barbara County faces significant threats to reliability and resiliency of the electrical grid due to its location at the end of Southern California Edison's two high-voltage transmission lines, which traverse the nearby mountains. The area is at risk of experiencing a prolonged electrical outage should the lines serving the area experience a simultaneous disruption, as was threatened during the Thomas Fire in 2017-2018. The fire-denuded steep terrain, when inundated by a large volume of rainfall in January 2018, resulted in the Montecito debris flows and 23 deaths. The severity of the Thomas Fire illustrates the region's vulnerability to wildfire and flooding. Public Safety Power Shutoff (PSPS) events pose another ongoing risk. During a PSPS, all customers serviced by an affected power line have their electricity shut off and such power outages can last multiple days.

The City of Goleta partnered with the City of Carpinteria and the County of Santa Barbara to create SEPs with both a regional focus and local strategies specific to each jurisdiction, including embedding equity. Coordinated community outreach and stakeholder involvement were essential to the development of the strategies in each adopted SEP. Actions to solicit feedback spanned several jurisdictions, including the City of Santa Barbara, and many

stakeholder groups through various channels. This model of collaboration has become a key practice in our community and continues today through a Regional Climate Collaborative and Clean Energy Assurance Subcommittee, which is now working on implementing a shared SEP strategy for energy assurance services to protect critical facilities.

To support these efforts, the City of Goleta entered into a MOU with these partner jurisdictions to jointly procure consulting services to develop the SEP. This approach was extremely cost-effective for a smaller city, such as Goleta, which used General Funds for its share of the contract, which was proportionally based on its jurisdictional land area and population size (\$25,800 or approximately 14 percent of the total consultant cost).

Since the SEP's adoption, the city has joined Central Coast Community Energy (CCCE), which has identified a pathway to 100 percent clean and renewable energy by 2030 and now offers its customers a 100 percent renewable energy option. Enrolling in CCCE also provides the city and community access to various GHG emissions reduction programs, including EVCS installation, fleet and agriculture electrification, energy education, and energy storage deployment opportunities. In pursuing SEP implementation strategies that focus on local generation, the city is currently installing a microgrid-ready solar photovoltaic generation system at City Hall and looking to replicate the project at other city facilities.

The SEP aims to improve the quality of life by advancing equity, creating jobs, improving public health, and minimizing Goleta's contribution to climate change. Developing the SEP has laid a foundation of strong regional bonds, and its continued implementation will help ensure that energy infrastructure operates properly to support interdependent critical infrastructures such as transportation, communications, finance and governmental systems to continue to perform for the community as needed.

Littleton Mayor Kyle Schlachter

South Platte Renew

South Platte Renew (SPR) is co-owned by the Cities of Littleton and Englewood and is the third largest Publicly Owned Treatment Works in Colorado. The SPR facility receives wastewater from 300,000 customers and generates approximately 500,000 cubic feet of biogas per day through the treatment process. The SPR Pipeline Injection Project (Project) constructed a biogas conditioning system at the facility that converts raw biogas into renewable natural gas (RNG) and injects it directly into the Xcel Energy natural gas pipeline. The biogas system produces roughly 700,000 Therms of energy per year, equivalent to the annual energy usage of 1,700 homes.

Through an internal Energy Improvement Program developed in 2012, SPR identified areas for increased energy efficiency and investigated practical uses of the biogas. At the time, the SPR facility used roughly 15% of the biogas internally and flared the remaining gas into the atmosphere. The Cities of Littleton and Englewood realized the potential for biogas usage and conducted a Feasibility Study to help make an informed decision on developing the Project.

The City of Littleton was an early supporter of the Pipeline Injection Project, communicating the environmental and financial viability to community stakeholders. However, since SPR is a co-owned facility, both Cities must approve the Project to move forward. This required extensive investigation and clear communication regarding system reliability, financial sustainability, and performance evaluations, resulting in a successfully delivered Project. Since project completion in October 2019, the wastewater professionals at SPR have embraced the new challenges involved with operating a gas recovery system. Engineers, operators, and mechanics quickly adapted to the new system and developed the necessary skills to operate it safely and efficiently.

The biogas system captures 4,000 Metric Tons of carbon dioxide equivalent (CO₂eq) annually, offsetting roughly 9.5 million car miles each year. Since commissioning the project, the SPR facility has reduced greenhouse gas emissions by 8,900 Metrics Tons of CO₂eq.

Littleton with *South Platte Renew* were the first wastewater facility in Colorado to convert biogas to RNG for direct pipeline injection. The innovative process utilizes highly efficient membranes capable of converting raw biogas into pipeline-quality gas using minimal resources and energy. This system has a net-negative carbon and net-positive energy cycle. In addition to the environmental impacts, the Project generates revenue through the Environmental Protection Agency's Renewable Fuel Standard Program. Through this program, the Cities of Littleton and Englewood anticipate a four to six-year payback period, outpacing initial payback estimates.

The capital for commissioning this project was generated from the Cities of Littleton and Englewood's sewer funds, with each city splitting the cost equally.

The Pipeline Injection Project is an outstanding example of how cities can utilize wastewater treatment plants to positively contribute to their communities, foster regional partnerships, and improve sustainable practices. Capturing biogas eliminates odor, improves air quality through reduced local greenhouse gas emissions, and provides a new source of revenue for the participating cities. This overall effort demonstrates how collaboration among several entities and working together can create a complex solution for the benefit of their communities.

Palo Alto Mayor Pat Burt

Multifamily Gas Furnace to Heat Pump Retrofit Pilot

Palo Alto recently completed a *Multifamily Gas Furnace to Heat Pump Retrofit Pilot*. The pilot aimed to identify viable retrofit options and validate the cost and benefits of replacing in-unit gas furnace systems with energy efficient heat pump alternatives at an income-qualified multifamily property. The selected site was a 24-unit apartment complex built in 1998 and rented to low-income adults. Retrofits were completed for 16 one-bedroom units with gas wall furnaces, and 8 two-bedroom units with ducted gas furnaces.

Gas furnaces are a common heating system in multifamily buildings. These systems are inefficient, contribute greenhouse gas (GHG) emissions, and generate indoor air pollutants in living spaces. By contrast, heat pump systems are very efficient, provide space cooling during summer months, and do not generate net GHG emissions due to Palo Alto's 100% carbon-neutral electric supply. Despite these benefits, apartment building owners are unlikely to retrofit gas furnaces with heat pump systems due to high costs associated with retrofits. Multifamily housing accounts for 40% of Palo Alto's housing market, making it necessary to address emissions from these buildings to meet the city's GHG reduction goal of 80% by 2030 relative to the 1990 baseline.

Some of the challenges the city encountered advancing this pilot included uncertainty of whether existing electric panels could accommodate the additional heat pump load and training residents to operate the thermostat, amongst others. To overcome these issues, the city contracted with a consultant to provide technical direction, while staff coordinated load monitoring of the electric

panels and provided permit requirements for installation. The contractor performed a "first in place" installation in two units before beginning construction on the remaining homes.

Using historic billing data, the city estimates the pilot saves an average of 71,804 kbtu annually, reduces annual GHG emissions by 11.1 MT, and results in average utility bill savings of \$125 for one-bedroom units. The elimination of NO_x and other combustion byproducts from gas furnaces also helps improve local air quality.

Increasing electrification in the residential building sector is a key strategy to mitigate climate impacts. It's important to electrify existing buildings, given that new construction represents less than 1% of annual building stock turnover in Palo Alto. This pilot serves as a case study and provides a template for future retrofit projects.

At the project level, the pilot provided direct benefits to residents at the project site through improved indoor air quality, bill savings, and increased comfort, as reported in the post-retrofit survey. At the community level, the pilot reduces GHG emissions and serves as a case study for future electrification projects in multifamily buildings. The final pilot report was shared with other jurisdictions to support electrification of multifamily properties. This pilot also addresses environmental justice as the city continues to pursue GHG reductions in the building sector. Learn more about the city's sustainability and electrification efforts at www.cityofpaloalto.org/sustainability.

Redmond Mayor Angela Birney

Climate Vulnerability Assessment

From more extreme heat events to increased precipitation and flooding, Redmond is already feeling the effects of climate change. As Redmond works to reduce greenhouse gas emissions, it recognizes that it must also proactively prepare for a changing climate. The Climate Vulnerability Assessment was identified as a near-term priority within the city's comprehensive Environmental Sustainability Action Plan (ESAP). The ESAP was adopted in September 2020 to guide efforts to preserve natural resources, reduce emissions to net zero, and create a healthy, equitable, and resilient Redmond for all.

The City of Redmond recently partnered with regional experts to complete a climate vulnerability risk assessment to inform climate preparedness programs and better understand the populations that are most vulnerable to climate change. The risk assessment included two elements:

- *Climate Vulnerability Assessment Report (Assessment)*: The Assessment provides an overview of potential climate impacts on Redmond's population, neighborhoods and business centers, infrastructure, and services. It identifies vulnerabilities and strategies to enhance Redmond's resilience. The Assessment was completed as a partnership between the city's Long-Range Planning and Sustainability teams to inform the Comprehensive Plan update that is currently underway. The findings from the Assessment are being integrated into growth scenarios and planning policies within the Comprehensive Plan to ensure the city is embedding preparedness efforts into its foundational strategy documents.
- *Climate Vulnerability Index (CVI)*: The CVI creates a geospatial tool that synthesizes key climate, environmental, and community data to inform the city's work. The CVI sums over 30 indicators of climate vulnerability and identifies which census block groups have more or less vulnerability regarding extreme heat or extreme precipitation, relative to other areas in Redmond. It's a planning level tool to help staff investigate areas in more detail and better understand the nuance of a particular community. The CVI is a key tool as the city works to increase the resilience and preparedness of vulnerable communities. This tool is being used to inform Redmond's outreach efforts, considerations for funding and infrastructure investments, and support the city's work in best serving the community.

Many climate preparedness efforts are inherently long-term. The Assessment, therefore, was created not just to understand the impacts of climate change on Redmond's population, neighborhoods and business centers, infrastructure, and services, but also to identify planning, programming, and partnership strategies to enhance resilience work. The Assessment is a key tool to inform functional planning efforts that are underway as the city updates its Comprehensive Plan. This will help systemically integrate preparedness efforts into city operations and create a more resilient community moving forward.

The findings from the Assessment were also integrated into Redmond's Comprehensive Plan Environmental Impact Statement and growth alternatives analysis to further integrate climate action and preparedness efforts into the Comprehensive Plan update. This supports a systemic approach to the city's preparedness efforts.

Redmond is leading the region in the integration of preparedness into its long-range planning work. The city's approach is also helping set the standard for climate preparedness and comprehensive planning work across the region.

This assessment effort was funded through the City of Redmond's operating budget; implementation efforts will be integrated into the future operating budgets.

Redmond's Climate Vulnerability Index and its Assessment can be found here: www.redmond.gov/1708.

Santa Fe Mayor Alan Webber

Solarize Santa Fe

Solarize Santa Fe is a solar energy bulk purchasing program designed to help Santa Feans save money on their energy bills. Think of it as buying at wholesale prices – the more people who sign up, the more everyone saves on the cost of solar power together. The City of Santa Fe launched *Solarize Santa Fe* in September 2021 to make the process of installing solar as easy and affordable as possible. The city and its partners carefully selected a featured solar installer through an RFP process that will offer discounted prices for this program. The team also encouraged local credit unions to create solar loans with lower interest rates. As a result, most participants in *Solarize Santa Fe* saw immediate energy savings, with no up-front cost. To help reach homeowners within Santa Fe who could benefit from this bulk-priced program, the Solarize team partnered with Santa Fe Public Schools – whose workforce’s demographics reflect those of the city overall – for the initial outreach campaign.

The city recognized this program was needed to reduce the disproportionate energy burden experienced by communities of color and low-income residents. The cost of solar photovoltaic systems is out of reach for low-income households, somewhat due to the lack of tax liability to take advantage of tax credits. In addition, the data shows communities of color have significantly less rooftop solar installed. The City of Santa Fe developed an inclusive *Solarize Santa Fe* campaign by marketing the program exclusively to Santa Fe Public Schools staff, which is a diverse demographic primarily comprised of low-income residents.

Based on an analysis performed by supporting agency, RMI, the City of Santa Fe marketed the program to offer immediate savings for no up-front cost. As program participants started to receive their estimates, it became clear this is not always the case, predominately due to the inability to finance the tax credits. The Sustainability Officer worked with local credit unions to overcome this barrier, and one credit union revised their loan terms to allow for financing of the tax credits from day one.

As a result of the program, 39 more homes have solar energy. The solar power generated from these new installations will eliminate about 220 metric tons of carbon dioxide emissions per year.

The City of Santa Fe developed this program in collaboration with a peer-learning cohort led by RMI and the World Resources Institute comprised of 20+ local governments. The city learned from RMI that it had the highest conversion rate of all cohort participants (applicants signed contracts) and that it created the best financing terms of any program.

The *Solarize Santa Fe* program required no city funds. A private donor contributed \$50,000 to the program, which went to offset the cost for income-qualified households. The Sierra Club contributed \$2,000.

By lowering the energy burden for low-income teachers that have carried so much weight during the COVID-19 pandemic, this program helped residents who most need help recognize real savings while reducing their carbon footprint.



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