LEVERAGING THE INFLATION REDUCTION ACT TO ACCELERATE CLIMATE ACTION

COLUMBIA | SIPA
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On Behalf of C40 Cities

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TABLE OF CONTENTS

1. **Executive Summary**
2. **Introduction**
3. **Methodology**
    a. Overview
    b. Climate Action Plan Analysis
    c. Interviews
    d. IRA Matchmaking
    e. CEJST Analysis
4. **Climate Action Plan Summaries**
    a. Introduction
    b. Cities
    c. Comparative Analysis
    d. Summary
5. **IRA Matchmaking**
    a. Introduction
    b. Cities
    c. Comparative Analysis
    d. Summary
6. **CEJST Analysis**
    a. Introduction
    b. Cities
    c. Comparative Analysis
    d. Summary
7. **Recommendations**
    a. Recommendations for Cities
    b. Recommendations for C40 Cities
8. **Conclusion**
9. **Endnotes**

ABBREVIATIONS

BO – Building Operations
CAEWG – Climate Action Equity Working Group
CAP – Climate Action Plan
CBO – Community-Based Organizations
CEJST – Climate and Economic Justice Screening Tool
CEQ – Council on Environmental Quality
EPA – U.S. Environmental Protection Agency
ES – Energy Supply
EV – Electric Vehicle
GHG – Greenhouse Gas
HE – Healthy Ecosystems
IRA – Inflation Reduction Act
J40 – Justice40 Initiative
NOLA – City of New Orleans Government
PGH – City of Pittsburgh Government
PPP – Public-Private Partnership
RPC – Responsible Production and Consumption
SF – City of San Francisco Government
TLU – Transportation and Land Use
ZEV – Zero-Emissions Vehicles

EXECUTIVE SUMMARY

The landmark Inflation Reduction Act (IRA) of 2022 is the single largest investment to address climate change in American history, and works towards "President Biden's vision to make sure the United States —powered by American workers—remains the global leader in clean energy technology, manufacturing, and innovation." [1] By allocating $369 billion to combat climate change, the IRA presents a historic opportunity to support U.S. cities as they transition to a zero-emissions future.[2]

The client for this report, C40 Cities, comprises a global network of nearly 100 mayors from leading cities around the world "that are united in action to confront the climate crisis."[3] These 96 member cities account for more than 20% of the global economy and have developed resilient and inclusive climate action plans (CAP) in accordance with the 1.5℃ warming limit set forth in the Paris Climate Agreement.[4,5] To bolster city efforts to meet their CAP goals, this report evaluates the CAPs of two C40 member cities and one non-C40 city—New Orleans, San Francisco, and Pittsburgh, respectively—to identify funding opportunities from the IRA that may be used to advance progress toward climate goals. To achieve this, the team conducted a thorough literature review of the three cities' CAPs and the climate-related provisions of the IRA. This provided an understanding of the ambition, scope, and sector focus of different cities' climate action goals and the best-matched IRA funding opportunities for these goals. The team also carried out interviews with a key city official from each of the three cities to further contextualize their needs and prerogatives. Finally, the team produced an equity analysis utilizing the White House Council on Environmental Quality's (CEQ) Climate and Economic Justice Screening Tool (CEJST). The tool allowed us to identify low-income communities that are burdened by different sectors that the three city CAPs focused on and match additional IRA provisions specifically designated for disadvantaged communities.

This report includes summaries of the analyses listed above and concludes with some overarching recommendations for both C40 Cities and U.S. cities as a whole to utilize the IRA efficiently and effectively. Based on the analysis completed by our team, we recommend that cities:

1. Prioritize applying for the broadest and largest grants in the IRA due to limited municipal staffing, as well as six clean energy and clean vehicle tax credits made recently available to local governments that are newly available funding pools.
2. Engage in private or nonprofit partnerships to receive additional technical assistance that can build capacity to apply for and access funding opportunities.
3. Set up public education campaigns to inform citizens about the unique tax breaks for individuals and businesses created by the IRA.
4. Expand their data collection and monitoring capabilities using IRA funding to continue refining their CAP goals and identify emerging climate and equity issues in the city to apply for future funding opportunities to address these problems.
5. Initiate proactive financial planning and new public-private financing schemes to optimize their grant applications and increase the likelihood of receiving funding due to conditional federal funding matching requirements.

We recommend that C40 Cities:

1. Establish an online knowledge hub for the IRA with resources for cities to access, which will aid them in their approach to applying for federal funding opportunities.
2. Create a public calendar with deadlines and important notices for IRA funding opportunities to help cities remain on track in their applications.
3. Host online webinars that provide technical assistance to cities on grant applications and understanding the myriad of tax credit opportunities in the IRA.

INTRODUCTION

Climate change is the greatest multifaceted challenge of our time. Countries, states, and cities are working to understand their climate sensitivities, gaps, and challenges to better prepare and understand how to approach this changing reality. Many cities have created and adopted a CAP–a municipal plan that establishes policies and initiatives aimed at curbing greenhouse gas (GHG) emissions while also adapting to climate change. In August 2022, President Biden signed the IRA into law, which is the most significant commitment the United States government has made towards addressing climate change and provides billions of dollars in funding for investments in clean energy and climate action.[6] As more funding opportunities are open to U.S. municipalities through the IRA, additional guidance is needed to understand how cities can leverage these opportunities. This project aims to demonstrate how IRA funding opportunities can be utilized to achieve the goals outlined in CAPs across different cities in the United States.

Our team selected three case study cities: New Orleans, Pittsburgh, and San Francisco. For each city, the team studied each municipality's CAP, cross-examined the goals from these plans with available IRA funding opportunities, and geographically analyzed the presence of disadvantaged communities, which are defined as those communities that are "marginalized, underserved, and overburdened by pollution."[7] The team then used the CEJST to produce a comprehensive review of equity within cities. The CEQ published this tool after President Biden issued Executive Order 14008, which directed the establishment of a new geospatial tool displaying "interactive maps highlighting disadvantaged communities."[8,9] Mapping disadvantaged communities can complement the federal government's efforts in President Biden's Justice40 Initiative (J40), which aims to direct 40% of overall benefits from federal investments in categories such as climate change, clean energy and transit, and pollution remediation to disadvantaged communities.[5] The CEJST and J40 better informed our matching process to identify which IRA federal funds would best serve each city's CAP and equity goals.



From this process, we crafted recommendations that were specific to each city, as well as general guidance applicable to all cities, on the most strategic IRA programs to apply for. Finally, we drafted recommendations on how C40 Cities can provide cities with additional resources to better facilitate the application process. The ultimate goal of this report is to offer recommendations to help cities across the United States maximize federal funding opportunities and achieve the goals established in their CAPs.

METHODOLOGY

OVERVIEW

The main research question that this project aimed to answer was: how can U.S. city governments utilize the funds provided by the IRA to further progress toward the goals outlined in their CAP? In order to determine this, the team evaluated the CAPs of New Orleans, Pittsburgh, and San Francisco to identify their respective climate action priorities, examined available funding sources within the IRA, and analyzed the CEJST to locate disadvantaged communities that may qualify for additional IRA funding opportunities based on the goals stated from initiatives such as J40. From this research, the team created recommendations for which IRA provisions each city should focus on, given their individual priorities outlined in their CAPs. The team also provided general recommendations for how C40 Cities can assist cities in the process of applying for these federal funding opportunities.



CLIMATE ACTION PLAN ANALYSIS

Acknowledging the need for a diverse sample to represent different types of climate-related issues and demographics in the United States, the team selected New Orleans, Pittsburgh, and San Francisco as case studies. New Orleans represents the Southern United States, and extreme flooding and sea level rise presented a unique challenge for their city. Pittsburgh is representative of the Eastern United States, and its historical reliance on fossil fuels for energy and economy distinguished it from the other cities. Lastly, San Francisco represents the Western United States, and the growing frequency and intensity of wildfires in California presented another unique climate-related issue for analysis. By selecting Pittsburgh, a non-C40 member city, for comparative analysis, we expected to see differences in its climate ambition and aggressiveness as compared to New Orleans and San Francisco. Once the team identified the case study cities, we thoroughly reviewed the CAP of each city to determine the main goals and strategies, particularly those which specifically achieved GHG emissions reductions. These goals included clean energy procurement and generation, increasing energy efficiency, increasing electrified mobility, diversifying low-carbon transit modes, expanding green infrastructure, and deploying nature-based solutions. The team then compared the goals of each city against each other to evaluate which concerns were present in all cities and which were more specific to the individual cities. This analysis provided insight into the main focus for each city regarding climate action and was used to match the IRA provisions to specific CAP goals. We then provided recommendations tailored to each city while still identifying IRA opportunities that all cities would benefit from.

METHODOLOGY

INTERVIEWS

After conducting extensive research of the CAPs for all three cities, the team sought to gain a better understanding of the current status and challenges each city faces in its development and execution of its respective CAP. To do so, the client contact introduced the team to relevant city officials specializing in the city's CAP, and the team conducted tailored interviews. The team compiled specific questions and inquiries regarding the priorities and goals unique to each city's CAP, as well as the climate change-related impacts they are currently dealing with. Across all three cities, we wanted to understand the city's approach to IRA funding and equity issues, its current progress on receiving or applying for IRA funding, and its current and future challenges with the implementation of its CAP goals. This process was critical for our analysis to ensure our team provided contextualized and highly utilizable matched IRA programs and recommendations.

IRA MATCHING

The first step in the IRA matching process was to examine the provisions defined in this historic piece of legislation and identify the most pertinent available funding opportunities. From this, the team created a comprehensive list of funding sources available to municipal governments. The team cross-examined this list with the summaries of the CAPs to identify strategies that would be eligible for different IRA provisions. The team compiled this analysis into three tables included in this report that match the funding opportunities of the IRA to different goals and subgoals of each city. From these table, the team created recommendations identifying which opportunities would provide the most benefit to each city. While our tables matched far more programs to funding sources, we limited our recommendations to tax credits and grants available to all local municipalities, so that cities could leverage their limited personnel to complete applications that would maximize their greenhouse gas reduction. We chose to highlight the opportunities that have large streams of funding, flexibility, and broadness in their scope of project eligibility, and offer unprecedented types of funding opportunities for local governments that can further accelerate their climate action goals.

CEJST ANALYSIS

In addition to matching IRA provisions to CAP strategies, the team analyzed disadvantaged groups within each city with the use of the CEJST to identify communities that may be eligible for additional IRA funding opportunities that qualify under J40. Using this tool, the team identified communities in the three case study cities that experience significant environmental burdens and are considered to be low-income. To do so, the team mapped out low-income census tracts that meet the criteria defined for each type of burden using ArcGIS and the dataset provided by the CEJST website. For this project, we focused on energy, transportation, and housing burden, since these are the main broad focuses of the three case study CAPs, as discussed in the CAP summary portion of this report. Communities that are low-income and surpass the threshold of one of these burdens are considered disadvantaged and may be eligible to receive benefits through J40 compliant programs within the IRA. The identification of these groups in our analysis provides insight into how cities can leverage these funds targeted at disadvantaged communities to achieve the goals in their CAPs and was incorporated into the final recommendations of this project.

CLIMATE ACTION PLAN SUMMARIES

INTRODUCTION

In response to the rising effects of climate change over the past decade, many cities have established CAPs. These plans offer strategies for both improving resilience to climate change and reducing its future impact through actions such as reducing GHG emissions. Our team reviewed and analyzed the CAPs of New Orleans, Pittsburgh, and San Francisco to identify the main climate concerns for each city and the strategies chosen to address those issues. This was an important first step for the project to determine the focuses of each city to best match funding opportunities to each city's programs in the following portions of this report. This section presents a summary of the CAP for each city, followed by a comparison of the strategies each has selected for addressing climate change.

New Orleans
New Orleans is one of the most vulnerable cities to climate change in the United States and has been experiencing devastating storms, sea level rise, and heat waves. The Louisiana coast has a relative rate of sea level rise that is among the highest in the nation, making New Orleans prone to wetland loss, storm events, and flooding.[10] The National Oceanic and Atmospheric Administration found that the total cost of climate disaster events in the United States in 2022 was $165 billion. In 2020 and 2021, the state of Louisiana had the 2nd and 3rd highest combined climate related costs compared to the rest of the United States, respectively.[11]

Pittsburgh
Pittsburgh is vulnerable to a range of climate change impacts, such as increased precipitation, flooding, extreme heat, and more frequent and severe weather events. In 2018 and 2019, Pittsburgh experienced two of the three highest precipitation years in the history of the city. The trend of high rainfall is predicted to continue in the coming years, which can lead to increased rates of flooding.[12]

San Francisco
San Francisco is facing multiple climate threats, including increased wildfires, flooding, heat waves, high winds, and sea level rise. The city's transportation system is at particular risk with much of it concentrated along the coastline, which is experiencing rapid sea level rise. A report concluded that with a moderate sea level rise scenario of 4 feet, $62 billion of property and infrastructure is at risk due to proximity to coastlines.[11] Climate change is also straining San Francisco's electrical grid, which has grown increasingly vulnerable due to constant wildfires and winds.[13]

CITY ANALYSIS

New Orleans

The City of New Orleans (NOLA) created and published their first CAP in 2017 under Mayor Mitchell J. Landieu's administration, as a commitment to keeping global temperature rise below 1.5 ℃. An updated version in 2018 explored and integrated a partnership with the Climate Action Equity Working Group (CAEWG) to create a CAP that addressed social inequities in New Orleans. NOLA has since released an updated CAP in 2022 under Mayor LaToya Cantrell's administration, with an overarching goal of net-zero emissions by 2050 and an interim goal of reducing emissions by 50% by 2035. Notably, the interim goal of 2035 is an update from NOLA's 2017 CAP, which had an original goal of reducing emissions by 50% by 2030.[14] According to a NOLA official, these goals were recently changed when NOLA determined it was highly unlikely that it would be able to reach the original 2030 deadline due to a lack of funding.[15]

CLIMATE ACTION PLAN SUMMARIES

NOLA's CAP provides strategies to reduce emissions in three major sectors that are the highest GHG emitters: energy, transportation, and waste. Additionally, the plan highlights two cross-cutting strategies: ramping up the local climate action economy and focusing on climate adaptation and nature-based solutions. As the majority of the New Orleans' population are communities of color, many of whom are historically underserved, NOLA prioritizes projects that aim to increase economic opportunities within these communities, specifically in green infrastructure.[14]

ENERGY SECTOR

According to the 2022 CAP, 51% of New Orleans' emissions come from the energy sector, including energy production, distribution, and use. The NOLA City Council has regulatory jurisdiction over Entergy New Orleans, the city's primary utility company, which allows NOLA to have greater control over its electricity and natural gas services. The main strategies outlined in the CAP are to decarbonize the energy sector by cleaning the grid, produce clean energy locally by increasing local renewable energy development and installing solar on city property, and decrease energy usage in buildings through the EnergySmart program. The first strategy outlined in the CAP is to decarbonize the energy sector by cleaning and greening the grid. NOLA's second strategy is to produce clean energy locally by increasing local solar and wind energy development, launching community solar programs, and installing solar on city property. The final strategy is to decrease energy usage in buildings, which will be accomplished by ramping up savings in the New Orleans' EnergySmart program in addition to setting and benchmarking performance standards for commercial and multi-family buildings. NOLA aims to have a 40% reduction in cumulative energy use in municipal buildings by 2030.[16]

TRANSPORTATION SECTOR

Transportation is the second largest contributor of GHG emissions and is responsible for 43% of all carbon emissions in New Orleans. NOLA plans to reduce emissions in this sector with two strategies. First, NOLA aims to diversify travel choices by increasing non-auto trips to 50% of total trips taken by 2030. There are several programs underway to reach this goal, such as implementing the "Complete Streets" policy to design streets for all users (including pedestrians, cyclists, etc.), increasing transit ridership, investing in more comprehensive bicycle infrastructure, expanding NOLA's bike share system, and improving public transit service. An additional priority is to improve public transport services in underserved communities. The second strategy to reduce transportation emissions is to increase the share of zero-emission vehicles (ZEV) on roads. The CAP states that 40% of all vehicles on the road will be electric by 2035 and 100% by 2050, which will be achieved by installing 31 free electric vehicle (EV) charging stations at 25 publicly chosen sites throughout New Orleans. Furthermore, NOLA's municipal fleet will be 75% low or no emissions by 2035, and NOLA's Regional Transit Authority fleet will be 75% low or no emissions by 2030.[16]

WASTE SECTOR

Waste is the third largest driver of GHG emissions in New Orleans. While it comprises a relatively low level of emissions (6%) relative to the two aforementioned sectors, waste management is an area targeted for carbon reductions. NOLA's current diversion rate is below 5%, despite city-wide recycling. This is for two reasons: First, NOLA's waste is currently managed by contractors, and second, NOLA's proclivity for natural disasters makes it difficult for these contractors to provide reliable services. Currently, NOLA does not engage in the waste management market for commercial businesses and larger buildings, and recycling or composting is not required for restaurants and businesses. NOLA's primary waste goal will increase the recycling diversion rates to 25% by 2030. NOLA also plans to commission a solid waste master plan for further waste management opportunities.[16]

CLIMATE ACTION PLAN SUMMARIES

ADDITIONAL STRATEGIES

In addition to the sector-based approach, NOLA's CAP highlights two cross-cutting strategies to achieve its climate goals. The first strategy is to ramp up the local climate action economy, with an overarching goal to divest NOLA's investments in fossil fuels completely by 2025 and invest in clean energy solutions. This will be accomplished by establishing a regional green bank with Finance New Orleans, a member of the American Green Bank Consortium. NOLA also aims to promote sustainable business practices and jobs as well as implement sustainable contracting and procurement policies within New Orleans. Finally, NOLA will make climate action data available as a data dashboard on the NOLA website with annual updates.[16]

The second cross-cutting strategy outlined in the CAP is to promote climate adaptation and nature-based solutions. New Orleans is facing multifaceted climate change-related hazards, and consequently, the CAP prioritizes increasing green infrastructure and trees throughout New Orleans over time to create nature-based solutions. It aims to plant 40,000 new trees citywide by 2030, achieve a minimum of 50% tree canopy by 2030, and complete at least 15 green infrastructure projects by 2035. Additionally, as NOLA recognizes its need to increase energy and water infrastructure resilience, several actions are already underway. For example, NOLA is planning on conducting an energy resilience study and implementing microgrid pilots for communities.[16]

EQUITY

While the climate crisis affects everyone, it disproportionately affects underserved and overburdened communities. New Orleans is made up of majority Black residents at 58.1% of the population in 2022, compared to the national 13.6% in the United States. The percentage of persons in poverty is also disproportionately high, at a staggering 23.8% in 2021 compared to the nation's 10.5%.[17] The combination of the geographical implications and socioeconomic factors makes New Orleans residents particularly vulnerable to climate change and environmental injustice.

Given the socioeconomic and racial makeup of New Orleans, the city is arguably one of the most susceptible to climate injustice. In 2005, Hurricane Katrina devastated New Orleans and trapped many Black women and children, one of the poorest demographics in that part of the United States.[18] Compounded with the more recent consequences of the COVID-19 pandemic, vulnerable individuals are now even more likely to fall into poverty. Climate change policymakers have a unique opportunity and obligation to create strategies that are inclusive, equitable, and just by prioritizing environmental justice at all levels of policy decision-making. New Orleans, has continued to partner with CAEWG since 2018 to explore how climate change challenges relate to social, economic, and racial inequities.[16]

FUTURE GOALS AND SUMMARY

Even after extending its interim net-zero goals to 2035, NOLA continues to face a few specific challenges to meeting their CAP goals. In an interview with a NOLA official, our team learned that NOLA relies heavily on federal funding that does not require city matching. However, NOLA lacks funding and is unable to meet federal match grant requirements, which reduces the chance of successfully acquiring additional federal funding. In addition, the permitting process in NOLA is a major challenge in accelerating renewable energy. NOLA also lacks both adequate staffing and technical expertise, which greatly limits the ability to apply for grants successfully.[15] The IRA has the potential to bridge these funding and staffing gaps to help NOLA meet its climate goals and best protect its residents from the most adverse impacts of climate change.

CLIMATE ACTION PLAN SUMMARIES

Pittsburgh

The City of Pittsburgh (PGH) has acknowledged that the rising rates of climate disasters and other consequences of climate change require action on all levels of government. PGH has been attempting to address these issues since 2007 when it signed the U.S. Mayors Climate Protection Agreement.[19] PGH created the first version of its CAP shortly after in 2008 by its Green Government Task Force, and there have been two revisions since then in 2012 and 2018.[19] For this project, the team reviewed the latest version of the CAP to focus on the current goals of PGH rather than the past benchmarks.

PGH's CAP is an ambitious strategy to increase its resilience to the impacts of climate change and aims to reduce GHG emissions in Pittsburgh by 50% by 2030, with an extended goal of 80% by 2050. To accomplish this, PGH has identified that significant reductions in emissions are required from the building, transportation, and waste management sectors, the main drivers of emissions in Pittsburgh. It also aims to compile an updated sector and activity-based GHG inventory, the creation of which has already begun according to a PGH official.[19,20] By using this diverse method of approaches, PGH aims to create a more sustainable and resilient future for Pittsburgh.[19]

<u>ENERGY SECTOR</u>

Energy is an important sector for GHG emissions reductions under PGH's CAP. Increasing the use of renewable energy is a critical strategy for Pittsburgh to reduce GHG emissions and mitigate the effects of climate change, and the CAP acknowledges the importance of developing clean energy infrastructure to do so. The CAP presents a few main strategies for increasing renewable energy in Pittsburgh, which include encouraging solar installation of buildings, promoting community solar projects, and increasing the development of clean energy infrastructure. The CAP sets a goal of installing 2,500 solar roofs in Pittsburgh by 2025 to meet its objective of increasing solar in homes and buildings.[19] It plans to achieve this by streamlining the permitting and regulatory processes for these installations to make them easier and more cost-effective. Furthermore, the CAP calls for the creation of community solar programs and policies to promote development.[19] This is another key strategy for PGH, as community solar projects will allow multiple residents or businesses to share the benefits of a singular solar installation.

The CAP offers actions to further develop clean energy infrastructure, such as public education, smart grid investments, and energy storage programs. First, PGH intends to educate residents and businesses on the benefits of solar energy and workforce development to create more job opportunities in the solar industry.[19] Second, the CAP calls for the development of smart grids across Pittsburgh to create a more efficient and reliable energy system that will support the integration of solar energy sources. The CAP also encourages the establishment of energy storage systems, such as batteries, which can store excess energy generated by renewable energy sources to increase reliability by balancing the supply and demand of electricity. These strategies, in tandem with the improvement in the energy efficiency of buildings and transportation, will further the integration of renewable energy into Pittsburgh's energy system, which will result in the reduction of GHG emissions.[19]

CLIMATE ACTION PLAN SUMMARIES

Additionally, PGH recognizes the need to create financing mechanisms and incentives to support investment into renewable energy technologies. Fiscal tools, such as tax credits and grants, will make these projects more affordable and attractive to investors alongside the development of public-private partnerships (PPP), which will encourage further investments and financing. The CAP recommends prioritizing the procurement of renewable energy for PGH's municipal operations to help increase demand and support the growth of the renewable energy industry in Pittsburgh. This will send a strong signal to the market that there is demand for renewable energy, which can help increase investments in renewable energy projects and infrastructure, creating more opportunities for the deployment of renewable energy across Pittsburgh. The CAP also focuses on the creation of a green bank to provide financing for renewable energy projects and improvements in Pittsburgh. The green bank will allow PGH to leverage private investment and provide low-cost financing for renewable energy projects.[19] These economic tactics will help increase the success of the other actions outlined in the CAP and will further the progress of GHG reductions in Pittsburgh.

TRANSPORTATION SECTOR

Transportation is another significant source of GHG emissions in Pittsburgh, at around 32%. To address transportation emissions, the CAP sets a goal of increasing usage of public transit from 18% to 36% by 2030, which will require improvements to PGH's public transit infrastructure and the promotion of alternative modes of transportation.[19] The expansion of PGH's public transit system will include increasing the frequency of transit usage, scaling up coverage, and introducing new transit technologies such as the bus rapid transit and the light rail. The promotion of alternative methods of transportation includes strategies to increase sustainable transportation methods, such as cycling, walking, and EVs. Improvements in pedestrian and bicycle infrastructure will consist of measures such as improved sidewalks, expanded bike lanes, and increased accessible bike parking throughout Pittsburgh. The CAP aims to accelerate the transition by promoting the adoption of EVs in PGH's fleet and supporting the installation of public charging stations.[19] These transportation goals are vital to the reduction of GHG emissions and are one of the main priorities of PGH.

BUILDING SECTOR

The main driver of GHG emissions is buildings, which are responsible for 81% of Pittsburgh's GHG emissions through electricity and natural gas consumption. Therefore, improving energy efficiency in buildings is a key priority for PGH, and the CAP has set a goal of reducing energy consumption in buildings by 50% by 2030.[19] To do so, the CAP calls for the implementation and enforcement of more stringent building energy codes to ensure that new buildings and major renovations meet higher energy efficiency standards. It recognizes the importance of educating building owners, operators, developers, and tenants about the benefits of energy efficiency and how to implement energy-saving measures to maximize reductions. Building owners and operators are recommended to conduct regular energy audits to identify opportunities for energy savings and implement cost-effective energy efficiency measures. Additionally, it requests the creation of financing mechanisms and incentives to help building owners and operators invest in energy efficiency improvements, such as low-interest loans, tax credits, and rebates.[19] These strategies for reducing energy consumption in buildings will be imperative in reaching the GHG emission reduction goals of Pittsburgh's CAP.

CLIMATE ACTION PLAN SUMMARIES

EQUITY

There are significant disparities in environmental burdens in Pittsburgh, which the CAP aims to address. Pittsburgh's demographic is 64.1% White, 23.2% Black or African American, 3.9% Hispanic, 6.1% Asian, and 2.7% other races. For communities of color, about 19.7% of the population lives below the poverty line, compared to the national average of 10.5%.[21] Low-income and communities of color tend to be located in areas near major sources of air pollution such as by highways and industrial facilities, exposing them to higher levels of air pollution at an average of 12.2μg/m³ compared to predominantly White and more affluent neighborhoods at 10.5μg/m³.[22] Additionally, communities of color are vulnerable to lower water quality, as local waterways have higher levels of pollutants, such as lead and arsenic, that stem from industrial pollution.[23] The CAP recognizes the environmental justice challenges posed by climate change and includes specific strategies and initiatives to address these disparities. The CAP calls for targeted outreach and engagement with low-income and communities of color to ensure that their perspectives and needs are incorporated into climate planning and decision-making processes, as well as a focus on prioritizing underserved demographics on energy efficiency and green infrastructure. The CAP also includes initiatives to promote workforce development and job creation in the clean energy sector, with a particular emphasis on providing training and employment opportunities for residents of low-income and communities of color.[19] The CAP aims to include the recognition of underserved demographics in the climate strategies, and these actions attempt to address disparities in Pittsburgh.

FUTURE GOALS AND SUMMARY

The PGH CAP sets ambitious goals, and the completion of these goals relies on factors such as financial viability and available workforce capacity. The main challenges that Pittsburgh faces are the lack of current data and jurisdiction to implement regulations. For example, PGH is not permitted to change certain building codes and relies on the Pennsylvania state government to do so.[20] Rather than focusing on enforcing regulations on the areas in which PGH lacks jurisdiction, the CAP instead promotes energy efficiency in municipal buildings and educating owners on the benefits of sustainability. Based on an interview with a PGH official, PGH has started expanding its energy efficiency efforts from municipally--owned buildings to energy-burdened communities and is actively encouraging developers to build energy efficient buildings specifically in low-income communities and communities of color.[20] In addition, PGH has begun creating a new GHG inventory for tracking emissions, but funding from the IRA could provide additional resources to help with the implementation of this system. The collection of accurate data is imperative to successfully reducing emissions within Pittsburgh. Besides these concerns, Pittsburgh also lacks guidance on how to approach the new funding opportunities presented by the IRA, according to a PGH official.[20] The IRA has the potential to help Pittsburgh achieve its climate goals and overcome the current challenges, but the city will need support in the application process to take advantage of these new opportunities.

CLIMATE ACTION PLAN SUMMARIES

San Francisco

The City of San Francisco (SF) developed its first CAP in 2004, which is one of the reasons that it is considered a leader in local climate action. Following this, SF released an updated plan in 2013 that measured the progress toward its previous goals and established revised goals for the city. As the consequences of climate change have continued to worsen over the past decade, the SF Department of Energy began developing a new CAP in 2019 and completed it in 2021. SF's 2021 CAP is divided into six main focuses: Building Operations (BO), Energy Supply (ES), Healthy Ecosystems (HE), Housing, Responsible Production and Consumption (RPC), and Transportation and Land Use (TLU). SF plans to use these six focus areas to meet its emissions reduction goals. Certain sectors weigh more heavily than others, with the largest emissions footprints coming from the BO, ES, and TLU sectors. All three of these sectors need to make major progress within the next several years to reach SF's overall GHG emissions reduction goals.[24]

To ensure its actions will not result in outsourcing emissions, SF's overall emissions reduction goals are broken down into two categories: sector-based and consumption-based. Sector-based emissions are those that come from San Francisco's exported goods and services, while consumption-based emissions are those that come from San Francisco's imported goods and services. Two goals within each section are to be met at certain milestones over the next several decades. The sector-based goals are to reduce GHG emissions by 61% compared to 1990 levels by 2030 and to achieve net-zero emissions by 2040 through a combination of a 90% reduction of GHG emissions and the other 10% sequestered through nature-based solutions. The consumption-based goals are to reduce GHG emissions by 40% by 2030 and 80% by 2050.[24]

<u>ENERGY SECTOR</u>

The reduction of GHG emissions from energy use in San Francisco is vital to reaching SF's climate goals because the reductions in other sectors hinge on the ability to utilize clean energy. In response to this, SF has set goals for 100% renewable electricity by 2025 and to phase out all fossil fuels by 2040. SF plans to provide affordable 100% renewable energy to all residents through local regulations on utilities and investing in local renewable energy projects. SF also aims to develop a reliable and flexible grid system by investing in infrastructure and smart grid technologies, which are vital for the integration of renewable energy into San Francisco.

This investment includes the development of a workforce to deliver clean energy resources. SF will also create a decommissioning plan for natural gas systems to smoothly transition to this new clean energy system. This switch to renewable energy will lead to emission reductions in other sectors discussed in the CAP.[24]

CLIMATE ACTION PLAN SUMMARIES

TRANSPORTATION SECTOR

Transportation is the largest source of GHG emissions in San Francisco, accounting for nearly 50% of the city's total. SF has set goals to reduce the emissions from transportation by increasing the use of low-carbon transportation, which consists of options such as walking or public transit, and encouraging the transition to EVs. These goals are to have 25% of all vehicles registered in San Francisco be electric by 2030, with an increase to 100% by 2040 and have 80% of trips taken within San Francisco be low-carbon methods.[24] To build a reliable transit system and encourage low-carbon transportation, SF plans to expand and repair the current public transportation systems with a focus on disadvantaged neighborhoods, specifically those that have experienced historical disinvestment. SF also aims to make biking and walking more accessible by providing designated corridors for these methods of transportation, which will be aligned with major transit stops to maximize the utility of the system. After increasing the use of low-income transportation through these methods, SF plans to decrease the emissions of the remaining cars by encouraging a transition to ZEVs. This includes a public awareness campaign and the expansion of public EV charging that is accessible to low-income residents. Through the use of modeling, it was determined that by 2030, a combination of these strategies can reduce GHG emissions by 23% when compared to the 2030 baseline.[24] As evident from this model prediction, these strategies are important for the overall GHG emissions reductions in San Francisco.

WASTE SECTOR

SF passed an ordinance for mandatory recycling and composting and has successfully kept 3 million tons of recyclables out of landfills. The RPC sector in the SF CAP has two goals to continue targeting waste reduction in the city. The first goal is to reduce solid waste generation by 15% compared to 2015 levels by 2030, and the second goal is to reduce disposal to landfills by 50% by 2030. One key strategy to achieving these goals is reaching a total carbon balance in the building sector by targeting a 40% reduction in building construction carbon by 2030. Another strategy to meet the RPC goals is to reduce the carbon footprint of the food system by cutting total food waste in half by 2030. This will be achieved by adopting a Food Waste Prevention and Edible Food Recovery policy and partnering with food retail, distributors, and manufacturers to prevent food waste from going to landfills.[24]

BUILDING SECTOR

SF's CAP has a goal for all large commercial buildings to reach zero emissions by 2035 and for zero GHG emissions across all buildings by 2040. Buildings have the second largest footprint at 41% of GHG emissions within San Francisco, and SF plans to achieve these emissions reduction goals by targeting emissions in existing buildings, building a decarbonization workforce, and reaching a total carbon balance across the building and infrastructure sectors. First, SF aims to tackle existing buildings by creating a policy requiring any newly installed equipment to be all-electric and highly efficient. The CAP also states that new construction must follow these same standards with zero-onsite emissions. To accomplish this, SF plans to expand its workforce through training programs that target low-income workers and workers of color. Lastly, the CAP includes strategies for low-income owners and renters that prevent displacement, offer technical assistance for rebates and financing, and support affordable housing development. These strategies work together to reduce the emissions from buildings in San Francisco while protecting the interests of low-income communities and communities of color.[24]

CLIMATE ACTION PLAN SUMMARIES

HOUSING SECTOR

The housing section of SF's CAP focuses on affordable and accessible housing for its residents. The primary goal is to build a minimum of 5,000 new housing units annually, with 30% of those units as affordable units. One strategy to meet the overall housing goal is to rehabilitate existing housing and new housing developments to meet the needs of vulnerable populations. SF will accomplish this by providing resources to unhoused people and creating incentives to build housing specifically for vulnerable populations in transit-accessible areas. Another strategy is to expand subsidized housing production and availability for low- to middle-income households, which will increase the number of affordable housing units produced annually compared to historic averages. SF will advocate for increased funding for affordable housing and identify cost-cutting measures to make housing developments more competitive.[24]

GREEN INFRASTRUCTURE

HE is the portion of SF's CAP that focuses on nature-based solutions, such as tree planting and park restoration, to meet net-zero goals. The main purpose of this sector is to sequester the residual 10% of GHG emissions that are unable to be eliminated by other goals in the CAP, and SF aims to achieve this through partnerships with Indigenous tribes and community organizations. In contrast with the other sectors of SF's CAP, all the strategies and actions under HE are nature-based carbon sequestration rather than technologies to reduce GHG emissions.[24] One strategy is to maximize tree coverage throughout all of San Francisco by planting 30,000 street trees by 2040, maximizing woody vegetation and native trees, and creating dedicated, municipally-managed street tree nurseries. Another strategy is to prioritize Indigenous partnerships and integrating Traditional Ecological Knowledge. To reach this goal, SF will engage in meaningful and long-term relationships with Indigenous groups and agencies, such as the Ramaytush Ohlone community, to incorporate Indigenous knowledge into nature-based solutions.[24]

EQUITY

Recognizing that communities of color are the least responsible for climate change and are at the most risk of further disparities, SF prioritizes environmental justice throughout the CAP. San Francisco's population is primarily White at 51.5% of the population, with 37.2% Asian, and 15.7% Hispanic.[25] Additionally, an estimated 10% of San Francisco's population lives in poverty, which is just under the national average.[26] The CAP includes a metric for measuring the improvements to equity under the goals for each sector. While this has great potential, many of the goals have yet to be assigned an equity metric, which is a clear gap that needs to be addressed. Additionally, there are evident inequities in housing burdens, where low-income residents are disproportionately affected by high housing prices. There is an uneven shift of low-income households into neighborhoods with lower housing costs, which are most susceptible to environmental pollution and have lower access to public transportation.[27] SF needs to continue creating goals and strategies to uplift communities of color and low-income communities, and through J40, the IRA can provide benefits to these communities.

CLIMATE ACTION PLAN SUMMARIES

FUTURE GOALS AND SUMMARY

The SF CAP is a roadmap for achieving equitable climate action and provides in-depth guidance on approaching complex issues in the San Francisco. However, the implementation of the SF CAP has presented many challenges. According to an interview with an SF official, staffing shortages as well as other significant San Francisco-wide issues have slowed the implementation of the goals.[28] Furthermore, the CAP itself acknowledges that existing funding sources are inadequate for accomplishing the established goals.[12] Besides the concerns with the staff and budget of SF, the feasibility of some of the goals is also an issue. The IRA provisions can help SF bridge this funding gap, but staffing shortages would still pose an issue, as applying for funding sources can be incredibly time-consuming. The lack of staff to help implement the goals of the CAP and request funding from the IRA requires further consideration. Lastly, SF needs to continue to prioritize equity by creating equity metrics for the CAP strategies that currently lack them. Overall, the SF CAP establishes ambitious goals for San Francisco that could greatly benefit from IRA funding.

COMPARATIVE ANALYSIS

Among all three CAPs, the overarching target remains reducing the GHG emissions of each city. While the main goal for each CAP focuses on the overall reduction of GHG emissions, the strategies for approaching this goal are dependent on the needs of that respective city. NOLA focused primarily on a renewable energy transition and improvements to transportation, as those are their two largest sources of GHG emissions. PGH also had a strong emphasis on energy and transportation, but included an additional extensive plan for improving the efficiency of buildings. This is because buildings account for the overwhelming majority of Pittsburgh's GHG emissions through energy consumption. In SF's CAP, the main strategies focused on reducing the emissions from transportation and buildings, as these are the largest sources of emissions in SF. While this is similar to NOLA and PGH, there is still variation between each city's goals. For example, both PGH and NOLA stated the intention to develop green banks to help facilitate the investment in clean energy systems in their CAPs, but San Francisco did not include this in their strategies. Additionally, all the cities recognized the importance of incorporating equity into the strategies, but the level of commitment to monitoring equity varied. PGH's CAP offers the least amount of goals related to equity, while NOLA and SF both offer more tangible methods for addressing inequities. The CAPs may contain similar long-term goals, but the strategies chosen to accomplish the goals differed across the cities.

SUMMARY

The consequences of climate change have forced cities to develop CAPs to address the negative effects and implement actions to reduce future impacts. While these CAPs tend to put GHG emissions reductions as the underlying goal for the city, the strategies and intermediate goals are designed to best suit the needs of each city. However, the need to improve transportation systems and transition to renewable energy appear to be common action items in all cities, based on our three case studies. Additionally, all three cities identified the challenge that staff and funding shortages create an obstacle to achieving these goals. The provisions from the IRA can help address these concerns, as it increases the overall availability of funds to address climate change so that these cities can accomplish the goals they have outlined in their CAPs.

IRA MATCHMAKING

INTRODUCTION

While NOLA, PGH, and SF have created CAPs, implementation requires planning and funding to make these goals a reality. The IRA can be a major funding source for these goals if they fit the eligibility requirements for specific IRA provisions or programs. Eligible entities and requirements differ for each IRA provision, and cities need to determine whether their CAP goals could qualify. The team combined our analyses of the IRA provisions and CAPs to identify how each city can use specific IRA programs to fund its respective CAP goals.

The following tables identify available IRA programs for those city-specific CAP goals and subgoals that could be eligible for funding. These matched CAP goals are a refined list from the complete list of strategies in each city's CAP. This section of the report highlights the abundance of available funding from the IRA and provides a case study of how a specific city can leverage IRA funding.

New Orleans

Table 1. This table displays different IRA funding opportunities and the NOLA CAP strategies that fit under the criteria for each provision. The yellow represents the main goals and the beige underneath represents the sub-goals for each CAP strategy. An asterisk (*) symbol denotes programs that states are eligible to apply for. A plus sign (+) symbol denotes programs that cities can apply for in partnerships with community-based organizations (CBO). Findings are organized by sector to help navigate the table.

IRA Provision	1st Matched CAP Strategy & Actions	2nd Matched CAP Strategy & Actions
ENERGY SECTOR		
Clean Electricity Investment Tax Credit	Generate more clean energy locally	
	Increase local solar and regional wind energy development	
	Launch community solar	
	Increase Solar for All installations	
	CITY FOCUS: Install solar on NOLA property	
Clean Electricity Production Tax Credit	Generate more clean energy locally	
	CAEWG: Help residents to reduce the cost of electric bills by generating their own electricity	Promote Green Mortgages
Energy Infrastructure Reinvestment Financing	Clean our Grid	Generate more clean energy locally
	100% clean electricity by 2035 (national goal — local commitment by 2040)	Increase local solar and regional wind energy development

IRA MATCHMAKING

Table 1. (Cont.) New Orleans

IRA Provision	1st Matched CAP Strategy & Actions	2nd Matched CAP Strategy & Actions
TRANSPORTATION & LAND USE SECTOR		
Neighborhood Access and Equity Grants Program	Diversify our travel choices to increase non-auto trips	
	Implement "Complete Streets" policy to design streets for all users (walkers, cyclists, transit users, drivers)	
	Develop robust Transit-Oriented Communities	CAEWG: Place bike share locations in underserved neighborhoods
	Invest in 6 miles of transit-only infrastructure by 2027	
	Redesign the regional public transportation system Regional Transit Authority to increase access, capacity, and efficiency	
	Increase transit ridership	
	Invest in safe, low-stress, and comprehensive bicycle infrastructure	
	Expand bike share system	
	CAEWG: Improve public transport in underserved communities for faster and more reliable service	
Clean Heavy-Duty Vehicles	ZEVs to reduce air pollution	
	75% of Regional Transit Authority's fleet will be low or no-emissions vehicles by 2030 (from Strategic Mobility Plan)	
Qualified Commercial Clean Vehicles	ZEVs to reduce air pollution	
	CITY FOCUS: Increase ZEV use in NOLA fleet	
Alternative Fuel Refueling Property Credit	ZEVs to reduce air pollution	
	Increase ZEV use and facilitate the development of electric vehicle charging stations throughout NOLA	
	CAEWG: Increase accessibility of EVs	

IRA MATCHMAKING

Table 1. (Cont.) New Orleans

IRA Provision	1st Matched CAP Strategy & Actions	2nd Matched CAP Strategy & Actions
BUILDING SECTOR		
Assistance for Latest and Zero Building Energy Code Adoption	Use less energy in our buildings	
	Benchmarking and building performance standards ordinance for multi-family and commercial buildings	
Energy Efficient Commercial Buildings Deduction*	Use less energy in our buildings	
	Increase annual energy savings for Energy Smart 0.2% per year to reach 2% annual savings goal set in 2015	
	CITY FOCUS: Reduce energy use in NOLA buildings by an additional 17% by 2030	
Home Energy Performance-Based, Whole-House Rebates*	Use less energy in our buildings	
	Increase annual energy savings for Energy Smart 0.2% per year to reach 2% annual savings goal set in 2015	Promote Green Mortgages
	Continue to increase energy savings goal 0.2% beyond 2% to achieve 3% or more annual savings	
High-Efficiency Electric Home Rebate Program*	Use less energy in our buildings	
	Continue to increase energy savings goal 0.2% beyond 2% to achieve 3% or more annual savings	
GREEN INFRASTRUCTURE		
Urban and Community Forestry Assistance Program	Increase green infrastructure and trees throughout the city over time	
	Plant 40,000 trees by 2030	
HOUSING SECTOR		
Environmental and Climate Justice Block Grants+	CAEWG: Increase opportunities in environmentally sustainable sectors for African-American residents	
GHG Reduction Fund	Increase resilience of our energy and water infrastructure	
	Implement a microgrid pilot(s) for energy resilience	

IRA MATCHMAKING

Based on the IRA funding opportunities the team matched to NOLA's CAP goals as seen in Table 1, two grants could be particularly effective for NOLA. First, the Neighborhood Access and Equity Grants Program allocates funding to projects to improve walkability, safety, and affordable transportation access with a particular emphasis on underserved and disadvantaged communities, which directly reflects NOLA's main CAP strategies.[29] One of NOLA's goals is to have 50% of trips be non-auto by 2030, and this goal can benefit from the funding from the Neighborhood Access and Equity Grants Program. This program is extremely broad and therefore has the potential to support all the actions that NOLA must take to achieve this CAP goal, including a "Complete Streets" policy and investing in safer bicycle infrastructure. An 80% federal share is provided for this program, but cities like New Orleans may qualify for a 100% federal share if this project is located in a disadvantaged community.[29] The second program NOLA can apply for is the $5 billion Energy Infrastructure Reinvestment Program. This program provides loans to projects that retool, repower, repurpose, or replace energy infrastructure. It can also be used for projects that would enable currently operating energy infrastructure to avoid, reduce, utilize, or sequester GHG emissions.[30] This IRA program can be directly used for NOLA's CAP goal to clean their energy grid and meet its target to have 100% clean electricity by 2035.

IRA MATCHMAKING

Pittsburgh

Table 2. This table displays different IRA funding opportunities and the PGH CAP strategies that fit under the criteria for each provision. The dark blue represents the main goals and the light blue underneath represents the sub-goals for each CAP strategy. An asterisk (*) symbol denotes programs that states are eligible to apply for. A plus sign (+) symbol denotes programs that cities can apply for in partnerships with CBOs. Findings are organized by sector to help navigate the table.

IRA Provision	1st Matched CAP Strategy & Actions	2nd Matched CAP Strategy & Actions	3rd Matched CAP Strategy & Actions
ENERGY SECTOR			
Funding for Department of Energy Loan Programs Office	50% emissions reduction overall by 2030	Power all PGH Facilities with 100% clean electricity by 2030	
GHG Reduction Fund	50% emissions reduction below 2003 levels	Measure Pittsburgh's climate and ecological impact annually	
Methane Emissions Reduction Program	50% emissions reduction below 2003 levels		
	Reduction of natural gas fugitive emissions		
Clean Electricity Investment Tax Credit	Modernize Energy Systems	100% renewable electricity by 2030 through both city-owned generation and purchase power agreements that install more renewable electricity production locally	
	Transferral of Pittsburgh customers to clean electricity		
	Convert systems from combustion to electrification		
	Decarbonize the electric grid		
Residential Clean Electricity Credit	Transferral of Pittsburgh customers to clean electricity		
TRANSPORTATION & LAND USE SECTOR			
Neighborhood Access and Equity Grants Program	Reduce vehicle miles traveled per capita by 50% below 2013 levels by 2030		
	Increasing Port Authority ridership		
	Increase bikeability and walkability		
	Bus rapid transit		

IRA MATCHMAKING

Table 2. (Cont.) Pittsburgh

IRA Provision	1st Matched CAP Strategy & Actions	2nd Matched CAP Strategy & Actions	3rd Matched CAP Strategy & Actions
TRANSPORTATION & LAND USE SECTOR			
Clean-Heavy Duty Vehicles	Increase shift in fuel sources by promoting vehicle electrification	Reduce freight emissions by 25% by 2030	
	Conversion of other fleets to 100% fossil free		
Clean Fuel Production Credit	Increase shift in fuel sources by promoting vehicle electrification	Reduce freight emissions by 25% by 2030	
	PGH Fleet conversion to 100% fossil free		
	Conversion of other fleets to 100% fossil free		
Environmental and Climate Justice Block Grants*	Reduce vehicle miles traveled per capita by 50% below 2013 levels by 2030		
	Increasing Port Authority ridership		
	Increase bikeability and walkability		
	Bus rapid transit		
Clean Vehicle Credit	Increase shift in fuel sources by promoting vehicle electrification		
	PGH fleet conversion to 100% fossil free		
	Conversion of other fleets to 100% fossil free		
Qualified Commercial Clean Vehicles	Increase shift in fuel sources by promoting vehicle electrification		
Diesel Emissions Reductions	Reduce freight emissions by 25% by 2030		
BUILDING SECTOR			
Assistance for Latest and Zero Building Energy Code Adoption	Ensure all new buildings are carbon neutral by 2030		
	Promote Passive House building guidelines		
	Improved building codes		

IRA MATCHMAKING

Table 2. (Cont.) Pittsburgh

IRA Provision	1st Matched CAP Strategy & Actions	2nd Matched CAP Strategy & Actions	3rd Matched CAP Strategy & Actions
BUILDING SECTOR			
Climate Pollution Reduction Grants	Improve quality of energy and water use data		
High-Efficiency Electric Home Rebate Program*	Mitigate high energy burdens in vulnerable communities	Improve energy efficiency in residential, commercial, and industrial buildings	Reduce energy and water consumption by 50% by 2030
		"Promote Green and Healthy Homes" Initiative and related programs	
Home Energy Performance-Based, Whole-House Rebates*	Mitigate high energy burdens in vulnerable communities	Improve energy efficiency in residential, commercial, and industrial buildings	Reduce energy and water consumption by 50% by 2030
		Promote "Green and Healthy Homes" Initiative and related programs	
State-Based Home Energy Efficiency Contractor Training Grants*	Ensure all new buildings are carbon neutral by 2030	Improve energy efficiency in residential, commercial, and industrial buildings	
Energy Efficient Commercial Buildings Deduction*	Improve energy efficiency in residential, commercial, and industrial buildings	Ensure all new buildings are carbon neutral by 2030	Reduce energy and water consumption by 50% by 2030
GREEN INFRASTRUCTURE			
Urban and Community Forestry Assistance Program	Ensure healthy vegetation is able to thrive		
	Tree canopy coverage		
	Shade tree commission		
	Implement "Biophilic Cities Initiatives"		
Climate Pollution Reduction Grants	Increase carbon sequestration by 100% by 2030		
	Calculate carbon sequestration capacity		
Funding for Department of Energy Loan Programs Office	Increase carbon sequestration by 100% by 2030		
	Calculate carbon sequestration capacity		

IRA MATCHMAKING

Table 2. (Cont.) Pittsburgh

IRA Provision	1st Matched CAP Strategy & Actions	2nd Matched CAP Strategy & Actions	3rd Matched CAP Strategy & Actions
HOUSING SECTOR			
GHG Reduction Fund	Improve energy efficiency in residential, commercial, and industrial buildings		
	Promote "Green and Healthy Homes Initiative" and related programs		

As seen in Table 2, building energy efficiency and the deployment of EVs are two key priorities in the PGH CAP. Through the IRA, PGH can utilize the Assistance for Latest and Zero Building Energy Code Adoption to improve building energy codes and increase efficiency. This grant can support PGH in adopting, implementing, and enforcing the latest model, zero energy, or other equivalent energy codes and standards, which will help improve residential and commercial new construction and retrofits and transition Pittsburgh's infrastructure to more efficient, decarbonized buildings.[31] PGH can use this federal technical assistance to meet its goals to mitigate high energy burdens in vulnerable communities and reduce energy and water consumption by 50% by 2030.

Another key goal of the PGH CAP is to increase electric vehicles in Pittsburgh. The Clean Heavy-Duty Vehicles Credit within the IRA provides funding for the costs of replacing eligible vehicles with ZEVs along with the associated required infrastructure and workforce development and training.[32] This program can directly address a few of PGH's goals, such as reducing freight emissions by 25% by 2030 and transitioning the entire municipal public transportation and waste management fleets to EVs.

IRA MATCHMAKING

San Francisco

Table 3. This table displays different IRA funding opportunities and the SF CAP strategies that fit under the criteria for each provision. The dark pink represents the main goals and the light pink underneath represents the sub-goals for each CAP strategy. An asterisk (*) symbol denotes programs that states are eligible to apply for. A plus sign (+) symbol denotes programs that cities can apply for in partnerships with CBOs. Findings are organized by sector to help navigate the table.

IRA Provision	1st Matched CAP Strategy & Actions	2nd Matched CAP Strategy & Actions	3rd Matched CAP Strategy & Actions	4th Matched CAP Strategy & Actions
ENERGY SECTOR				
Clean Electricity Investment Tax Credit	ES.1 Supply 100% greenhouse gas-free electricity to residents and businesses	ES.2 Invest in local renewable energy and energy resilience projects		
	ES.1-3 Ensure renewable electricity is the only option for San Francisco residents and businesses, by supporting state or local regulatory requirements and/or acquiring PG&E's grid assets serving San Francisco	ES.2-3 Explore developing grid-independent solar and storage at critical municipal facilities and other critical or vulnerable community sites		
		ES.2-4 Support the development of local renewable electricity production by scaling up programs such as net metering, community solar, feed-in tariffs, and battery storage		
Clean Electricity Production Tax Credit	ES.1 Supply 100% greenhouse gas-free electricity to residents and businesses	ES.2 Invest in local renewable energy and energy resilience projects		
	ES.1-3 Ensure renewable electricity is the only option for San Francisco residents and businesses, by supporting state or local regulatory requirements and/or acquiring PG&E's grid assets serving San Francisco	ES.2-3 Explore developing grid-independent solar and storage at critical municipal facilities and other critical or vulnerable community sites		
		ES.2-4 Support the development of local renewable electricity production by scaling up programs such as net metering, community solar, feed-in tariffs, and battery storage		

IRA MATCHMAKING

Table 3. (Cont.) San Francisco

IRA Provision	1st Matched CAP Strategy & Actions	2nd Matched CAP Strategy & Actions	3rd Matched CAP Strategy & Actions	4th Matched CAP Strategy & Actions
ENERGY SECTOR				
Climate Pollution Reduction Grants	ES.5 Plan for the equitable decommissioning of the city's natural gas system			
		ES.2-3 Explore developing grid-independent solar and storage at critical municipal facilities and other critical or vulnerable community sites		
		ES.2-4 Support the development of local renewable electricity production by scaling up programs such as net metering, community solar, feed-in tariffs, and battery storage		
Energy Infrastructure Reinvestment Financing	ES.3 Design and develop the reliable and flexible grid of the future			
GHG Reduction Fund	ES.1 Supply 100% greenhouse gas-free electricity to residents and businesses	ES.2 Invest in local renewable energy and energy resilience projects	ES.3 Design and develop the reliable and flexible grid of the future	
		ES.2-1 Assist affordable housing developments with installing on-site solar and battery storage and meeting San Francisco energy efficiency and solar energy requirements		
		ES.2-2 Continue to develop onsite solar on SF-owned buildings and reservoirs based on emerging opportunities and San Francisco Public Utilities Commission feasibility analysis		
Low Emissions Electricity Program	ES.1 Supply 100% greenhouse gas-free electricity to residents and businesses	ES.2 Invest in local renewable energy and energy resilience projects	ES.3 Design and develop the reliable and flexible grid of the future	ES.4 Plan for the equitable decommissioning of SF's natural gas system
	ES.1-2 Promote early adoption of renewable electricity products to all San Francisco, with a preference for San Francisco programs	ES.2-1 Assist affordable housing developments with installing on-site solar and battery storage and meeting San Francisco energy efficiency and solar energy requirements		

IRA MATCHMAKING

Table 3. (Cont.) San Francisco

IRA Provision	1st Matched CAP Strategy & Actions	2nd Matched CAP Strategy & Actions	3rd Matched CAP Strategy & Actions	4th Matched CAP Strategy & Actions
TRANSPORTATION & LAND USE SECTOR				
Alternative Fuel Refueling Property Credit	TLU.7 Where motor vehicle use or travel is necessary, accelerate the adoption of ZEVs and other electric mobility options			
	TLU.7-2 Expand publicly available EV charging across the city that is financially and geographically accessible to low-income households and renters			
Clean Heavy-Duty Vehicles	TLU.1 Build a fast and reliable transit system that will be everyone's preferred way to get around			
Qualified Commercial Clean Vehicles	TLU.7 Where motor vehicle use or travel is necessary, accelerate the adoption of ZEVs and other electric mobility options			
	TLU.7-4 Establish a pathway to incentivize ZEVs for passenger service vehicles operating at the airport			
	TLU.7-5 Launch a pilot to advance the use of ZEVs, e-bikes, and other low-carbon modes for door-to-door goods and meal delivery services			
Climate Pollution Reduction Grants	TLU.1 Build a fast and reliable transit system that will be everyone's preferred way to get around	TLU.3 Develop pricing and financing of mobility that reflects the carbon cost and efficiency of different modes and projects and correct for inequities of past investments and priorities	TLU.7 Where motor vehicle use or travel is necessary, accelerate the adoption of ZEVs and other electric mobility options	
	TLU.1-7 Study the role of Muni fare programs on equity, climate, and mobility goals and adopt recommendations		TLU.7-3 Develop a plan to help the San Francisco's non-revenue fleet and small and locally owned businesses build infrastructure that allows for zero-emission delivery, drayage, and longer haul trucks	

IRA MATCHMAKING

Table 3. (Cont.) San Francisco

IRA Provision	1st Matched CAP Strategy & Actions	2nd Matched CAP Strategy & Actions	3rd Matched CAP Strategy & Actions	4th Matched CAP Strategy & Actions
TRANSPORTATION & LAND USE SECTOR				
Extension of Tax Credits for Biodiesel and Renewable Diesel	TLU.7-6 Create incentives for the use of renewable diesel and emerging zero-emission tech to reduce emissions from construction equipment			
Neighborhood Access and Equity Grants Program	TLU.1 Build a fast and reliable transit system that will be everyone's preferred way to get around	TLU.2 Create a complete and connected active transportation network that shifts trips from automobiles to walking, biking, and other active transportation modes	TLU.3 Develop pricing and financing of mobility that reflects the carbon cost and efficiency of different modes and projects and correct for inequities of past investments and priorities	TLU.7 Where motor vehicle use or travel is necessary, accelerate the adoption of ZEVs and other electric mobility options
	TLU.1-5 While meeting transit ridership goals prioritize services and reduce obstacles for more vulnerable populations, neighborhoods with fewest mobility options, and populations that have faced historic disinvestment			TLU.7-7 Design by '23 and launch by '24 a pilot project to test the use of accessible bicycles, e-bikes, and e-scooters for commuting, as well as recreation
	TLU.1-5 While meeting transit ridership goals prioritize services and reduce obstacles for more vulnerable populations, neighborhoods with fewest mobility options, and populations that have faced historic disinvestment			TLU.7-7 Design by '23 and launch by '24 a pilot project to test the use of accessible bicycles, e-bikes, and e-scooters for commuting, as well as recreation
BUILDING SECTOR				
Assistance for Latest and Zero Building Energy Code Adoption	BO.2 Eliminate fossil fuel use in existing buildings by tailoring solutions to different building ownership, systems, and use types			
	BO.2-7 Adopt a building performance policy requiring large commercial buildings to completely transition to efficient and all-electric equipment			
Climate Pollution Reduction Grants	BO.2 Eliminate fossil fuel use in existing buildings by tailoring solutions to different building ownership, systems, and use types			

IRA MATCHMAKING

Table 3. (Cont.) San Francisco

IRA Provision	1st Matched CAP Strategy & Actions	2nd Matched CAP Strategy & Actions	3rd Matched CAP Strategy & Actions	4th Matched CAP Strategy & Actions
BUILDING SECTOR				
	BO.2-1 Develop a system to monitor the replacement rate of existing private sector natural gas-fueled equipment with all-electric			
	BO.2-3 Begin recording decarbonization status for each property at time of sale and permit review to ensure compliance with time of replacement policy			
Environmental and Climate Justice Block Grants*	BO.2 Eliminate fossil fuel use in existing buildings by tailoring solutions to different building ownership, systems, and use types			
	BO.2-8 Develop and adopt tenant protection and anti-displacement policies for renters in buildings transitioning to efficient and all-electric systems			
	BO.2-9 Technical assistance offers to communities of color and low-income residents			
Environmental Product Declaration Assistance*	BO.1 Eliminate fossil fuel use in new construction			
GHG Reduction Fund	BO.2 Eliminate fossil fuel use in existing buildings by tailoring solutions to different building ownership, systems, and use types			
	BO.2-12 Explore the creation of a revolving decarbonization fund by developing a virtual power plant or other district scale solution that monetizes the benefits derived from energy efficiency, demand response, and energy storage systems			
High-Efficiency Electric Home Rebate Program*	BO.2 Eliminate fossil fuel use in existing buildings by tailoring solutions to different building ownership, systems, and use types			

IRA MATCHMAKING

Table 3. (Cont.) San Francisco

IRA Provision	1st Matched CAP Strategy & Actions	2nd Matched CAP Strategy & Actions	3rd Matched CAP Strategy & Actions	4th Matched CAP Strategy & Actions
BUILDING SECTOR				
Home Energy Performance-Based, Whole-House Rebates*	BO.2 Eliminate fossil fuel use in existing buildings by tailoring solutions to different building ownership, systems, and use types			
State-Based Home Energy Efficiency Contractor Training Grants*	BO.3 Expand the building decarbonization workforce, with targeted support for disadvantaged workers			
GREEN INFRASTRUCTURE				
Investing in Coastal Communities and Climate Resilience	HE.3 Restore and enhance parks, natural lands, and large open spaces			
	HE.3-2 Continue improving management of existing salt marshes and explore expanding restoration acreage of degraded Bayshore properties			
	HE.3-4 Restore and create natural ecological parkland on Yerba Buena and Treasure Islands, including implementing the Yerba Buena Island Habitat Management Plan			
Urban and Community Forestry Assistance Program	HE.3 Restore and enhance parks, natural lands, and large open spaces	HE.4 Optimize management of the city's entire urban forest system	HE.5 Maximize trees throughout the public realm	HE.6 Maximize greening and integration of local biodiversity into the built environment
HOUSING SECTOR				
GHG Reduction Fund	H.2-4 Secure federal, state, and local resources for accessibility, energy efficiency, decarbonization, and resilience upgrades in existing and new housing			

IRA MATCHMAKING

As seen in Table 3, SF's CAP goals prioritize the building and transportation sectors with a particular emphasis on equity. SF can utilize the Environmental and Climate Justice Block Grants to meet goals in both the building and housing sectors of the CAP. This grant provides funding to CBOs to reduce pollution and climate threats in disadvantaged communities.[33] With environmental justice being central to SF's CAP, SF can partner with CBOs to make significant progress towards their goals of eliminating fossil fuels from existing and new buildings, while also supporting vulnerable or underserved communities. SF can use this competitive grant funding to develop tenant protection policies for renters in buildings that are transitioning to efficient, electric systems, as well as for technical assistance programs for communities of color and low-income residents.

SF can also utilize two other IRA programs to reach their CAP goals. The Alternative Fuel Refueling Property Credit provides a tax credit for properties with alternative energy refueling stations in low-income communities.[34] This will directly help SF reach its goal of expanding the accessibility of public EV charging to low-income households, ensuring a more equitable transition. The Urban and Community Forestry Assistance Program provides competitive grant funding for the planting of trees in urban areas.[35] This provision would allow SF to fully build out its urban tree coverage, as well as expand San Francisco's natural areas, decreasing the urban heat island effect using nature-based solutions. The funding can specifically be used to meet SF's CAP goal to plant 30,000 sidewalk trees by 2040.

COMPARATIVE ANALYSIS

While each city is at a different stage of its CAP implementation and has varying CAP goals, the IRA provides broad funding for many different climate adaptation and mitigation projects. All three cities can utilize many provisions within the IRA. As seen in Table 1, the team matched 14 IRA programs to NOLA's CAP goals with the most goals in the transportation sector. The transportation sector has 15 goals that can benefit from four different IRA grants. NOLA has fewer CAP goals in general compared with SF and Pittsburgh, but due to its high rate of inequity and disadvantaged communities, NOLA can apply for grants specifically for low-income communities that the other two cities may not qualify for.

As seen in Table 2, PGH's CAP goals can be matched with a total of 20 IRA programs. The team directly matched 9 transportation goals to 7 IRA programs. Six IRA programs can fund 8 building goals in PGH's CAP. PGH has the highest number of building goals that can utilize IRA funding, and this is directly reflected in the number of CAP goals and our analysis of disadvantaged communities in the following section.

As seen in Table 3, SF can utilize 19 IRA programs, with the majority of the programs targeting transportation goals. SF also has the most total number of CAP goals and can apply to a wider range of IRA programs compared to PGH and NOLA. This is due to the extensiveness and aggressiveness of SF's CAP compared to the other cities. Six different IRA provisions can match 10 of SF's CAP energy goals, and an additional 6 IRA programs match to 12 transportation goals for SF.

IRA MATCHMAKING

The type of grants that the cities are applying for will be based on the status of their CAP goals. Some IRA provisions, such as the Climate Pollution Reduction Grant, are very broad and can be used for projects at the very early development stages of a city's climate action planning. These programs will be best for cities that need funding for CAP development. Larger cities with more substantial climate data, such as San Francisco, may have an advantage when applying for grants. SF will be able to provide raw data for GHG emissions and methane monitoring, while Pittsburgh lacks more contemporary GHG tracking. PGH and NOLA can use IRA programs, such as Funding to Address Air Pollution, which provides funding to support increased air quality monitoring methods and capacity, to fill these data gaps.[36] Several grants are broad enough that many cities can apply for them, including our three case study cities. These include the Climate Pollution Reduction Grant, the Neighborhood Access and Equity Grants Program, and the Greenhouse Gas Reduction Fund.[37]

SUMMARY

Cities such as NOLA, PGH, and SF have created ambitious CAPs to combat climate change, however, funding can be a prohibitive barrier to reaching these goals. Specific IRA programs and provisions can be matched to eligible goals within a city's CAP. While federal funding is available for cities to apply to, grant applications can be complex and may require technical expertise that city officials might not have. In addition, the federal government is slowly setting up IRA provisions, and municipalities must keep track of these deadlines and guidelines. Ultimately, the IRA can be a successful funding source for cities with adequate analysis and preparation of which CAP goals and projects are eligible for grants and tax credits.

CLIMATE & ECONOMIC JUSTICE SCREENING TOOL ANALYSIS

INTRODUCTION

The Biden-Harris Administration developed the CEJST as part of J40, setting a goal that 40% of benefits from climate related investments flow to communities that are "marginalized, underserved, and overburdened by pollution."[7] These investments include climate change, clean energy and energy efficiency, clean transportation, affordable and sustainable housing, training and workforce development, remediation and reduction of legacy pollution, and critical clean water and waste infrastructure.[38] With the federal goal of targeting disadvantaged communities, the CEJST is a mechanism that was created to allow municipalities and agencies to identify relevant communities. This tool is broken up into eight environmental burdens (climate change, energy, health, housing, legacy pollution, transportation, waste and wastewater, and workforce development), and each burden has specific criteria to indicate whether a census tract is defined as disadvantaged. In our analysis, the team evaluated energy, housing, and transportation burdens to analyze whether the CEJST can map out disadvantaged communities and determined how cities can integrate this information when applying for IRA provisions. Several key terms help guide our analysis as follows:

Table 4. This table displays definitions used by CEJST to identify each type of burden discussed in this analysis and disadvantaged communities in general.

Burden Type	Definition	Percentile
Disadvantaged	A community is highlighted as disadvantaged on the CEJST map if it is in a census tract that is (1) at or above the threshold for one or more environmental, climate, or other burdens, and (2) at or above the threshold for an associated socioeconomic burden. In addition, a census tract that is completely surrounded by disadvantaged communities and is at or above the 50% percentile for low-income is also considered disadvantaged.	N/A
Low-Income	Percent of a census tract's population in households where household income is at or below 200% of the Federal poverty level, not including students enrolled in higher education.	65th
Housing Cost	Share of households that are both earning less than 80% of Housing and Urban Development's Area Median Family Income and are spending more than 30% of their income on housing costs.	90th
Energy Cost	Average household annual energy cost in dollars divided by the average household income.	90th
Diesel Particulate Matter Exposure	Mixture of particles in diesel exhaust in the air, measured as micrograms per cubic meter. This is one of the three criteria used in the transportation burden maps.	90th
Traffic Proximity and Volume	Number of vehicles (average annual daily traffic) at major roads within 500 meters, divided by distance in meters. This is one of the three criteria used in the transportation burden maps.	90th
Transportation Barriers	Average relative cost and time spent on transportation relative to all other tracts. This is one of the three criteria used in the transportation burden maps.	90th

CLIMATE & ECONOMIC JUSTICE SCREENING TOOL ANALYSIS

ENERGY BURDEN

Census tracts are considered disadvantaged for energy burden if they are low-income AND are in the 90th percentile for energy cost [39]

HOUSING BURDEN

Census tracts are considered disadvantaged for housing burden if they are low-income AND are in the 90th percentile for housing cost [39]

TRANSPORTATION BURDEN

Census tracts are considered disadvantaged for transportation burden if they are low-income AND are in the 90th percentile for **ANY** *of the following three categories:*

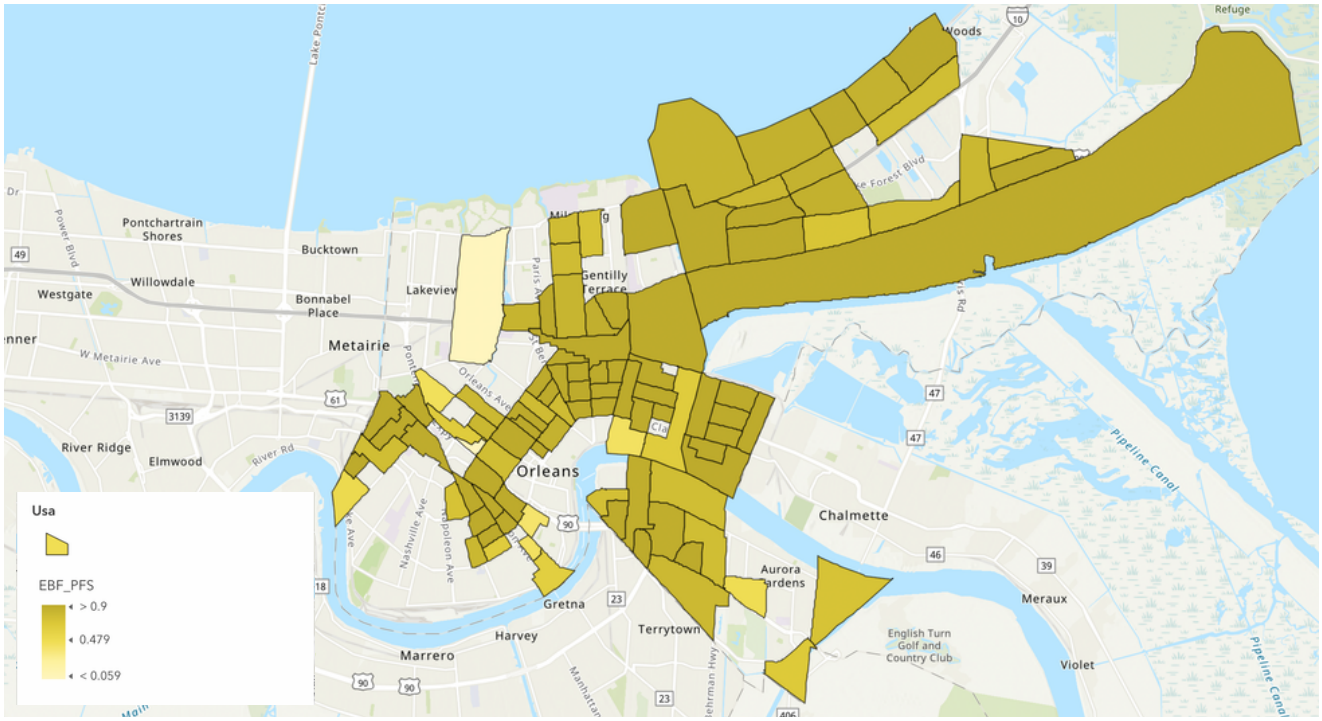
- *Diesel particulate matter exposure*
- *Traffic proximity and volume*
- *Transportation barriers* [39]

New Orleans

In New Orleans, the team mapped the energy burden and transportation burden to understand which census tracts are disadvantaged and can benefit from J40.

ENERGY BURDEN

Figure 1. This map shows the energy burden percentiles in census tracts that meet the low-income criteria. Energy burden is a significant issue in low-income areas, with many of the census tracts having an energy burden higher than the 90th percentile.

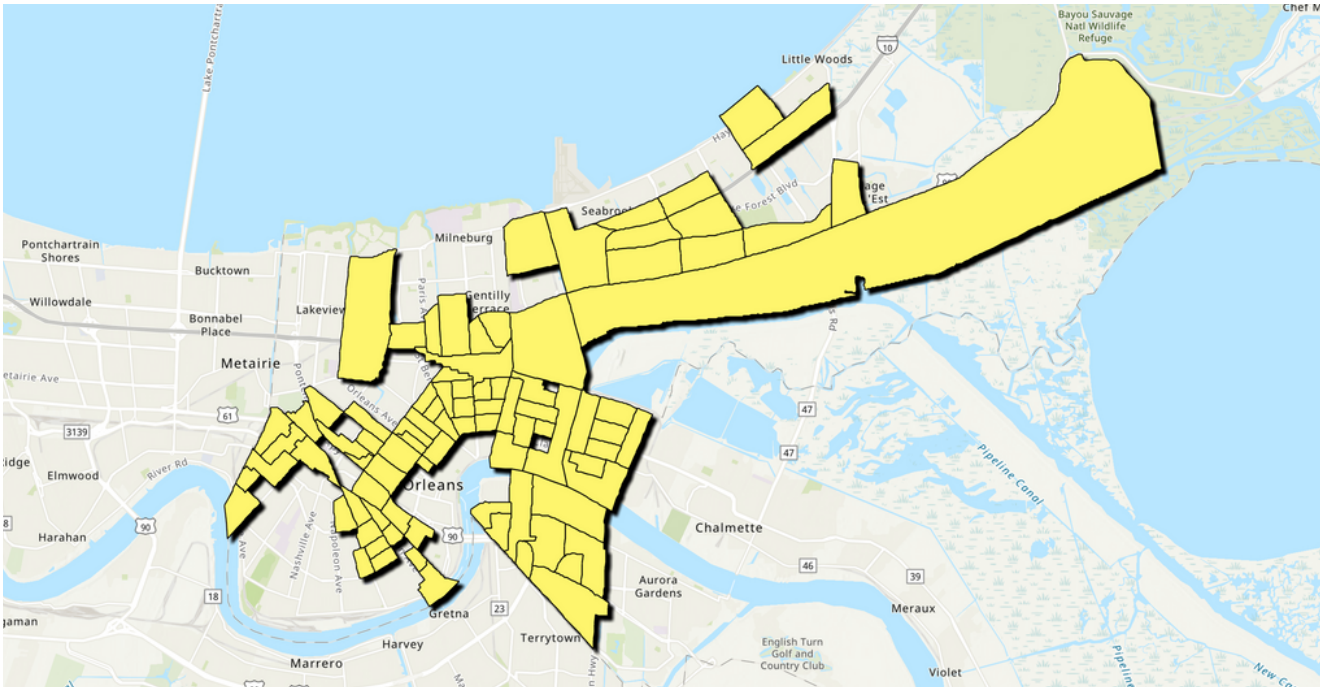


CLIMATE & ECONOMIC JUSTICE SCREENING TOOL ANALYSIS

As seen in Figure 1, energy burden is a significant issue within much of New Orleans and is particularly severe in low-income communities. 51 out of 177 (28.81%) census tracts in New Orleans, based on Orleans Parish data, meet the CEJST disadvantaged threshold in energy burden criteria. Low-income communities are nearly all in the 50th and above percentile for energy burden within New Orleans, and this is significant because low-income households are the ones that are most impacted by energy costs. According to the Department of Energy, low-income households spend approximately 8.6% of their income on energy, while non-low-income communities tend to spend only 3% on energy.[40] Energy is a key component of the NOLA CAP with several strategies and goals outlined to develop clean energy and energy efficiency, such as cleaning the energy grid and using less energy in buildings. NOLA can target these low-income neighborhoods with the highest energy burdens to reduce energy costs in the communities that are the most impacted by high energy prices. NOLA can leverage IRA provisions that fall under J40 in these particular census tracts to aid the communities with the highest energy burden.

TRANSPORTATION BURDEN

Figure 2. This map shows the census tracts that meet the threshold for low-income and meet one of the three criteria for transportation burdens. As shown by the abundance of census tracts on this map, transportation burdens affect a large portion of the New Orleans community and almost all of the census tracts identified as low-income.



As seen in Figure 2, much of New Orleans also experiences transportation burdens, and 88 out of 177 (49.71%) census tracts in New Orleans meet the CEJST disadvantaged threshold in transportation burden criteria. Transportation burdens are not uniquely tied to low-income communities, however, transportation and energy burdens have a large overlap. The NOLA CAP highlights transportation as a large sector for reducing emissions, with goals to diversify travel choices to increase non-auto trips and ZEVs to reduce air pollution. Both of these goals focus on lowering the impact of transportation burdens in New Orleans, and NOLA can use the CEJST to identify these particular census tracts that are the most heavily burdened.

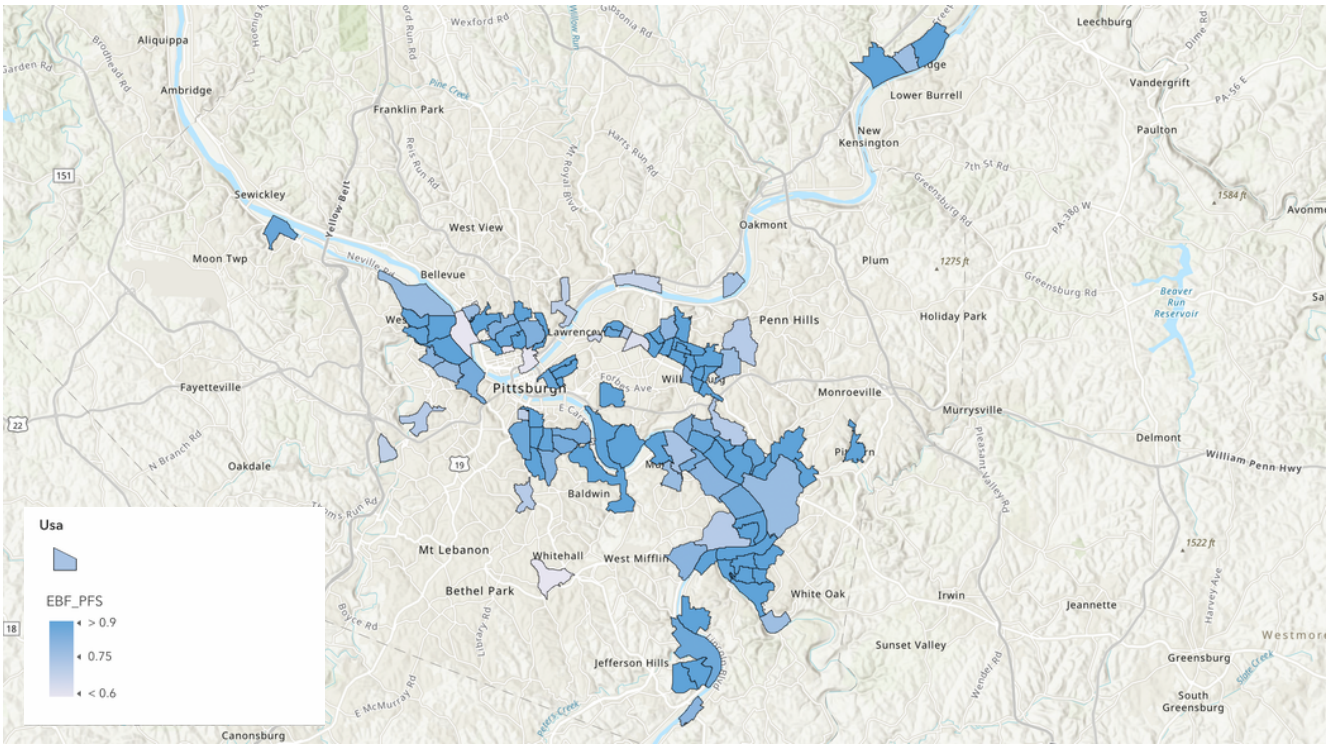
CLIMATE & ECONOMIC JUSTICE SCREENING TOOL ANALYSIS

Pittsburgh

In Pittsburgh, the team mapped the energy burden and transportation burden to understand which census tracts are disadvantaged and can benefit from J40.

ENERGY BURDEN

Figure 3. This map shows the energy burden percentiles in census tracts that meet the low-income criteria. A majority of the low-income areas mapped below also have high energy burdens.

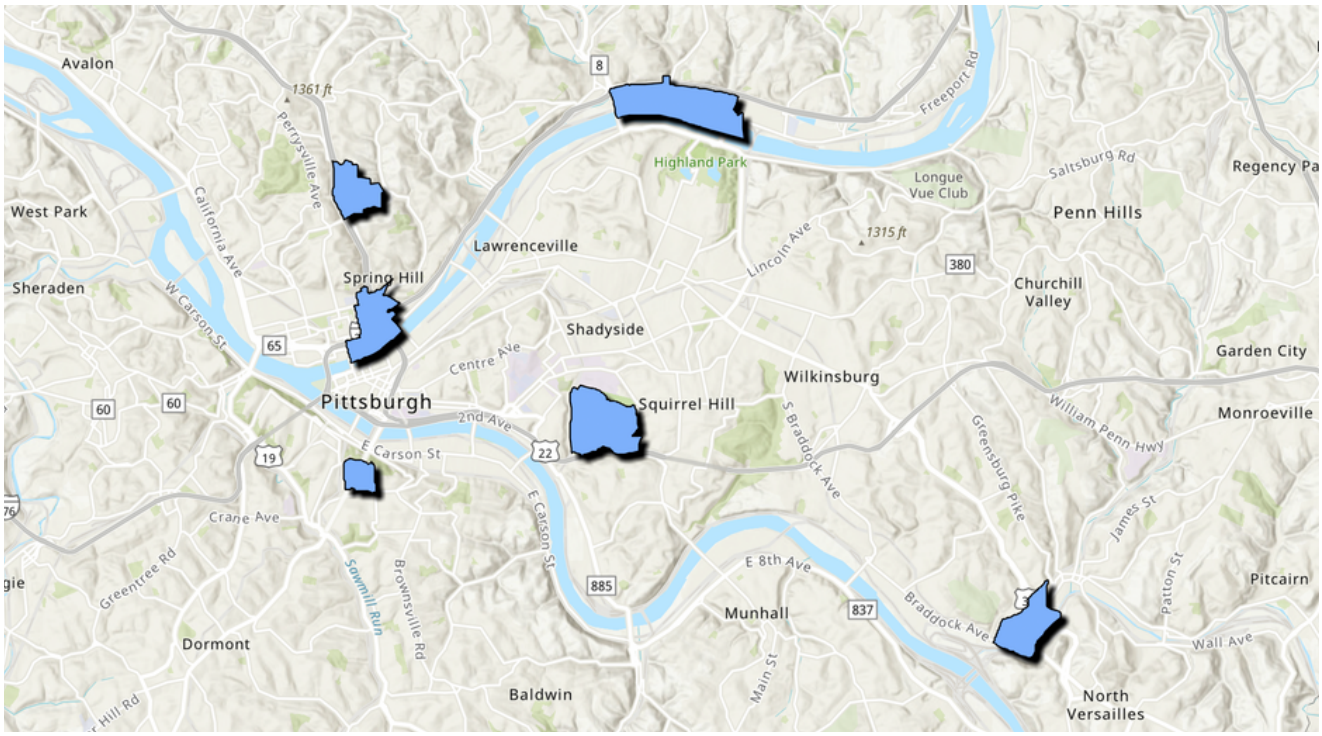


As seen in Figure 3, many of Pittsburgh's low-income census tracts also experience an energy burden. 53 out of 402 (13.18%) census tracts in Pittsburgh, based on Allegheny County data, are considered disadvantaged in energy burden. PGH's CAP acknowledges the importance of addressing the energy burden within Pittsburgh and has specific goals to mitigate high energy burdens in vulnerable communities while also aiming to significantly lower the energy demand and usage in governmental, residential, and commercial buildings. PGH can target energy cost reduction and programs for these specific low-income census tracts.

CLIMATE & ECONOMIC JUSTICE SCREENING TOOL ANALYSIS

TRANSPORTATION BURDEN

Figure 4. This map shows the census tracts that meet the threshold for low-income and meet one of the three criteria for transportation burdens. Out of all the census tracts that are considered low-income, only 6 are identified as experiencing a transportation burden.



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CLIMATE & ECONOMIC JUSTICE SCREENING TOOL ANALYSIS

San Francisco

In San Francisco, the team mapped energy, transportation, and housing burden to understand which census tracts are disadvantaged and can benefit from J40.

ENERGY BURDEN

Figure 5. This map shows the energy burden percentiles in census tracts that meet the low-income criteria. There are no census tracts in San Francisco that are low-income and have an energy burden higher than the 90th percentile.

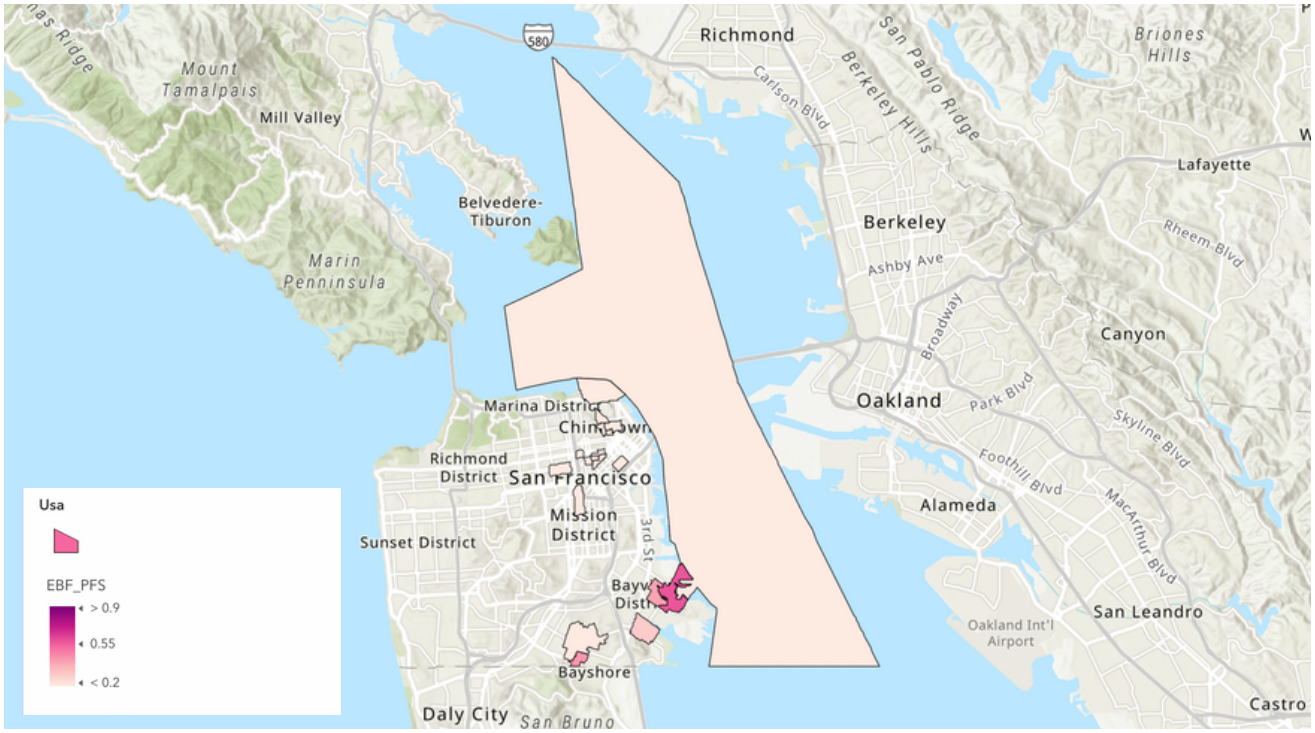
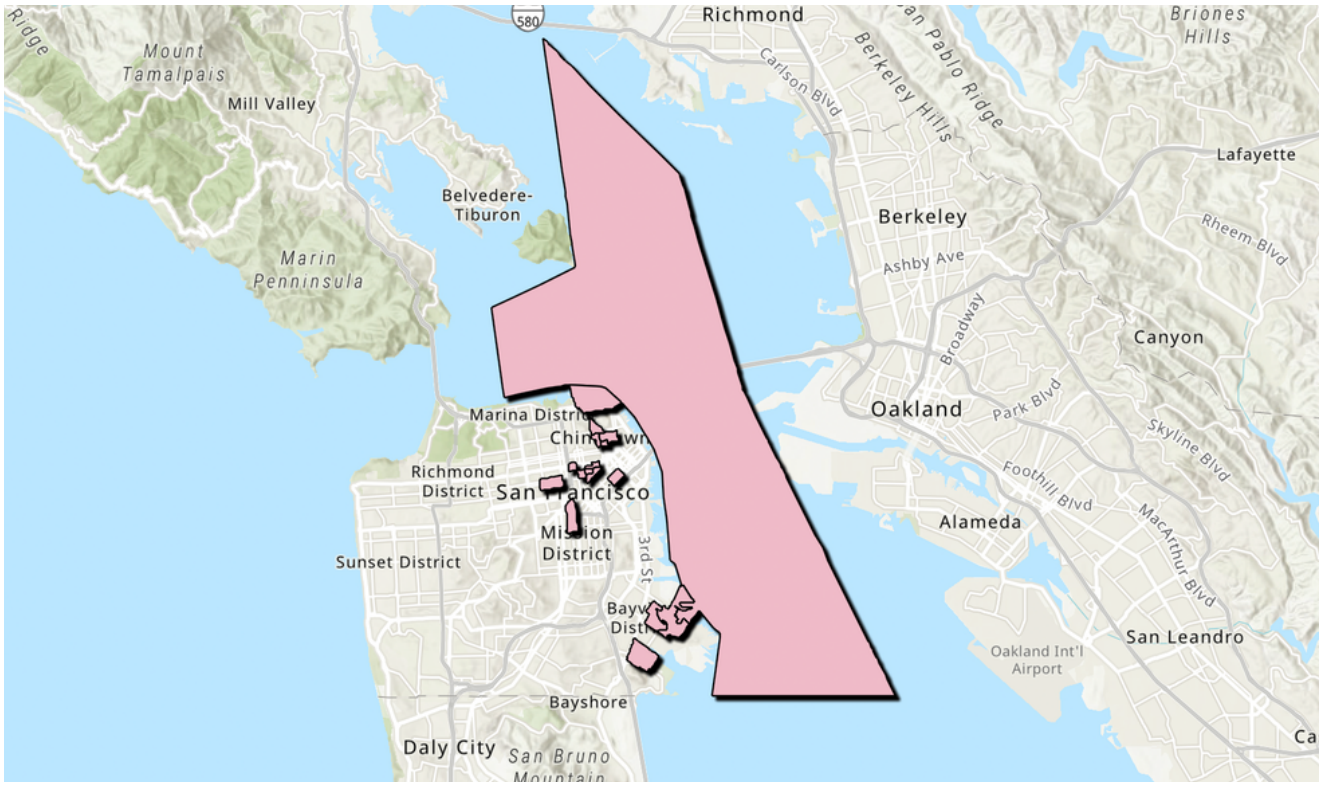


Figure 5 shows that while some energy burden is experienced by certain census tracts in San Francisco, there are no census tracts, regardless of income status, that meet the 90th percentile criteria to be defined as disadvantaged by the CEJST. Zero out of 197 (0%) census tracts in San Francisco, based on San Francisco County data, are categorized as disadvantaged by energy burden. The SF CAP reflects that energy burden is not their main priority within the energy sector, as the strategies focus on transitioning to clean energy as opposed to energy costs. Creating a clean grid system and investing in renewable energy are the main energy goals presented in the CAP, which follows the analysis that energy burdens are not high in the city. SF will not be able to utilize IRA funding for energy burden in the same way that other cities will.

CLIMATE & ECONOMIC JUSTICE SCREENING TOOL ANALYSIS

HOUSING BURDEN

Figure 6. This map displays census tracts that meet the criteria for both low-income and housing burden. There are 19 census tracts in San Francisco that are considered low-income, and 11 of those tracts experience a housing burden.



Many communities in San Francisco are disadvantaged by housing burdens, as shown in Figure 6. Eleven out of 197 (5.58%) census tracts experience a housing burden in SF, and these tracts have a large overlap with the transportation burden maps. The SF CAP presents multiple strategies to address this high housing burden and focuses mainly on expanding the amount of housing available. SF has CAP goals to increase the production of low-income housing, develop housing in lower-density neighborhoods, and focus on housing for vulnerable populations. The high housing burden is a strong focus in SF's CAP, and the strategies geared towards vulnerable populations can use funding from the IRA to further their progress.

CLIMATE & ECONOMIC JUSTICE SCREENING TOOL ANALYSIS

TRANSPORTATION BURDEN

Figure 7. This map shows the census tracts that meet the threshold for low-income and meet one of the three criteria for transportation burdens. Out of the 19 low-income census tracts in San Francisco, 17 of them meet the threshold for one of three criteria of transportation burden.

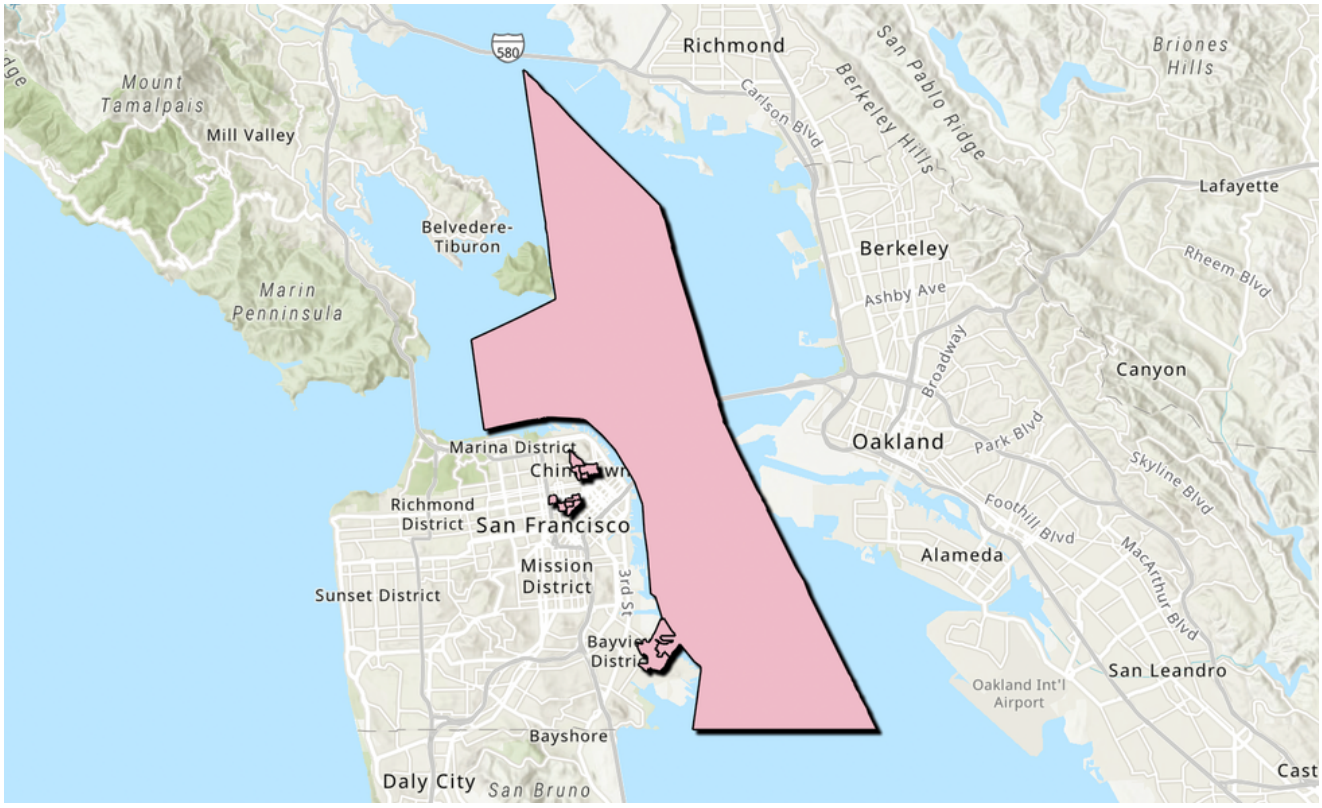


Figure 7 shows census tracts that meet the criteria of low income and burdened by transportation. 17 out of 197 (8.62%) census tracts in San Francisco are considered disadvantaged in transportation burden as defined by CEJST. The SF CAP focuses on increasing the use of public transportation and reducing emissions and pollution related to transportation. Both of these goals target all three criteria of transportation burdens by decreasing the amount of traffic through encouraging commuters to bike or use public transportation. This would decrease the number of cars on the road and decrease the emissions of the remaining cars by accelerating the adoption of EVs.

CLIMATE & ECONOMIC JUSTICE SCREENING TOOL ANALYSIS

COMPARATIVE ANALYSIS

ENERGY BURDEN
Energy burden is a large issue in both New Orleans and Pittsburgh, while San Francisco has no census tracts that are disadvantaged by energy burden. New Orleans has the highest number of census tracts disadvantaged by energy burden, and this is reflected in the aggressiveness of energy cost goals in NOLA's CAP. While all three cities emphasize the energy sector in their CAPs, NOLA and PGH's goals focus more on reducing energy costs and increasing local energy, and SF's goals target a reduction in non-renewable energy and clean energy investment. This is due to the differences in communities affected by energy burden as seen in the maps, and PGH and NOLA can utilize IRA programs designated for disadvantaged communities.

HOUSING BURDEN
San Francisco is the only city where we analyzed housing burdens, due to the emphasis on the building sector in SF's CAP. Because we did not examine housing burdens in the other cities, we cannot compare these maps across the case studies. However, we chose to still include it in this report, as it is important to San Francisco and provides interesting insight into the rationale for the strategies that target housing within the SF CAP.

TRANSPORTATION BURDEN
Transportation is an issue in all three cities and in particular New Orleans, where nearly 50% of all census tracts are categorized as disadvantaged by transportation burden. San Francisco and Pittsburgh experience transportation burdens at a lower rate compared to New Orleans, but there are still significant census tracts that are disadvantaged. All three cities heavily emphasize transportation in their CAPs, which reflects the need to address transportation issues in the CEJST maps. The cities can focus on these census tracts when applying for grants targeting low-income communities.

SUMMARY

The CEJST has the potential to identify disadvantaged communities that will benefit from federal funding through J40, which will help cities focus on these communities in the implementation of their CAPs. However, there are some gaps and missing components of the tool that need to be considered when cities use it. Some of the data used in the CJEST are nearly a decade old, such as the diesel particulate matter data that is taken from the National Air Toxics Assessment from 2014, and newer and consistently updated data are required to increase the utility of the tool. The data need to be updated every two to three years for cities to truly understand the changing dynamics of disadvantaged communities and to ensure that the federal funding due to J40 is reaching its intended communities. Other federal and state screening tools, such as the Environmental Protection Agency's (EPA) EJScreen, Department of Energy's Energy Justice Mapping Tool, or Department of Transportation's Transportation Disadvantaged Census Tracts, may help fill the gap created by the lack of current data.

Cities can also use the CEJST to identify census tracts that are most burdened by specific environmental factors, such as climate, transportation, and pollution. With this information, cities can apply for IRA provisions that target both disadvantaged communities and the specific environmental burden(s) those communities face. Many of the provisions in the IRA are only available to underserved and low-income communities, and the disadvantaged census tracts identified in the CEJST would qualify and benefit. In addition, several IRA provisions require cities to contribute a share towards the grants, but underserved cities may qualify to receive a 100% federal share grant. The CEJST allows cities to determine whether they qualify for these exceptions. Cities need to prioritize disadvantaged communities when addressing their CAP goals, and they can successfully identify these communities through CEJST and other climate justice tools to take advantage of IRA funding.

RECOMMENDATIONS

The team utilized the research completed in the three different stages of this project to create recommendations for both city governments on how to take advantage of the IRA funding opportunities and for C40 Cities on how they can assist cities in maximizing the amount of funding that they receive. The identification of overarching goals that are common in most cities from the CAPs and funding opportunities that can be used to fulfill them informed our choices for recommendations. The team also used the insight provided by our conversations with city officials to determine the concerns that city governments have regarding their ability to receive funding, and we provided recommendations to C40 Cities for how they can offer further support to municipalities. These recommendations are a reflection of the research the team conducted throughout this project.

RECOMMENDATIONS FOR CITIES

The team identified several grants and tax credits provided by the IRA that all U.S. cities can apply to. We recommend municipalities prioritize the grants below, as they have broad funding opportunities that can help reduce emissions across transportation, energy, and building sectors in the United States. Moreover, there are novel credits with direct pay eligibility for local governments and municipalities to fund new assets in clean energy and clean vehicle projects. Direct pay allows a tax-exempt organization, such as state, local, and tribal governments, to receive an elective cash payment from the Internal Revenue Service for the value of the tax credit. [41,42] Thus, local governments will pay the upfront cost of investments and can then receive up to the full value of their investment back for eligible projects. This new mechanism for non-tax paying entities provides great incentive for cities to make much-needed investments that work to achieve their climate action goals. This is especially valuable for cities with larger budgets that are able to pay for large upfront costs. For cities with greater financial constraints, it is critical that they find additional means to augment their green financing capacity, which our team outlines in some of our recommendations below.

Recommended Grants and Tax Credits:

- **Assistance for Latest and Zero Building Energy Code Adoption:** This program funds technical assistance to state and local governments in "adopting, implementing, and enforcing the latest model, zero energy codes, or equivalent codes and standards, improving residential and commercial new construction and retrofits, and transitioning the building stock to more efficient, decarbonized buildings for all." [31] This grant has $1 billion, and grant recipients must create an implementation plan communicating compliance approach, capacity building for implementation, and active workforce training programs.[31] For cities that plan to leverage building and energy code updates to reduce their GHG emissions in the energy and buildings sectors, this program can help realize such strategies by codifying strong, enforceable measures to achieve these emissions reductions.

- **Clean Heavy-Duty Vehicles:** This competitive grant program provides funding to offset the costs for replacing heavy-duty vehicles with ZEVs, as well as related infrastructure and workforce development. Of the $1 billion available, $400 million is allocated specifically to areas that do not meet air quality standards.[32] Heavy-duty vehicles comprise roughly a quarter of transport-based carbon emissions in the United States and are the largest mobile source of particulate matter, carbon monoxide, and nitrogen oxides.[43] With up to 100% of costs covered for eligible entities, cities with priorities in reducing emissions in the transportation sector could utilize this funding to make great strides in improving air quality and electrifying their transit.[32]

- **Climate Pollution Reduction Grant:** This grant provides funding for projects that are directly related to the development, updating, or evaluation of state, local, tribal, or territorial plans to reduce climate pollution, such as reducing GHG emissions or enhancing carbon sinks. It also provides flexible support to the climate planning and implementation process. This grant has $5 billion with a two-staged grant program of $250 million for non-competitive planning grants and $4.6 billion for competitive implementation grants.[44] Under this program, cities would need to submit a CAP (or a revision of an existing one) with ambitious goals for decarbonization and an understanding of their GHG emissions. For cities without established CAPs, this program not only provides substantial funding to initiate their planning, but also maintains "recipients' flexibility to pursue activities tailored to their unique resources, delivery capacity, and mix of key sectors responsible for emitting and absorbing GHGs."[45]

RECOMMENDATIONS

- **Diesel Emissions Reductions:** This program funds the identification and reduction of diesel emissions that result from goods movement facilities in low-income and underserved communities. Provided through grants, rebates, and loans, this $60 million funding can benefit local governments with jurisdiction over their transportation or air quality. Using tools such as the CEJST, cities that have disadvantaged communities with transportation burden would be more likely to receive this funding and could leverage it to reduce the health impacts of air pollution on these communities.[46] This opportunity is particularly useful for cities that have high levels of diesel emissions and have CAP goals to reduce these emissions in low-income communities.

- **Environmental and Climate Justice Block Grants:** This grant provides $3 billion for community-led projects covering a range of eligible activities, from pollution monitoring and prevention, to mitigating health risks from climate events like heat and wildfires, to climate resilience and adaptation, to increasing community engagement in public processes like rulemakings. If city governments would like to receive this funding, they must apply for these grants with CBOs.[47] This program could act as a powerful force-multiplier for disadvantaged communities, with resources that can be used to leverage public funds for reducing pollution and driving sustainable development. This program is especially important in that it will help build community capacity in local contexts. For cities to maximize their CAP goals, they should partner with CBOs to leverage funding opportunities such as this.

- **Funding to Address Air Pollution (Clean Air Act Grants):** This program extends funding to the EPA's research, development, planning, and grants program under the Clean Air Act.[48] This grant contains $25 million for partnerships with the EPA that establish programs "that address air quality, transportation, indoor air, and climate change."[36] For city governments, such as PGH, that would benefit from enhanced air quality monitoring programs, this funding can close gaps on efforts to monitor, research, and better understand the impacts and scope of air pollution in their city. Environmental data such as PM2.5, methane, and GHG emissions are essential for creating baselines, targets, and goals for cities to stay up to date on priorities in their CAPs.

- **Greenhouse Gas Reduction Fund:** This fund mobilizes financing for clean energy and climate projects that reduce greenhouse gas emissions or the development of zero-emission technologies, emphasizing projects in low-income and disadvantaged communities. This grant has $27 billion with $7 billion in financial and technical assistance allocated for zero-emission technologies for low-income and disadvantaged communities and $8 billion in financial and technical assistance for projects that reduce air pollution for low-income and disadvantaged communities.[49] Using tools such as the CEJST, cities that have disadvantaged communities with energy and transportation burdens would be more likely to receive this funding and could make meaningful investments in improving equity and reducing GHG emissions.

- **Neighborhood Access and Equity Grants Program:** This program provides funding for projects to improve walkability, safety, and affordable transportation access and focuses on planning and capacity-building activities in disadvantaged or underserved communities. Projects that help to mitigate or remediate negative impacts on the human or natural environment resulting from a facility in a disadvantaged or underserved community also qualify for this grant program. This is a $3 billion grant spread out over 5 years, with $50 million designated to technical assistance.[29] There is an 80% federal cost share threshold, with an exception for projects in disadvantaged communities.[29] This program is advantageous for city governments due to emphasis on funding "context-sensitive projects" and providing additional means of support such as templates, trainings, tools for contracting, design assistance, and project delivery, and subgrants specifically for local governments to build implementation capacity.[29]

- **Urban and Community Forestry Assistance Program:** This program works to augment programs for tree planting and other related activities. Eligible to local governments, this grant contains $1.5 billion and requires a 50% cost share with the federal government.[35] For cities with larger budgets that are able to provide the remaining 50% share, such as San Francisco, this grant can greatly amplify the deployment of nature-based solutions to achieve GHG emissions reductions.[35] Cities that have established goals to increase tree coverage in their CAP, such as San Francisco, can utilize this grant to reduce the cost of achieving these goals.

RECOMMENDATIONS

- **Advanced Energy Project Credit:** This tax credit provides a credit for investments in advanced energy projects. Advanced projects can include property for renewable energy, vehicle production, and recycling, equipment for manufacturing or industrial facilities that reduce GHG emissions by at least 20%, and industrial facilities that process, refine, or recycle critical minerals. The base credit amount is 6% of the qualified investment.[50] This credit program offers direct pay eligibility for tax-exempt entities, such as local governments. Utilizing this tax credit could enable cities to greatly expand out or re-equip existing clean energy projects for their municipality. As our team determined through our case study analysis, the energy sector is a large priority for cities with great emissions reduction potential. Thus, fiscal incentives such as this are important for cities to utilize to deliver on net-zero goals.[50]

- **Alternative Fuel Vehicle Refueling Property Credit:** This tax credit provides a credit for alternative fuel vehicle refueling and charging property in low-income and rural areas. Eligible alternative fuels include electricity, ethanol, natural gas, hydrogen, or biodiesel. The credit is equal to 30% of the cost of such infrastructure and non-tax paying entities, such as local governments, can receive this credit.[34] For cities like New Orleans that lack adequate public transportation for residents, this credit can help expand the low-carbon vehicle infrastructure that will reduce transportation burdens for disadvantaged communities, while also advancing the reduction of a city's overall GHG emissions.[34]

- **Clean Fuel Production Credit:** This tax credit encourages the domestic production of clean transportation fuels. The base credit amount is $0.20/gallon for non-aviation fuel and $0.35/gallon for aviation fuel, multiplied by the carbon dioxide "emissions factor" of the fuel.[51] This credit program offers direct pay eligibility for tax-exempt entities, such as local governments. This credit can encourage cities to bolster their clean energy economy and climate workforce by contributing to clean fuel production in the United States. Particularly, cities with climate action goals centered around increasing workforce development for the production of cleaner energy and fuel sources can utilize this provision to fund the transition from traditional sources to cleaner ones.

- **Clean Electricity Investment Tax Credit:** This tax credit provides a credit for investment in facilities generating clean electricity. The base credit amount is 6% of the qualified investment, and bigger deductions are likely in the earlier years of the investment. This credit program offers direct pay eligibility for tax-exempt entities. In combination with the Clean Electricity Production Tax Credit, these two programs provide notable investment in clean electricity production and GHG emissions reductions for cities needing to clean their grid.[52] This tax credit is particularly useful for cities to meet energy goals that focus specifically on increasing clean energy capacities, such as increasing solar installation, decarbonizing the electric grid, and supporting local renewable production.

- **Clean Electricity Production Tax Credit:** This tax credit provides facilities that generate clean electricity a base credit of 0.3 cents/kW produced, adjusted with inflation.[53] The credit program offers direct pay eligibility for tax-exempt entities.[54] Cities with existing renewable electricity production would be able to receive financial returns, and this credit additionally incentivizes cities to invest in new clean electricity generation infrastructure. This tax credit acts as a direct payment for every kilowatt of clean electricity generated and is an incentive for cities to ramp up renewable energy production and target CAP goals to increase local clean electricity.

- **Commercial Clean Vehicles Credit:** This tax credit provides a credit to purchasers of clean vehicles for use. Eligible purchasers include tax-exempt organizations. For vehicles less than 14,000 lbs, the credit is up to $7,500, and for all other vehicles the credit is up to $40,000. For cities seeking to convert their municipal vehicle fleet to ZEVs, this credit could provide helpful financing to achieve such goals.[55] By allowing cities to transition their fleets to ZEVs rather than traditional fuels, this provision will aid local governments in their goals to reduce on road emissions and increase the number of clean vehicles on the road.

RECOMMENDATIONS

In addition to prioritizing these grants and tax credits, we recommend that cities do the following:

Partner with Nonprofits and the Private Sector: Many IRA provisions are available for local CBOs, and cities can leverage additional funding by partnering with these organizations, especially in disadvantaged communities. The Environmental and Climate Justice Block Grants program is one example of an IRA provision that applies directly to CBOs. This program will support community-led projects that advance environmental justice.[28] By forming proactive partnerships with CBOs and designing projects that address CAP goals focused on equity and pollution reduction, cities can operationalize these additional IRA funding opportunities and achieve greater success in meeting their climate action goals. To fill funding and knowledge gaps, cities can leverage PPPs for new climate-related projects. Collaboration between cities and businesses "can boost the growth of green jobs, develop skills, and accelerate the transition to a low-carbon economy while generating municipal revenue."[56] C40 Cities' business and innovation programs can provide technical assistance to facilitate this collaboration between city governments and the private sector to form PPPs geared toward climate action. These C40 programs and initiatives include the City-Business Climate Alliance (CBCA), the City Solutions Platform (CSP), and the New Economies & Innovation Forum (NEIF).[56] The CBCA is a joint initiative between C40 Cities, the World Bank Council for Sustainable Development, and CDP and supports cohorts of cities to build PPPs and ensure their long term self-sustainment.[57] The CSP is a partnership between CLEAN and C40 Cities that assists in the pre-procurement engagement with climate solution providers "to drive a common understanding of a specific city climate challenge and subsequently co-create innovative, scalable, and tangible solutions."[32] Lastly, the NEIF brings together city officials from around the world to foster experimentation on innovative ways for cities to address climate risks and emissions even outside the direct control of the city government.[58] Through collaboration with these existing and new partnerships, nonprofit organizations and businesses can optimize cities' capacity to deliver on climate action and reach their CAP goals.

Educate Local Citizens: The majority of the IRA provisions are individual and business tax credits, and cities should indirectly leverage this funding to achieve their CAP goals by raising awareness of and assisting in applying to these incentives. Cities can help educate residents on upcoming IRA tax credits that people may be eligible for by providing webinars and training on eligibility requirements and how to apply. Cities should use their communications outlets, highlighting the IRA and upcoming deadlines for receiving tax credits on their respective social channels, newsletters, and notification centers. It would be advisable that cities collaborate with local publications and co-create educational campaigns to further amplify outreach and awareness building. In this way, cities can further progress on their CAP goals by taking advantage of the additional funding mechanisms of the IRA and meaningfully reduce costs for its residents.

Expand Data Collection: Throughout our research and communications with city officials, we discovered that many cities still lack relevant climate-related data and methods to obtain this information. Having current and accurate data on GHG emissions, air quality, and other environmental metrics is required to apply for certain IRA provisions and meet CAP goals. However, not all cities currently have the capacity, resources, or structure to gather this data. To prepare accordingly, cities should track and quantify several environmental datasets or seek assistance from partners. The IRA provides multiple funding opportunities to improve data collection and monitoring of environmental data, but these initiatives are mainly targeted at federal agencies, such as the EPA.[59] However, there are a few opportunities that are available to local governments such as cities. For example, under the general program Funding to Address Air Pollution, there are four different grants that are available to local agencies to improve the monitoring of factors that contribute to air pollution.[59] Cities should investigate these types of opportunities to improve their data collection and monitoring to aid in identifying environmental issues in the city and apply for future funding opportunities to address these problems. If there are no available IRA provisions that provide support for the type of data collection a city requires, the cities should still place a focus on developing further monitoring. The availability of recent, accurate data plays a crucial role in the creation of climate action plans and applications for federal funding sources, and, therefore, it is imperative that cities have access to this data to achieve their climate goals.

RECOMMENDATIONS

Create Green Banks: Finding innovative ways to fund green investments is key to climate adaptation technologies and strategies. In a survey of fifty-three C40 member cities published by CDP, only 6% of city climate projects were fully funded, with the other 94% having partial funding and still requiring additional capital.[60] Most cities, based on a survey of C40 member cities, rely on municipal revenue streams and national governments for a significant source of green finance. Despite increasing climate commitments and action from the private sector, cities still struggle accessing private capital and leveraging public-private funding models.[60] The creation of green banks in cities can help deploy private equity in clean energy and other green investments. Green banks have the potential to promote job creation, fund affordable energy upgrades, and reduce emissions by helping cities meet their climate agendas.[61] Green banks are an attractive tool for city governments, as they "spearhead green investments to demonstrate the market-viability of these transactions with the goal of multiplying their impacts by attracting private capital participation."[62] For cities looking to establish a green bank, new legislation may be required to authorize the allocation of these public funds by a new entity in green investment. Additional considerations for cities when developing a green bank are: its governance structure, the mechanism of initial capitalization that will be used, which markets to target and if that aligns with the city's wider objectives, the financial products that will be offered, how it will approach self-sustainability of the bank, and how it will measure impact. While green banks are complex institutions whose establishment depends heavily on the political buy-in of the municipality, they can be well-positioned to help address the CAP goals of a city with fiscal support.[62]

Prepare Capital Budgets: Cities should create multi-year capital improvement plans to assess their fiscal capacity to be best prepared for the process of applying for IRA federal funding, as many grants require cities to match a portion of the funding. Understanding the capacity of the city to match these funding opportunities will give municipalities a better understanding on the amount of grant funding a city can realistically apply for. While certain provisions do not require matching and some disadvantaged communities are exempt from the fund matching requirement under specific provisions, cities will still need to be aware of the level of funding they are able to match when developing grant applications. Estimating future revenues, expenditures, and funds available will also encourage municipalities to consider funding requirements for climate projects and determine how the IRA can fill any funding gaps. Capital planning can help cities operate more efficiently and lower transaction costs, while informing cities of where and when the largest funding gaps are in their municipal budget.

RECOMMENDATIONS FOR C40 CITIES

C40 Cities is an influential network that is in a unique position to serve as a vital resource for cities looking to apply for IRA funding. In developing this project, our client wanted to examine a potential methodology that could be used to strategically identify federal funding opportunities for cities to accelerate urban climate action. As C40 Cities continues to consider the most feasible balance between the depth and scale of their support to cities, we provide a few recommended actions below that would largely benefit all U.S. C40 and non-C40 member cities to enhance their capacity and strategy in approaching IRA funding.

C40 IRA Knowledge Hub and Capacity Building
One of the main concerns for cities that the team identified in this project is the capacity to apply for the federal funding opportunities from the IRA with the limited staff and resources available to municipal governments. Additionally, there are some types of funding opportunities, such as tax credits, that have not been previously available for cities to utilize, and cities may not understand what is needed to access and acquire these new funding streams. C40 can address this concern for its partner cities in the United States by creating a streamlined IRA knowledge hub as a key resource for cities during the application process. Each IRA provision has specific entity and eligibility requirements that can be difficult to determine, and the application process itself can require technical expertise and data that cities do not possess. This knowledge hub will serve as a primary source of information for cities to understand each IRA funding source as it is rolled out by the federal government and provide specific information on how to best utilize and apply for it.

RECOMMENDATIONS

C40 Cities has already established and maintains an online resource center for cities that provides materials regarding the creation, implementation, and marketing of CAPs for municipal governments.[63] C40 Cities can mirror this existing resource with an additional online resource that focuses on providing information to cities on the available funding opportunities from the IRA, who is eligible for each of these provisions, and the application process for receiving the identified funds. As part of the knowledge hub, C40 Cities can create and update a calendar with important timelines and deadlines for different IRA programs. IRA provisions are being released sporadically, and it may be difficult for cities to track when the application process opens and when submissions are due. Thus, cities can benefit from a centralized calendar with crucial timeline information. This C40 resource will allow cities to concentrate their limited staff and resources on the most time-sensitive and impactful IRA programs, and aggregating all relevant resources and information into one platform will save cities from focusing on provisions that are not yet available or ill-suited.

C40 Cities can also provide specialized trainings and webinars through this knowledge hub on how cities can write successful grant applications for IRA provisions and educate city officials across the United States on important considerations to maximize the impact of federal funds.[64] As many of these opportunities will be competitive due to the large number of eligible applicants, providing cities with resources to aid in the grant writing process will maximize the success rate for their applications. Again, this is crucial due to the lack of staff currently available for developing grant proposals in municipal governments. Since the cities will not be able to apply for every opportunity due to limited resources, the proposals that are completed need to be of the highest quality to provide the most benefit to the cities. The ability to access training materials and workshops provided by C40 Cities will allow cities to produce high quality applications that increase the likelihood of approval.

C40 Communications Assistance

In addition to creating a centralized knowledge hub, C40 Cities can leverage its extensive network and resources to support cities in their outreach and educational campaigns. By creating fact-sheets, campaign materials, and generalized communications toolkits, C40 can assist cities who are staff deficient in conducting outreach to local citizens, ensuring that individuals and businesses are fully aware of incentives available to them. Drawing from the existing Climate Action Planning Communications Toolkit, C40 Cities can develop a new guidebook on how cities can communicate with its residents, other cities, and within itself to maximize support for their plans to utilize IRA funding opportunities.[65] Whether C40 Cities chooses to incorporate an updated IRA portion to the existing guidebook or develop a separate document specific to IRA provisions, the creation of a guide for cities on how to receive support from their community in the process of applying for and utilizing IRA funding can make the process of tackling climate action easier for local governments.

CONCLUSION

The IRA has provided more funding opportunities for climate action in the United States than has ever been available in U.S. history. With this unprecedented influx of available grants, rebates, and tax credits, municipal governments are in need of guidance on approaching the process of receiving funding and identifying applicable opportunities to target their respective goals. This report examined three case study cities to determine the type of assistance that local governments require to achieve the goals established through their CAPs and the IRA provisions that would contribute to the successful completion of these goals. Each city evaluated throughout this project has taken its own approach to address the unique climate change threats they face, but all three cities have similar goals that appear in their CAPs, illustrating a pattern of universal objectives cities share in regards to reaching their net-zero targets. These general goals include improving transportation systems, transitioning to renewable energy, and increasing energy efficiency. From matching these goals to IRA provisions and incorporating additional opportunities targeted at addressing inequities, our team developed recommendations for both cities tackling climate action and C40 Cities itself. Our recommendations include grants and tax credits that are applicable to most cities based on these case studies, but we also include suggestions to the specific cities examined on how to achieve their climate goals through IRA funding opportunities. Beyond the recommended funding opportunities, this report also includes recommendations on preparations cities can make to streamline the application process, such as improving data monitoring and additional financial planning. The recommendations provided to C40 Cities focus on ways the organization can create educational materials to the cities to further prepare them for the grant application process. All of these recommendations aim to maximize the progress of climate action in cities across the United States by utilizing the unique opportunity the IRA has provided.

While our recommendations provide some insight for cities on approaching IRA funding, the support from organizations like C40 Cities to guide local agencies on utilizing the IRA will be crucial for maximizing the amount of climate action that can take place in the next decade. The IRA is a landmark investment, with the potential to make significant progress in climate action across multiple levels of government, but it is also a complex piece of legislation with an unprecedented amount of funding provisions. With the right guidance in applying for the numerous programs, cities can leverage this unique opportunity to meet their climate goals and tackle the climate crisis.

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