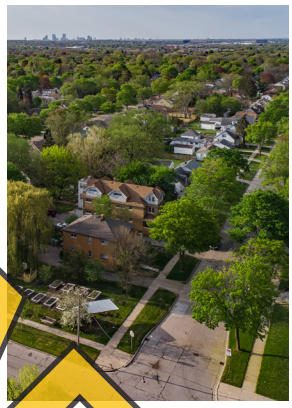
CITY OF MILWAUKEE

CLIMATE & EQUITY PLAN

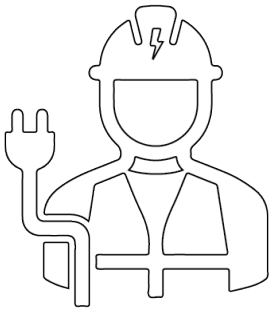
10 Big Ideas To Reduce Greenhouse Gas Pollution, Increase Racial Equity, And Make Milwaukee A Prosperous City For The Long Term

OCTOBER DRAFT



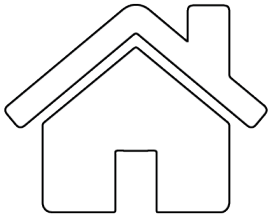
City of Milwaukee

THE TEN BIG IDEAS

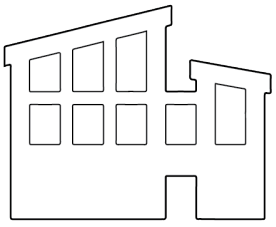


1 GREEN JOBS ACCELERATOR

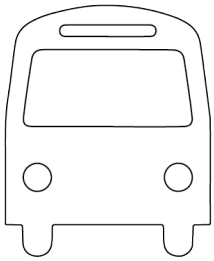
2 HEALTHY HOME ENERGY UPGRADES



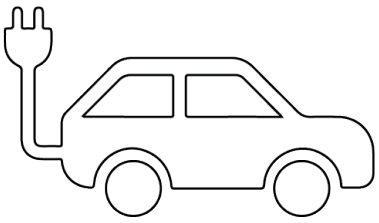
3 NEW NET-ZERO ENERGY HOMES



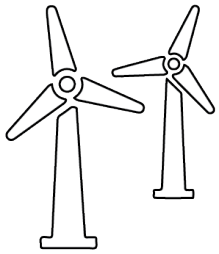
4 COMMERCIAL BUILDING ENERGY BENCHMARKING + BUILDING PERFORMANCE STANDARDS



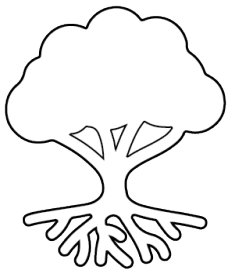
5 PEOPLE CENTERED TRANSPORTATION AND URBAN DESIGN



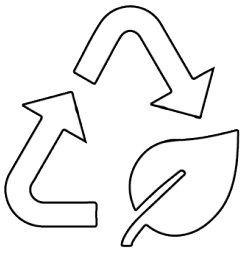
6 ELECTRIFY TRANSPORTATION



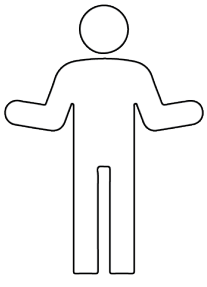
7 GREENING THE ELECTRIC GRID



8 PROTECT AND RESTORE NATURE IN THE CITY



9 FOOD WASTE REDUCTION



10 RESILIENCE AMBASSADORS

MILWAUKEE, AS PART OF PLANET EARTH, FACES GRAVE THREATS FROM CLIMATE CHANGE.

Greenhouse gas emissions from excessive use of fossil fuels are changing the Earth's atmosphere and dangerously warming the planet. In addition, **Milwaukee has pronounced historical racial disparities that could be exacerbated by climate change.** All Milwaukeeans will be affected by climate change, and low-income communities face environmental hazards at a higher rate.

In the face of these threats and challenges, Milwaukee can support a new clean energy economy while creating new opportunities for people of color to more fully and equitably participate in the economic life of Milwaukee.

MILWAUKEE HAS THE OPPORTUNITY TO CHART A COURSE.

△ Photo courtesy of the Urban Ecology Center.

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Reduce community greenhouse gas emissions

45% by 2030

achieve net zero emissions by 2050

Improve racial and economic equity by

creating green jobs that pay

$40,000

focusing recruitment on

people of color

EXECUTIVE SUMMARY

The summer of 2022 may go down in history as the real wake-up call to the climate crisis facing us all. Temperature records were broken worldwide, drought led to dramatic water shortages and reduced food production, wildfires raged and flooding washed communities way. We are witnessing the climate change impacts forecast in study after study that show with clear scientific consensus: the global climate is changing, human activity is the primary contributor, and we must act now.

In the last 5 years alone, reports from the United Nations Intergovernmental Panel on Climate Change (IPCC), the United States Global Change Research Program, the United Nations Framework Convention on Climate Change, the Milwaukee Metropolitan Sewerage District (MMSD), and countless other reputable entities have all contributed key findings that the planet's climate is drastically changing due primarily to human activity. The impacts of the changing climate are felt in Milwaukee through extreme storms and flooding, heat waves and urban heat islands, health risks, food supply disruptions, loss of biodiversity, and more.

Racial and Environmental Justice

Milwaukee is blessed to be Wisconsin's most racially diverse community. The City's diversity is a source of strength and drives community, creativity, and action. Yet, Milwaukee has unacceptable racial disparities in every economic category including employment, incomes, home ownership, and energy burden. Deindustrialization, outsourcing, inequitable recruitment and hiring practices, and numerous other effects of structural racism have resulted in economic conditions similar to those seen during the Great Depression for minorities and disadvantaged communities in Milwaukee. As recently as 2019, the University of Wisconsin – Milwaukee researchers found that in the 53206 ZIP code, only approximately 50% of working- age adults were employed, more than one-fifth of employed residents had incomes below the federal poverty level, and the area had an overall poverty level of 42%. Milwaukee is an older industrial city that is working to recover from historical practices that left a range of environmental problems, including old homes with poor insulation, lead paint and lead pipes; polluted soil; and other challenges.

Following industrial disinvestment of the 1970s and 1980s, many Milwaukee neighborhoods of color now contend with concentrated poverty. With not enough family supporting jobs, many neighborhoods lack the financial resources to repair, maintain, and environmentally improve their homes. The City of Milwaukee's own financial constraints also make widespread environmental restoration difficult without support from State, Federal, and other partners. Climate change will worsen these inequities and disproportionately impact underserved communities. Environmental justice means that the City and its collaborative partners work to create jobs and improve the environment for residents that have been historically left behind.

Important Federal Investments

The good news is that the climate emergency wake-up call is being answered in the form of the biggest investments to fight climate change in U.S. history. The Infrastructure Investment and Jobs Act and the Inflation Reduction Act begin to provide the resources needed to transition the U.S. energy and transportation sectors to run on clean, renewable energy sources, and to enhance our natural environments to better capture Greenhouse Gas (GHG) emissions. To make these transitions a reality across the U.S., millions more jobs will need to be created. This means that mobilizing to solve the climate crisis can also work to help resolve the inequity crisis experienced in Milwaukee and nationwide, if these investments

are made equitably and intentionally. Therefore, implementation of the City of Milwaukee Climate and Equity Plan is coming at an opportune time.

Integrating The Comprehensive Plan

This plan is being adopted as an amendment to the City's Comprehensive Plan, which serves as the cornerstone for all local land use decisions and provides a framework for policy decisions. The integration of the Climate and Equity Plan adds legitimacy to the content, goals, and actions throughout this document. Many of the implementation items within the 10 Big Ideas are consistent with the overarching goals of the Comprehensive Plan and can be accomplished in conjunction with one another.

City Leadership

This Plan is the latest cumulative effort of the City's diverse work to combat climate change, advance racial equity, and ensure long-term prosperity - work that has made Milwaukee a leading city in Wisconsin on climate policy.

A central leader in the City's climate and equity work has been the City's Environmental Collaboration Office (ECO), formed to develop practical and racially equitable solutions that improve people's lives and the economy while working to protect and restore natural ecosystems. The ECO team has, and continues to, collaborate with the community, develop global partnerships, and manage award-winning programs such as the Me^2 Home Energy Efficiency Program and Milwaukee Shines Solar Program. ECO also implements the City's Refresh Milwaukee sustainability plan, adopted in 2013.

The City of Milwaukee and ECO implemented Wisconsin's first Property Assessed Clean Energy (PACE) financing program for commercial buildings, which has financed $40.4 million in energy efficiency and renewable energy projects since 2013 and has since been replicated in counties across the State. The City has adopted and implemented a Green Infrastructure Plan to use nature-based solutions for stormwater management, and the City is redesigning its streets to reduce reckless driving and support more bike and pedestrian friendly development. The Hop Streetcar also represents new recent investments in electric transportation.

THIS CLIMATE & EQUITY PLAN BUILDS FROM THE REFRESH MILWAUKEE PLAN AND IS INTENDED TO FURTHER ACCELERATE ACTION AND DEFINE CLEAR GHG REDUCTION AND RACIAL EQUITY GOALS.

The Paris Climate Agreement

As of the writing of this Plan, the City of Milwaukee also reaffirmed its intent to adhere to the Paris Agreement, a global plan to counteract climate change and prevent the average global temperature from increasing by 2 degrees Celsius above pre-industrial levels. Milwaukee is part of a national coalition of local governments committed to strong action on climate that collectively represent nearly 70% of US GDP, nearly two-thirds of the U.S. population, and over half of U.S. Greenhouse Gas (GHG) emissions. Within Wisconsin, Milwaukee was a founding member of the Wisconsin Local Government Climate Coalition, which advocates for state policies that are necessary for local governments to achieve their ambitious climate goals. The Climate and Equity Plan goal of reducing GHG emissions 45% from 2018 levels by 2030, and achieving net zero GHG emissions by 2050 follows the target set in the IPCC Special Report published in 2019 to keep global temperature rise to 1.5 degrees Celsius, given the significantly worse climate change impacts anticipated at 2 degrees Celsius of warming versus 1.5 degrees of warming.

THE CITY'S CLIMATE ACTION PROGRESS

2022

City County Task Force on Climate and Economic Equity Recommends 10 Big Ideas for the Climate and Equity Plan.

Port Milwaukee launched the StewardSHIP initiative to reduce greenhouse gas emissions from commercial shipping fleets.

2021

City's Largest Solar Installation at 2.25 Megawatts Completed

City Departments Accelerated Transition to Lower Fuel Vehicles

2020

Comprehensive Energy Plan Developed for Municipal Buildings and Fleet

City-County Task Force on Climate and Economic Equity Created

2019

Solar Installed at 3 City Libraries, Major Energy Efficiency Project Completed at Central Library

City of Milwaukee Green Infrastructure Plan Adopted

2018

We Energies Renewable Energy Pilot Programs Approved

Milwaukee Complete Streets Policy Adopted

2015

Milwaukee Better Buildings Challenge Launched for Commercial Buildings

2013

PACE Financing Program Developed for Commercial Buildings

City Adopts the ReFresh Milwaukee Sustainability Plan

2012

100-Kilowatt Port Milwaukee Wind Turbine Installed

2011

Milwaukee Energy Efficiency program, $Me^{2,}$ is Created

2008

Milwaukee Shines, the City's Solar Program, is Created

City-County Task Force on Climate and Economic Equity (CCTFCEE)

In 2019, the City of Milwaukee and Milwaukee County jointly established the City-County Task force on Climate and Economic Equity (CCTFCEE), sponsored by then Milwaukee County Supervisor, Supreme Moore Omokunde, and then Alderman Ashanti Hamilton (Common Council file #191923). The Task Force issued a Preliminary Report in March 2020. Throughout 2021, the Task Force and its ten diverse working groups met consistently and publicly to develop thorough recommendations for the 10 Big Ideas. These working groups included:

1. Greening the Electric Grid
2. Green Buildings (including commercial buildings, residential retrofits, and net zero new housing as sub-groups)
3. Transportation & Mobility
4. Jobs & Equity
5. Adaptation & Climate Resilience
6. Protect and Restore Nature in the City
7. Waste & Sustainable Consumption
8. Education & Outreach
9. Finance
10. Accountability

These work groups involved many members of the public, including local experts in energy efficiency, transportation, climate resilience, ecosystems, and beyond. The work groups offered many opportunities for stakeholder participation, including regular virtual meetings throughout 2021, video surveys, online surveys, presentations, and events. The CCTFCEE was supported by national experts on climate policy, including the International Council for Local Environmental Initiatives (ICLEI), a recognized partner with local governments to advance sustainability efforts. ICLEI completed a 2018 GHG Emissions Inventories for the City and County of Milwaukee help identify each communities' baseline greenhouse gas emissions. ICLEI also provided

SUMMARY OF THE 10 BIG IDEAS

1	GREEN JOBS ACCELERATOR	Creating clear pathways to increase the number of people of color employed in family-supporting green jobs. This includes public outreach, coordination with existing training providers, clear career ladders from entry-level employment to progressively higher skills, public benefits agreements on government-funded projects, and support for businesses owned by people of color working in this field.
2	HEALTHY HOME ENERGY UPGRADES	Making weatherization and renewable energy retrofits more affordable as part of holistic housing improvements that also address lead-based paint and other health hazards.
3	NEW NET-ZERO ENERGY HOMES	Building healthy, affordable, net-zero energy homes on Milwaukee's scattered vacant lots. The project envisions supporting a new factory in Milwaukee that constructs modular housing components year-round to both reduce the cost of new home construction and restore manufacturing job opportunities for people of color.
4	COMMERCIAL BUILDING ENERGY BENCHMARKING + BUILDING PERFORMANCE STANDARDS	Requiring large commercial building owners to annually track and report on their energy use and develop longer-term building performance standards to gradually reduce GHGs from commercial buildings.
5	PEOPLE CENTERED TRANSPORTATION AND URBAN DESIGN	Helping people drive less by improving and expanding city-wide public and active transportation options and creating thriving communities where people live, work, and play through Transit Oriented Development.
6	ELECTRIFY TRANSPORTATION	Building a network of publicly-accessible EV charging stations, increasing EV adoption rates through public outreach, and transitioning municipal fleets to EVs, hybrids, and other low-emissions vehicles.
7	GREENING THE ELECTRIC GRID	Transitioning the electric grid to carbon-free sources of energy through advocacy for better renewable energy policy with state utility regulators, the direct purchase of renewable energy from new utility-scale projects, and expansion of rooftop solar in the City.
8	PROTECT AND RESTORE NATURE IN THE CITY	Protecting existing natural areas and increasing the amount of green space and trees on private and public property through expansion of the Green Schoolyards program and removal of excess asphalt in commercial parking lots that also contribute to urban heat islands.
9	FOOD WASTE REDUCTION	Reducing food waste and feeding hungry people through public-private partnership called FEED.
10	RESILIENCE AMBASSADORS	Partnering with trusted neighborhood-based organizations to connect underserved communities with available tools and resources to make their homes and neighborhoods more resilient to climate change.

analysis and guidance on common greenhouse gas reduction strategies used in other cities. The combination of national experience plus the local perspectives of Task force members and working group members led to the development of 10 Big Ideas that are the foundation of this Climate and Equity Plan. The CCTFCEE publicly presented their recommendations to the Milwaukee Common Council in March of 2022 and to the Milwaukee County Board in September of 2022. Each of the 10 Big Ideas provide cross-functional benefits that address climate and equity issues. For example, addressing green buildings not only has the potential to reduce GHG emissions from the built environment, but can also lower the energy burden for low-income residents.

The 10 Big Ideas all contribute uniquely to achieving these goals and ensuring Milwaukee will be a resilient home long into the future. The 10 Big Ideas are summarized briefly below, with additional detail and analysis throughout the chapters of this Plan.

The Education and Outreach Work Group

The Education and Outreach work group was established to support "public engagement during the planning process, grow public support for large scale climate action, and effectively convey work group activities to the public." Its actions are informed by the standards of inclusivity and scale. Two measures of success for achieving these goals are contained in the Climate and Equity Plan's charter. These are:

- [An] equitable, diverse, and inclusive planning process, as measured by the quantity and diversity of community feedback received.
- Community-wide recognition and support for the final plan, as measured by solicit[ing] feedback from the community during each stage of plan development.

To see all community engagement results, please see the Appendix.

The Climate Coalition: Community Engagement after the Plan

Community members played an important role in the development of Milwaukee's Climate and Equity Plan and will continue to do so after its adoption by the Common Council.

To continue the work of promoting the Climate and Equity Plan, and to amplify the voices of Milwaukee residents and others who support its adoption, the Education and Outreach Work Group is launching Our Future Milwaukee. This coalition of community organizations and individuals will carry on the work of keeping the public informed about the progress of the Climate and Equity Plan while also advocating for its full and equitable implementation.

Our Future Milwaukee action may include:

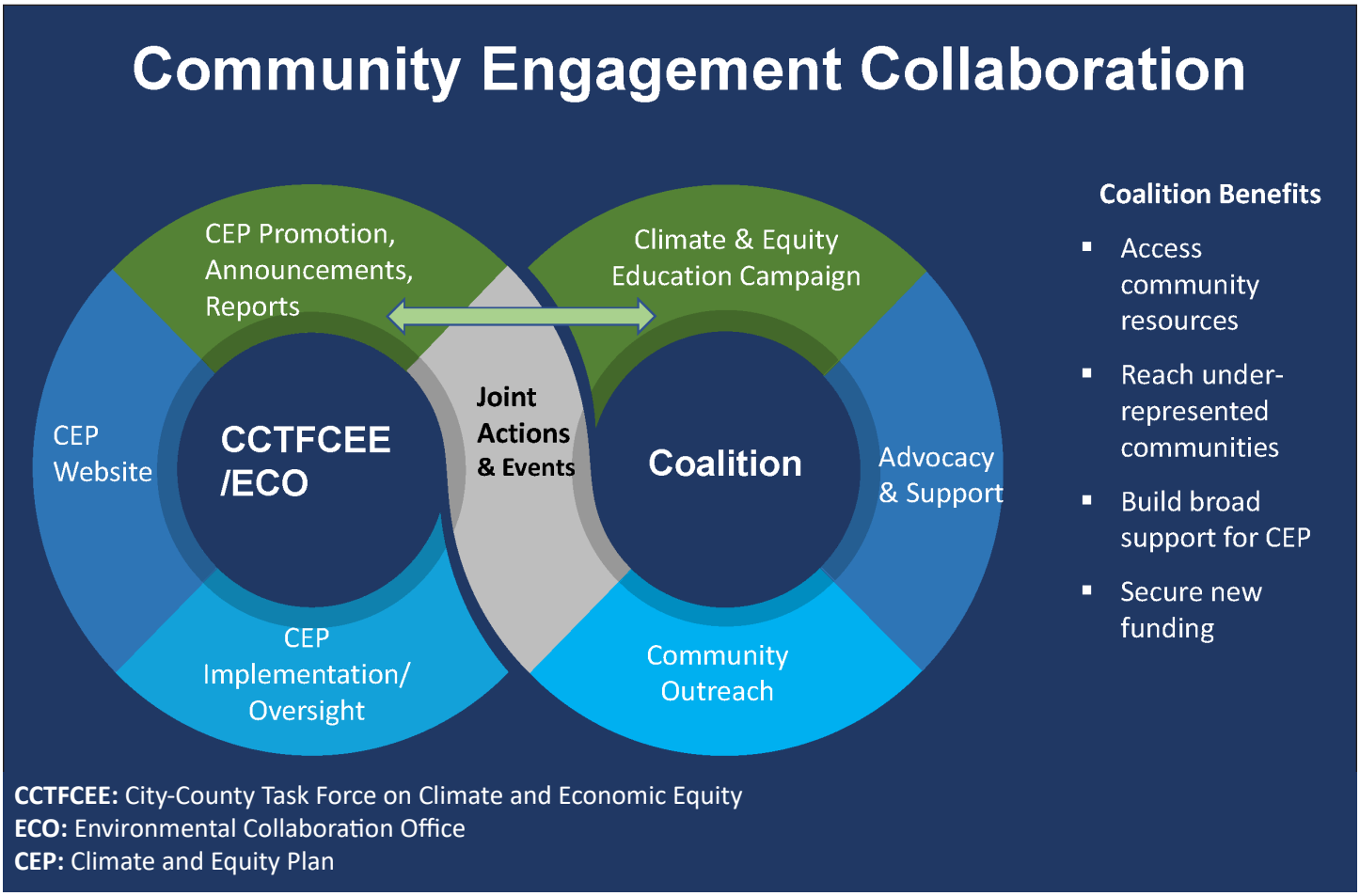
- Public information and marketing campaigns about climate change and economic inequity.
- Updates on Milwaukee's Climate and Equity Plan – including proposals, implementation plans, and progress reports from the city.
- Alerts to the public about public hearings, local implementation efforts, and opportunities to weigh in on the progress of the Plan.

The diagram titled "Community Engagement Collaboration" shows the relationship between Our Future Milwaukee, the City County Task Force, and the City of Milwaukee represented by the Environmental Collaboration Office (ECO).

Role for Milwaukee County and Municipalities

The negative impacts of climate change are not restricted to geographic boundaries. For example, air pollution from internal combustion engines can travel far from its source. So, even if the City of Milwaukee transitions all vehicles to electric, mobile sources from the broader region may still negatively impact the quality of the City's air,

▽Graphic by the City County Task Force on Climate and Economic Equity.



cause higher rates of asthma among residents, contribute to prolonged and deadly heat waves, and more. However, collaboration with neighboring jurisdictions to pursue larger- scale shifts to sustainable and resilient systems can amplify and augment the sustainability and overall health of the natural and built environment across the region. The Climate and Equity Plan recognizes that the City of Milwaukee's geographic boundaries are located within Milwaukee County, and the City's greenhouse gas emissions represent a portion of Milwaukee County's community emissions. Milwaukee County's geographic boundaries include Milwaukee and eighteen additional municipal governments, including Wauwatosa, West Allis, Shorewood, Greenfield, to name a few. Other relevant units of local government that have roles to play in greenhouse gas reduction, climate adaptation, and equity include Milwaukee Public Schools (MPS) and other school districts, and the Milwaukee Metropolitan Sewerage District (MMSD).

Therefore, although the City of Milwaukee can take ambitious steps to advance the 10 Big Ideas independently, significant benefits can arise from maximizing regional partnerships and cooperation. The City has already initiated effective working relationships with neighboring local and regional jurisdictions, such as with Milwaukee County through CCTFCEE and other local institutions such as MMSD, MPS, and UWM.

A Plan Built on Partnerships

The Climate and Equity Plan was funded by the City of Milwaukee without financial contributions from other local governments. Thus, this Climate and Equity Plan is focused most on initiatives that the City of Milwaukee can implement itself or in partnership with Milwaukee Public

Schools and Milwaukee County Transit System. Implementation metrics are primarily focused on GHG emissions reductions, equity targets, and other performance measures within the City of Milwaukee's geographic limits.

Although the Plan primarily focuses on the City of Milwaukee, the City welcomes the opportunity to partner further on climate action with Milwaukee County, other Milwaukee County municipalities, MPS, and MMSD. Recommendations on housing, electric vehicle planning, people centered transportation and urban design, commercial buildings, zoning and other areas can be adopted by other municipal governments. This can reduce duplication of effort, help the region attract more federal grants, and help ensure that the region is "rowing in the same direction" on climate action and racial equity. Additionally, Milwaukee County communities can work together to concentrate urban growth which can help reduce transportation emissions in Southeastern Wisconsin.

The City of Milwaukee has also played a leading role in establishing the Wisconsin Local Government Climate Coalition (WLGCC.org) which provides a forum for communities across Wisconsin to collaborate in advocating for better state policies that can support local climate action. Milwaukee County and Wauwatosa are also currently members. Any Wisconsin municipality with climate goals is welcome to join to further strengthen the coalition's efforts and learn about best practices in climate planning.

This Climate and Equity Plan can serve as a "playbook" for other Milwaukee County communities. The City of Milwaukee's Environmental Collaboration Office stands ready to lead by-example, share best practices, and collaborate with other willing communities through the Intergovernmental Cooperation Council (ICC) or other venues.

Opportunities for Collaboration

Organizations that participated in the Task Force are also well-poised to work with the City on the 10 Big Ideas, including Citizen Action of Wisconsin, the Wisconsin Climate Table, the Sierra Club, the Community Advocates Public Policy Institute, the NAACP, the Milwaukee Area Labor Council, Clean Wisconsin, the City of Milwaukee Youth Council, the City of Milwaukee Environmental Collaboration Office, Alliance for Climate Education, and Cream City Conservation.

COLLABORATING ON RECOMMENDATIONS RELATED TO HOUSING, ELECTRIC VEHICLE PLANNING, PEOPLE CENTERED TRANSPORTATION AND URBAN DESIGN, COMMERCIAL BUILDINGS, AND ZONING CAN REDUCE DUPLICATION OF EFFORT, HELP THE REGION ATTRACT MORE FEDERAL GRANTS, AND HELP ENSURE THAT THE REGION IS "ROWING IN THE SAME DIRECTION" ON CLIMATE ACTION AND RACIAL EQUITY.

Some of the broader coalitions and partnerships the City of Milwaukee can continue to collaborate with include:

- Better Buildings Challenge: Milwaukee participates in the Department of Energy's national Better Buildings Challenge.
- Climate Mayors: Over 400 U.S. mayors work together to strengthen local efforts to reduce greenhouse gas emissions and support efforts for binding federal and global-level policymaking.
- Milwaukee Metropolitan Sewerage District: MMSD created the 2019 Resilience Plan, a framework for how the Milwaukee metropolitan area can address complex threats and become a stronger region.

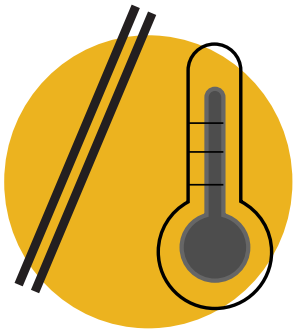
- Global Covenant of Mayors for Climate & Energy: The largest coalition of city leaders addressing climate change by pledging to reduce greenhouse gas emissions, tracking progress, and preparing for the impacts of climate change.
- U.S. Department of Energy SunShot Initiative: Milwaukee Shines is involved in a number of SunShot grants as part of a coalition of Midwest cities and organizations making solar energy cost-competitive with other forms of electricity by the end of the decade.
- Wisconsin Local Government Climate Coalition: Members collaborate on overcoming barriers to decarbonization, accelerating local climate change solutions, and ensuring the benefits of the clean energy economy are distributed to everyone throughout the state.

We're All in This Together

As part of this Plan, the City recognizes the immense investments necessary to create sweeping change and the history of structural racism embedded in our society that must be abandoned, both of which contribute significant challenges to achieving climate and equity goals. Therefore, the City reiterates its commitment to climate leadership. To achieve effective collaboration at a larger scale, the City will connect with other Milwaukee County municipalities to encourage their engagement in climate action planning, and to coordinate planning and implementation with the City and each other.

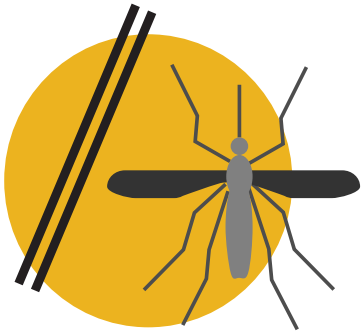
Collaboration can maximize limited resources by combining efforts focused on staff education, data collection, operational documentation, long-term plan implementation and monitoring, and other critical functions.

CLIMATE CHANGE VULNERABILITIES & OPPORTUNITIES



EXTREME HEAT
is more deadly to Wisconsinites than all other weather disasters *COMBINED*

Without decisive federal and local climate action, climate-related disasters will cost ***taxpayers hundreds of billions of dollars.***



Warmer, wetter weather means that ***ticks and mosquitoes*** are becoming more widely distributed in Wisconsin.

Flooding has increased so much in Wisconsin that ***a 100-year flooding event in 1961, now occurs about every 40 years***

Climate change is caused by a rise in global temperatures due primarily to the burning of fossil fuels, such as coal, oil, and gas, which release excessive amounts of carbon dioxide and other greenhouse gases (GHGs) into our atmosphere. Without dramatic action to fight climate change, many parts of the Midwest will face serious threats to survival within a few generations.

Extreme Weather and Flooding

The Midwest has gotten warmer, with average annual temperatures increasing over the last several decades. Between 1900 and 2010, the average air temperature increased by more than 1.5°F. The rate of increase in temperature has accelerated in recent decades, particularly nighttime and winter temperatures. As our climate changes, more extremes in precipitation can be expected with more intense storms and extended periods of drought [1].

The Milwaukee area is already experiencing the impact of heavier storms and flooding. Catastrophic flooding in July 2010 caused over $30 million in damage to homes and businesses and caused hundreds of job losses[2]. Flooding across Wisconsin in August 2018 caused more than $208 million in damage[3]. Currently, 19,413 properties in Milwaukee County are at risk of flooding and that risk will increase in the future[4]. Flooding has increased so much in Wisconsin that what was once considered a 100-year flooding event in 1961, now occurs about every 40 years[5].

On the other end of the spectrum, prolonged periods of drought and hotter summers can be expected in Wisconsin as the average temperature increases. Heat waves are one of the weather phenomena most clearly caused by human-made global climate change and are the most deadly[6]. For example, it is estimated that over 70,000 people died in the 2003 European heat wave[7].If the world warms by 2°C – warming which scientists project may be reached in 20 to 30 years – there will be widespread food shortages, fatal heat waves, and crop failures throughout the Global South[8].

Extreme heat is more deadly to Wisconsinites than all other weather disasters combined, as it can lead to heat stroke, dehydration and worsen chronic diseases[9]. Milwaukee County reported 91 heat-related deaths during a heatwave in 1995[10]. The greatest health risks occur with extended heat events or excessive nighttime temperatures[11]. By 2050, experts predict that Milwaukee will see three times as many days with a heat index above 105 degrees[12]. Higher temperatures also result in an increase violent crime[13].

Health

Flooding can lead to future health issues, such as mold growth that exacerbates asthma symptoms[14]. Warmer, wetter weather means that ticks and mosquitoes are becoming more widely distributed in Wisconsin. Tick bites can cause the debilitating Lyme disease, and mosquito bites can cause potentially deadly disease from West Nile virus and La Crosse encephalitis[15]. The U.S. Centers for Disease Control already reported a 25% increase in from West Nile virus in 2018[16].

Food Production and Hunger

Scientists warn of an economic recession caused by major economic impacts of climate change by 2100. Two causes include more frequent crop failures and disturbances to major trade routes. Without decisive federal and local climate action, the report warns, climate-related disasters will cost taxpayers hundreds of billions of dollars. [17]

Climate change is expected to have many impacts on agriculture, forests, and other ecosystems in the Midwest. Midwestern agricultural lands make up two-thirds of the region's land area and produce 65% of the nation's corn and soybeans. [18] Some climate-related impacts may provide short-term benefits for agriculture, but negative effects are also expected in this time frame. In the long-term, climate impacts are likely to have increasingly detrimental effects that increase variability in crop and agricultural production. [19] [20] There may

be higher yields of important agricultural crops for a limited period of time. However, over time, increasingly warmer temperatures and other stressors are expected to decrease yields.

Climate change will likely worsen existing food insecurity due to limited local food availability, price increases, interrupted transportation, and diminished food safety[21]. Many people in Milwaukee already experience hunger and food insecurity. In 2020, 15% of Milwaukee County residents were food insecure, compared to a national average of 13% [22]. Nearly 42% of children in Milwaukee County received FoodShare (food stamps), while 82% were determined to be economically disadvantaged[23].

Opportunities to Chart a New Course

The good news is that fighting climate change can also create significant economic and environmental benefits. Before the COVID-19 pandemic hit, there were 76,600 clean energy jobs in Wisconsin, with 23,748 in the greater Milwaukee area[24]. In-state production of 100% clean energy would create an estimated 162,000 good, high-paying jobs in Wisconsin[25].The median income for a Solar Installer in Wisconsin is $73,393 per year[26], and the median income for an Energy Efficiency Specialist is $55,537 per year[27].

Making homes more energy efficient reduces energy bills. Households saved an average of $500 per year after their homes were weatherized[28]. Wisconsin's main energy efficiency program, Focus on Energy, is very cost-effective. Every $1 invested results is nearly $5 in benefits for all utility ratepayers[29].

In addition to saving money, reducing dependence on fossil fuels results in improved health and quality of life for Wisconsin's residents. Producing 100% clean energy in Wisconsin would reduce air pollution, saving $21 billion every year due to avoided health damages[30]. A decline in the use of gasoline-powered vehicles, through increased use of transit, biking and walking, and electric vehicles, will reduce local air pollution. Planting more trees is a key climate change strategy, as trees absorb GHGs and cool the environment through evapotranspiration. Increased tree cover has been found to decrease nearby air temperatures by up to 9° Fahrenheit, another benefit in a warming world[31]. Studies also show a strong relationship between more tree canopy and community cohesion, including lower levels of crime [32].

THE GOOD NEWS IS THAT FIGHTING CLIMATE CHANGE CAN ALSO CREATE SIGNIFICANT ECONOMIC AND ENVIRONMENTAL BENEFITS.

As our climate changes, more extreme weather events such as heat waves and flooding, are becoming common. Projections of future precipitation in Wisconsin indicate that heavy downpours are likely to occur primarily in winter and spring months while summers will become drier and hotter. These extremes conditions create challenges for local communities. Action on climate change is needed to protect against damage to property and crop yields, as well as mitigate negative impacts for human health and the economy.

▽Photo courtesy of David Thomas.

TACKLING CLIMATE CHANGE THROUGH THROUGH AN EQUITY LENS TO ADDRESS RACIAL DISPARITIES

When the City-County Task Force on Climate and Economic Equity (CCTFCEE) was created in 2019, the main idea was that creating a plan to tackle climate change could simultaneously work to reduce economic inequity in the City and County of Milwaukee, given the scale of transitions required to make dramatic reductions in GHG emissions. For example, making buildings substantially more energy efficient will require substantially more energy efficiency technicians, which are jobs that pay a decent wage and cannot be outsourced or automated. Another example is the need to reduce GHG emissions from personal vehicle use by making the public transit system better and more convenient so that more people use it rather than driving their own cars. Such improvements to the public transit system would also benefit under-served community members who rely more on public transit. This means that Task Force members and the Work Groups they led took the initial recommendations from ICLEI regarding the best standard policies to reduce GHG emissions and, over a year of research and discussion, modified those recommendations to fit Milwaukee and to reduce inequity where possible through the proposed recommendations. Work Group members further understood that, unless historic disparities are addressed, Milwaukee will not be able to meet the ambitious goals laid out in this Plan. If thousands of mostly Black and Latino households facing high energy burdens continue to face barriers to making their homes more energy efficient, or face barriers to electrifying their homes, the GHG emissions reductions from residential housing envisioned in this Plan will not be realized. Similarly, if EV charging infrastructure is not distributed equitably and is not accessible to all residents, the City will not achieve its target EV adoption rates. Moreover, the Task Force and Work Group members recognized that while climate change affects us all, it does not affect us all equally, with underserved communities bearing the brunt of most impacts of climate change, like urban heat islands and flooding. Work Groups included members of underserved communities and/or the community organizations that serve those communities, due to the understanding that developing equitable solutions to mitigate and adapt to the climate change impacts that are already here requires having everyone at the table, especially those most impacted.

The Task Force, and by extension, this Climate and Equity Plan, does not aim to solve all inequities in the City of Milwaukee. Instead, it aims to tackle climate change in a way that reduces inequity, and does not worsen existing inequities - a concept known as a "just transition" of our energy and transportation systems. Fortunately, the City of Milwaukee's goals to fight climate change through a just transition align with the most significant federal efforts and largest investments made in U.S. history to tackle the climate crisis. The Justice40 Initiative is an effort to ensure that at least 40% of federal investments under the Infrastructure Investment and Jobs Act (IIJA, also known as the Bipartisan Infrastructure Bill) accrue to "disadvantaged communities" across the U.S. Communities are designated as "disadvantaged" if they face a number of challenges, including

> **I VIEW CLIMATE CHANGE TO NOT ONLY BE A POLITICAL AND SOCIAL ISSUE, BUT ALSO A HUMAN RIGHTS ISSUE.**

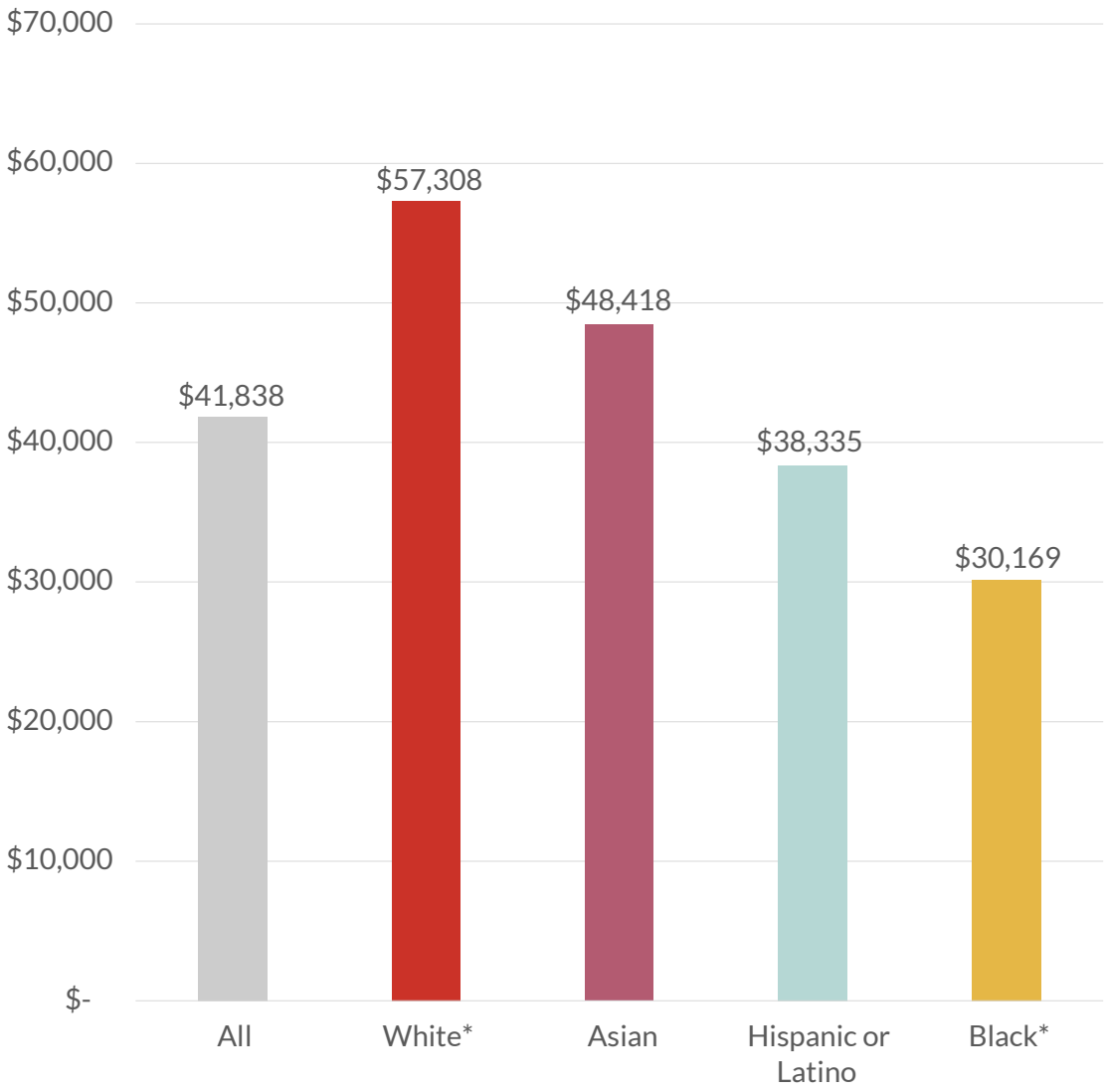
dependence on fossil fuel, high energy burdens, more exposure to climate and environmental hazards, and socio-economic vulnerabilities.

The federal investments flowing from the IIJA include investments in clean energy and energy efficiency, clean transit, affordable and sustainable housing, training and workforce development, and the development of clean water infrastructure, among other investments. Similarly, the Inflation Reduction Act (IRA) provides more incentives for lower-income households to make energy efficiency, renewable energy and electrification improvements to their homes, provides incentives for the purchase of new and used EVs, and provides additional funding to address historic environmental inequities through the Environmental Justice Block Grant programs, just to name a few examples. Visit the Clean Energy For All federal website page for more details. Like Milwaukee, the Biden Administration and the most relevant agencies, like the Department of Energy, Department of Transportation, and the Environmental Protection Agency, are aligned on advancing energy justice, while also fighting the climate crisis. This means that addressing high energy burdens, creating pathways for workers needed to accelerate energy and transportation system transitions, and ensuring resources for all members of society to transition their own homes, vehicles and communities will be paramount. For more details on the specific provisions of the IIJA and the IRA, please see the Finance chapter.

During the first year of the City-County Task Force on Climate and Economic Equity, Task Force members and partners like Citizen Action, helped the Task Force delve deep into the daunting inequities facing the City, and provided those findings in the CCTFCEE's Preliminary Report. One predominant issue continues to be deep disparities in household income. The median household income for residents of color continues to lag behind white residents. While all racial groups have seen an increase in median household income in the past decade, a recent study from the Pew Research Center showed that wages for all American workers lags behind the cost of living, with Black and Latino community residents being the most vulnerable. In Milwaukee, racial disparities in household income persist, as shown by the graph titled "Median household income in past 12 months".

These disparities in household income impact homeownership, which has declined 14% in the past 15 years. Now, just 37% of housing units are owner-occupied (including multi-family housing), with the Black homeownership rate half of that of white households. These homeownership rates, along with the fact that 42% of the housing stock in the City was built before 1940, directly cause environmental justice problems like high energy burdens and childhood lead poisoning, with many Black and Latino families renting older homes that are energy inefficient and contain lead paint and dust hazards. This Climate and Equity Plan seeks to directly address those issues by improving programs available to renters and better engaging landlords. But this Plan also seeks to address some of the underlying causes of these disparities, like a lack of good-paying jobs for many workers of color and a lack of affordable housing, by creating pathways to good, green jobs and by developing a model for affordable, energy-efficient new housing in the City of Milwaukee.

Median household income in past 12 months



	Black*	Hispanic or Latino	Asian	White*	All
2015-2019	$30,169	$38,335	$48,418	$57,308	$41,838
2010-2014	$28,178	$34,494	$42,795	$51,858	$38,362
Change	$1,991	$3,841	$5,623	$5,490	$3,476

△*Not Hispanic or Latino. Source: US Census Bureau, 2010-2014 and 2019 American Community Survey 5-Year Estimates in 2019 dollars . Graph courtesy of Milwaukee's Office of Equity & Inclusion.

Milwaukee's Office of Equity and Inclusion

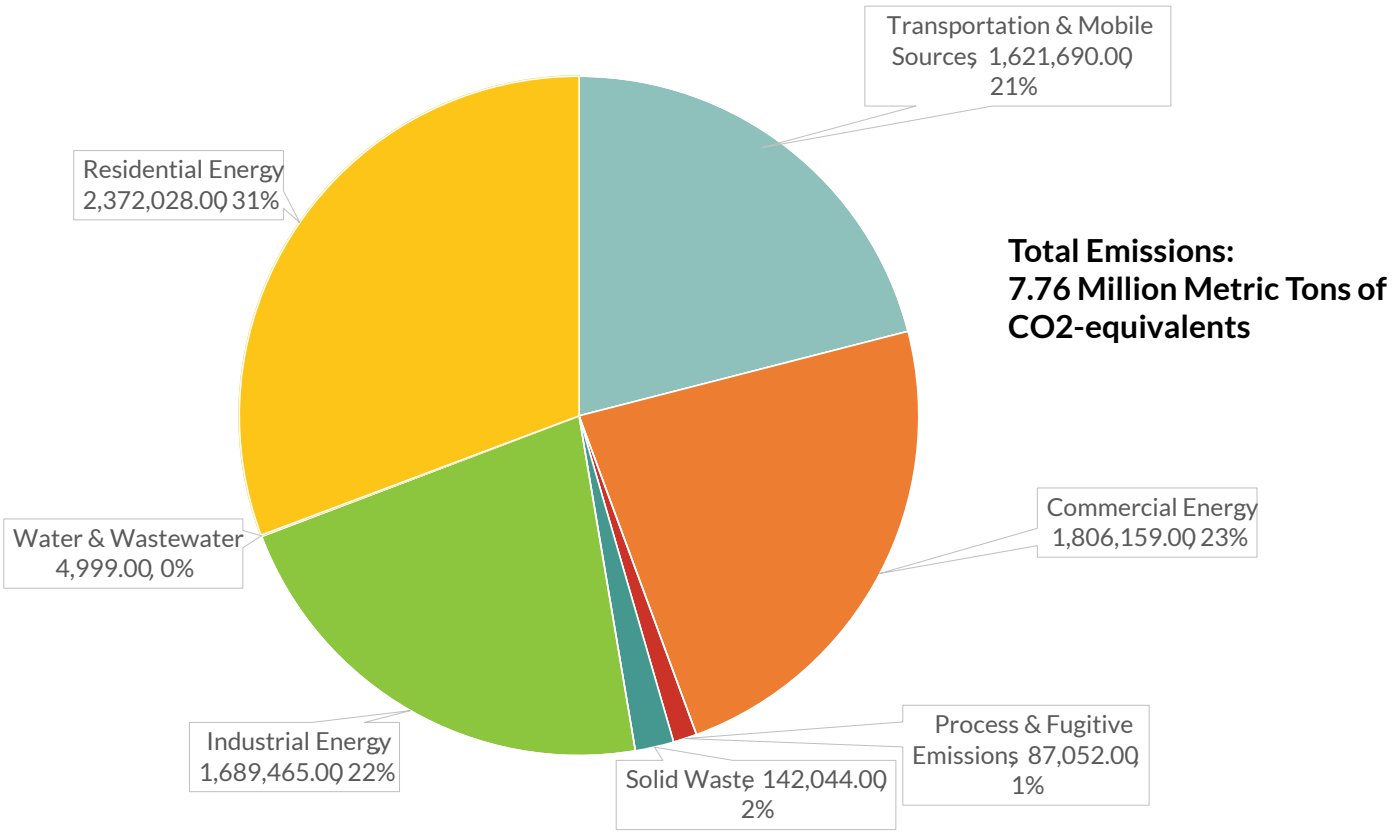
Environmental justice is only possible if income, race, ethnicity, and place of residence does not determine the burden people face from climate change. As seen throughout this document, each of the 10 Big Ideas were formed with equity at the forefront. The CCTFCEE, all Work Group members, and the City of Milwaukee are proud to have helped develop a climate action plan that puts equity at the forefront, and engaged such a large and diverse group of stakeholders in creation of its recommendations to dramatically reduce GHG emissions 45% by 2030 and reach net-zero GHG emissions by 2050. However, all stakeholders know that this Plan means very little without good implementation, and the City of Milwaukee ECO will work in collaboration with its partner departments at the City, along with many valuable external partners and stakeholders, to ensure good implementation of the Plan. One of those key partner departments in terms of equity issues is the Milwaukee Office of Equity and Inclusion has many resources and information available about past, present, and future environmental justice and social equity initiatives and funding opportunities in the city. To learn more about how the City is addressing racial disparities, please visit Milwaukee.gov/OEI.

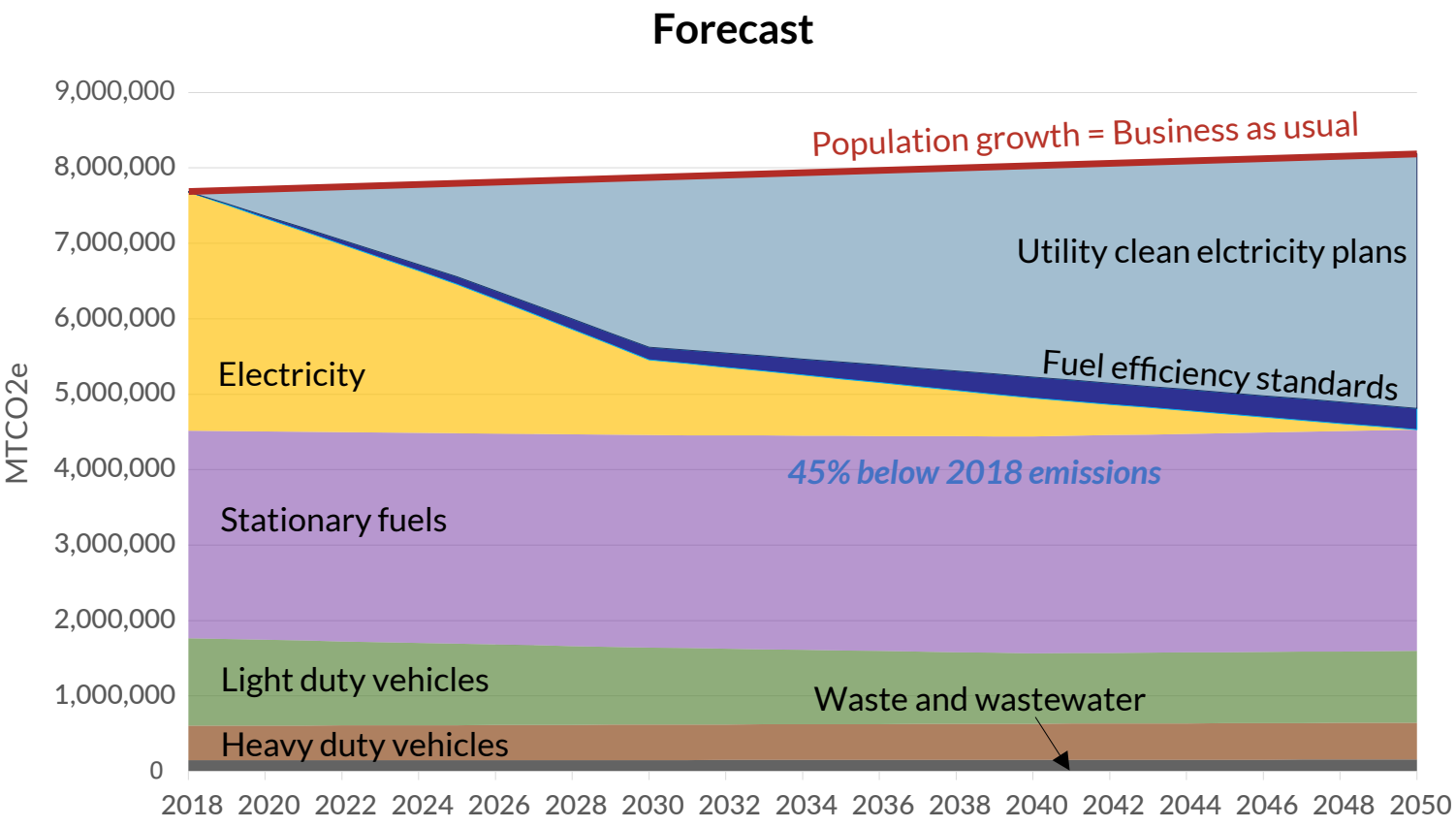
GREENHOUSE GAS INVENTORY

SUMMARY AND SCENARIO PLANNING TO 2030 AND 2050

2018 Greenhouse Gas Inventory

Milwaukee completed its most recent greenhouse gas (GHG) inventory for calendar year 2018. After reviewing more detailed assessor data and data from U.S. Department of Energy's State and Local Planning for Energy (SLOPE) Platform, ICLEI revised the GHG inventory to the following breakdown of the City's 7.7 million metric tons of carbon dioxide equivalent (MTCO2e) emissions. The complete inventory is available at Milwaukee.gov/ClimatePlan:





Business as Usual (BAU) Emissions Forecast

ICLEI developed a forecast of future GHG emissions in Milwaukee under a business as usual (BAU) scenario using projections of Wisconsin's Future Population prepared in December 2013 for the Wisconsin Department of Administration .This forecast showed Milwaukee's emissions increasing from about 7.7 million MTCO2e in 2018 to about 8.2 million MTCO2e in 2050 due to expected population growth if no action is taken to reduce per capita GHG emission output.

The analysis then accounted for expected reductions in grid electricity emissions based on We Energies' stated goals of reducing its own carbon emissions associated with electricity generation:

- 60 percent reduction in 2025
- 80 percent reduction by 2030
- Carbon neutrality by 2050.

The forecast also included changes to automobile fuel efficiency based on the Trump Administration Fuel Standards established by the National Highway Traffic Safety Administration:

- 14 percent reduction in fuel per mile in 2030 for light duty vehicles
- 23 percent reduction in fuel per mile in 2040 for light duty vehicles (constant after 2040)
- No change to heavy duty vehicle efficiency

Although the GHG emission reductions associated with these expected external changes are significant, ICLEI concluded that "without any additional emissions reductions, Milwaukee would fall short of its 45% reduction by 2030 goal." The results of this analysis are presented in the graph above.

But what about Scope 3 Emissions?

This Climate and Equity Plan is primarily focused on Scope 1 and 2 Emissions. This is the common starting point for municipal climate plans. Although some cities include scope 3 emissions that occur outside of the municipal boundaries, including airport transportation, the City of Milwaukee will face major challenges tracking and reducing its more fundamental scope 1 and 2 emissions.

Total Estimated GHG Reductions

The following images summarize the GHG reductions from each of the strategies included in ICLEI's wedge analysis, starting with reductions from each action over time. As shown, the estimated reductions match Milwaukee's interim goal of a 45 percent reduction from 2018 GHG emissions by 2030 but show some remaining emissions in 2050. The following two graphs to the right provide a breakdown of the reductions from each action in 2030 and 2050, respectively.

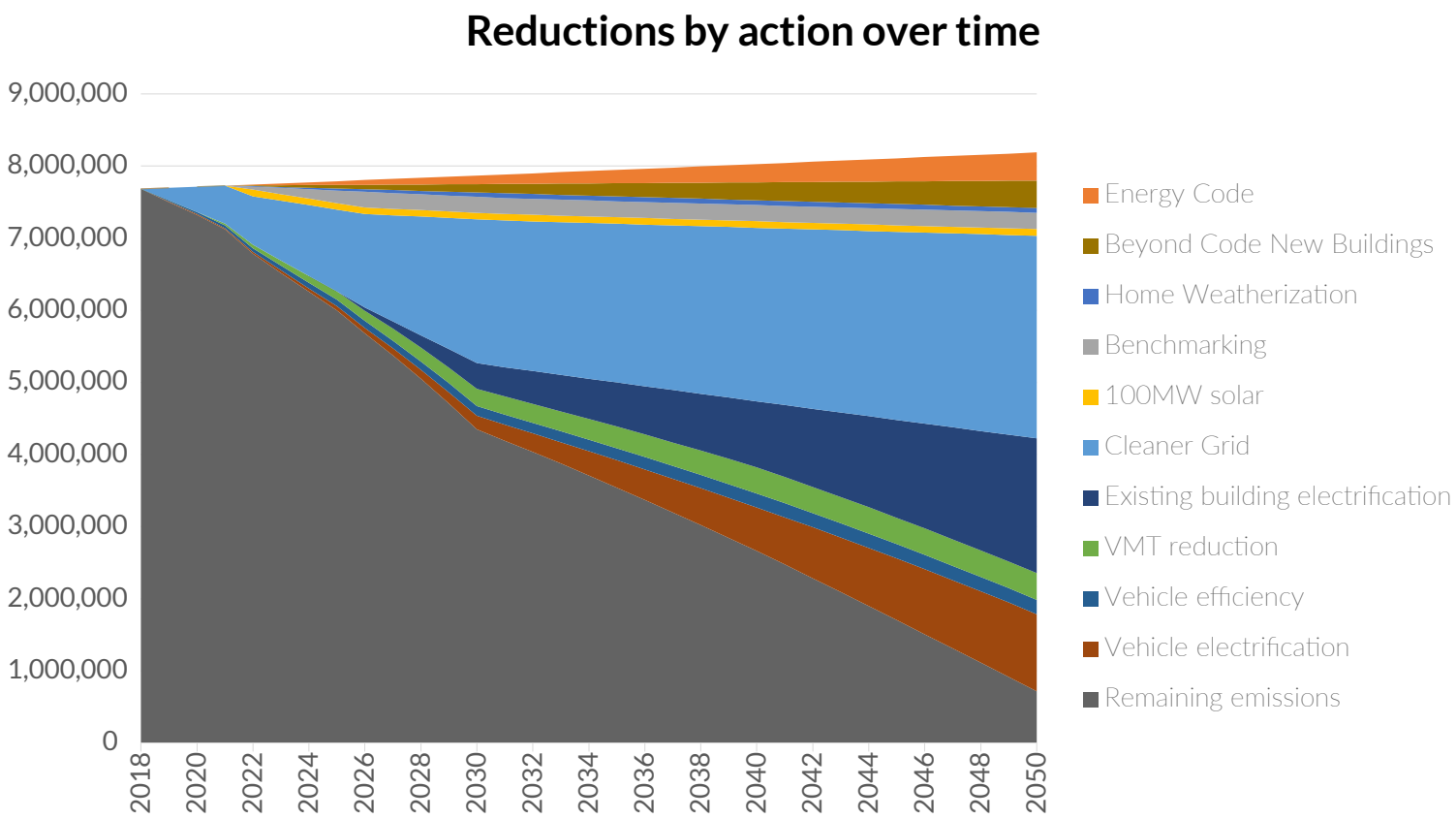
Next Steps

The City worked with ERG—experts in GHG emissions inventories and mitigation strategy development, alternative energy and energy use analyses, waste management, and building energy efficiency—to ensure that the recommendations detailed in the Plan are feasible and aligned with industry standards and best practices. First, ERG conducted a comprehensive review of the underlying assumptions made by ICLEI in the 2018 Greenhouse Gas Inventory completed in May 2021. This analysis included:

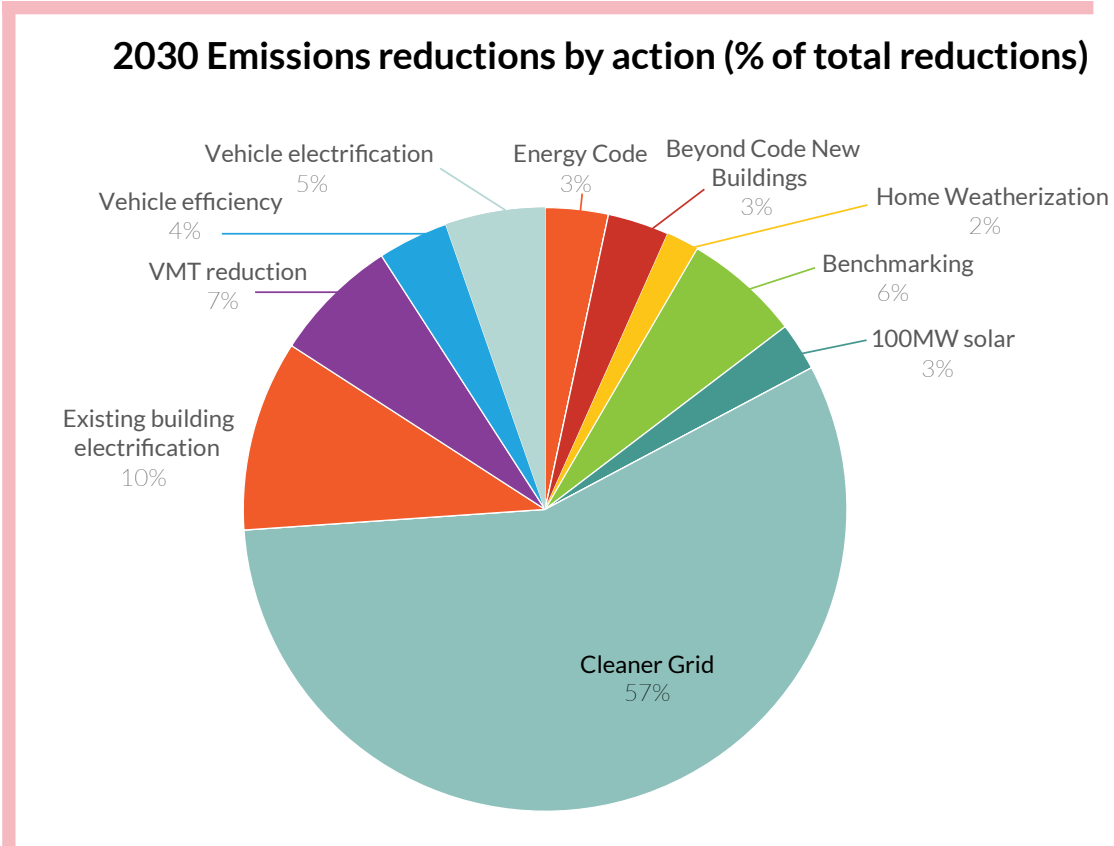
- An update to the fuel efficiency standards and electric vehicle (EV) adoption rates and goals related to the change in federal leadership (from the Trump to the Biden administration);
- A review of assumptions for stationary energy use (i.e., energy audits, weatherization, etc.), and transportation (EV adoption and vehicle miles traveled reduction) and the resulting impacts on key reduction targets included in the Plan, and;
- An comparative analysis for targets related to vehicle miles traveled (VMT) reduction.

ERG continued this comparative analysis for the City's VMT target of a **20 percent decrease in 2030 and a 30 decrease percent in 2050**. ERG found that while these targets are ambitious, they are comparable to similar VMT reduction targets established by peer cities in similar climate planning efforts. ERG next compared the City's targets against nationally-reputable sources of comparable or supporting information including the U.S. Department of Energy's State and Local Planning for Energy (SLOPE) Platform and the Center for Neighborhood Technology's AllTransit tool.

This work culminated in the City's Climate and Equity Plan Implementation Matrix. This Matrix provides a template for the City to assign responsibility and measure progress for each of the recommendations as detailed throughout this Plan. The Matrix also includes additional data points and analyses to estimate the GHG reduction potential for specific actions and each Big Idea cumulatively. For actions where the GHG emissions reduction potential is not the ultimate goal, key equity targets are identified to provide a framework for tracking progress. ERG developed interim benchmarks for each Big Idea, also included in the Matrix, and incorporated planning level cost estimates for each recommendation. For more details on the Implementation Matrix, please visit the Implementation & Accountability chapter of this Plan.



EMISSION REDUCTION GOALS

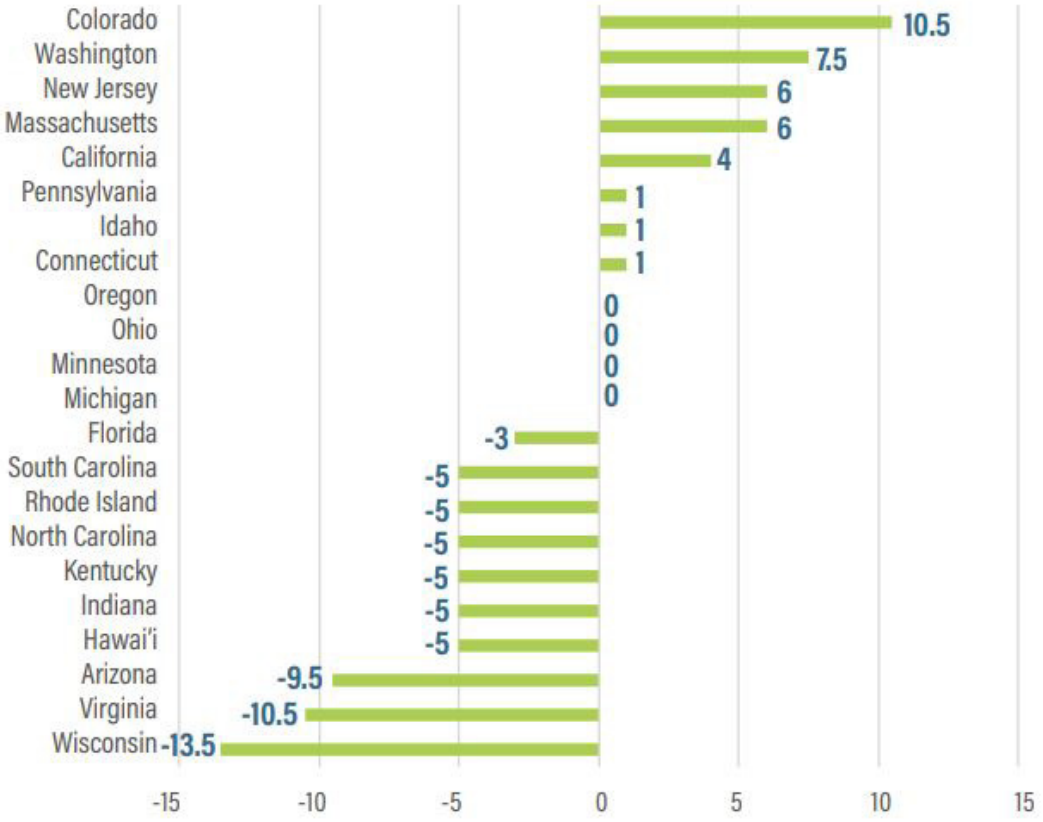


CITY PLAN
IN CONTEXT OF OTHER PUBLIC ENTITIES AND THE PRIVATE SECTOR

In developing this Plan, the CCTFCEE focused on policies and programs that the City of Milwaukee has the political power and financial resources to implement, while also noting where the City would advocate for state and federal law changes to help it reach its climate and equity goals, as well as highlighting where the City would seek external financial resources to implement recommended programs and policies.

More specifically, regarding the City's legal authority to pass policies to advance climate action, cities in Wisconsin are at a significant disadvantage, as state law prohibits many avenues of local action, like setting local building codes that require higher energy efficiency standards than those set at the state level. The American Council for an Energy Efficient Economy (ACEEE) publishes a national clean energy scorecard for cities. The report documents the distinct disadvantage Wisconsin law puts on its cities implementing local energy codes. The figure below shows that the net effect of Wisconsin state action reduces Wisconsin cities' scores by 13.5 points, meaning that state policy limits local climate action more so than in any other state evaluated in the scorecard. On the other end of the graph, the net effect of the State of

Figure 5. Net effect of state actions on city scores



Colorado's actions has increased its cities' scores by 10.5 points. Milwaukee's currently ranked 53 out of 100 cities.

WISCONSIN DECREASES ITS CITIES' CLEAN ENERGY SCORE BY -13.5 POINTS.

COLORADO INCREASES ITS CITIES CLEAN ENERGY SCORES BY 10.5 POINTS

Milwaukee must also partner with We Energies as well as state and federal governing bodies. We Energies have an outsized influence on the use of fossil fuels in our community. Wisconsin is a regulated utility state, and Milwaukee is located in their service territory. As Milwaukee's public electric and gas utility they provide electric power and gas services to buildings.

However, local governments may be in a position to play a role in encouraging and organizing financing in partnership with other public and private organizations.

In Context of the Private Sector

In addition to financing, the private sector is also a key stakeholder when it comes to increasing the number of green jobs and reducing racial inequity.

According to the CCTFCEE Preliminary Report, Black men in Milwaukee have among the lowest levels of employment of any major city in the country. The employment rate for working age Black men in Milwaukee in 1970 was 73%. In 2010, the employment rate had plummeted to 45%, and had only recovered to a 54% employment rate as of 2018.

According to Marc Levine of the UW-Milwaukee Center on Economic Development: "No metro area has witnessed a more precipitous erosion in the labor market for Black men over the past 40 years than has Milwaukee," and "in no other large metro area is the contemporary Black man employment crisis more acute than in Milwaukee. The report goes on to acknowledge that Inequality is being driven not only by an absence of job opportunities for people locked out of private employment, but also by the plummeting quality of the jobs that are available.

Concerning the private sector, the CCTFCEE Report recommends that the City and the County examine the jobs and equity potential of sectors tentatively identified as major drivers of a climate transition.

These sectors tentatively include:

- Energy Conservation/Efficiency and Retrofitting (including remediation of lead paint and dust).
- Renewable Energy (e.g. solar, wind).
- Water Conservation and Clean Water (including remediation of lead pipes that leach into water supply).
- Transportation (the need for increased and dedicated funding for public transit,which mitigates air pollution from cars, creates good jobs, and gets people to work).
- Food Waste/Waste and Recycling.
- Combining decarceration efforts with employment pathways in green energy, reforestation, green infrastructure and conservation efforts.
- Include Career Pathways in the Green Economy as an officially (State) registered apprenticeship program.

In Context of the Public Sector

The following plans illustrate the climate and equity work that has already been done in the region as well as possible points of collaboration with other entities.

2013 ReFresh Milwaukee Sustainability Plan is a citywide, strategic plan to develop a sound environmental, economic and social sustainable future for the community. The plan aims to implement sustainable projects and encourage

citizens and businesses to engage in solutions that are economically, environmentally, and socially smart for our community.

2019 Green Infrastructure Plan provides street-focused stormwater strategies to improve water quality and reduce polluted stormwater runoff. The program's strategies are considered when designing a street for repaving or reconstruction projects to maximize the sustainable benefit of our street network.

The 2019 Resilience Plan for the Milwaukee metropolitan area details 20 actions that are grouped into three vision categories. The three vision categories are as follows:

- Environment & Society which focuses on improving the quality of public spaces and services.
- Economy & Society which improves access to jobs by creating and connecting people to opportunities. This vision aims to close the wealth gap and ensure that quality of life is not determined by race or ethnicity.
- Infrastructure & Environment takes a collaborative approach on improving regional resiliency while accounting for strained infrastructure budgets.

The 2022 Wisconsin Clean Energy Plan is a statewide plan that will lower energy bills, fight climate change by investing in clean energy technologies and possibly create up to 40,000 jobs.

The 2022 draft Wisconsin Electric Vehicle Infrastructure Plan will promote long distance travel in electric vehicles by placing approximately 60 charging stations in a 50-mile radius of Wisconsin's designated Alternative Fuel Corridors, according to WisDOT.

Federal Inflation Reduction Act was signed into law by President Joe Biden in August of 2022. This act was the largest ever federal investment in climate action. This act was passed after the CCTFCEE provided is recommendations. The success of the Climate and Equity Plan will depend on effectively leveraging these and other federal infrastructure investments.

THE INFLATION REDUCTION ACT

The Climate, Tax, and Health Bill (officially known as the Inflation Reduction Act) is the single largest investment in climate change in United States history. The bill includes $369 billion in climate and energy related funding with substantial opportunities in transportation, water & wastewater, electricity grid modernization, electric vehicle infrastructure, environmental conservation, and pollution remediation. Based on analyses by several energy modeling groups, the Inflation Reduction Act will reduce U.S. greenhouse gas emissions by at least 40% by the year 2030, significantly narrowing the gap between the U.S.'s current path and its Paris Climate Agreement commitment.

The Bill prioritizes environmental justice and leveraging nature as a climate change solution. Over $60 billion in environmental justice priorities will help drive these investments into disadvantaged communities. The Inflation Reduction Act acknowledges that land is a profound ally in the fight against climate change. Implementing nature-based climate solutions in urban settings, supporting reforestation initiatives, boosting forest preservation, and incentivizing climate-smart farming practices will help to protect our natural environment, improve human health, and mitigate climate change impacts.

Highlights:

- More than $300 billion will be invested in energy and climate reform, the largest federal clean energy investment in U.S. history.
- $60 billion for growing renewable energy infrastructure in manufacturing like solar panels and wind turbines.
- Over $60 billion to on-shore clean energy manufacturing in the U.S. across the full supply chain of clean energy and transportation technologies.
- Over $60 billion in environmental justice priorities to drive investments into disadvantaged communities
- Tax credits for electric vehicles and residential energy efficiency
- Affirms the central role of agricultural producers and forest landowners in our climate solutions by investing in climate smart agriculture, forest restoration and land conservation
- Bill is projected to lower greenhouse gas emissions by 40%, based on 2005 levels, by the end of the decade

THE TEN BIG IDEAS

1. GREEN JOBS ACCELERATOR
2. HEALTHY HOME ENERGY UPGRADES
3. NEW NET-ZERO ENERGY HOMES
4. COMMERCIAL BUILDING ENERGY BENCHMARKING + BUILDING PERFORMANCE STANDARDS
5. PEOPLE CENTERED TRANSPORTATION AND URBAN DESIGN
6. ELECTRIFY TRANSPORTATION
7. GREENING THE ELECTRIC GRID
8. PROTECT AND RESTORE NATURE IN THE CITY
9. FOOD WASTE REDUCTION
10. RESILIENCE AMBASSADORS

WHAT ARE THE TEN BIG IDEAS?

CCTFCEE members and citizens chaired subject area work groups, consisting of Milwaukee residents and representatives from environmental groups, local government, non-profit organizations, and businesses. These working groups developed a Preliminary Report in March of 2020.

Nine (9) work groups met throughout 2021 to develop initial recommendations for implementation beginning in 2023. Each work group developed one (1) or more proposals for a specific sector, including jobs, transportation, buildings, the energy grid, land use, waste management, and resiliency. All of the working groups understand and accept the fiscal constraints that the City has. However, they were instructed to **"think big"** to position Milwaukee for federal grants and other funding opportunities that are now available to meet the goals established by the Common Council and County Board.

Working groups finalized their proposals ("Ten Big Ideas") that now form the foundation for the Climate and Equity Plan.

GREEN JOBS ACCELERATOR

Employ more people of color in family-supporting green jobs.

△Photo by Steve White Films.

WHY IS THIS IMPORTANT?

The City of Milwaukee Common Council established the City County Task Force on Climate and Equity in 2019 (CCFN 190445) to make recommendations on how to address the ongoing climate crisis and mitigate racial and economic inequity through "green" jobs. According to the Bureau of Labor Statistics, green jobs are defined as jobs that produce goods or provide services that benefit the environment or conserve natural resources. Some of the most likely growth categories for green jobs include electricians, HVAC technicians, weatherization workers, and arborists. Electricians and associated positions are particularly important to support solar energy projects, electric vehicle charging infrastructure, energy efficient lighting replacements, and other beneficial electrification work. Positions of opportunity are not limited to traditional trades. A whole generation of engineers, developers, sales teams, and other related support positions will be necessary to realize the clean energy transition.

Now is the time to invest in building a diverse clean energy jobs workforce. Energy efficiency, renewable energy, clean transportation, and resilient buildings supports the Milwaukee economy and the environment. Milwaukee sees a growing opportunity for workers that enable energy efficiency to reduce energy bills, protect natural resources, and create better buildings.

This opportunity for green jobs must be coupled with a clear-eyed assessment of Milwaukee's history of unacceptable racial disparities in employment. Racial and economic disparities in the Milwaukee metro area are massive and have generally not improved over four decades. The Preliminary Report issued in March 2020 by the City-County Task Force on Climate and Economic Equity, cites a number of policy reports that highlight the persistent disparities in jobs and household incomes that fall along racial lines, particularly for black families. As one example, the University of Wisconsin-Madison's Wisconsin Poverty Report issued a supplement in 2018 entitled "Poverty, Incomes, Race and Ethnicity in Wisconsin and Milwaukee". Among many troubling statistics, the report finds that 79% of African American households in Milwaukee County have incomes beneath the minimum family survival budget. Additionally the African American poverty rate is 300% higher, and the Latino poverty rate is 85% higher, than the white poverty rate, even after social safety net programs are accounted for. These and other reports from the UW-Milwaukee Center on Economic Development underscore the need for intentional economic policy and practice to develop an economic strategy that creates more job and paid training opportunities for people of color.

The US Department of Energy reports that cost-effective energy efficiency upgrades in U.S. buildings could save $100 billion each year in energy bills and 30% of electricity use. This translates to an estimated annual savings of $400 for each household with energy-saving upgrades. These savings are only possible when knowledgeable workers design the equipment and buildings, provide quality installation of equipment, communicate energy efficiency benefits to buyers, and themselves possess a family-supporting job. Over two million Americans already work in the building energy efficiency sector, but many receive little training on these technologies before entering the workforce. New federal investments in clean energy infrastructure will also require a ready and trained workforce. Failure to grow the clean energy and infrastructure workforce at scale commensurate with new federal funding will drive price increases. It's imperative that Milwaukee grow the number of skilled workers in relevant trades to both boost household income and reduce inflationary pressure from the new investments.

COMMUNITY VOICES

"Addressing climate change gives us an opportunity to fortify community especially in our most vulnerable neighborhoods. Whether its planting trees to lower the heat index and capture water, rebuilding our drinking water and sewage infrastructure, improving roads to capture water where it falls, building and improving parks and their amenities-all of these things can make us more prepared for climate change, provide family sustaining jobs, and improve the quality of life for each and every member."

Overview of Green Jobs in Milwaukee County

The following table titled "Green Jobs Statistics for Milwaukee County" specifically shows two things. Several categories of skilled trades such as electricians and plumbers offer family supporting wages and career ladders through apprenticeships. However, these growing fields are over 84% white. Growing the total number of these jobs presents the opportunity to diversify the workforce. These trades can pay a higher wage precisely because they are higher skill, require more years of training and on-the-job experience, and are often physically demanding. Diversifying the workforce can happen when employers make intentional efforts to hire people of color and create a welcoming and fair work environment. Conversely, workers have more opportunities to advance by demonstrating persistence and consistency in meeting the job demands in these fields.

Other green jobs, like insulation workers have higher levels of diversity but lower pay and higher turnover rates. This can be overcome by employers offering higher family supporting wages for this difficult and dirty work, in exchange for a higher level of training and skill. By raising wages in this industry while upskilling workers, consumers can expect more consistent and higher quality work.

A variety of existing workforce challenges must be overcome to reach the full potential of the green jobs sector. For example, there is a low/negative perception of certain energy efficiency professions. This represents a significant lack of interest and awareness of career opportunities and benefits among young people. In addition, the U.S. Energy and Employment Report (2020) found that women and Black Americans are significantly underrepresented in the workforce.

According to the U.S. Department of Labor, women make up 47% of the U.S. workforce, but they only make up 25% of the energy efficiency workforce according to a 2021 report prepared for the National Association of State Energy Officials titled Diversity in the U.S. Energy Work Force. Furthermore, this report shows that although Black Americans make up 12% of the nation's workforce, they only constitute 8% of the efficiency workforce. Additional challenges include fragmented and nontransparent credentials for jobs, insufficient teaching materials, limited adoption of digital tools, and more extreme hiring difficulties among employers. According to the U.S. Energy and Employment Report (2020), 80-90% of efficiency employers reported hiring difficulty for construction-related efficiency jobs, higher than hiring difficulties among non-efficiency employers.

GREEN JOBS STATISTICS FOR MILWAUKEE COUNTY					
DESCRIPTION	**ELECTRICIANS**	**PLUMBERS, PIPE FITTERS, AND STEAMFITTERS**	**HEATING, AIR CONDITIONING, AND REFRIGERATION MECHANICS AND INSTALLERS**	**LANDSCAPE ARCHITECTS**	**INSULATION WORKERS, FLOOR, CEILING, AND WALL**
Median Annual Earnings	$70,625.75	$72,155.02	$62,768.35	$50,533.85	$35,592.44
2020 Turnover Rate	65%	50%	42%	34%	**74%**
Typical Entry Level Education	High school diploma or equivalent	High school diploma or equivalent	Postsecondary non-degree award	Bachelor's degree	**No formal educational credential**
Typical On-The-Job Training	Apprenticeship	Apprenticeship	Long-term on-the-job training	Internship/ residency	Short-term on-the-job training
Males % of Occupation	97%	99%	99%	70%	92%
Total Diversity % of Occupation	16%	15%	13%	11%	N/A
White % of Occupation	84%	85%	87%	89%	73%
Median Hourly Earnings	$33.95	$34.69	$30.18	$24.30	$17.11

△Source: Economic Modeling Systems International (EMSI), Milwaukee County

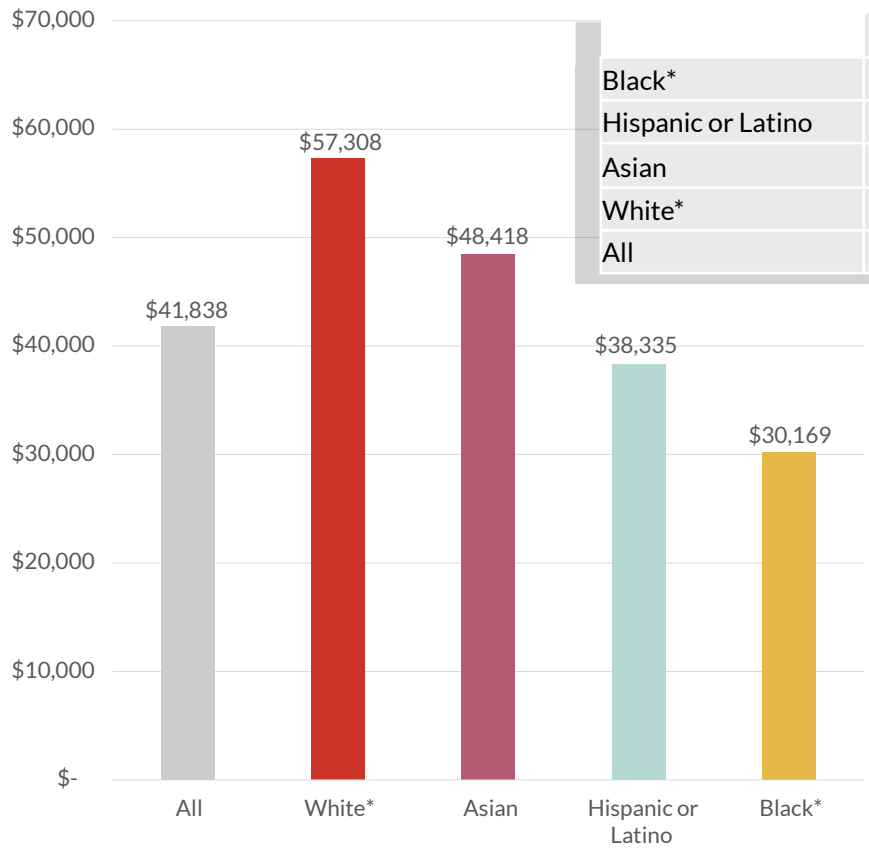
Equity

Milwaukee has significant racial disparities among employment. According to the City of Milwaukee's Office of Equity and Inclusion, the unemployment rate for black residents is over twice the unemployment rate of white residents. Black males have experienced high levels of persistent high unemployment. Furthermore, the chart below highlights that the median white family in Milwaukee earns almost double the median black family.

Black residents in Milwaukee also live in poverty at much higher rates than white residents, as can be seen from the graph below. The significant disparity in income, coupled with high unemployment and poverty rates, contribute to low home ownership rates among black residents (25.2% compared to 55.8% for white residents) and housing cost burden (59.8% for black residents compared to only 39.8% for white residents). Today, four out of five green trade jobs are occupied by an aging, white, male workforce. People of color are dramatically underrepresented in these fields. However, green jobs provide good wages among many other benefits and represent significant opportunity for people of color in Milwaukee:

- Substantial quantity of total jobs with positive 10-year growth rates
- Wages are mostly family-supporting and, generally, have favorable advancement opportunities
- The industry is experiencing a mis-match between job openings and finding skilled workers to fill vacancies

Median household income in past 12 months



	2010-2014	2015-2019	Change
Black*	$28,178	$30,169	$1,991
Hispanic or Latino	$34,494	$38,335	$3,841
Asian	$42,795	$48,418	$5,623
White*	$51,858	$57,308	$5,490
All	$38,362	$41,838	$3,476

△*Not Hispanic or Latino. Source: US Census Bureau, 2010-2014 and 2019 American Community Survey 5-Year Estimates in 2019 dollars . Graph courtesy of Milwaukee's Office of Equity & Inclusion.

Resiliency

Increasing the median income for people of color, especially Black families, is an essential condition for strengthening the region's economic resiliency. When all residents, regardless of background, are offered stable, positive economic opportunities, incomes are more equitably distributed and fewer fall below the poverty line. The region as a whole thrives with more frequent, long-lasting periods of prosperity and suffers more infrequent, shorter periods of economic stagnation. In addition, enabling all people to fully participate in the economy has ripple effects at the household and neighborhood level by enabling people with the resources to respond to the rising costs of energy and food instead of falling deeper into poverty. Residents are also better equipped to respond against extreme weather events or natural disasters, enabling the regional economy to more quickly regain economic stability.

CITY STRATEGY

To address persistent levels of black male unemployment and disparities in household income for families of color, Milwaukee's Green Jobs Accelerator will work with existing workforce institutions and employers to recruit, train, and employ Milwaukee workers with family supporting wages in growing green jobs sectors.

THIS PLAN ESTABLISHES A GOAL OF CREATING GREEN JOBS THAT PAY AT LEAST $40,000 PER YEAR AT THE ENTRY LEVEL. IN ADDITION, 40% OF GREEN JOBS WILL BE HELD BY PEOPLE OF COLOR, PARALLEL TO THE WHITE HOUSE'S JUSTICE40 STANDARD.

Milwaukee's existing workforce training needs to be scaled up to meet the current workforce gaps and be made more accessible to low-income workers and underserved communities. This plan establishes a goal of creating green jobs that pay at least $40,000 per year at the entry level. In addition, 40% of green jobs will be held by people of color, parallel to the White House's Justice40 standard. When projects are directly subsidized by government funds, the City should codify public benefits agreements to ensure that contractors meet these standards.

The Green Jobs Accelerator will support green jobs opportunities and engage employers in their willingness to hire those who complete trainings that are vetted and certified/accredited. The Green Jobs Accelerator(s) will use and support coaches who will help market these jobs at the community level, assist individuals who want to get into trainings, help them stay in and successfully complete the training, and be available to help people address retention issues once hired. Below is the desired pathway for the Green Jobs Accelerator:

- Build excitement for green jobs
- Clarify pathways
- Build skills
- Identify transitional jobs with career ladders
- Identify community benefits agreements for public projects
- Promote Black and Latino business development

Accelerating the growth of the green job workforce and family-supporting jobs requires a multi-prong strategy. Large-scale subsidized employment models that employ workers as they train for their future careers and intentionally place them in sustainable work and offer additional training as needed to advance in career ladders can meaningfully improve economic equity and reduce racial disparities. Higher paying green jobs are correlated with workers who have higher levels of training and experience. It requires having:

1. Prospective workers that are aware of green job opportunities and who want to make a career in those industries
2. Workers who know where to get the necessary training and who have the financial and transportation supports to enroll and persist through training programs
3. Employers who are willing to hire Milwaukee residents and workers of color and who are willing to pay family-supporting wages and benefits
4. Sustained market demand for green good services that will induce employers to hire and retain workers

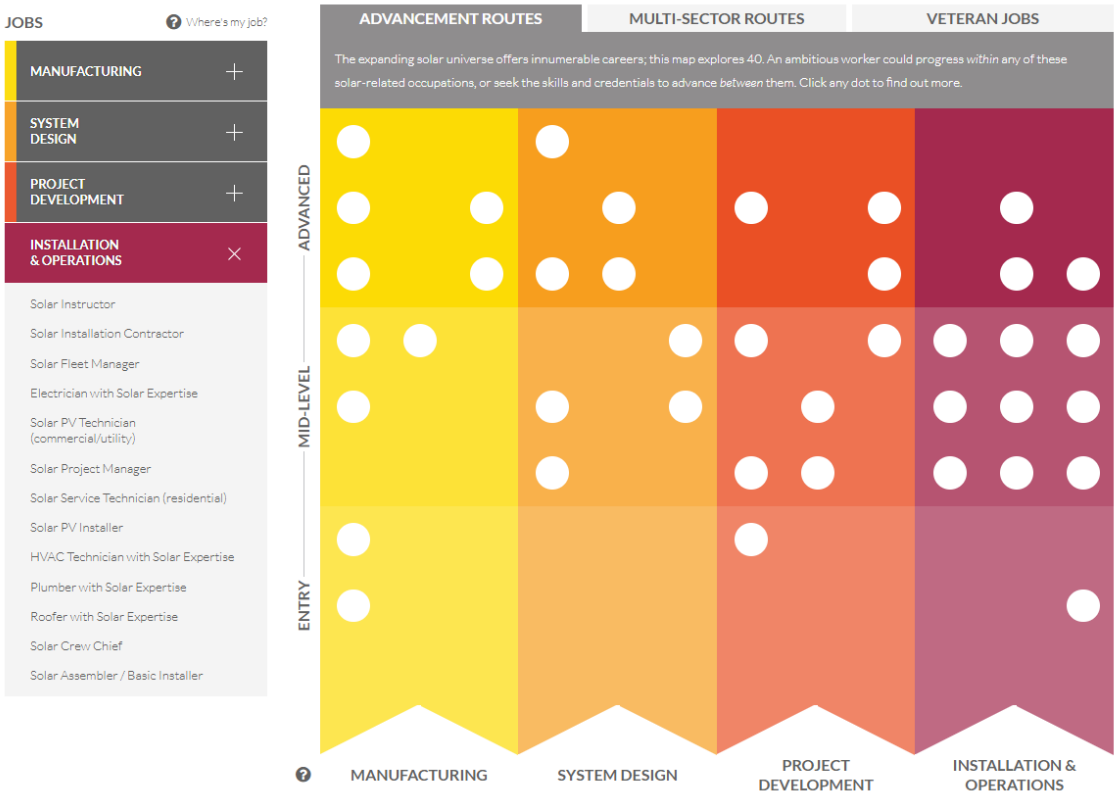
To work on all these issues, the City of Milwaukee, Employee Milwaukee, or associated workforce agencies, should develop a Green Jobs Accelerator Program that:

- Builds a modern website and resources that takes national green job maps and connects them to local training providers
- Operates at physical locations to showcase green jobs careers
- Hires local workers of color and provide entry-level transitional jobs for approximately 2 days per week while exposing workers to the broader array of career opportunities and subsidized training.
- Provides direct commercial drivers license training, which is a prerequisite for many green jobs
- Signs agreements with employers of good will to hire workers graduating from the program
- Implements community benefits agreements on related government work and utility-scale projects to employ workers in the private sector
- Develops an outreach plan to:
    - High school students
    - Underemployed people of color
    - Short-term unemployed
    - Incumbent workers

The Green Jobs Accelerator should utilize a tracking system to provide regular public information on the percentage of green jobs which are held by people of color. The following metrics of community-wide measures of race-based economic inequality should be tracked regularly (see Implementation chapter for more details):

- Employment Rate by Race and Gender (Census);
- Median Household Income by Race (Census);
- Median Hourly Wage Rate by Race and Gender (BLS data).

▽Screenshot of website from the Interstate Renewable Energy Council.



△Photo by Steve White Films.

Existing Resources - Getting a Green Job Right Now!

The Environmental Collaboration Office website has listed existing resources related to green jobs including electricians supporting energy efficiency and renewable energy, HVAC technicians, weatherization workers, housing constructors, manufacturers of sustainable technologies, and other professional jobs such as consultants, engineers, and building operators. With additional funding, Milwaukee can greatly expand its green job web resources and recruitment resources.

The Interstate Renewable Energy Council and its partners have developed interactive clean energy career maps (https://irecusa.org/career-maps) , that highlight the range of green jobs, from entry level positions to more advanced:

More can be done to help prospective workers understand the career opportunities at a high level, understand which local training providers provide relevant training, and then connect trained workers with employers who are willing to hire them.

Green Jobs: Local Training Providers

Milwaukee already has a number of training programs for green jobs including:

- Trade unions like IBEW provide training and family-supporting wages and benefits
- MATC is a pathway to many trades and green jobs, particularly building automation and controls
- The Wisconsin University system has expanded offerings in water and energy technology
- The Midwest Renewable Energy Association provides training in solar energy
- Weatherization workers could be trained and paid more to reduce turnover (recommend $20/hour+) through national certification programs such as the Building Performance Institute, Inc (BPI.org)

Working with Milwaukee Public Schools

Milwaukee's most important workforce preparation opportunity is our schools, including high school. Grade school and high school provide critical formation in helping kids to not only learn basic skills like reading and math. Primary and secondary education is also a critical opportunity for young people to explore their interests, and develop the good work habits of setting goals, completing work on time, and meeting standards. Milwaukee's workforce environment and opportunities will be improved by creating clear and more consistent transitions from high school to post-secondary educational opportunities with technical colleges and other reputable training providers, such as through the M3 initiative. Efforts to expose young people to promising green careers through the Green Schools Consortium of Milwaukee, and other intentional efforts with trade unions and other trade associations should be expanded. Additionally, MPS and other area high schools should continue to recognize that the skilled trades, when coupled with adequate preparation, presents attractive career alternatives to college for many young people. Our school system should expand hands-on classroom opportunities to begin to the prerequisites for careers in the skilled trades.

HEALTHY HOME ENERGY UPGRADES

Improve existing Milwaukeean homes to be energy efficient, lead-safe and healthy.

WHY IS THIS IMPORTANT?

Improving the energy efficiency of homes is critical to dramatically reducing greenhouse gas emissions, reducing the burden of high energy bills, and improving the health and quality of life for residents. According to the City of Milwaukee 2018 Inventory of Community Greenhouse Gas Emissions (GHGs), 31% of GHGs were produced by residential buildings. GHGs are produced from the residential housing sector by the energy used to heat, cool, and power homes and appliances. This includes electricity generated through burning coal and natural gas in power plants, as well as natural gas used to heat household spaces and water, and to power gas stoves and dryers. Energy inefficient homes with poor insulation, outdated appliances, and old heating systems are not only less comfortable to live in, but they also create higher utility bills and more GHG emissions due to energy being wasted.

Energy efficiency focuses on using less energy to perform the same task. For example, installing an energy efficient air conditioner can use less energy than an old, failing air conditioner but performs the same job. Residential energy efficiency can take many forms but is commonly associated with (1) reducing energy use, by installing more efficient heating and cooling systems, appliances and lighting, and (2) improving the building envelope (exterior walls and roof) to reduce waste energy, by adding insulation and air sealing. Programmable thermostats to reduce energy use while residents are away are another way to conserve energy without sacrificing comfort.

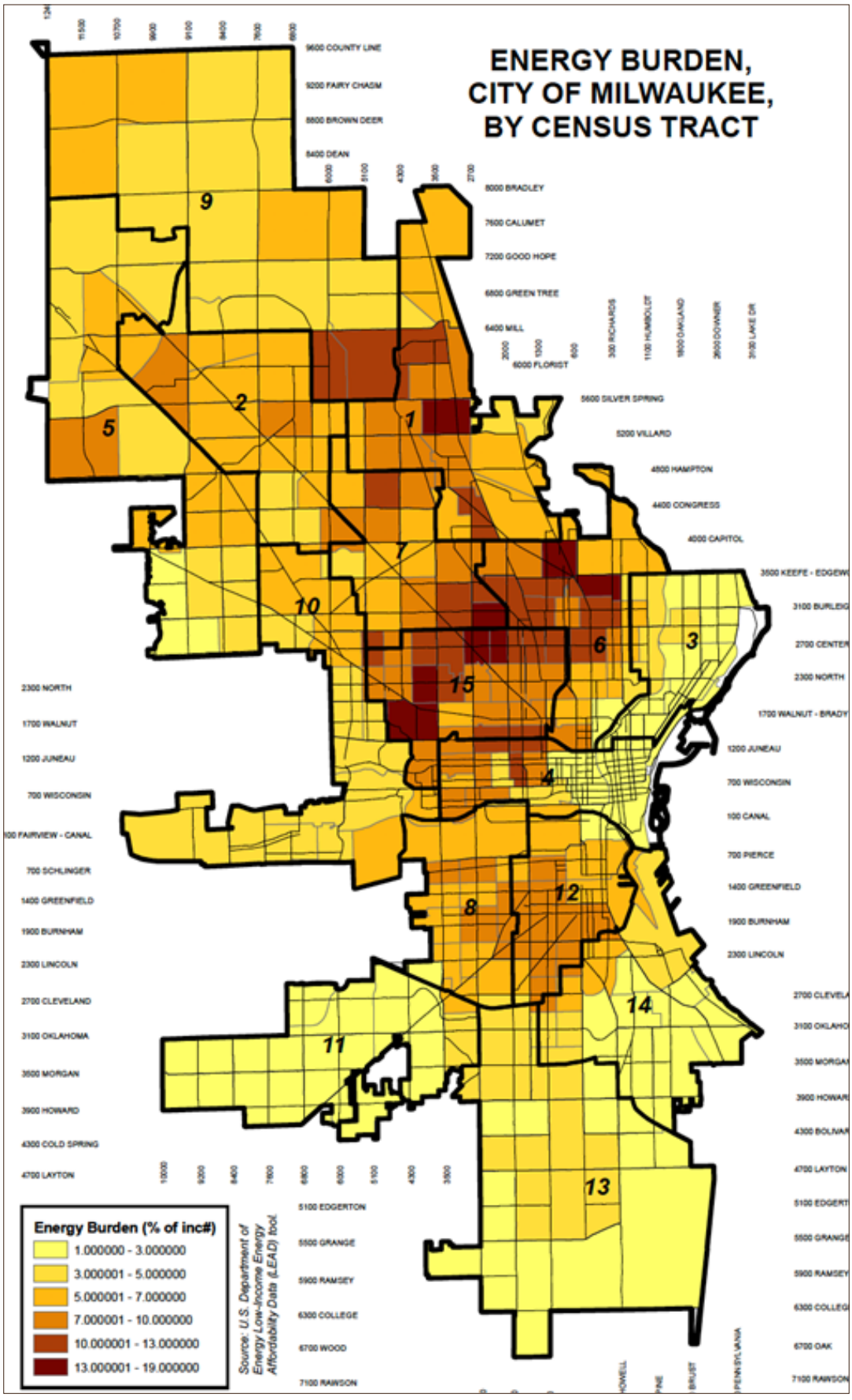
Overall, reducing energy use through energy efficiency upgrades reduces the amount of energy that must be paid for in monthly utility bills. According to a September 2020 report by the American Council for an Energy Efficient Economy (ACEEE) titled "How High Are Household Energy Burdens?", affordable household energy costs should be no more than 6% of total household income. Unfortunately, many residents in Milwaukee are paying more than 10% of their income, and as much as 15-19% of their income on energy bills due to a combination of low-incomes and old, energy inefficient housing. The map titled "Energy Burden, City of Milwaukee by Census Tract" shows the areas in Milwaukee where residents are experiencing these energy burdens.

COMMUNITY VOICES

If we can implement a program that provides at a discount, energy efficient appliances like heat pumps, stoves, electric water heaters, let's distribute those to the people who are in most need."

We need to ensure that whatever solutions we adopt to combat climate change also impact racial justice. Examples include green jobs training programs, increased and improved public transit, energy efficiency upgrades in rental homes in predominantly Black and Latino neighborhoods, lead abatement in those homes, increases in green spaces and tree cover in neighborhoods that lack access to parks and playgrounds, and measures to mitigate extreme heat events and their impact on communities of color.

I think that there just needs to be a concentrated effort to improve the quality of the housing stock in the most needy neighborhoods. And these are things that could have a huge effect on carbon emissions, too.


ENERGY BURDEN, CITY OF MILWAUKEE, BY CENSUS TRACT
Energy Burden (% of inc#)
1.000000 - 3.000000
3.000001 - 5.000000
5.000001 - 7.000000
7.000001 - 10.000000
10.000001 - 13.000000
13.000001 - 19.000000
Source: U.S. Department of Energy Low-Income Energy Affordability Data (LEAD) tool.
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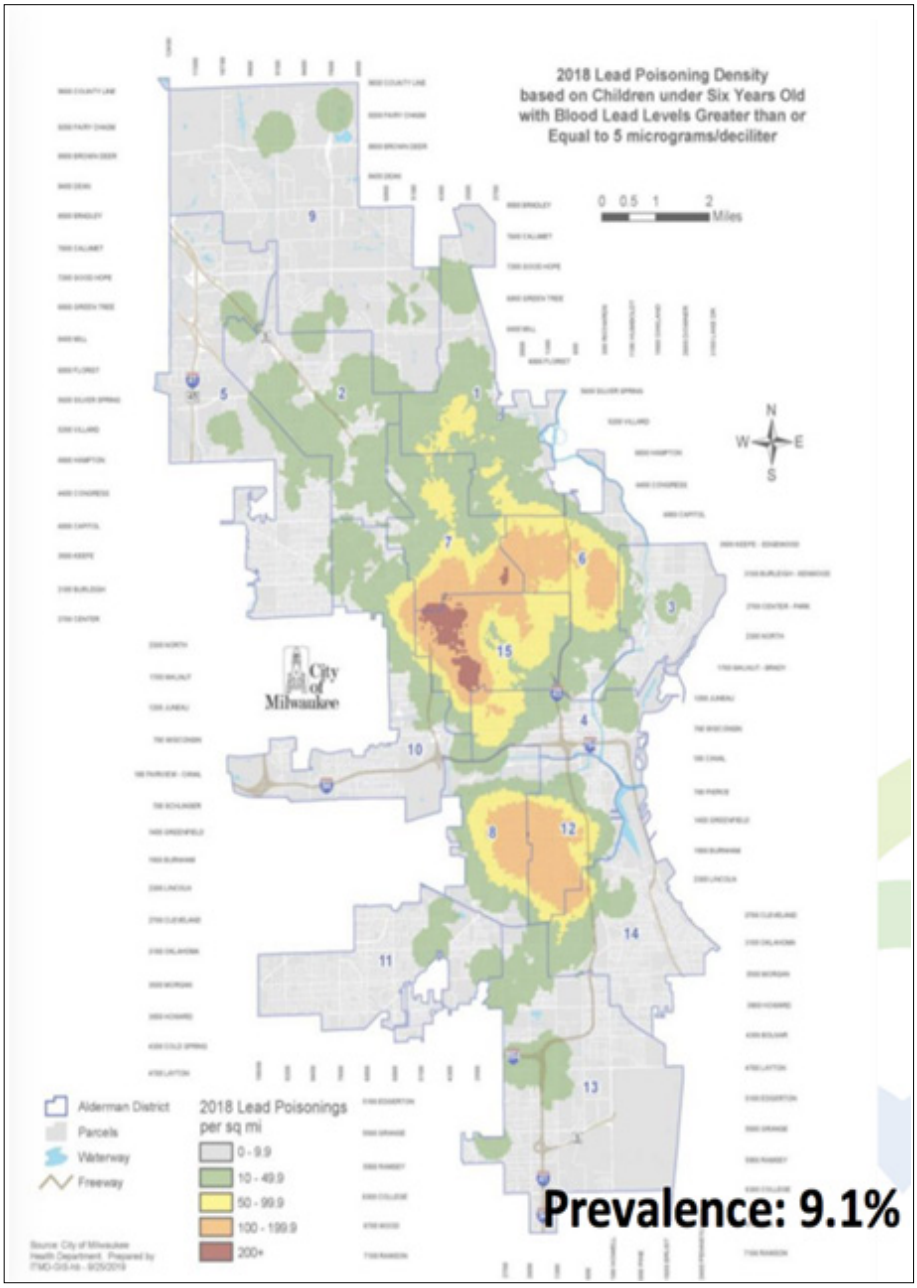
Childhood Lead Poisoning

Childhood lead poisoning is a health crisis that is also tied to Milwaukee's old, deteriorated housing stock and disproportionately impacts children of color in underserved neighborhoods. Although it is not related to climate change, it is an important issue for Milwaukee residents that intersects with the need for climate action. It's unsurprising that the Milwaukee census tracts with high energy burdens often overlap with the census tracts with the highest levels of childhood lead poisoning. The state of Wisconsin, and Milwaukee in particular, have a very high burden of lead poisoning in comparison to other U.S. cities and states. Prior to the COVID-19 pandemic, approximately 7% of children in Wisconsin had blood lead levels above the CDC's prior Blood Lead Reference Value of 5 micrograms/deciliter (µg/ dL), which is higher than the national average of approximately 4%. In Milwaukee, the percentage of children with blood lead levels of 5 µg/ dL and above is consistently 9-10%. However, in the most burdened census tracts, that percentage can be 20-30% of children lead-poisoned. City leaders have prioritized addressing this critical near- term crisis. Improving homes with an eye toward removing lead hazards and addressing energy efficiency at the same time presents new opportunities for collaboration.



Other Housing Issues

Milwaukee's housing stock in disinvested neighborhoods of color faces a range of other structural and health challenges, including leaking roofs, outdated electrical wiring, and a host of other issues. Over time government agencies and non-profit organizations have attempted to address this with a patchwork of housing repair programs that have an often confusing and hard to navigate eligibility requirements that vary by program. Creating better coordination and navigation tools among various housing programs presents an opportunity to create efficiencies and improve customer service. Improving the existing housing stock with more energy-efficient homes will save households money on both operations and maintenance costs, freeing up funds to be used for other necessities like rent, food, and medical care.

△Graphic by GRAEF.

Equity

The focus of this idea is increasing equity in Milwaukee's housing sector by creating healthy home environments for all Milwaukeeans. Milwaukee children are a top priority, because the impacts of lead poisoning can have devastating, life-long impacts on their cognitive development, and lead poisoning disproportionately impacts Black and Latino children in Milwaukee. Moreover, while improvements have occurred over the past two decades, the highest energy burdens continue to be faced by Black and Latino households.

Energy-efficient homes also include many more benefits such as staying warmer in the winter and cooler during summer months. This ensures more comfortable, healthy home environments for households during frigid winter and summer heat waves, which will be increasingly important with more extreme and frequent impacts of climate change in Milwaukee. Energy efficiency can also increase home value, an opportunity to build wealth for low-income residents.

Resiliency

Existing homes must also be improved to be more resilient to the more extreme and frequent weather events caused by climate change. MMSD's Pipe Check Program provides practical tips to help homeowners reduce the risk of flooding and basement backups in their home.

Electric air-source heat pumps, geothermal ground loop systems, and rooftop solar all provide home heating and cooling with lower GHG emissions. Building insulation is one of the simpler but effective housing retrofit tools that should be broadly implemented. Improving a home's thermal envelope—any structure that helps control interior temperatures—with better insulation is one of the lowest cost but most beneficial improvements one can make while preventing heat and conditioned air from escaping. As prices come down, solar energy coupled with battery storage offers the opportunity to help homeowners keep the lights on during grid outages.

SOLAR ENERGY

Milwaukee SHINES

ecoCITY of MILWAUKEE

The City of Milwaukee has been a leading city in Wisconsin in working to increase access to solar energy. Adding solar energy systems to existing homes can strengthen energy independence and home value while reducing the costs paid to an electric utility for energy in the long-term.

The Milwaukee Shines Solar Program has reduced permitting and other soft costs for solar, provided affordable financing to qualified homeowners, and supports "group-buys" to bring down the cost of solar. The City has also supported solar projects in communities of color including Alice's Garden, Walnut Way's Wellness Commons, and the Fondy Farmer's Market. In addition, the City of Milwaukee also advocates for new options to help all customers, regardless of income, access solar. Expanding the benefits of solar further to underserved communities requires continued advocacy for statewide policy changes that support lease financing of solar and new community solar options for customers that do not have a suitable site for solar.

CITY STRATEGY

Continue and Expand Current Weatherization and Energy Efficiency Programs

Milwaukee currently has a range of weatherization [1]and energy efficiency programs and solar programs including the low-income Weatherization Assistance Program (WAP), the Milwaukee Energy Efficiency (Me2) loan program, the statewide Focus on Energy program which provides rebates for investing in energy efficiency, as well as the Milwaukee Shines solar program. The Me2 loan program for energy efficiency complements other rebate programs from Focus on Energy and federal incentives by supporting homeowners citywide who cannot afford the upfront costs to improve their home. The City will continue and expand these existing programs.

Align Energy Efficiency and Lead Paint Abatement

Milwaukee leaders have dramatically increased funding for residential lead abatement and other home repair programs through the City's funding allocation of the American Rescue Plan Act (ARPA). These funding resources are primarily targeted to neighborhoods with a high percentage of historic disinvestment and communities of color. With this historic influx of federal funds to support housing repairs from ARPA, coupled with new financial incentives through the 2022 Inflation Reduction Act, the City of Milwaukee has an unprecedented opportunity to financially support energy efficient and healthy home upgrades. To meet the moment and bring these efforts to scale, the City of Milwaukee, following the recommendations of the City-County Task Force on Climate and Economic Equity, is developing a unified Healthy Home Energy Upgrades Strategy. In 2022, the City of Milwaukee contracted with the Green and Healthy Homes Initiative (GHHI), the nation's foremost experts on integrating energy efficiency retrofits with lead paint abatement work. The City's Environmental Collaboration Office, Milwaukee Health Department, Weatherization Assistance Program providers including the Social Development Commission, and other housing repair programs will work together to coordinate a more holistic approach to home repair. Through better coordination, the City aims to more efficiently and effectively deliver housing improvements to households of color most at risk for lead poisoning and high energy bills.

Implementation of this energy efficient and healthy homes strategy is already underway. In October 2021, the City of Milwaukee Common Council allocated approximately $26.3 million of its American Rescue Plan Act (ARPA) funding to reduce lead poisoning, including funding to abate lead paint hazards in 850 of the highest priority housing units, provide necessary medical and case management services to lead-poisoned children, increase blood lead level testing, and provide resources to parents, among other efforts.

The Council further approved $2 million to audit and complete energy efficiency upgrades in those units being abated of lead hazards. Moreover, the Council approved an additional $3 million to help develop the workforce needed to complete this larger scale of home improvements. The City of Milwaukee Common Council also allocated $15 million in ARPA funds to renovate 150 homes currently owned by the City of Milwaukee, making them lead-safe and highly energy efficient, to prepare them for resale. Additional planning work in 2023 and beyond will be necessary to incorporate the new opportunities from the Inflation Reduction Act.

Develop a Long-Term, Flexible Funding Strategy for Healthy Home Upgrades

While the funding resources provided by ARPA, the Infrastructure Investment and Jobs Act, and the Inflation Reduction Act are significant, the scale of healthy home renovations needed

1 Weatherization programs typically refer to programs for low-income households who can qualify for free energy efficiency upgrades to their homes - like insulation, air sealing, replacement of furnaces and water heaters with more efficient versions, etc. - though these programs do not cover window replacement.

in Milwaukee will require more than can be supported through government funding alone. Moreover, existing home weatherization and lead paint abatement programs are unable to cover needed "pre-weatherization" work in a large number of Milwaukee homes each year. This "pre-weatherization" work most often includes roof repairs, and when these issues are uncovered, it stops the weatherization or lead abatement work from being done. Statistics from one local weatherization agency indicate that, for example, in 2019, 46% of households that applied for weatherization of their homes could not have it completed due mostly to these "pre-weatherization" issues. Such home repairs impeded a number of homes from being abated for lead paint hazards every year, as well. This is another reason the City of Milwaukee has contracted with GHHI, because they have experience assisting other cities and states to develop flexible healthy home repair funds that combine government funds with contributions from philanthropic sources, health care providers, contractors and trades, Federally Qualified Health Centers, and other relevant sources. Due to greater flexibility, the fund could also provide support for necessary improvements to homes discussed above, that currently impede both weatherization and lead paint abatement work from being completed.

Coordinate Housing Repair Programs and Simplify Application Processes

In addition to improving the coordination of programs, Milwaukee will make better use of technology to help residents understand the existing housing repair programs, the various eligibility requirements, and how to access these programs. All City and housing repair programs should work on a unified, online navigation tool that will make it easier to connect residents to the programs for which they are eligible, as well as coordinate outreach with the Resilience Ambassadors described later in this Plan. Where practical, the City should explore better coordinator or consolidation among its various home repair programs while respecting the different customers they serve.

Electrify Homes

Finally, the City and its partners will lay the groundwork for "beneficial electrification" of homes. Achieving net-zero GHG emissions by 2050 requires replacing the burning of natural gas in homes for heating, cooking and clothes-drying with affordable electric options powered by carbon-free electricity sources. Recent advances in cold-climate air source heat pumps, heat-pump hot water heaters, and induction stoves make this feasible. Moreover, the federal Inflation Reduction Act provides significant funding assistance for households to electrify, with more support for lower-income households. The City, along with its partners, will promote the availability of these federal incentives for electrification and continue to integrate support for electrification into existing programs, such as the Me2 program, which now provides low interest loans for various electrification improvements to homes. Many policy, technological, and financing strategies will need to effectively come together over time to make this strategy truly beneficial for both the environment and residents' pocket books, but the City will be working proactively on these efforts with our partners in the City and statewide. Net-zero homes are discussed further in the following chapter.

Advocating for State, Federal, and Utility Energy Efficiency Funding and Programing

The City of Milwaukee ECO will continue to intervene in relevant dockets and cases at the Wisconsin Public Service Commission through the Wisconsin Local Governments Climate Coalition (WLGCC.org) to encourage improved energy efficiency, weatherization, and pre-weatherization programs and policies. This includes supporting the Focus on Energy program and coordinating with it for local programs. The City of Milwaukee may also advocate with We Energies for creation of an on-bill financing option for customers. Such on-bill tariff options remove financial barriers to households adding energy efficiency upgrades

to their homes, by allowing utility customers to pay off energy efficiency and other upgrades to their homes overtime on their utility bills, rather than needing to pay upfront for energy efficiency upgrades that will lower their utility bills over time. Federal and State investments are critical to upgrading our housing stock for health and energy efficiency.

Cross-Cutting Recommendation: Supporting the Green Jobs Accelerator

Upgrading buildings will require more green contractors and workers than are currently available. Accordingly, this represents an opportunity to focus on recruitment, training and employee retention, and presents great career opportunities for workers of color. While HVAC technicians and electricians will certainly be needed, the importance of building envelope improvements, such as insulation and air sealing, will require laborers and carpenters. This is even more true when incorporating lead paint abatement work, which mainly includes window replacement, paint removal and hazardous waste cleanup.

Energy contractors, such as Green Homeowners United, have been working with labor unions to explore workforce training opportunities in energy efficiency and lead paint abatement. Maintaining a high-quality workforce of insulation workers, HVAC technicians, and other energy efficiency workers will require fair wages of $20+/hour. The intersection of workforce development and home remediation is addressed further in the Green Jobs Accelerator chapter.

NEW NET-ZERO ENERGY HOMES

Build new affordable, durable, energy efficient housing for Milwaukee neighborhoods, promoting for infill development and homeownership for low-to-moderate buyers.

△Photo of Westlawn Garden Modular Housing being built.

WHY IS THIS IMPORTANT?

Affordable, quality housing is a huge need for Milwaukee families. Milwaukee has thousands of existing homes that should be maintained and improved for energy efficiency and healthy environments as outlined in the previous chapter. As a complement to the strategy of preserving existing housing when practical, Milwaukee has a need for new homes to reinvigorate Milwaukee neighborhoods and provide long-term, affordable, and sustainable housing stock. The City has over 2,000 buildable vacant lots in residential neighborhoods where old, unsafe houses were demolished and new homes were not built in their place. As a major city, space is limited in Milwaukee. Taking advantage of the hundreds of vacant residential lots scattered throughout Milwaukee is both environmentally and socially sustainable. According to the Environmental Protection Agency, building on infill sites is a form of environmental conservation; it reduces pressure on outlying lands that serve important environmental and ecological functions. Denser communities also means more pedestrian-friendly areas and less driving.

The major challenge to redeveloping vacant lots with new housing is the gap between the cost of building new homes with traditional "stick-built" construction, and what banks are willing to finance due to lower neighborhood housing values.

According to Milwaukee's 2018 Community-Wide Greenhouse Gas inventory, 2.4 million tons of GHGs were produced by the residential sector. Overall, direct emissions from homes account for 31% of all GHG emissions in the City. In Milwaukee, as in other cities across the country, fossil fuel energy costs put a larger burden on low-income households.

As solutions are sought to generate new housing in Milwaukee, it is essential to make sure those homes are climate friendly. That means designing houses so they are extremely energy efficient, and designed so that any heating, cooling, and other energy needs can be provided by clean, renewable sources. A home that produces the same amount or more energy than it consumes is known as a "net zero" home.

In Milwaukee, net-zero homes should be designed to be super energy efficient. They should also be able to support enough on-site solar panels to completely power and heat the home. This means net zero homes feature energy efficient appliances and heating systems that are run on electricity rather than natural gas. This "beneficial electrification" is possible when homes are designed with the goal in mind from construction. This includes air-source heat pumps for heating and cooling, which can work alone when in a fully insulated home. . The US Department of Energy also has a Zero Energy Ready Homes (ZERH) standard that can put Milwaukee homes on the path to being carbon neutral by 2050.

Equity

Too many urban Milwaukee families lack access to affordable, climate-friendly housing. This is due to a number of factors, including a shortage of living-wage jobs and a shortage of affordable, climate-friendly housing stock in low-income neighborhoods. Therefore, making new homeownership more affordable means improving both sides of the housing equation: reducing the cost of new construction while also increasing incomes for people of color. Housing affordability also means reducing the cost of home ownership, including reducing the energy costs in the home.

The City has suffered a 40% decline in manufacturing jobs since 1970. Since the 1980s, service sector jobs – which traditionally pays lower wages – experienced explosive growth. This puts today's service sector workers at financial disadvantage. In addition, 42% of housing stock in the City was built before 1940. As housing continued to age, the COVID-19 pandemic accelerated housing insecurity. City homeownership has declined by 14% in the past 15 years. Now, just 37% of housing units are owner-occupied (including multi-family housing), with the Black homeownership rate half

▽ Modular housing rendering. Image courtesy of University of Wisconsin-Milwaukee - Designer Dongmin Yun.

of that of white households. With lower incomes low and housing costs relatively high, there is a housing affordability disparity that falls along racial lines. Simply put: Milwaukee, like many other metropolitan areas, has unacceptable racial disparities in both income and housing.

Resiliency

With climate migration and the Mayor's goal to have Milwaukee be a city of 1 million people, there is an urgent need for affordable and sustainable housing. These new homes should be built with triple bottom line sustainability in mind to: (1) reduce environmental impact, (2) be affordable, and (3) provide added health and social benefits to the residents.

Infill development and multifamily units in urban environments are more efficient land uses as opposed to single family residential homes on large lots. Additionally, a major climate risk to the residential sector is flooding. Milwaukee can look at building new homes with first floor storage instead of basements to reduce costs and the risk of basement sewer back-ups during major storms.

LEADING BY EXAMPLE

This program is an outgrowth of the Business Case developed for the Bloomberg Philanthropies Global Mayors Challenge and the City-County Task Force on Climate and Economic equity. Major milestones to date include:

- In 2021, the City's Environmental Collaboration Office (ECO) presented this project to the U.S. Department of Energy and the Advanced Building Construction Collaborative that is powered by the Rocky Mountain Institute.
- In early 2021, ECO worked with the University of Wisconsin--Milwaukee's School of Architecture and Urban Planning students to develop concepts.
- In July, ECO City issued a Request for Information to firms nationally to gage interest and get feedback on the program idea. The City of Milwaukee received interest from seven national manufacturers and innovation teams that may be interested in establishing a factory in Milwaukee through this partnership. The envisioned public-private partnership would combine private sector manufacturing expertise with the public financial support plus technical assistance in developing a pipeline of new housing orders, workforce development, and design and permitting. ECO received a $25,000 EPA grant to develop a demand-side financing strategy to help new homeowners purchase houses built from this factory.
- One million dollars has been allocated to this through the American Rescue Plan.

COMMUNITY VOICES

Implementing solar energy in low-income areas would be the first step to equity. Research on "energy burdens" in WI shows that low-income areas may be disadvantaged even further if high-income, majority-white areas receive access to solar or wind first. How does the city of Milwaukee plan to grant access to those who need it most, first?"

"There just needs to be a concentrated effort to improve the quality of the housing stock in the most needy neighborhoods. These are things that can have a huge effect on carbon emissions, too.."

"Milwaukee could serve as a manufacturing center and marketing hub for a number of new energy generation and energy efficiency technologies.

CITY STRATEGY

To address the related needs of climate solutions, equity, affordable housing, and the need for green manufacturing jobs, the ECO is working on a bold strategy for new, net-zero energy homes. These homes will be built on existing vacant lots scattered throughout Milwaukee's neighborhoods. The homes will be designed to be all-electric, affordable, durable, and fit within the architectural character of the City's neighborhoods.

To dramatically scale up the number of new homes that can be built in the City while reducing costs and creating year-round-employment opportunities, this project will utilize off-site construction. This means that major housing components will be built in a factory under a roof, meaning workers can operate year-round. It also allows for using precision equipment to assemble housing components at scale. Off-site construction can include a range of complexity from building simple two-dimensional wall sections to more complex three-dimensional modular systems.

This project will develop a model for infill housing in Milwaukee's neighborhoods, with housing components made in a new factory in Milwaukee, preferably a central City or northside location where jobs are needed most. The project envisions a public-private manufacturing partnership to design, prototype, and build affordable, durable, climate-friendly housing in the 30th St. Corridor while creating year-round family supporting jobs. Factories of the kind that make these homes are in business primarily on the East and West Coasts, with little presence in the Midwest. Milwaukee aims to fill this gap and become a center of expertise and capability for ZERH construction while also minimizing emissions for transporting these materials from factory to home sites. Milwaukee's participation in the national Advanced Building Construction Collaborative informed the development of this project.

ECO worked with the University of Nebraska-Lincoln (UNL), Better Buildings Workforce Accelerator to create a preliminary workforce development plan for this project under a technical services agreement paid for by the U.S. Department of Energy. This preliminary plan recommended The Training for Manufactured Housing Construction (TRAMCON) as a possible model that has been successful in other states. In addition to employing program participants, employers and industry partners may serve as program advisors, providing input on training and the relevance of credentials. Employers and industry partners may include panelized and modular manufacturers, single and multi-family modular homebuilders, modular building associations and trades organizations, and labor unions.

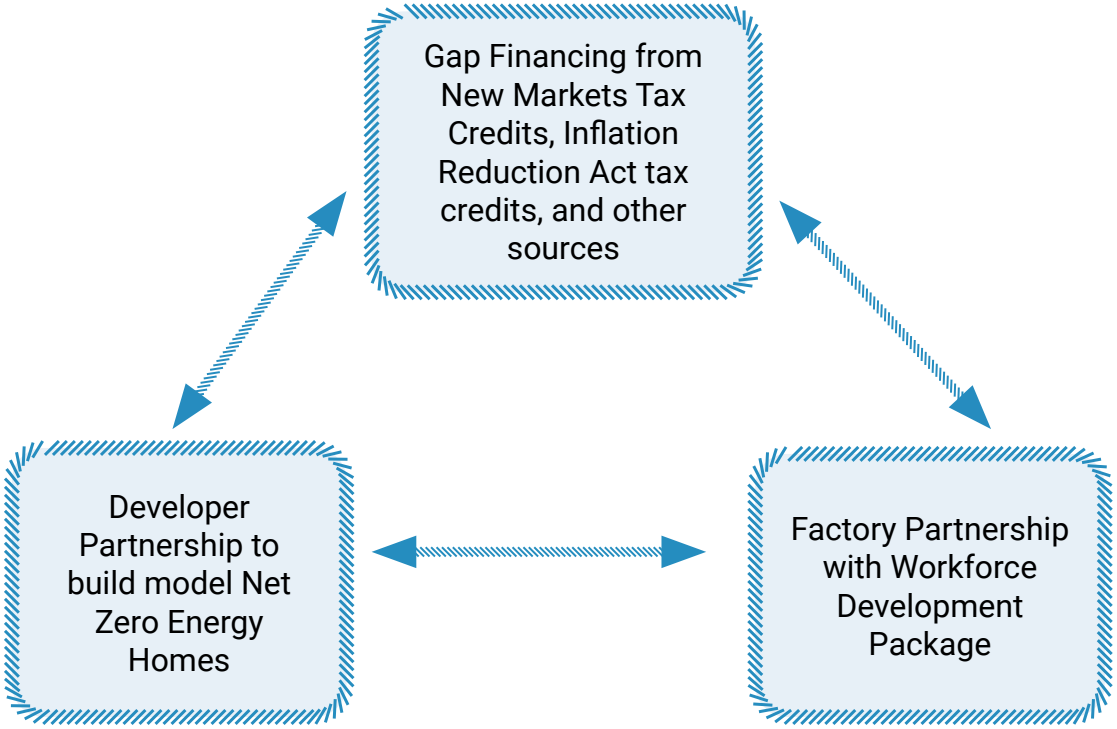
▽Photo courtesy of Jens Behrmann.

A Three-Pronged Approach

To achieve this vision, this strategy envisions a three-pronged approach, kickstarted by the $1m investment ARPA investment and EPA Financing grant. First, the City, through a Request for Proposals (RFP), will identify a developer to build model net-zero energy homes. These models will serve as a proof of concept for the technology, architecture, and market for these homes. If the model homes are successful, the developer and City will work to scale up the construction and sale of the dozens of additional new homes annually.

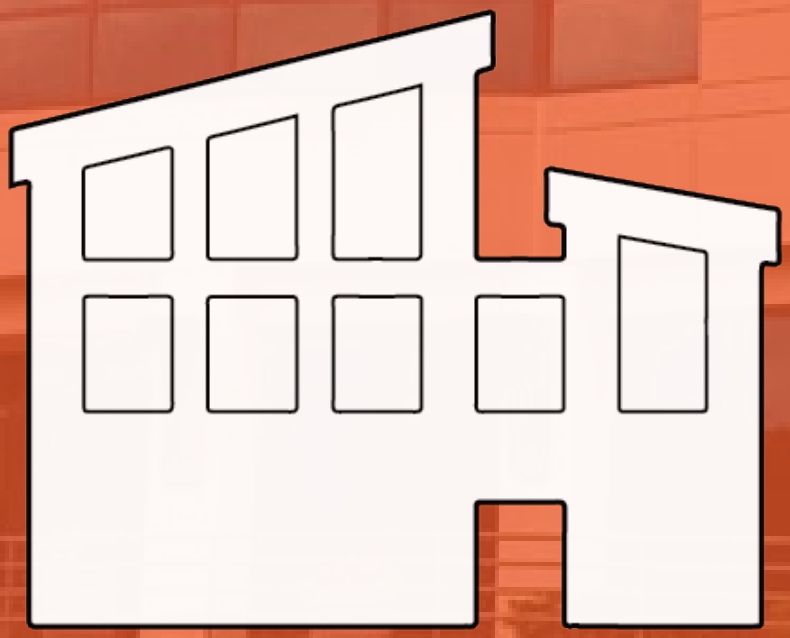
Secondly, the project is identifying creative sources of financing to fill the gap between the cost to construct new single-family homes or duplexes and what can be financed with traditional mortgage financing. This may include New Markets Tax Credits for housing, tax credits and other new financial supports recently approved through the federal Inflation Reduction Act, and possibly other financing resources such as the City's Housing Trust Fund, the WHEDA home loans.

Finally, the project envisions a new manufacturing facility, ideally in the Century City area. Housing manufacturing provides year-round employment opportunities and an ergonomically friendly environment. Through an integrated design process, the developer will work with the manufacturer to develop designs that meet market demands and which can be cost effectively produced and replicated. The factory should provide "mass customization" meaning it can achieve the economies of scale provided by industrial construction while also giving customers some options and variety in the fit and finish of the homes.



COMMERCIAL BUILDING ENERGY BENCHMARKING + BUILDING PERFORMANCE STANDARDS

Improve energy efficiency in commercial buildings by tracking energy use and updating minimum requirements in existing buildings.



△ Executive Center – Better Building Challenge.

WHY IS THIS IMPORTANT?

In the past 10 years, Milwaukee has experienced an exciting surge of major commercial building developments (for example, the Fiserv Forum and the Northwestern Mutual tower). In addition, many of the City's older commercial and industrial buildings have been repurposed and converted into residential apartments. Commercial buildings consume approximately 18% of the total energy consumption in the United States, and according to the 2018 City of Milwaukee Community Greenhouse Gas (GHG) Inventory, commercial building energy use accounted for 23% of total GHG emissions. Reducing energy use in existing commercial buildings and multi-family properties, while improving the buildings' indoor air quality, is important to continue reducing GHGs in the City of Milwaukee. For the purposes of this section, commercial buildings are divided into new building developments and existing buildings. This includes multi-family apartment buildings with 4 or more units.

New Buildings

Commercial buildings must adhere to established building codes, which set regulations for design, construction, alteration, and maintenance. Building codes include energy codes, which specify regulations for the energy efficiency of a building and its systems. The State of Wisconsin Department of Safety and Professional Services establishes the building code for the entire State. Per Wisconsin law, municipalities are not allowed to set higher energy efficiency requirements in local building codes, something that other municipalities across the U.S. are allowed to do. As of September 2022, the minimum energy efficiency requirements of the Wisconsin building code have not kept pace with international standards.

Construction of a new building typically follows a building code that lists the minimum requirements of energy conservation. These are related to the minimum insulation, window properties, efficiency requirements for mechanical equipment (heating, cooling, water supply), and more. According to the U.S. Department of Energy, as of 2022, the energy conservation chapter of the Wisconsin commercial building code is equivalent to ASHRAE Standard 90.1 2010, released 12 years ago. The Wisconsin commercial building council is in the process of proposing a newer code that is equivalent to ASHRAE Standard 90.1 2019. Adopting the new code will reduce the energy use of new commercial buildings by approximately 19% compared to a building built following the current code.

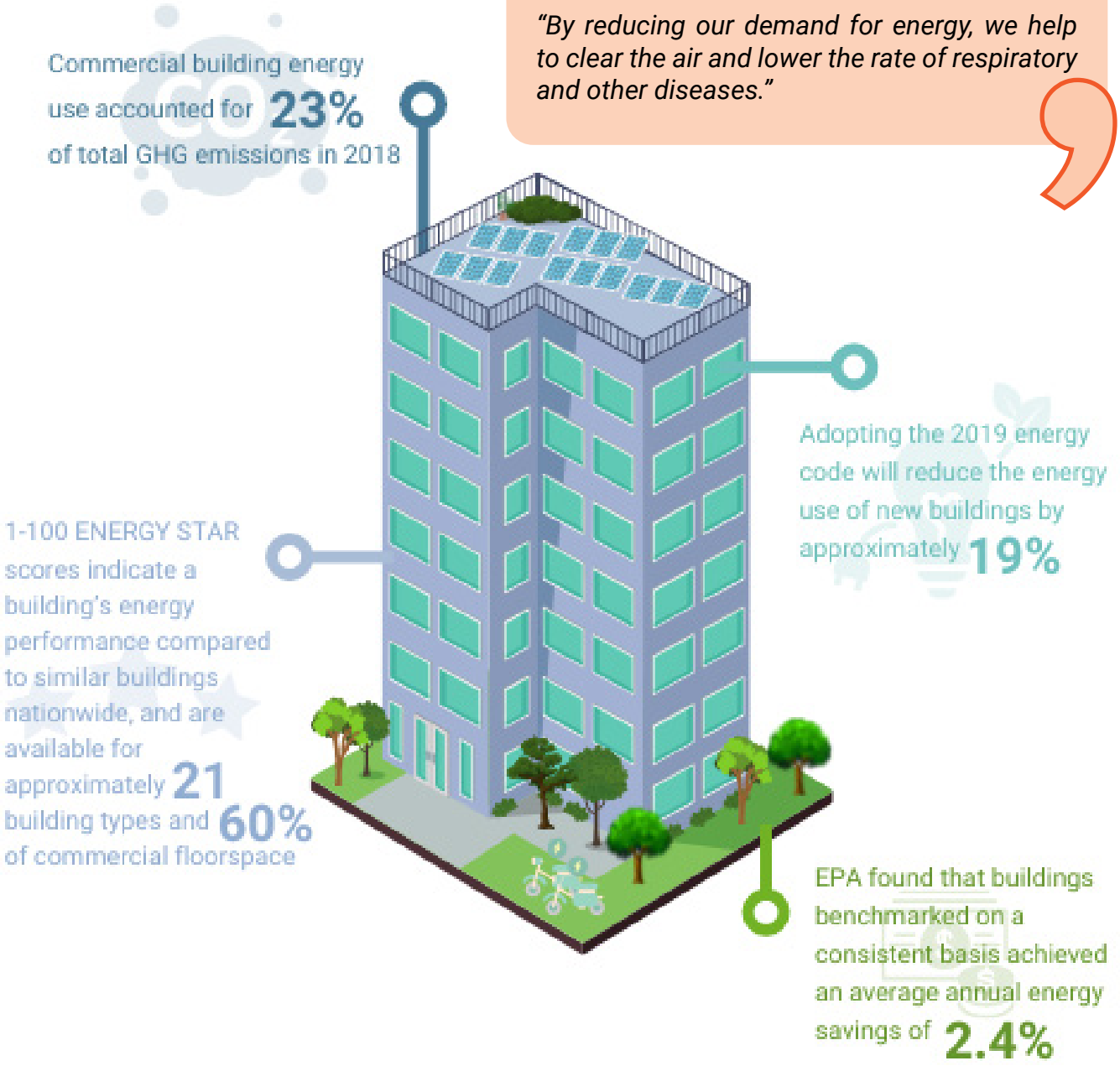
It is important to highlight that the code and standards released by ASHRAE (American Society of Heating, Ventilation, Refrigeration, and Air-Conditioning Engineers), or the IECC (International Energy Conservation Code) define minimum requirements only. Builders are permitted to build to higher energy efficiency standards, as long as the base code is being met. These standards and codes are updated every three years with the aim of reducing building energy use in each release. When new energy conservation standards are released, the Pacific Northwest National Laboratory (PNNL) quantifies the impact of the building code on energy cost savings and job creation. The PNNL has demonstrated through many of their analyses that states adopting newer energy conservation standards for new buildings and existing buildings not only save energy, but also create jobs. Read more about a 2013 case study in neighboring Minnesota titled "Potential Job Creation in Minnesota as a Result of Adopting New Residential Building Energy Codes". More specifically

- Local jobs are created through new building construction or upgrading existing buildings to make them more energy efficient, and
- Jobs are created by the increase in disposable income that is returned to the local economy, thanks to the reduction in monthly utility bills.

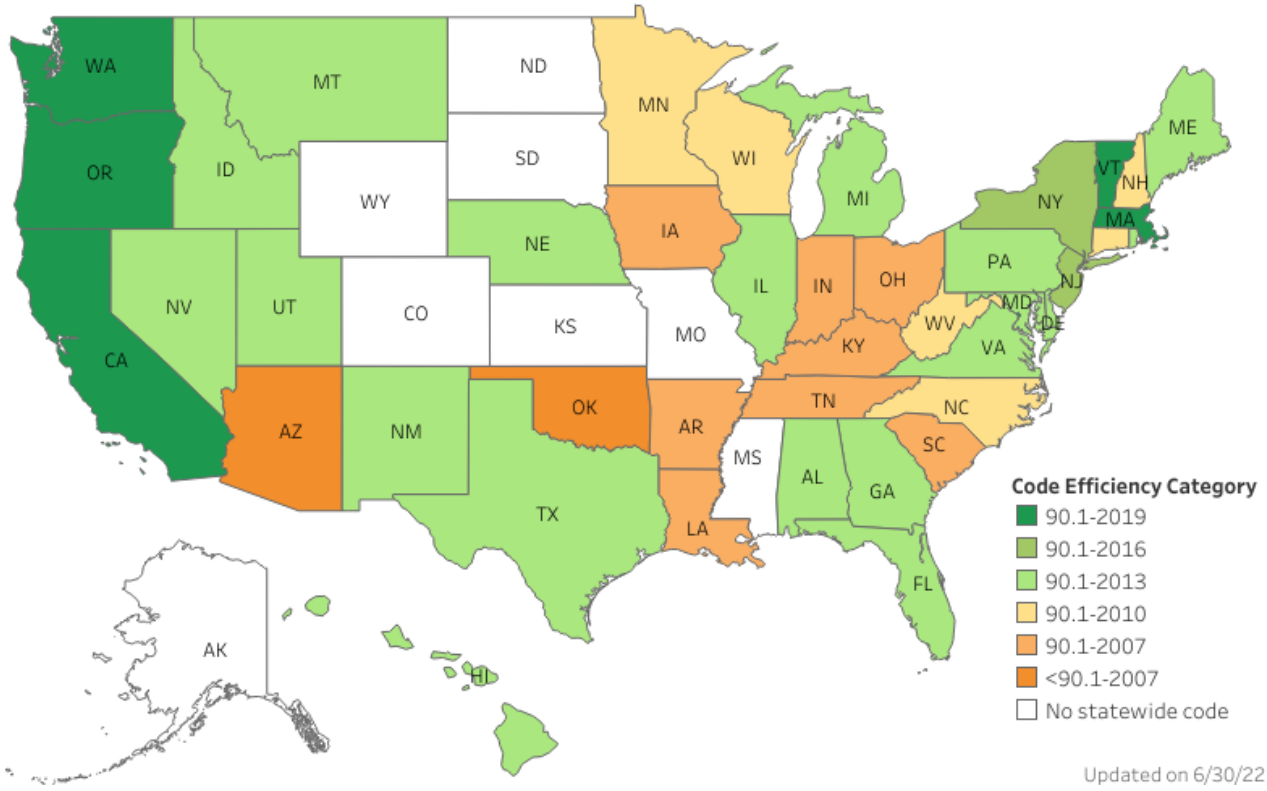
COMMUNITY VOICES

"Energy inefficient buildings that lack the necessary green space to support outdoor learning and engagement are a huge problem throughout Milwaukee."

"By reducing our demand for energy, we help to clear the air and lower the rate of respiratory and other diseases."



▽Graphic by GRAEF.



△"Status of State Energy Code Adoption" commercial code map by the Office of Energy Efficiency & Renewable Energy.

Existing Buildings

Milwaukee's existing building stock comprises buildings of different sizes and ages. Buildings constructed during different years means many buildings were built according to older and less energy efficient building codes than today's standards. The first building energy conservation standards were developed in the 1970s as part of the Energy Policy and Conservation Act (EPCA) as a response to the 1973 oil crisis. Some buildings have been repurposed, some were upgraded to be more energy efficient, and others deteriorated due to poor maintenance or lack of maintenance at all.

In Milwaukee, there are a number of programs in place through the statewide Focus on Energy program and We Energies to address energy efficiency in existing, older buildings. Offerings include specialized energy advisors to help building owners and managers identify ways to reduce energy use in commercial buildings. Through its Better Buildings Challenge voluntary leadership program and Property Assessed Clean Energy (PACE) financing program, the City of Milwaukee has worked to make it easier for willing building owners to make energy efficiency improvements. These programs provide a solid base framework, but need more depth and resources to meet the carbon reduction goals for the commercial building sector. For the City to meet the moment on climate action, these voluntary programs may no longer be sufficient. Cities across the country are establishing new policies through law to reduce carbon emissions from commercial buildings and Milwaukee must follow suit.

LEADING BY EXAMPLE

Since 2012, the City of Milwaukee has championed the U.S. Department of Energy's "Better Building Challenge". This initiative features the participation of 133 buildings in the city, with the goal of improving energy efficiency of commercial, public, industrial, and residential buildings by at least 20% over ten years.

In Milwaukee, the Better Building Challenge established a voluntary benchmarking program that provided free energy assessments and benchmarking and offered property assessed clean energy (PACE) financing. Also through this program the City of Milwaukee provided training, technology transfer, and workforce development with the help of local organizations such as the Milwaukee Area Technical College (MATC) and the Midwest Energy Research Consortium (MWERC). The City of Milwaukee's commitment to improve energy efficiency in commercial buildings was recognized by the U.S. Department of Energy. Through the execution of this program, the Environmental Collaboration Office (ECO) developed the Eco Design Guidelines for commercial buildings, a document that provides specifications of architecture, urban design, and public space for all building development projects to achieve their sustainability goals.

Equity

New building developments and upgrades to existing buildings create a variety of new jobs in the fields of construction, HVAC (heating, ventilation and air conditioning), plumbing, electrical, and engineering. Transforming the City of Milwaukee to a sustainable city with high-performance buildings will require a larger workforce than currently exists. The goals and strategies within this Big Idea will support creation of energy efficiency jobs to advance social equity through inclusive citizen engagement with training programs and other resources. Moreover, improving the energy efficiency of multi-family apartment buildings (with more than four residential units) can provide more comfortable, healthier living environments with lower energy bills for tenants, freeing up funds to be used for other vital needs such as rent, food, or healthcare.

An equitable workforce plan that engages training providers, employers, and government agencies is critical to this overall strategy. Local educational organizations, including the University of Wisconsin-Milwaukee and the Milwaukee Area Technical College (MATC), as well as local chapters of organizations like ASHRAE and the USGBC (U.S. Green Building Council), can provide the technical expertise and resources necessary for training and development.

Resiliency

Building owners can improve the resilience of their buildings as part of broader projects. For example, Wisconsin state law that governs PACE financing programs was updated in 2022 to include green infrastructure for stormwater management, resiliency projects including improvements intended to improve storm and wind durability or wind resistance, or to assist in fire suppression or mitigation of damage from flooding. In addition, Milwaukee's PACE program can finance energy efficiency or reliability improvements. These include energy storage or backup power generation improvements or improvements that facilitate participation in a microgrid. These projects can make Milwaukee's buildings more resilient to extreme storms and associated area power outages.

△Milwaukee City Landscape. Photo courtesy of Pixabay.

CITY STRATEGY

Benchmarking Policy + Building Performance Standard

Since 2015, the City of Milwaukee has encouraged commercial building owners to voluntarily set energy efficiency goals and track and report their energy usage as part of the Better Buildings Challenge Program. The Climate and Equity Plan recommends the City establish a new benchmarking ordinance that would require large commercial buildings to annually report their energy use in the free Energy Star Performance Manager software. By reporting their energy use, large commercial building managers will start the process of tracking their buildings' energy performance, a practice which can inspire action for making energy efficiency improvements. Cities that have implemented benchmarking policies report a 2.4% average annual energy saving improvement for the next 3 years for a total of 7.2%. Based on the 2018 GHG emissions inventory for Milwaukee, this could mean an approximate decrease of 54,536 tons of GHG emissions annually.

Commercial building benchmarking policies are a market-based strategy built on the theory that a market works best when performance is transparent and easily comparable. Chicago, Columbus, Indianapolis, Des Moines, Kansas City, and Ann Arbor are among other Midwestern cities that have implemented building benchmarking policies. Benchmarking ordinances are a common first step to more impactful strategies.

In addition to creating and enacting a benchmarking ordinance, City will develop a stakeholder engagement process and plan to phase a Building Performance Standard (BPS) or related policies to support energy efficiency in commercial buildings. In January of 2022, Milwaukee Mayor Cavalier Johnson and the Environmental Collaboration Office signed up Milwaukee for the National BPS Coalition (nationalBPScoalition.org), which was led by the White House Council on Environmental Quality. According the National BPS Coalition, "building performance standards are state and local laws that require existing buildings to achieve minimum levels of energy or climate performance. Working in tandem with new construction energy codes, these policies empower state and local leaders to deliver on their energy, and equity goals through accelerated retrofits." Alternatively, the City could consider other policies such as building tune-up policies to spur energy efficiency improvements at relatively low cost to commercial building owners.

In implementing a Commercial Building Benchmarking Strategy and other commercial building policies, the City will:

- Engage with affected stakeholders, including commercial building managers and front-line communities, to inclusively design and implement equitable Building Performance Standards and complementary programs and policies.
- Implement strategies for advocacy and education to socialize the new building ordinance.
- Develop a plan for phasing in the BPS over time to allow property owners a chance to benchmark their properties and plan for the ordinance.
- Implement the benchmarking ordinance and BPS through ECO, with collaboration of the following partners for critical success:
- The Institute for Market Transformation (IMT):, a non-profit organization with the experience and knowledge to develop and implement a building performance ordinance focusing on health, equity, inclusion and economic opportunity.
- ASHRAE: a non-profit organization that develops all the standards used nation-wide for high-performance buildings moving towards zero energy.
- The Milwaukee Area Technical College (MATC): to provide training, technology transfer, and workforce development.

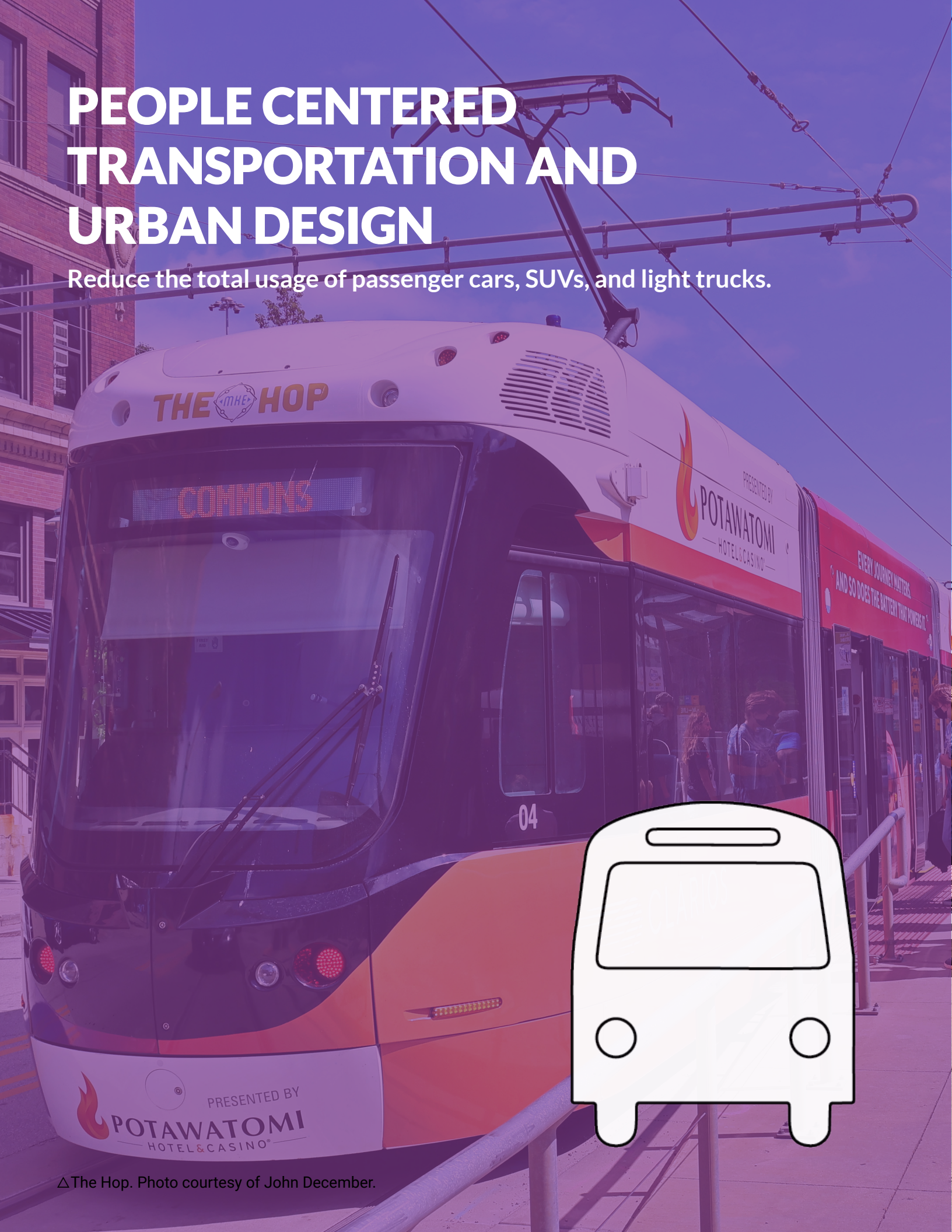
- Establish a Call Center resource to help building owners understand the requirements of the new policies. If possible, this call center should be established in conjunction with other communities who are implementing similar policies as a way to share costs.
- Provide continuous programs that advertise, educate,, and report successes. These are key activities to socialize and guarantee acceptance of the new ordinances in the City.
- Provide educational symposiums for the community to address the issues of climate change, how the new ordinances would work, and how the community would benefit.
- Meet with building owners to understand their concerns and receive feedback on the new ordinances.
- Advance legislation for state, local, or tribal BPS and complementary policies, with a goal of adoption by Earth Day, April 22, 2024.

SECONDARY STRATEGY: ADVOCATE FOR STRONGER STATEWIDE BUILDING ENERGY CODE

The City of Milwaukee and interested stakeholders should continue to advocate through the Wisconsin Local Governments Climate Coalition (WLGCC) for the State of Wisconsin to update commercial and residential building codes to the latest International Energy Conservation Code (IECC) and ASHRAE Standards 90.1 without amendments. Code advocacy work should be ongoing to help ensure Wisconsin is a leader in centering energy efficiency in the building code. The City is also supportive of the recently reconstituted Wisconsin Advisory Council on Building Sustainability to inform changes to the building code. Locally, the City should ensure that the energy building code is adequately enforced.

PEOPLE CENTERED TRANSPORTATION AND URBAN DESIGN

Reduce the total usage of passenger cars, SUVs, and light trucks.



△The Hop. Photo courtesy of John December.

WHY IS THIS IMPORTANT?

Transportation creates almost a third of greenhouse gas emissions (GHGs), making it the single largest contributor to climate change in the United States. An estimate of metro-Milwaukee GHGs by ICLEI indicates that transportation contributes 30% of GHG emissions in the county and 21% in the City. More than half of the emissions from the transportation sector are created by passenger cars, SUVs, and light-duty trucks. After decades of urban sprawl, the U.S. has the distinction of being a world leader in vehicle miles traveled (VMT) per capita, and Milwaukee is not an outlier to this trend. In fact, 71% of commuters drive to work alone in Milwaukee. VMT is a measure of the amount of travel for all vehicles in a given period, typically one year. The focus of this section is to reduce VMT, which predominantly focuses on reducing the number and duration of passenger-vehicle trips.

Car-dependent neighborhoods lock us into a baseline of harmful emissions while creating other negative climate impacts in the process. Society's love-affair with cars, along with decades of transportation planning that prioritized speed and individual mobility over access for everyone, has come at an enormous environmental cost. To meet the City's goals of reducing greenhouse gas emissions, it is imperative that single passenger driving decreases and investments are made in dense development that reduces the need to drive.

A variety of strategies are proposed throughout this chapter to achieve significant GHG emissions reduction from the transportation sector. Overall, transportation modes such as walking, wheeling, biking, and clean-powered public transit provide the most equitable access for all people and offer

COMMUNITY VOICES

Adding smart neighborhood design throughout the entire city and not just downtown/ east side/Bayview so that all of our citizens have more walkable neighborhoods.

Physically protected bike/scooter lanes on all the major streets in Milwaukee. This will and reduce greenhouse gas emissions from vehicles - fewer VMT and slower speeds and less car lanes.

Making the whole city more bike friendly with protected bike lanes and bike boulevards and lots of bike parking would help decrease fossil fuel use, improve air quality, improve our health.

Neighborhoods like the Third Ward are vibrant and active because they are walkable. We need more neighborhoods like that throughout the City.

Expand the support for and extend The Hop Streetcar's route. The Hop's award-winning, modern, electric-powered, hybrid (overhead or battery power options), emissions-free, ADA-compliant, American-made vehicles and its support team and operators have proven their ability to operate safely and well. The Hop shows a path for developing our community to its potential for transit, walkability, environmental benefits, health, equity, livability, economic development, and prosperity for all people.

innumerable health benefits and cost savings. The choices we make when allocating funds for transportation and implementing infrastructure improvements can have a positive effect, reducing our impact on the climate while improving the lives of all residents.

Equity

The disinvestment in public transit and walkable streets in favor of passenger vehicles has been particularly harmful to low-income and communities of color, reducing access to jobs, schools, healthcare and services, thus further exacerbating structural inequities. Ironically, the $750-$1,000 per capita that Wisconsin spends on roads and highways each year has made congestion worse while increasing air pollution, displacing communities of color, and destroying beneficial green spaces. In Wisconsin, communities of color are exposed to higher-than-average air pollution from particulate matter, with pollution from transportation and industry as the most harmful source of those disparities.

A lack of access to reliable and efficient transportation options severely reduces access to jobs, schools, health care and services, further exacerbating structural inequities in health and wealth in low-income communities of color. This inequitable access to transportation options results from a legacy of discriminatory housing, land-use, and transportation policies.

These policies and practices create the greatest harm to low-income and minority households, which suffer the double hazard of being the most dependent on transit services while also having higher risks of exposure to air pollution from automobile traffic. SEWRPC reports that 13% of low-income households use public transportation to get to work, versus 5% of higher earners. 13% of Black Milwaukeeans rely on public transportation to get to work, versus 3% of white individuals. SEWRPC predicts that failure to reverse these trends and invest in public transit will find minority populations experiencing a 43% decline in access to 10,000 or more jobs by the year 2050.

Walkable neighborhoods combined with safe biking trails and reliable transit services are universally seen as part of the solution. They also provide all residents with greater choice – about how to travel and how to spend one's money. Transit and active modes of transportation should be available to everyone, but according to a report by Transportation for America, six out of ten people drive because of a lack of other options.

Resiliency

Reducing the City's reliance on passenger vehicle use has a multitude of benefits, including a more resilient resident population and workforce. More dense, multi-use neighborhoods that are walkable or bikeable are less vulnerable to being cutoff from essential services during extreme weather events. Neighborhoods that are served via robust public transportation networks enable residents to choose an option other than cars to routinely and reliably commute to work. Reducing VMT also lowers the amount of toxic pollutants entering the City's air, which can have enormous public health and environmental benefits.

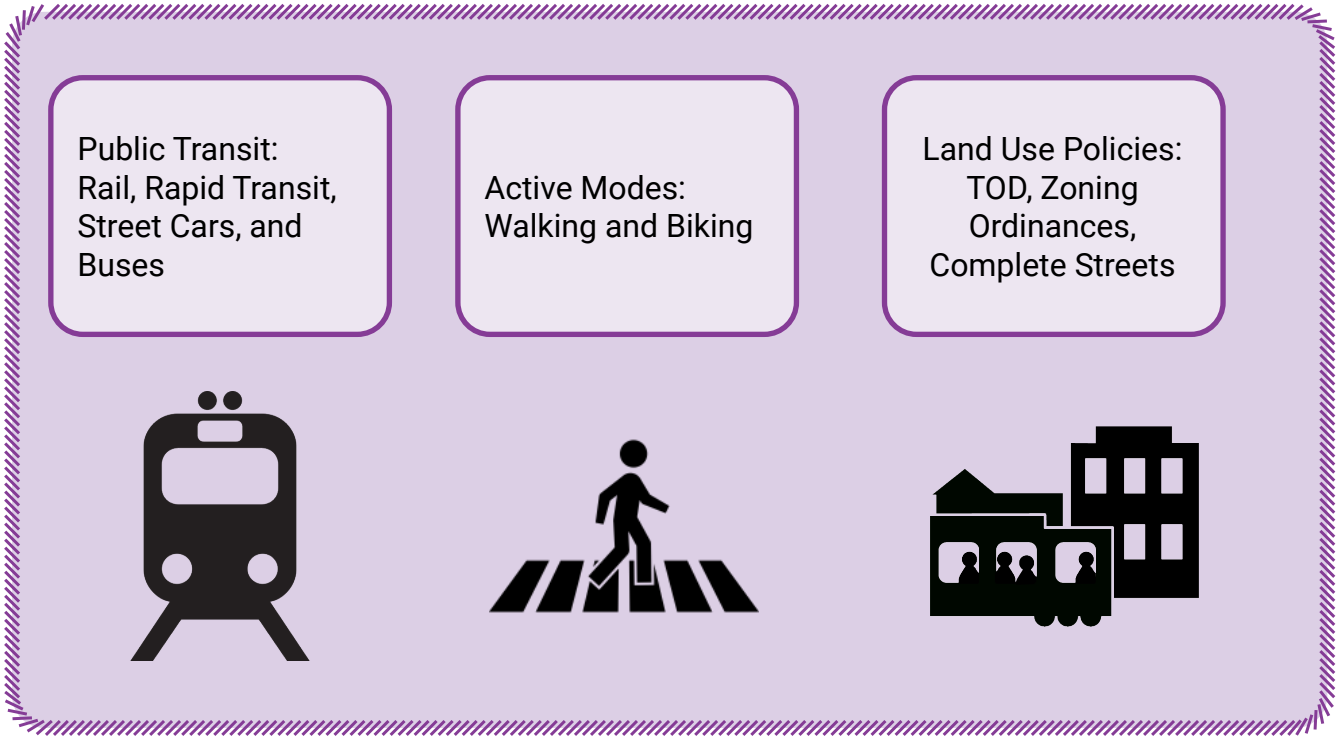
LEADING BY EXAMPLE

- In 2018, the City of Milwaukee adopted its Complete Streets Policy after over a year of work and close collaboration between the Department of Public Works, the Common Council, other city departments, and many community partners. The policy requires that all City streets be designed, operated, and maintained according to Complete Streets principles, meaning that streets should be safe, comfortable, and accessible to users of all ages and abilities, no matter how they are traveling. The policy recognizes that safety - particularly pedestrian safety - is imperative, and that street design elements that support walking, biking, and transit trips should be prioritized. The policy also prioritizes equitable investment in underserved communities that lack existing walking, biking, and transit infrastructure and have health and crash risk disparities. In 2017, the City adopted a bicycle parking ordinance that required short term and long-term bicycle parking be provided at all new developments.
- In 2002, the City of Milwaukee overhauled its zoning code to better facilitate mixed-use and transit-oriented development, and walkable commercial corridors. Milwaukee's zoning code has no parking requirements downtown, or for 1- to 4-unit residential developments. The code includes reduced parking requirements for development near transit and for shared parking, as well as parking maximums for retail/commercial uses.
- Lastly, Milwaukee's Comprehensive Plan and the fourteen Area Plans contain a variety of strategic recommendations that align land use and transportation planning to reduce vehicle trips and provide improved options for transit, walking, and bicycling. In 2018, the City adopted an Equitable Growth through Transit Oriented Development Plan to support new housing and commercial options near transit. The Department of City Development's guidelines for utilizing Tax Incremental Financing to support affordable housing development prioritize mixed-income developments near transit.

CITY STRATEGY

Although commonly seen as separate topics, land use and transportation are intimately linked. By scrutinizing the policies and regulations that restrict or enable climate-friendly and equitable transportation opportunities, land use decisions can better reflect the needs of the City, its residents, and the natural environment. The three-pronged approach within this chapter recognize that different modes of transportation require a diverse set of land use intensity, space, and resources. For example, parking lots and structures, even when underutilized, can encompass large tracts of land in close proximity to clusters of jobs, goods, and services, eliminating that land for use as housing and therefore forcing people to live further away from the places they frequently visit. The result is a greater need for driving or public transportation for daily household trips.

Land use development patterns influence, and can be influenced by, transportation modes. Subsequently, transportation provides a link between the activities of life: home, work, school, healthcare, other goods and services, and entertainment. Therefore, the relationship between land use and transportation are inextricably linked as reflected in the priorities of this chapter, alongside more traditional strategies to reduce VMT including public transit and walking and biking as discussed previously in the Equity section.



Comparing Milwaukee's VMT Goals to Peer Cities

The wedge analysis performed by ICLEI included the following assumptions for reducing vehicle miles traveled (VMT)

Per-capita vehicle miles traveled will decrease by 20 percent in 2030.

Per-capita vehicle miles travel will decrease by 30 percent in 2050.

These goals are similar to VMT reduction goals made by other cities in their climate planning efforts. The following VMT reduction goals were compiled in a 2022 study by the Victoria Transport Policy Institute (VTPI) entitled "Are VMT Reduction Targets Justified?"

- Minneapolis: 40% reduction by 2040
- Portland: 45% reduction (no date provided)
- San Antonio: 20% reduction by 2040
- California (state): 15% reduction by 2050
- Washington (state):
  - 30% reduction by 2035
  - 50% reduction by 2050

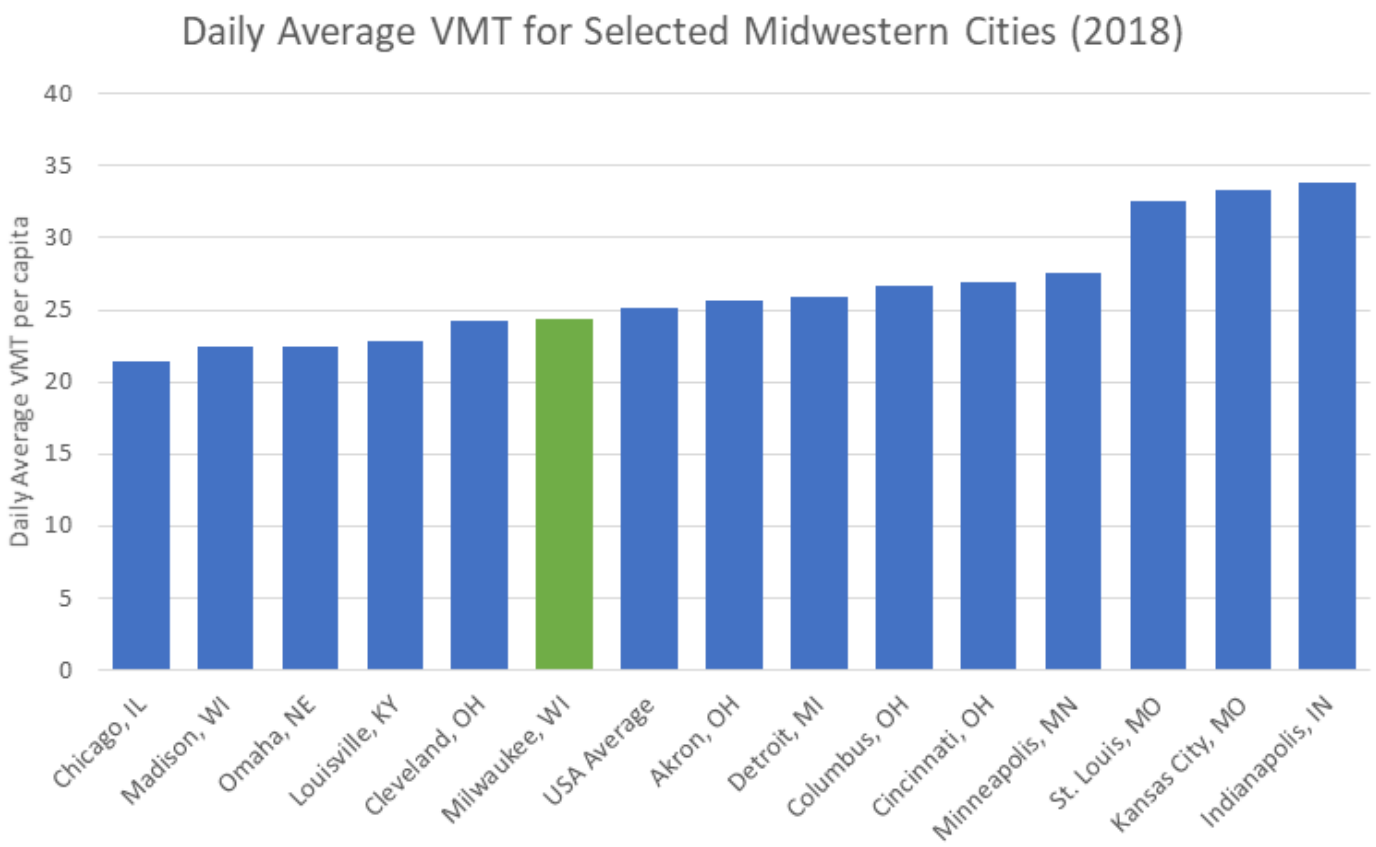
The following additional VMT reduction goals (or goals related to VMT reduction) from climate planning efforts in other cities [JC1] that may be considered peers to Milwaukee:

- Cincinnati, OH:
  - Increase passenger miles traveled via public transit by 25% by 2035
  - Double the lane miles of bike infrastructure
- Columbus, OH:
  - 15% VMT reduction by 2030
  - 40% VMT reduction by 2050
- Indianapolis, IN:
  - Increase transit service by 70% by 2025
  - Increase transit ridership by 15% by 2025
  - Decrease percentage of commuters who drive alone from 85% to 75% by 2025
  - Additional transit-oriented development, densification, and bike/pedestrian infrastructure improvements to reduce VMT
- Louisville, KY:
  - 27% VMT reduction by 2050 from improved transportation systems
  - Additional VMT reductions from increased densification, active transportation, and ridesharing

Based on these comparisons, the VMT reduction goals suggested by ICLEI for Milwaukee are similar to VMT reduction goals in other peer cities.

While most of these cities may be considered peer cities to Milwaukee, it is also important to examine the existing VMT conditions to understand the baseline to which these VMT reduction goals are being applied. The following graph shows the daily average VMT per capita for several peer and other regional cities based on 2018 Highway Statistics from the Federal Highway Administration (FHWA).

As shown, Milwaukee's daily average per capita VMT (24.4 miles) is on the lower end of the range shown for these cities (21.4 to 33.8 miles) and just below the national average (25.2 miles).



1. Improve and Expand Public Transit

Given state level funding decisions, it is critical that the City and County find ways to increase local funding commitments for public transportation.

A. Build a Network of Seven Rapid Transit Corridors:

Milwaukee County Transit System, working with City planners, should explore plans to construct the rapid corridors recommended in SEWRPC's VISION 2050 Plan, beginning with Bus Rapid Transit (BRT) as seen on the graph titled "Vision 2050 Transit System". BRT has a lower development cost than other fixed rail transit options and working aggressively to build out the BRT network should be a priority as a near term option to meet Milwaukee's immediate goal of reducing VMT 20% by 2030. The corridors recommended for BRT may be developed as rail rapid transit if funds are available in the near term or replaced with rail as new funding sources become available. Long-term, fixed rail (streetcar and light rail) are important parts of the enhanced transit network called for in this plan as rail development likely has the largest transit multiplier effect and may be inherently more attractive as an alternative to driving.

Offering travel times that are competitive with cars and providing enhanced amenities, BRT has been described as "light rail without the rails." Because it can avoid traffic delays experienced by other bus-oriented travel, it is able to attract commuters who might otherwise drive. It offers flexibility and can be phased in gradually.

Buses will arrive at least every 15 minutes during the daytime, and as frequently as every eight minutes in some corridors. Battery Electric Buses, operating with traffic signal priority, dedicated lanes (at least 75% along the corridors), and stations spaced at approximately one-half mile apart will provide a train-like experience with faster service from point to point and reduced traffic congestion.

B. Expand Milwaukee's Streetcar Service (The Hop)

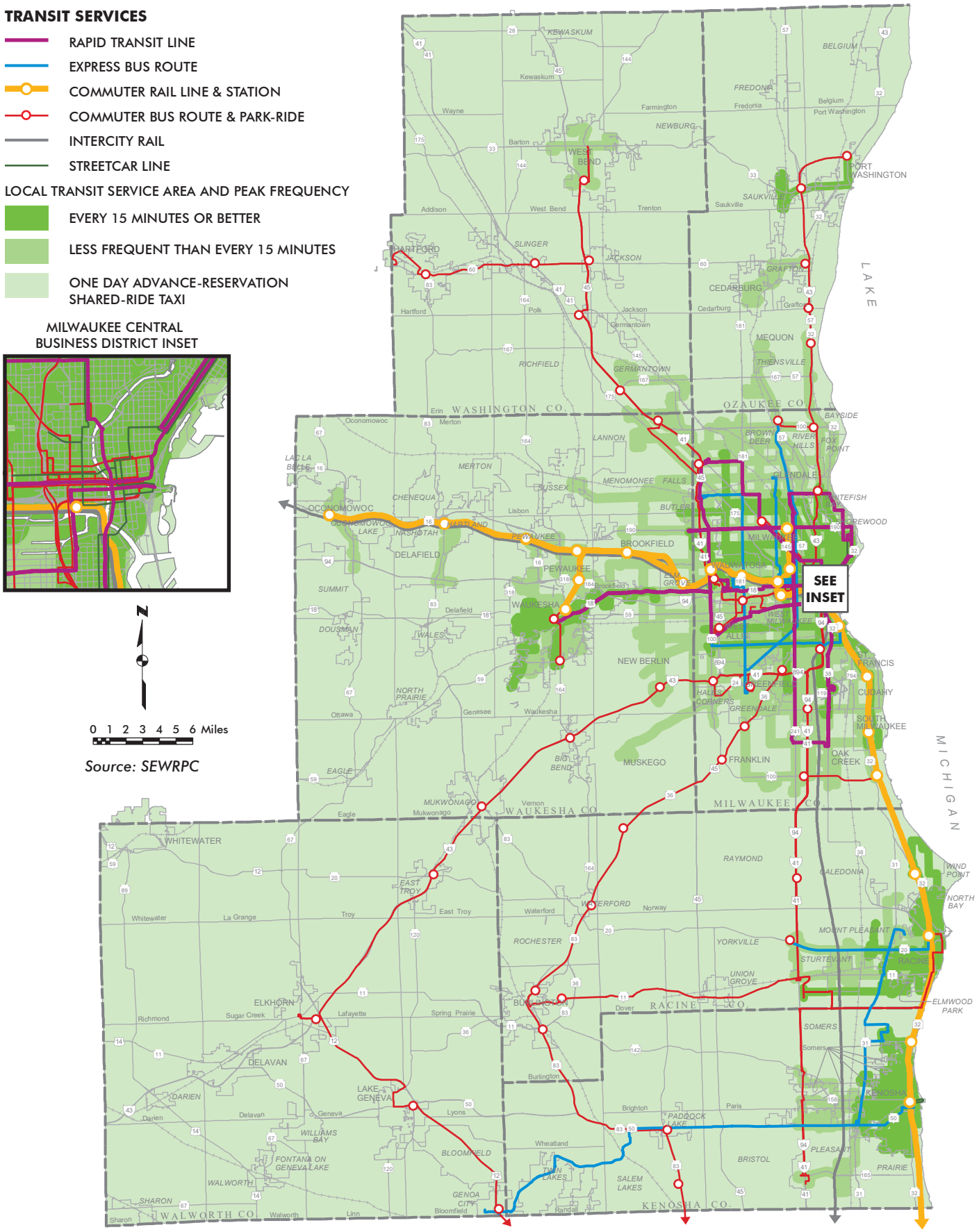
It is recommended that the City extend the streetcar network to adjacent neighborhoods and areas with potential for becoming densely developed transit hubs. Recommended extensions are to UW-Milwaukee, and from Bronzeville to Walkers Point.

C. Expand the Frequency and Hours of Existing Bus Services

It is further recommended that improvements are made to the frequency and hours of transit service in Milwaukee County by approximately 15%, prioritizing corridors that were unable to be enhanced under previous budget limitations. BRT and rail systems work best when they are fed by robust bus systems. To get drivers out of their cars and onto buses, bus service not only needs to be made faster, but also more frequent and more affordable than driving. Research indicates that if any one of three factors (efficient travel times, direct routes or few transfers, and high service frequency) are missing, transit use declines.

- Add four additional High Frequency Routes (service every 15 minutes or better during the daytime)
- Enhance several existing High Frequency routes to arrive every 10 minutes during the daytime
- Extend service hours on some High Frequency corridors to provide 24 hours-a-day service on most days
- Extend the service hours of Daytime Routes to include evening service
- Partner with van service providers to provide access to jobs in business parks not easily or efficiently served by fixed-route bus

VISION 2050 Public Transit System



MEASURABLE IMPACTS TO IMPROVE ACCESS TO JOBS AND SERVICES:		
Milwaukee County residents living within walking distance of rapid transit	2022 prior to completion of 1st route in 2023	2030
All residents	0%	43%
Residents of color	0%	49%
Low-Income Households	0%	55%
Jobs accessible by rapid transit	0%	62%
Region's population with access to 10,000 or more jobs within a 30 minute transit trip	Now	2030
All residents	30%	70%
Residents of color	55%	90%
Low-Income Households	50%	85%

D. Improve Bus Travel Time and Other Amenities:

Finally, it is recommended that MCTS working with the city planners as necessary develop physical infrastructure to speed up bus service and improve passenger amenities. Infrastructure to speed up service on high frequency routes could include adding bus lanes in congested areas or adding transit signal priority. In addition, the number of bus shelters across the City and county could be increased, enhanced shelters at high ridership stops will be installed, and all stops will meet current ADA standards.

Milwaukee County residents living within walking distance of high frequency transit	Now	2030
All residents	56%	61%
Residents of color	64%	70%
Low-Income Households	67%	74%
Jobs accessible by rapid transit	60%	64%
Region's population with access to 10,000 or more jobs within a 30 minute transit trip (if combined with recommended BRT)		
All residents	30%	70%
Residents of color	55%	90%
Low-Income Households	50%	85%
Number of local jobs created (drivers, mechanics and support staff)	45	

THE "HOP" EXTENSION

2. Prioritize Active Modes Walking and Biking:

Multiple studies have illustrated that walking and biking can make a measurable difference in reducing VMT and thus, carbon emissions. Results from a 2017 National Household Travel Survey (NHTS) demonstrate that it is possible to shift many short trips, which are taken by car, to walking or biking. According to the study, 53% of all trips are within 3 miles or less, and 28% of all trips are within 1 mile or less. Three miles is equivalent to a 20-minute bike ride for an average adult, and 1 mile is equivalent to a 20-minute walk for an average adult. Access to safe active modes of transportation is particularly important to low income and minority households, which take 50% more walk trips than higher income individuals, and have the greatest rate of bike trips, often using bikes to access their employment. Finally, in addition to being more environmentally friendly, infrastructure for active modes of transportation is less costly to build and maintain, supports local business development, and creates more green jobs. Specific short-term recommendations are included below:

1. Install protected bike lanes through downtown to connect the Oak Leaf Trail, Hank Aaron State Trail, and the Beerline Trail.
2. Implement design changes on some of Milwaukee's most dangerous streets for reckless driving, such as 27th Street, Fond Du Lac Ave., Capitol Drive, and 35th Street. See an example of safer street design below.
3. Continue to explore the feasibility of developing the 30th Street Corridor trail project.

◁Example of possible design changes to prioritize safer walking. Image by the Federal Highway Administration.

3. Establish Land Use Policies that Enable Reduced VMT

A. Prioritize Transit Oriented Development within the Zoning Code

The Department of City Development (DCD) will continue to advance the recommendations from the Equitable Growth through Transit Oriented Development Plan to make updates to the zoning code that further support new housing and commercial developments near transit. The recommended updates provide new options for residents to live in neighborhoods that are well served by transit and support thriving commercial districts along transit corridors.

B. Update the Zoning Code to Expand Housing Choice

In 2023, DCD will carry out an update of the housing elements of the City of Milwaukee's zoning code with a focus on facilitating development that advances the City's housing affordability, racial equity, and climate action goals. The City of Milwaukee's Zoning Code was last updated in 2002 and while the existing code supports mixed-use development, high density near transit, and other strong smart growth principles, there are areas of the code that need to be updated to align with evolving national best practices, recommendations included within the City's more recent planning efforts, and to accommodate future population growth.

With the completion of the City's Affordable Housing Plan and the Climate and Equity Plan, DCD Planning will utilize the recommendations of those efforts and other past plans to carry out a community-driven update to the portion of the City's zoning code regulating housing development. This project will propose code adjustments to advance the recommendations of multiple city planning efforts to:

- Support transit-oriented development and walkable urban neighborhoods citywide
- Increase housing choice, diverse housing styles including accessory dwelling units, and affordability across all city neighborhoods
- Propose updated parking requirements that align with housing affordability and climate action goals

C. Advocate for Local Authority to Enact Inclusionary Zoning ordinances

State law currently prohibits municipalities from requiring that a portion of units in new residential developments be affordable, including in situations where a developer may agree to provide affordable housing in exchange for additional development entitlements ("density bonuses"). It is recommended that the City and other local governments and housing stakeholders advocate for state policymakers to support affordable housing, including providing local control to allow municipalities to enact inclusionary zoning ordinances.

D. Revisit Parking in the Zoning Code

DCD should evaluate lowering or removing existing parking requirements and including parking maximums over time as investment in multimodal transportation and utilization of these alternatives increases. This will better enable developers and businesses to determine the number of spaces appropriate for customers and residents, with increasing reliance on multimodal transportation choices beyond personal vehicles.

E. Establish Variable Priced Metered Parking in Milwaukee's Downtown and Commercial Districts

DPW Parking Services/Transportation should set parking rates that are based on occupancy rates to balance the demand and supply of on-street parking spaces. The variable pricing system would optimize access by establishing pricing that would encourage the availability of one or two open spaces per block, effectively reducing or eliminating parking shortages. Demand-based parking pricing will provide the additional benefit of reducing vehicle miles traveled and associated

emissions as less traffic will be attributed to the search for parking in downtown and other commercial districts.

F. Reallocate City Parking Revenue

4. DPW Parking Services/Transportation, the Budget Office, and partners should utilize parking related revenue (e.g. parking meters, off-street program, towing, vehicle disposal, etc.) to support on-street and other public realm improvements and other services that support equity goals, beginning in 2023. This will enable the public to see parking revenues to enhance mobility in low-income communities beyond downtown and other areas with metered parking. Examples of public parking revenue use for public services from peer cities include:

- Support for transit - passes and expanded services
- Pedestrian and bicycle safety improvements
- Streetscape improvements, including curb bump-outs and parklets
- Projects that support equity objectives to improve mobility options for non-drivers

G. Parking Reform: Re-envision Underutilized Parking Lots

City agencies including DPW, ECO, and DCD continually consider City- and RACM-owned parking lots for opportunities to reduce parking and paving when appropriate, integrate green infrastructure to reduce stormwater and improve water quality, and integrate additional community amenities to improve the utilization of these parking assets. Additional information on depaving is included in the Nature in the City Chapter.

H. Expand Implementation of the City of Milwaukee Complete Streets Policy

The City of Milwaukee Complete Streets Policy directs City staff to plan, design, and maintain streets that are safe and accessible for everyone, no matter their age, ability, or how they are traveling. The policy also directs staff to prioritize underserved communities and increase community engagement. These principles are essential to both enabling people to drive less and creating a more equitable community

While improvements in how projects are carried out have been made under the policy, the City should accelerate these changes. In order to achieve the climate and equity goals in this plan, the City should explore and embrace more dramatic changes to how our streets are designed in order to make walking, biking, and taking transit safer, easier, and more comfortable. This can including piloting streets designed solely for transit, pedestrians, and bicyclists.

I. Create an Unbundled Parking Ordinance

The City should consider requiring that parking spaces be leased separately from the base cost of a rental property, rather than being bundled with rent. Unbundled parking enables residents to only purchase parking if they need it and reduces rates of car ownership and driving.

J. Create a Parking Cash Out Ordinance

The City should explore establishing a parking cash out ordinance that would require employers to offer employees the option to receive a cash payment or other compensation instead of a free or subsidized parking space at work that the employer would otherwise provide. Parking cash out programs incentivize people to walk, bike, take transit, and carpool to work in place of driving alone.

K. Create a Transportation and Mobility Plan & Sustainable Freight Plan

The City should continue its development of a Transportation and Mobility Plan with broad community engagement to develop a detailed vision of the future of Milwaukee streets and specific strategies for achieving that vision. The Transportation and Mobility Plan involves not only updates to the existing Milwaukee by Bike Plan and Pedestrian Plan but also a comprehensive analysis of all travel modes in the city. Either as part of this broader plan or as a stand-alone plan, the City will explore creating a Sustainable Freight Plan. This plan should also include analysis of multimodal options for handling larger freight, and consideration of how online retail has increased the frequency of delivery vehicles on the road.

▽Women with Bublr bikes. Photo courtesy of VISIT Milwaukee.

△ The Hop.

ELECTRIFY TRANSPORTATION

Implement a transition to electrified transportation and supporting infrastructure that lowers GHG emissions while strengthening broad access to affordable transportation.

WHY IS THIS IMPORTANT?

Reducing greenhouse gas (GHG) emissions from the transportation sector is critically important to combating further climate change. In the City of Milwaukee specifically, the 2018 Community Greenhouse Gas (GHG) Emissions Inventory shows transportation made up 21% of GHG emissions. County-wide, transportation made up 33% of GHG emissions, the second largest category of emissions. Transportation makes up 30% of GHG emissions in Wisconsin and now accounts for the most GHG emissions in the U.S. at 39%, as shown in the figure below.

While increasing community use of transit, biking, and pedestrian options is a critical part of reducing vehicle miles traveled (VMTs) and thereby reducing GHGs (as discussed in the People-Centered Transportation chapter), shifting our fuel sources from gasoline and diesel to electricity and alternative fuel sources like renewable natural gas (RNG) for heavy duty vehicles, is also a critical part of reducing GHGs from the transportation sector.

In terms of improvements to public health, a Milwaukee region-wide transition to electric vehicles will help reduce local air pollution, which disproportionately impacts communities of color and underserved communities. Replacing gasoline-powered cars with electric vehicles saves energy, regardless of the energy-source used to recharge the electric vehicles. As our electric

COMMUNITY VOICES

I have asthma...air quality is important to me. I have a brand new grandchild, so it's super important.

"We need to learn how to move and restructure and re-engineer...without expelling so much carbon into the atmosphere. Buses should all be electrified. We should do whatever we can to get electric cars to replace the internal combustion vehicles that we have.

"As to electric vehicles, charging is more easily financed by homeowners, but what about apartment dwellers or the myriad residents who park on the streets -- if they can even afford new vehicles?

LEADING BY EXAMPLE

The City of Milwaukee has begun the process to transition its municipal fleet from traditional internal combustion engine vehicles to those powered by alternative fuels, EVs, or hybrids. The Milwaukee Police Department (MPD), with the help of ECO, purchased 10 hybrid Police Interceptor's to pilot in 2020. Since their delivery, they have been shown to increase MPG by over 50% and reduce emissions per mile by 35%. MPD has ordered 30 more hybrids and will use them as their primary vehicle going forward.

ECO has also been working with other city departments to start planning for the transition to electric vehicles. An analysis of vehicle use per department has been completed, with next steps being to select vehicles that match with user needs and planning for charging infrastructure. The DPW-Parking office is leading the way with the adoption of EV's for their parking enforcement vehicles. DPW-Parking has already purchased 4 EV's to pilot and was recently awarded a $1.7 million federal grant from the Congestion Mitigation and Air Quality Improvement program to expand the number of EVs in the fleet and to build-out the necessary EV charging infrastructure to power those vehicles. Moreover, DPW-Parking is looking for ways to expand the utilization of those EV chargers to be accessible to City of Milwaukee employees and members of the public through the development of a smart phone application. In 2022, the City will begin to develop, communicate, and implement a clear policy that specifies considerations for vehicle and fleet purchase, lease, and other acquisition that puts the City on a path to converting municipal fleets to fully electric,hybrid, and other low-emissions vehicles.

In addition, the Milwaukee County Transit System, which is the transit system that operates throughout the City of Milwaukee, will also add ten battery electric buses (BEVs) to their fleet. The BEVs will be used on the upcoming East-West Bus Rapid Transit Route, which runs along Wisconsin Avenue in the City of Milwaukee, and will connect downtown Milwaukee through to the Milwaukee Regional Medical Center in the City of Wauwatosa.

grid is increasingly run from renewable energy resources, the electrification of transportation will become even cleaner.

Finally, on a global scale, the electrification of transportation is well underway. The City of Milwaukee needs to be ready for this transition, particularly to ensure that it is as equitable as possible.

EV Trends

Globally, electric vehicle (EV) adoption is rising significantly. Bloomberg New Energy Finance (NEF) reports there are more than 20 million passenger EVs, 1.3 million commercial EVs (including buses and delivery vans and trucks), and over 280 million two and three wheelers on the road throughout the world in 2022. Bloomberg NEF's Electric Vehicle Outlook (2022) forecasts that globally, on an economic basis (without significant policy intervention), 44% of new passenger/light duty vehicle sales will be electric by 2030. In the U.S., EVs currently account for 5% of all new car sales and could account for 25% of all U.S. new car sales by 2025 according to an EV analysis by Bloomberg News. In terms of statewide trends, the Wisconsin Department of Transportation (WisDOT) forecasts that there will be 334,000 EVs on Wisconsin roads by 2030 as seen in the 2022 Draft Wisconsin Electric Vehicle Infrastructure Plan.

Despite this projected growth, without significant policy and program intervention, the City will not achieve its climate and equity goals regarding EV adoption by 2030. Although EV sales are accelerating in Wisconsin, with 9,039 EVs out of 619,436 total vehicles registered in 2021, EVs

currently account for less than one percent of cars and other light-duty vehicles. EVs are also less than one percent of all registered vehicles in the City of Milwaukee and Milwaukee County. The Wisconsin Department of Transportation (WisDOT) reports that in 2021, there were 1,320 electric light-duty vehicles (cars, SUVs, and pick-up trucks) registered in Milwaukee County, with 484 of those registered in the City of Milwaukee. ,

Like many new technologies over time, low levels of EV adoption are attributable to a spectrum of barriers including real and perceived technical, social, economic, policy, and infrastructure constraints. Price, range, charging availability/ infrastructure, and consumer awareness/ perceptions are typically identified as the leading barriers to EV adoption. At the same time, several car companies have announced plans to phase-out the manufacture of gasoline-fueled vehicles and introduce more EV models with more options in price point, style, and range, among other features. Therefore, the City of Milwaukee must also be ready to support a just transition of our transportation systems, particularly for underserved community members.

Equity

While multiple barriers keep EV adoption rates lower in the Milwaukee area, racial and socioeconomic disparities are clear in EV adoption trends. Most new and used EVs have been purchased by affluent households. In addition to income disparity, research shows racial disparity in EV adoption with Black and Latino drivers making up 41% of gasoline and just 12% of EV purchases.

Part of this disparity could be attributable to more limited access to reliable charging infrastructure, which is another major barrier to EV adoption by those who are not homeowners. Renters in multi-family units often do not have access to a charging station on-site and therefore do not have a reliable, convenient place to charge overnight. Convenient access to EV charging is one of the benefits of driving electric, but also a benefit that is not equitably realized. More than 80 percent of EV charging is done at home, which emphasizes that access to home charging is critical to accelerating EV adoption. Consumers are less likely to buy EVs if they cannot charge conveniently and at home. So, to ensure all communities have real access to driving electric, making at-home charging possible is necessary, particularly in multifamily dwellings where underserved community members often live.

Another factor in the disparities in EV adoption rates could be the affordability of EVs. Various estimates have been put forth to mark the year in which price parity between internal combustion engine (ICE) vehicles and EVs will occur, with that price parity occurring in or around 2025. The Inflation Reduction Act will also make EVs more affordable by providing incentives of $7,500 for new EVs and $4,000 for used EVs for middle-to-lower-middle class consumers. Importantly, as upfront costs for EVs fall, and the inventory of used EVs grows pursuant to increasing EV penetration over time, more equitable access to EVs can be expected. This underscores the importance of building out a reliable EV charging network that provides equitable access for all Milwaukee-area residents. Moreover, while increasing EV adoption rates in Milwaukee will present challenges, this transition also provides significant opportunities for green job growth. According to Clean Jobs Midwest, the Milwaukee Metropolitan area has a total of 18,574 and Wisconsin has 69, 343 clean energy jobs. Advanced transportation jobs within this workforce account for 7% of the total, suggesting both that the state has a solid track record of clean energy employment with room for transportation-specific clean energy jobs to grow. A prime example is the opportunity for more skilled electricians to help install EV chargers and build out Milwaukee's EV charging network. This represents a specific pathway to a well-paying, skilled job without a college degree requirement. Other job opportunities include program and project managers with utilities and private installation companies, sales representatives, and technicians that provide training and maintenance.

CITY STRATEGY

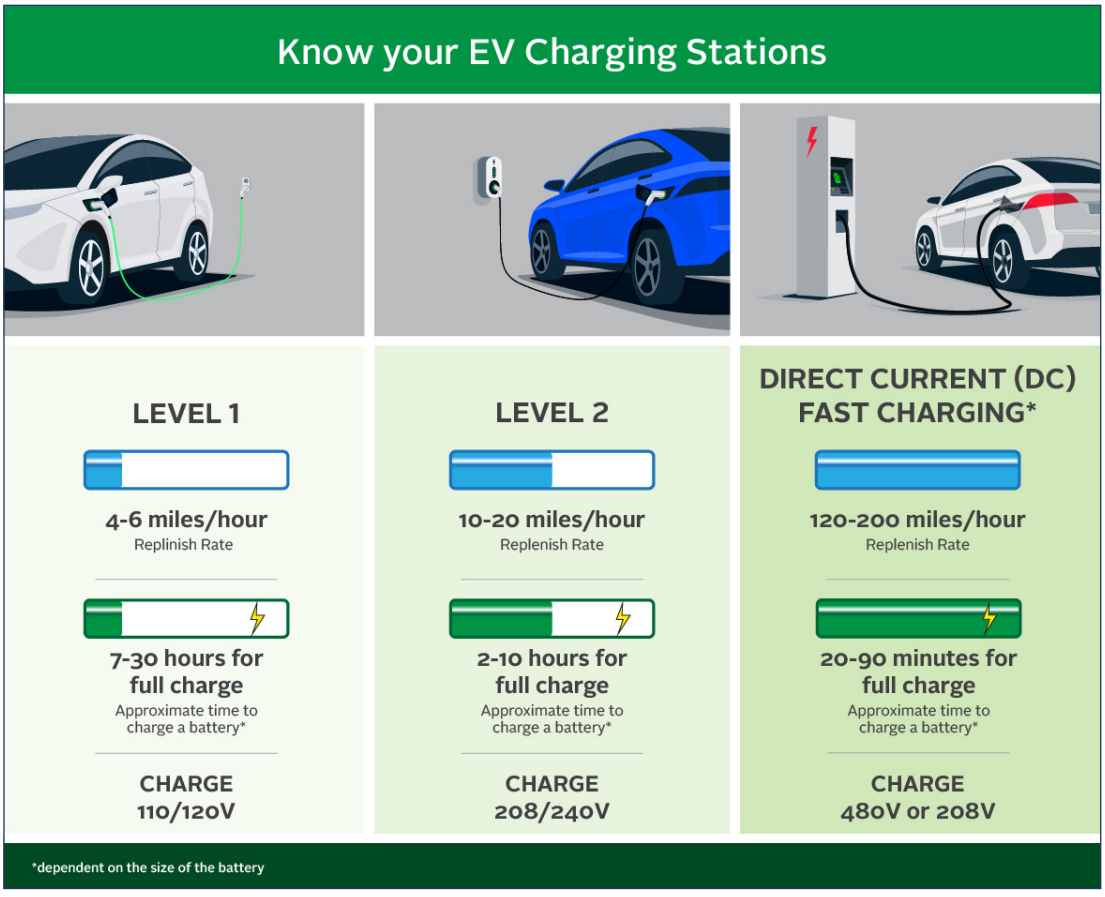
According to the wedge analysis provided by ICLEI regarding how the City of Milwaukee can achieve 45% GHG emissions reductions by 2030, 5% of those emissions reductions will come from the electrification of transportation. To achieve that goal, 50% of new vehicles registered in the City of Milwaukee will need to be EVs by 2030 and 30% of new heavy-duty vehicles will need to be EVs. The City of Milwaukee is developing a multi-pronged strategy to achieve that level of EV adoptions by 2030, as detailed below.

Continued Transition of Municipal Fleets

As referenced above, in 2022, the City of Milwaukee ECO will work with municipal fleet managers to develop an ordinance committing the City to transition fleets to EVs, hybrids and other low-emissions , heavy-duty vehicles. In addition, ECO will work with fleet managers to identify and apply for federal funding available to support the purchase of vehicles and to build out the EV charging infrastructure needed to power those fleets. Moreover, the ECO will explore opportunities to replace the compressed natural gas that currently powers many heavy-duty City vehicles with renewable natural gas (RNG), a fuel source that can be considered to provide negative GHG emissions, as RNG captures the methane (a potent greenhouse gas) that would otherwise be released into the atmosphere from landfills or livestock operations, and uses it as a fuel source. The Milwaukee County Transit System should also continue expanding their fleet of electric buses.

Build Out the EV Charging Network

A readily available public charging network is an important factor to increasing EV adoption rates. According to the US Department of Energy's Alternative Fuels Data Center, Wisconsin currently has 368 public Level 2 and fast charging stations with a total of 832 charging ports. Of these public charging stations, 28 are in Milwaukee County and



▽Graphic explaining the difference between Level 1, 2, and 3 Chargers. Graphic by the General Services Administration.

of those 21 are in the City of Milwaukee. Per an analysis from Slipstream, using the Alternative Fuels Data Center tools, the City of Milwaukee would need to have 818 Workplace Level-2 chargers, 500 Level-2 Public Chargers, and 87 Public Level-3 Fast Charging Plugs installed to support 50% of light-duty vehicle sales in the City of Milwaukee being EVs by 2030. While these calculations could change if their is wider adoption of home EV chargers, for example, to ensure that charging equipment is equitably distributed, the City of Milwaukee ECO will work with experts, partners, members of underserved communities and other stakeholders to develop a public EV charging network plan based on equity, access and efficiency. In addition, the City will seek funding to install EV charging equipment at City-owned parking lots, including several libraries that were made EV charger ready while they were repaved. These projects could be viewed as a pilot, using different types of charging equipment or vendors, to then evaluate their potential for wide-scale use. The City will also collaborate with the Wisconsin Department of Transportation's "Wisconsin Electrification Initiative" and their EV Infrastructure Deployment Plan, to help locate fast EV charging stations in the City of Milwaukee.

The City is not likely to be able to procure, install, and maintain enough chargers by itself to meaningfully impact adoption, so partnerships with other entities are important to consider. Accordingly, the City will collaborate with key stakeholders including We Energies, large employers, multi-family housing owners, existing gas stations and others to explore ways to expand EV charger availability on private property. To supplement the public EV charging plan and potential expansion through partnerships, ECO will also work with stakeholders to propose an ordinance that requires a certain percentage of parking spots at new or substantially-expanded parking facilities provide EV charging or be ready for EV charging installation by running electrical conduit under parking surfaces. Including this EV charger "readiness" in parking lots is dramatically less expensive than having to retrofit parking lots to be ready for EV charging. Many other cities have had success with such ordinances, including Madison, Wisconsin, which passed their ordinance in early 2021. Numerical targets to support the City's EV adoption goal (# of workplace chargers installed, # of public chargers installed, etc.) are also included in the Implementation chapter.

Finally, the recently enacted federal Infrastructure Investment and Jobs Act includes new federal funds to support public electric vehicle charging stations. ECO will work with partners, including potentially other Wisconsin cities, to pursue these federal resources to help finance the growth of public vehicle charging infrastructure in Milwaukee. Planning EV infrastructure in a coordinated fashion with other cities can support consistency in the EV charging network for drivers as they travel throughout the state.

Raise Public Awareness of EVs and supportive program

In addition to expanding the EV charging network, the City will work to expand public awareness of EVs through existing programs and new partnerships. ECO will add an EV awareness component to the ECO Neighborhood Program, to inform community members about EV charger installation programs, incentives for the purchase of new and used EVs, and opportunities to test drive EVs. ECO will also partner with the Wisconsin Clean Cities Coalition to organize Ride and Drive test drive events and other community outreach events, and with Renew Wisconsin on their EVs for Good Initiative, to continue to raise community awareness and familiarity with EVs. In addition, ECO will work in collaboration with Drive Electric Wisconsin to advance EV adoption by increasing consumer demand and dealerships' supply and sale of EVs.

Through a combination of these efforts to increase charging access, plus the growth in options for electric vehicles that will be available in the coming years, EV adoption should continue to accelerate and help the City meet the GHG emissions reduction goal.

GREENING THE ELECTRIC GRID

Use utility-scale investments to provide universal access to renewable energy and a just energy system for people of color.

WHY IS THIS IMPORTANT?

Electricity powers our homes, businesses, streetlights, appliances, computers, and even our cars. A reliable electricity supply is of critical importance to our modern society. Historically, the major fuel sources used to generate electricity are coal and natural gas. These fuels, when combusted to produce electricity, also produce greenhouse gases which are the major contributors to climate change. The "Greening the Electric Grid" strategy aims to accelerate the switch to clean and renewable sources of energy, such as solar and wind, that reduce, and eventually eliminate, emissions from the electric power sector.

Greening the Grid accounts for 57% of the change needed to meet Milwaukee's 2030 emissions reduction goal. The shift to a clean, renewable electric grid also underpins other strategies like vehicle electrification. Greening the Grid also accounts for the energy used to heat homes and businesses, commonly natural gas and heating oil. To achieve net zero carbon emissions by 2050, natural gas would need to be largely eliminated as an energy source for heating in our built environment and be replaced by heating sources that are carbon-free, such as electric air-source heat pumps powered by renewable energy technologies.

COMMUNITY VOICES

Reducing our energy use and building with sustainable, long-lasting infrastructure will help improve our air quality, reduce our reliance on fossil fuels, and help us save resources in the long run..

Tools for Greening the Grid

The electric grid is largely under the control and operation of electric utility companies. These companies are involved in the generation, transmission, and distribution of electricity from source to consumer. Wisconsin's investor-owned utilities (IOUs) and energy market are regulated at the State level through a combination of state laws and administrative oversight by the Public Service Commission of Wisconsin (PSC). Local governments do not play a direct role in regulating electric utilities. In addition, local governments and residents have fewer options than communities in other states to purchase renewable energy. In response to these limitations, the City of Milwaukee and Milwaukee County have become active advocates for climate policy at the PSC through the Wisconsin Local Government Climate Coalition (WLGCC) and through direct intervention on PSC dockets. WLGCC and its members are authorized to file comments in dockets and cases before the PSC. This is an important pathway towards designing and implementing the policy and regulatory changes necessary to enable a transition to a clean electric grid.

Over the last decade, Wisconsin, and as a result, Milwaukee, have lost ground relative to other states and cities with regard to policies that support adoption of renewable energy on the electric grid. The CCTFCEE researched possible energy policy tools and placed them into context for the state of Wisconsin. These are directly applicable to Milwaukee's Greening the Grid priority. See the table titled "Renewable Energy Policy Tools" for a complete overview of these tools on the next page:

RENEWABLE ENERGY POLICY TOOLS		
POLICY	DESCRIPTION	STATUS IN WISCONSIN
Net Metering Rates	Net metering policies allow distributed generation customers to sell excess electricity to a utility at a specified rate and receive credit on their utility bill. This credit offsets the customer's electricity consumption during other times of the day or year, which reduces the expenditures the customer must send to a utility.	Net metering rates over the last decade have been lower in Milwaukee than other cities. Additionally, an annual net metering reconciliation policy would benefit customers more than the monthly net metering currently offered by We Energies.
Third-Party Financing for Rooftop or Ground-mounted Solar Energy Systems	Third-party financing allows solar providers to finance and install solar on a customer's property. This financing mechanism helps make the up-front investment in solar more affordable, especially for schools, governments, and non-profit institutions that cannot otherwise take advantage of federal tax credits for solar energy production.	We Energies has denied interconnection of third-party financed solar projects under the legal interpretation that solar companies offering this financing are acting as "public utilities."
Community Solar Programs	Many homes, apartments, and businesses are not conducive to rooftop solar installations due to roof orientation, tree cover, or other factors. Community solar involves the development of an off-site solar installation through which multiple customers can buy or lease solar panels and receive a bill credit for electricity generated by the system.	Although other Wisconsin utilities offer community solar, We Energies currently does not. Current state law does not allow other solar providers to offer off-site solar programs to consumers.
Renewable Energy Sleeve Tariffs	Renewable Energy Tariffs allow large institutional customers to work with their utility to plan and build large renewable energy projects. Customers continue paying their regular electric rates to the utility, but are able to invest and receive the benefits of solar production, including Renewable Energy Credits toward their climate goals. These programs are "on-bill".	We Energies currently offers the Dedicated Renewable Energy Resource (DRER) pilot program that is a possible pathway for the City to achieve its 25% by 2025 renewable energy goal. This program currently has 20+ year commitment terms and does not explicitly require local labor to build the projects. We Energies also offers the Solar Now program through which the utility leases land or rooftops from customers to install solar energy. The City of Milwaukee and Milwaukee County have both implemented large projects using Solar Now but have not yet utilized the DRER program.

RENEWABLE ENERGY POLICY TOOLS		
POLICY	DESCRIPTION	STATUS IN WISCONSIN
Virtual Power Purchase Agreements	Virtual Power Purchase Agreements (PPAs) are financial arrangements in which customers invest in large scale solar projects and receive some financial benefit from the power sold to the grid on the wholesale market as well as Renewable Energy Credits toward their energy goals. In these arrangements, the customer continues to purchase energy directly from their utility.	To date, neither the City of Milwaukee nor Milwaukee County have pursued these arrangements. Large scale solar projects on the wholesale market still require a utility "off-taker" to purchase the power. Some institutions have used Virtual PPA's to invest in renewable energy in other states, but these do not yield local economic development benefits.
Community Choice Aggregation (CCA)	Community Choice Aggregation (CCA's) are statutorily authorized retail electricity choice programs administered by municipalities, which aggregate the demand of all customers within their jurisdictional boundaries and enroll customers on an opt-out basis. CCA's leverage the negotiation of contracts with retail or wholesale energy providers.	Wisconsin law currently does not allow for Community Choice Aggregation. The Wisconsin Local Government Climate Coalition's preferred approach is to increase renewable energy adoption through existing utilities when possible.
Green Rates	Green rates allow for a customer to voluntarily pay a higher rate to the utility for all or a portion of their electricity to come from renewable energy sources.	We Energies offers its customers the Energy for Tomorrow program. The City of Milwaukee previously used this program for 10% of the electric power at City Hall. These programs do not necessarily lead to new utility investments in solar systems and the end user does not formally get the renewable energy credits.
Renewable Portfolio Standards (RPS)	Renewable Portfolio Standards (RPS) are state laws that require utilities to increasingly use a minimum percentage of renewable energy over time as a portion of their energy portfolio.	In Wisconsin, the statewide RPS Is 10%. This law has not been updated since 2005, but utilities have made public pledges to far exceed these legislative requirements. Strengthening the RPS will hold utilities legally responsible for procuring ever-increasing amounts of renewable energy in their portfolio.

Utility Involvement: We Energies

We Energies is a subsidiary of the WEC Energy Group and is an investor-owned utility (IOU) with a service territory that covers southeastern Wisconsin, including the City of Milwaukee and Milwaukee County. We Energies is Milwaukee's sole public electric utility provider. The WEC Energy Group's Corporate Responsibility Report outlines the company's overall climate strategy and progress within their portfolio, and We Energies' "Pathway to a Cleaner Energy Future" document outlines their commitment to a 60 percent reduction in carbon emissions by 2025 and an 80 percent reduction by the end of 2030.

Despite the aggressive carbon reduction commitments as outlined above, We Energies has advocated for policies and legal interpretations that limit the adoption of distributed renewable energy systems that are not directly owned or controlled by the utility. In contrast to the traditional model of several massive power plants that must send energy long distances to consumers, "Distributed renewable energy systems" are smaller renewable energy systems that produce energy closer to where it will be used, serving either a single building or a microgrid. Distributed renewable energy systems can strengthen the energy independence and resiliency of communities. In addition, they can often be deployed more rapidly than large, central power plants, making them an important tool to quickly greening the grid.

Equity

Milwaukee residents are directly affected by the negative impacts of fossil fuel combustion for electricity. Air pollution is one significant and measurable impact. The EPA tracks air pollution through nonattainment areas that do not meet (or that contribute to ambient air quality in a nearby area that does not meet) the National Ambient Air Quality Standards (NAAQS). According to the Wisconsin Department of Natural Resources, the entire City of Milwaukee has elevated levels of pollution. Air pollution can negatively impact public health and the natural environment.

Switching from coal-fired power plants to natural gas in the short term and eventually retiring all coal-fired power plants in the Milwaukee area by 2035 can reduce the factors that contribute to high rates of asthma and other respiratory illness. It is recommended that local governments, We Energies, and their contractors support equity, diversity, and inclusion (DEI) in the workforce necessary to support the existing electric grid and the build-out of renewable energy infrastructure.

The City of Milwaukee's Milwaukee Shines program, in partnership with the Midwest Renewable Energy Association and Walnut Way Conservation Corporation, have conducted solar energy training for communities of color. Going forward, the City can include workforce provisions in its renewable energy contracts to further support DEI as it relates to Greening the Grid. Moreover, the City's proposed "Renewable Pathways" program allows for local hiring provisions in working with the utility on large scale renewable energy procurements.

Expanding access to distributed solar energy can also support equity. Customers who install their own solar at their own cost reduce the need for large, polluting power plants that all ratepayers must pay for, especially at peak times of the day or year. Distributed renewable energy systems that provide energy closer to end users can also reduce the need for costly transmission lines paid for by all ratepayers.

Resiliency

According to the U.S. Government Accountability Office (GAO), the effects of climate change could cost billions and "affect every aspect of the grid from generation, transmission, and distribution to demand for electricity". Specifically in the Midwest, warmer temperatures and heat waves can reduce the transmission capacity of power lines and heat waves can damage distribution lines, a vital lifeline for cooling buildings. As of a 2021 report by the GAO, the DOE does not have an agency-wide approach to grid climate resiliency

efforts to ensure that resources are targeted effectively. Therefore, the City recommends that We Energies utilize new federal resources to improve grid resiliency in Milwaukee in the face of climate change. This can include grid hardening, to improve and strengthen grid infrastructure in the face of extreme weather, and investments in energy storage to extend the amount of renewable energy accessible to the grid when the sun isn't shining or the wind isn't blowing. Additionally, homeowners and business campuses should consider the creation of microgrids, small areas of interconnected loads and distributed energy resources that act as independent entities from the electric grid. Microgrids can pair battery storage along with on-site solar distribution to protect properties and the people they serve from broader and more frequent grid outages.

CITY STRATEGY

Through its Milwaukee Shines program, the City of Milwaukee has helped grow the market for rooftop solar, which increases the amount of renewable energy on the grid. Local strategies that should be continued and expanded include 1) streamlining the permitting process for installing solar energy systems, 2) continuing the financing for solar projects through Milwaukee Shines loans for residential projects and PACE financing for larger projects, 3) expanding workforce partnerships to develop Milwaukee's solar workforce, particularly for people of color,; and 4) utilizing group-buys in partnership with the Midwest Renewable Energy Association to reduce the cost and complexity of solar installations.

In addition to these current strategies, the City of Milwaukee and Milwaukee County will support a transition away from fossil fuels and toward renewable energy through both advocacy and direct purchasing of renewable energy. The City and County will support both a utility-scale transition to renewable energy and a robust and competitive rooftop solar market.

Advocacy

The City of Milwaukee will take positions that accelerate the transition to renewable energy and retirement of coal-fired power plants. This advocacy will include the submission of public comments and/or intervention in relevant dockets before the Public Service Commission as well as expressing support for statewide legislation that will speed adoption of utility-scale and distributed renewable energy. The City of Milwaukee may work in conjunction with other communities through the Wisconsin Local Government Climate Coalition to strengthen the collective voice of communities throughout Wisconsin that have aligned climate goals. As outlined in the Roadmap to Zero Carbon Investigation (PSC Docket 5-EI-158), the City supports these policies as adapted from the WLGCC comments (PSC Ref #411458):

- **Utility Scale Transition to Renewable Energy.** The City will advocate for utility planning and decision-making that supports the retirement of all coal-fired generation in the state by 2035 or sooner and other fossil fuel generation in the state by 2045. This recognizes that natural gas can act as a bridge-fuel, but that any new investments in natural gas infrastructure must be carefully considered within Wisconsin's Energy Priorities Statute 1.12. The City will support utility-specific progress toward clean energy goals, using 5-year benchmarks, and the transition to renewable energy for all customers at fair rates.
- **Universal Access to Renewable Energy.** The City will advocate for adoption of policies to support distributed solar energy, including but not limited to, fair net metering rates that recognize the full spectrum of benefits distributed energy provides to the grid, fair interconnection policies, and the creation of community solar. In addition, the City will advocate for laws or rulings to clarify that solar companies that finance solar energy projects as a third-party are not public utilities under Wisconsin law, with an eye toward expanding access to renewable energy for all customers.

- **Support the transition to the Utility of the Future.** As described in PSC Ref 411458: "For most geographic areas of the State, Wisconsin's historic utility regulatory model has encouraged investor-owned utilities (IOUs) to control and invest in utility infrastructure. The system has been generally successful in delivering a reliable and stable supply of electricity and gas. However, from the perspective of local governments who have explored programs nationally, Wisconsin utilities could be more responsive to the evolving opportunities for residents to take more control over their energy needs and be more collaborative partners with local government who have often tended to be more assertive in supporting a transition to renewable energy and energy efficiency in buildings. The PSC can play a role in establishing better incentives for Wisconsin's electric utilities to support energy efficiency in buildings through on-bill financing or other means, distributed energy generation, pilot new technologies like battery storage and microgrids, and support electrification of the heating and transportation sectors. Wisconsin's regulatory environment supports the traditional utility business model that grants a stable rate of return on large investments in generation, transmission and distribution assets. The City supports consideration of new utility business models that align a utility's economic incentives with important public policy goals such as the fuel mix outlined in Wisconsin's Energy Priorities law. §1.12, including the proper emphasis on energy efficiency and conservation and non-combustible renewable energy. Specifically, the utilities themselves and/or the PSC should also examine utilities' "Return on Equity" formulas and performance bonuses to incentivize energy efficiency, demand side management, and deployment of distributed renewable energy systems."

Underpinning this advocacy strategy is an interest in working professionally with We Energies through a "Clean Energy Memorandum of Understanding" or other means to facilitate a timely and just transition to a clean electric grid. If benchmarks are not aligned toward this transition, the City may advocate for bolder reforms such as Community Choice Aggregation to allow for other pathways to achieve the necessary transition to renewable energy at scale.

Direct Purchasing

In 2009, Milwaukee joined other communities around Wisconsin to establish a 25% by 2025 renewable energy goal for municipal operations. Other corporations in Wisconsin may have similar Environment, Social Responsibility, and Governance (ESG) goals that include greenhouse gas reduction goals. Since less than 8% of We Energies' current fuel mix is composed of renewable energy, the City and other corporations need better options to accelerate their use of renewable energy. Rooftop solar is part of the solution, and the City should invest in additional rooftop solar arrays when cost effective. However, the City of Milwaukee maintains a large system of streetlights, water treatment and pumping infrastructure, and city buildings whose energy needs cannot be met only by rooftop solar. Therefore, the City will support options to opt-in to new, off-site utility-scale renewable energy projects.

The City has utilized We Energies' Solar Now program to build the largest solar energy project in the City's history, a 2.25 MW solar project on a City-owned landfill. ECO has productively worked with We Energies to propose a new "Renewable Pathway" tariff (PSC Ref# 443104) that would allow the City to procure up to 100% of its electric power needs from new renewable energy sources, utilizing local labor to build the City. If approved by the PSC, the City and other large institutions will use this opportunity (or other new options that may become available through state policy) to achieve or exceed the 25% by 2025 goal.

PROTECT AND RESTORE NATURE IN THE CITY

Conserve natural habitats and reintroduce native trees and plants to areas overwhelmed with paved surfaces.

△Photo of urban wilderness. Photo courtesy of Eddee Daniel.

WHY IS THIS IMPORTANT?

This chapter focuses on "Protecting and Restoring Nature in the City". While reducing greenhouse gas emissions is critical to addressing climate change, it is not the only strategy that must be enacted. Climate change is the dangerous result of natural carbon, water, nutrient, and energy cycles that have been disrupted at large scale by humans. Climate change cannot be fully addressed unless society reestablishes environmental equilibrium, which can only be accomplished by protecting and restoring natural ecosystems and biodiversity.

Extreme heat and heavy rainfall events are the two primary ways by which Wisconsin sees the effects of climate change, and both can be exacerbated or mitigated by strengthening Nature in the City. Our state has become 2.12 degrees Fahrenheit warmer since the 1950s and by 2050, Milwaukee and the surrounding region will have three times as many days with a heat index above 105 degrees. The City's annual precipitation has increased by about 4.5 inches, or 15%, in the last 70 years, and the Midwest has seen a 37% increase in very heavy precipitation events over a 64-year period. These trends are projected to be magnified this century due to climate change.

Even as the City and County strive to reduce greenhouse gas emissions 45% by 2030 and achieve net zero emissions by 2050, flooding and heat will have a negative impact on human health and local ecosystems. Nearly 50% of Milwaukee is covered in buildings or impervious pavement. With nowhere to go, floodwaters can overwhelm sewer systems, damage property, contaminate drinking water with pollutants and bacteria, displace residents, leave behind mold that causes respiratory problems..

Extreme heat kills more people in the state than all other weather disasters. Due to climate change, the number of heat waves in Wisconsin is projected to increase from 10 to nearly 60 days a year by 2050. This puts Milwaukee residents without air conditioning and outdoor workers at high risk, while those who can afford air conditioning will use it more frequently, which produces more pollution when fossil fuels are burned for energy generation. These pollutants and toxic particles raise the risk of respiratory disease and worsen the urban heat island effect. If trends continue, asthma and other respiratory diseases are expected to become more common and severe. Cities like Milwaukee suffer from the heat island effect when a lack of trees combined with an excess of pavement increase temperatures as compared to more natural areas. The result is an urban environment with dangerously hotter temperatures. Dense, hardscaped areas can become up to 22 degrees Fahrenheit hotter than surrounding communities that contain more trees and green space, according to the EPA. Diseases and pests have killed tens of thousands of trees since the 1950s, greatly reducing urban shade. As the climate changes, the threat of new and worse diseases and pests increases.

Equity

A 2020 analysis of U.S. cities revealed that heat islands are concentrated in low-income areas and communities of color, where trees and vegetation are scarce and discriminatory housing policies and planning were common. In the City of Milwaukee, the average tree canopy coverage overall is approximately 25%. But, in the three lowest-income zip codes, tree coverage is much less: 53233 has tree coverage of only 7%, 53205 has coverage of only 15%, and 53206 is 22%. In these communities and those adjacent to them, where tree coverage is low and where the energy burden of air conditioning is much more burdensome, residents are significantly more vulnerable to heat-related illnesses and even death.

Vulnerability to flooding is also not equitably distributed across the City. According to a recent case study on environmental justice and urban flood risk, flooding in Milwaukee is likely to disproportionately impact vulnerable communities and Black residents unless these communities are prioritized for solutions.

LEADING BY EXAMPLE

Below is a short list of examples of previous projects across the City that are aligned with "Nature in the City" priorities. The City should consider replicating or expanding activities and projects related to these in the future.

- The Cooper Park Pollinator Project is maintained by the Friends of Cooper Park.
- In 2007, Milwaukee County adopted a resolution known as the Green Print, outlining sixteen different initiatives. Among the goals is to return passive use park land to native grassland and prairie reserve areas. The Parks Department has identified underutilized turf areas and converted them to trees and grasslands, partially through the USDA Conservation Reserve Program. Parks Natural Areas staff have also expanded the pollinator gardens in the parks.
- In 2021, the City Forestry Services obtained a $25,000 increased budget allocation for a pilot program to establish two Wildflower Planting Beds, one in a Northside and one in a Southside location. The wildflower gardens will replace turf grass and are expected to result in lower lawn mowing costs.
- The Milwaukee River Greenway is a success story of many partners coming together to protect a stretch of environmental corridor along the Milwaukee River and make it accessible for light recreation.
- Green-cooling commercial lot projects were implemented at 5601 N Hawley Road and 1701 W North Avenue.

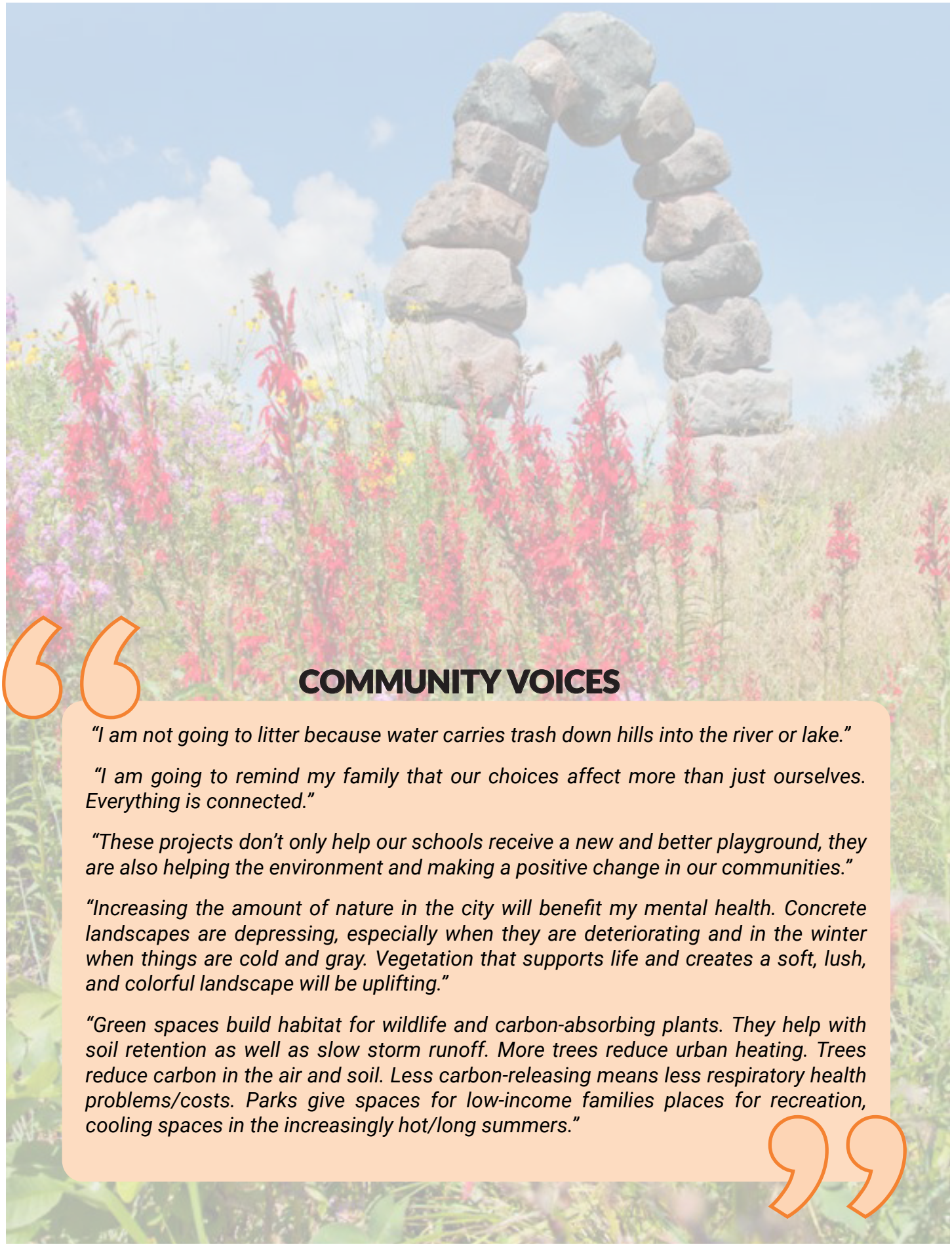
The lack of trees and excess amount of pavement directly affects children of color when schoolyards have a traditional design of large parking lots that double as recess areas. Fortunately, excellent work is being done by Milwaukee Public Schools, the Green Schools Consortium of Milwaukee, and the City of Milwaukee, and the Metropolitan Sewerage District to change this model and begin to incorporate nature back into MPS's playgrounds and outdoor classrooms, as further described in the Strategy section.

Resiliency

Healthy natural ecosystems provide clean water and healthy food, improve air quality, protect and steward biodiversity, and provide many other cultural, spiritual, aesthetic, and mental health benefits. The cooling benefits of trees through shade and carbon storage can counteract the negative impacts of the urban heat island effect. Maintaining existing natural areas where possible also benefits stormwater management and decreases flooding, because water has the ability to soak into the ground.

Many studies show that connections to nature are essential to human well-being.. Conserving natural habitats and reintroducing native trees and plants to our schoolyards, parking lots, and other areas overwhelmed with paved surfaces is one way to help Milwaukee residents reconnect with nature.

▽Photo of Milwaukee Rotary Centennial Arboretum. Photo courtesy of Eddee Daniel.



COMMUNITY VOICES

"I am not going to litter because water carries trash down hills into the river or lake."

"I am going to remind my family that our choices affect more than just ourselves. Everything is connected."

"These projects don't only help our schools receive a new and better playground, they are also helping the environment and making a positive change in our communities."

"Increasing the amount of nature in the city will benefit my mental health. Concrete landscapes are depressing, especially when they are deteriorating and in the winter when things are cold and gray. Vegetation that supports life and creates a soft, lush, and colorful landscape will be uplifting."

"Green spaces build habitat for wildlife and carbon-absorbing plants. They help with soil retention as well as slow storm runoff. More trees reduce urban heating. Trees reduce carbon in the air and soil. Less carbon-releasing means less respiratory health problems/costs. Parks give spaces for low-income families places for recreation, cooling spaces in the increasingly hot/long summers."

CITY STRATEGY

The City's strategy for "Nature in the City" is organized by a four-pronged approach. Overall, the priorities focus on expanding tree canopies, reducing pavement coverage, and designing green spaces for rain absorption as strategies that lower urban heat, reduce the impacts of flooding, and improve public health. Each approach is explained further below.

1. Protect Environmentally Sensitive Lands

The City will prioritize protecting environmentally sensitive lands from urban intrusion. In addition, the City will manage Natural Areas and Critical Species Habitats, as well as primary environmental corridors, secondary environmental corridors, and isolated natural resource areas, as defined by the most current version of Southeastern Wisconsin Regional Planning Commission's (SEWRPC) Natural Areas Plan. The City and County have acquired some of the lands listed by SEWRPC but some need to be further protected and managed. There are four parcels in the City of Milwaukee and 25 parcels in Milwaukee County targeted for acquisition for conservation. While the emphasis here is on acquisition of these parcels, it is also important to manage and maintain all 110 Natural Areas and Critical Species Habitat Areas that have been identified in the County (See SEWPRC's 2010 Plan Amendment for the Natural Areas and Critical Species Habitat Areas Reference Table).

2. Expand the Green and Healthy Schoolyard Redevelopment Program

The City will ramp up the "Green and Healthy Schoolyard (GHS) Redevelopment Program" to double the impact by 2030 for Milwaukee Public Schools (MPS) with more sustainable sources of annual funding and synergistic programming. MPS owns over 500 acres of impervious land. Among its 160 schools, MPS serves 70,000 students: 90% people of color, 66% economically disadvantaged; and 20% special needs. This population benefits from the GHS Program. In addition, school staff and neighborhood residents also benefit.

Green schoolyards make it possible for children who live and recreate within the City to experience the emotional and physical benefits of spending time outside in nature. The more exposure children have to nature at school, the more likely they will be to continue to engage in outdoor play (Beyer et al 2015). Especially in areas of the City that already experience higher levels of poverty, violence, and stress, natural spaces like green schoolyards can provide students and their families with proven positive mental health outcomes such as reduced depression and anxiety symptoms and improved mood and cognitive functioning (Bikomeye et. Al 2021).

Research conducted by the Hong Kong University of Science and Technology and the University of Colorado-Boulder has demonstrated that direct experiences in nature during childhood can lead to greater empathy for the environment. Given the disproportionate effects of climate change on our underserved neighborhoods, a City-wide effort to equip our younger citizens with knowledge about and care for the environment is imperative for future environmental stewardship efforts.

This program also has benefits beyond the schoolyards due to the potential for more green jobs. Civil engineers and planners, de-paving contractors and a workforce to implement de-paving, landscaping, landscape maintenance, and forestry contractors and workers, green infrastructure designers, installers, and maintenance workers all have a hand in the success of this strategy.

GREEN AND HEALTHY SCHOOLYARD, BAY VIEW ELEMENTARY

Reflo details the following as the vision for the updated schoolyard: BVM wants to create a schoolyard that speaks to teachers and allows for natural exploration, important to the Montessori pedagogy. We envision our schoolyard to become a community space that neighbors visit and an important water reclamation site for Lake Michigan. The ripple effect from this project will inspire students to become environmental and community stewards. For more information on this project, please visit Reflo's webpage for Bay View Montessori here. Photos below are courtesy of Reflo.

BEFORE:

AFTER:

3. Implement the Branch Out Milwaukee Campaign

The third strategy is to implement the "Branch Out Milwaukee Campaign" in line with the "Branch Out Milwaukee Master Plan". This Plan was developed with input from more than 30 governmental, non-profit, and community partners. The Plan centers on developing community-based partnerships and projects to build understanding of the social, health, economic, and environmental benefits of the urban tree canopy: maintaining Milwaukee's existing canopy, planting trees in accordance with community-defined priorities, and employing local residents for community organization and education, tree planting, and tree maintenance work needed to maintain and expand Milwaukee's tree canopy.

Studies have shown that communities with healthy trees witness better air quality, promote physical activity, reduce cardiovascular and respiratory disease, decrease stress, improve childbirth outcomes, and improved mental health. Trees and plants also offer climate change mitigation by removing carbon from the atmosphere and storing it within living structures.

Work is already underway in Sherman Park. The Branch Out-Sherman Park project is a pilot project for the Branch Out campaign being implemented over 2022 by Milwaukee Water Commons in partnership with the Sherman Park Community Association, the City of Milwaukee Environmental Collaboration Office, and the City's Forestry Division. The pilot project will educate residents about the multiple benefits of urban tree canopy, develop and train a neighborhood Tree Board to guide neighborhood tree canopy priorities, plant trees in selected vacant lots and employ a local landscape company to maintain the newly planted trees, provide free tree assessment services for local homeowners and subsidies for recommended tree maintenance, and inventory trees at participating residences for Wisconsin's Community Tree Map.

4. Incentivize Green-Cooling Commercial Lots

The City should incentivize private commercial property owners to de-pave portions of their parking lots and replace those areas with native trees and plants to help curb urban heat, reduce flooding, beautify the City, and increase biodiversity. Social vulnerability variables will be incorporated into the Green-Cooling Commercial Lot Program in recognition of the disproportionate impact of flooding on vulnerable communities and Black residents in Milwaukee, as documented in the recent Urban Systems Lab study of the City of Milwaukee.

This program will use tools, including the Tree Equity Score and the forthcoming State of Wisconsin Environmental Equity Tool in combination with SEWRPC's map to identify and prioritize private commercial parking lots located in low-income neighborhoods that have a high heat risk index and a low tree equity score. Priority will be given to applicants with commercial lots located within these areas. The City can work with Business Improvement Districts to engage property owners and also partner with equity-focused landscape contractors, such as Walnut Way, Cream City Conservation, and Groundwork Milwaukee to create jobs. The Green-Cooling Commercial Lots replaces the city's "Green Lots" Program and is designed to remove barriers to participation by designing the program to respond to feedback received from stakeholders and by offering reimbursement funds on a rolling basis rather than strictly upon project completion.

In addition, the City will continue to implement the recommendations of the 2019 Green Infrastructure Plan. To learn more about the Green Infrastructure Plan, visit the City's website Milwaukee.gov/GI.

△Photo by Reflo.

FOOD WASTE REDUCTION

The City will initiate a public-private partnership to reduce food waste and reduce food insecurity as well as strategize to contribute to a society based on sustainable consumption.

WHY IS THIS IMPORTANT?

In our modern man-made systems, society's creation of huge streams of waste has become normalized. Over time, the health of both our society and ecosystems have suffered due to accumulation of these waste materials. The impacts of this buildup of waste are not uniform: low-income neighborhoods and communities of color are affected disproportionately. Overproduction of food, packaging, and durable goods represents a huge exploitation and loss of natural resources and money, especially to the energy and water resources used to produce them. Once these materials are sent to a landfill, organic materials such as food decompose to release methane, a highly potent greenhouse gas. According to the U.S. Environmental Protection Agency (EPA), methane is more than 25 times more potent at trapping heat in the atmosphere as carbon dioxide, making it an especially powerful contributor to climate change.

This chapter focuses on the systems and tools needed to divert and capture usable solid waste streams, especially food, to create new value for Milwaukeeans while greatly reducing the volume of materials being sent to landfills that generate negative environmental impacts. In order to address both climate and equity issues, food waste was identified as a central topic. The United Nations estimates that, globally, a third of the total food produced for human consumption is wasted, leading to enormous methane emissions as food decomposes and exacerbating food insecurity as edible food is disposed of. Recognizing the enormity of this issue, the U.S. Department of Agriculture has set a goal of reducing food waste 50% by 2030 and has established grant programs to aid local governments and nonprofits in working towards this goal.

In Milwaukee, food waste and yard debris make up to 24% of the waste stream, representing a significant opportunity to reduce GHG emissions by reducing food waste. In 2021, the Wisconsin Department of Natural Resources (DNR) released an updated Waste Characterization Study. For the first time, DNR documented Wasted Food as a category. The study provides regional breakdowns and the Southeast region, which includes the City, had 15.4% food waste, higher than the state as a whole. Other data show single family residences had 15.5% food waste while multi-family residences had 15.7% food waste. This reporting shows that, in Milwaukee, there is significant potential to reduce food waste and reduce greenhouse gas emissions while also

COMMUNITY VOICES

Food inequity and food insecurity must be addressed. This issue affects people's health. Poverty and access to healthy food are big parts of the problem. Food being shipped long distances creates GHG emissions. Food going to landfills creates methane

Creating a system to send surplus food from restaurants and grocery stores to those that are food insecure instead of throwing it away will greatly benefit my community. I can't believe how much food is currently being wasted while so many are hungry!

creating systems to address food justice. Food justice is addressed further in the Equity section of this chapter.

Equity

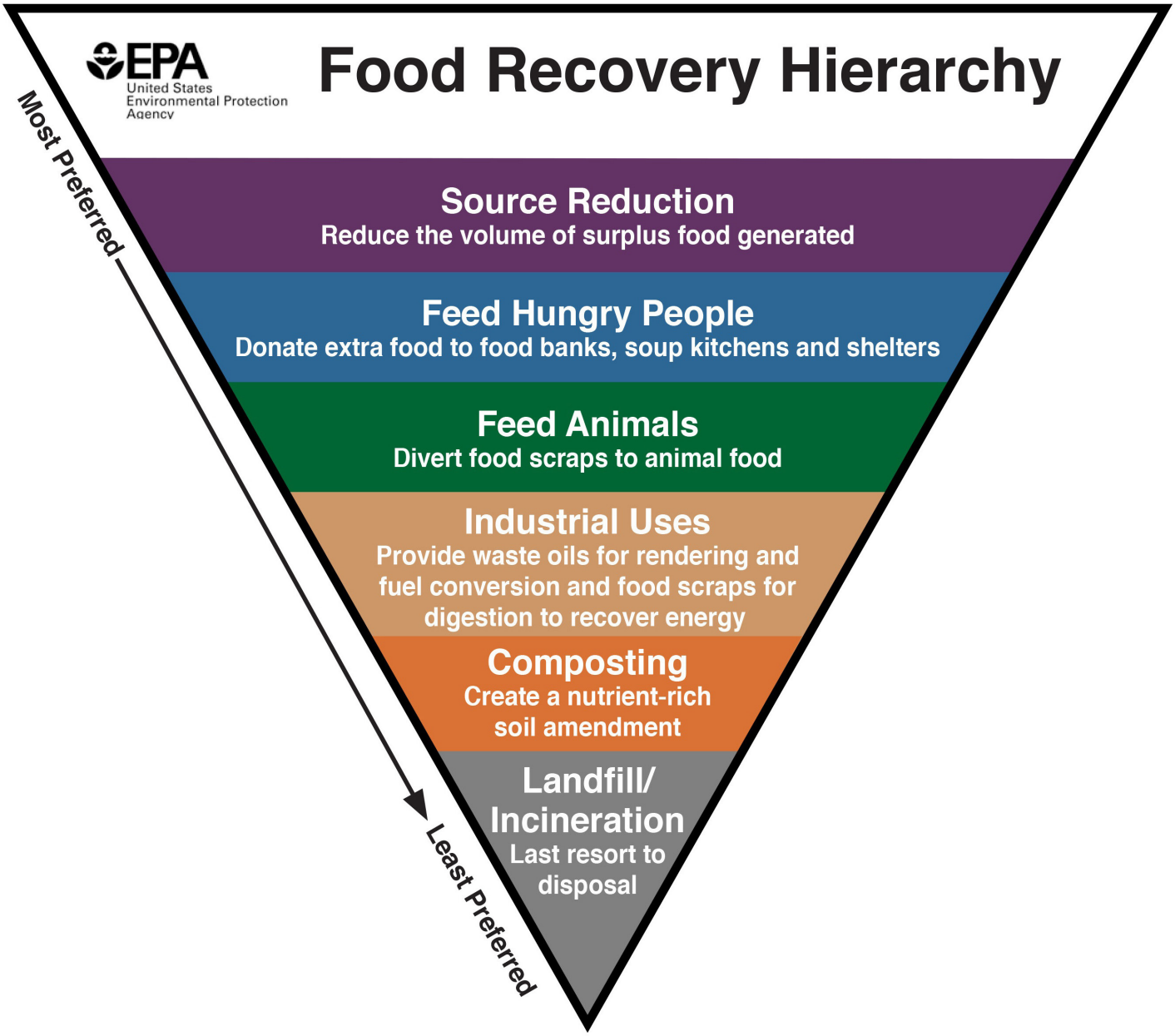
Food access is not equitable, with many members in the community unable to reach or afford healthy food. Locally produced food is often more expensive and more difficult to find than food produced from longer distances across the state, country, or internationally. In Milwaukee, food deserts, geographic areas where the absence of grocery stores within a convenient traveling distance limits residents' access to healthy and affordable food options, are prevalent in communities of color and low-income areas. According to the Feeding America "Map the Meal Gap", 15.4% of residents of Milwaukee County face food insecurity. From 2019-2020, the Milwaukee Hunger Task Force distributed 14,023,716 pounds of food to a network of 70 emergency food pantries, soup kitchens, and homeless shelters in the Greater Milwaukee area. Many organizations are working to address food insecurity in Milwaukee, including the Hunger Task Force, Feeding America, an extensive network of food pantries, gardening groups, and farmers markets.

The City's Fresh Food Access Strategy states: "Residents who lack access to healthy foods are at greater risk for higher rates of obesity, diabetes, heart disease and a host of other health consequences related to diet and nutrition. The Milwaukee County diabetes rate is estimated at 10.1%, the ninth- highest rate nationwide. Distance from supermarkets correlates with these problems, which are most acutely felt in food deserts." Food justice seeks to ensure that the benefits and risks of where, what, and how food is grown, produced, transported, distributed, accessed, and eaten are shared fairly. Food justice represents a transformation of the current food system, including but not limited to eliminating disparities and inequities. As climate change continues to negatively impact agriculture through more frequent, intense storms, heat waves, pests and diseases, flooding, and more, it is important that food justice is addressed in Milwaukee as part of this Plan.

Resiliency

Food waste contributes significantly to climate change when food decomposes in landfills and releases methane gas. Methane is more than 25 times as potent as carbon dioxide at trapping heat in the atmosphere, contributing to climate change. Food waste can be reduced by providing more opportunities for resident to compost, whether at home or through a municipal waste management system. Community gardens, farmers markets, and other locally grown and sourced food reduces the GHGs emissions from the food sector by decreasing the supply chain inputs and emissions from mass industrial farming practices which are also degrading soil quality. Potential policy remedies to food waste include exploring requiring all grocery stores to donate unpurchased food to food pantries and community centers before it spoils. Subscription-based services such as Imperfect Produce provide customers with leftover food that is still edible and would otherwise be sent to a landfill.

If food waste cannot be used to feed hungry people or animals, composting is the prime way to recycle the nutrients in a more sustainable manner than sending it to a landfill. Composting converts organic material, including food scraps and yard waste, into a usable soil amendment that can be used to grow new food and other plants. Composting provides many benefits to people who can use the compost to grow new food on a smaller scale, the environment by returning the nutrients back to the ecosystem, and the economy, because small-scale composting can drive small business operations and create new jobs. Compost is typically used as a slow-release



△Graphic by the Environmental Protection Agency.

fertilizer, turf grass top dressing, landscape mulch, soil amendment (to add nutrients), and mulch for erosion or dust control.

The EPA's Food Recovery Hierarchy identifies the most and least preferred avenues for food waste reduction. At the top of the hierarchy is to feed hungry people, while the least preferred method of food waste is to send it to a landfill.

Initiate the "FEED Milwaukee Collaboration" (FEED MKE) to reduce food waste and feed hungry people

FEED, stands for "Food Excess Equitable Distribution," is a conceptual public-private partnership (collaboration) which could be initiated by the City, County, or UW Extension Milwaukee County. FEED's primary goal is to reduce food waste sent to landfills, prioritizing the preferred uses of the EPA's Food Recovery Hierarchy as shown above: source reduction and feeding hungry people.

Expand Partnerships

The FEED Milwaukee Collaboration will build upon existing programs to step up efforts to reduce or prevent food waste, rescue surplus food, and feed hungry people.

In addition, partnerships should establish and support local, distributed growing operations. This empowers individuals and groups to engage in sustainable food production. When food is grown on-site, people are less dependent on disruptions to the global food system. One example to consider is Fork Farms' scalable hydroponic technology. According to the Fork Farms program, "...partners utilize indoor growing as an innovative model to attract interest in their food service programs, to demonstrate their commitment to healthy menus, nutritional education and community health, and sustainability initiatives. Fork Farms partners have used fresh food grown in meal food programs, to support local food pantries, to build micro-enterprises and more."

Identifiable Quantitative Outputs

Reduction in solid waste sent to landfills: Measures and tracking mechanisms need to be developed. The City tracks materials picked up, but no methods currently exist to track the materials picked up by private trash haulers. A 20% reduction in solid waste generated by 2025 and a 25% reduction by 2030 would have multiple benefits, including cost savings for municipal "tipping fees" at landfills along with reduced GHG emissions.

Food recovery: A food recovery goal of 50 tons by 2025 and 100 tons by 2030 is the recommended starting point. 50 tons is approximately 275 lbs./day. This goal may result in job creation in local government or with nonprofit partners working towards this goal. The Alpine Valley music venue, owned by Live Nation, is a Wisconsin-based example of setting and working towards a food waste reduction goal. In 2022, the venue succeeded in reducing waste, food, water, and energy by 70%.

Lead Agency + Collaborators

The City, County, and/or UW Extension Milwaukee County should explore initiating a FEED MKE by convening businesses, nonprofits, philanthropies, governmental agencies and interested citizens. A "Food Waste/Food Security Summit" could kick off the collaboration. Collaboration across city and county agencies should would be needed to make the collaboration a success.

Many organizations in the existing network to feed people should be invited to participate in the collaboration, especially:

- Hunger Task Force, Feeding America, and Extension Milwaukee County, as the largest organizations, as they may have the most staff capacity for participation
- Anti-poverty agencies such as the Social Development Commission (SDC) and Community Advocates
- Philanthropies interested in promoting food justice
- Universities with student or teaching resources/personnel

In addition to distributing recovered food, the City, County, UW Extension, or philanthropic partner organizations should explore opportunities for on-site, sustainable food production, such as Fork Farms' scalable hydroponic technology. According to the Fork Farms program, "...partners utilize indoor growing as an innovative model to attract interest in their food service programs, to demonstrate their commitment to healthy menus, nutritional education and community health, and sustainability initiatives. Fork Farms partners have used fresh food grown in meal food programs, to support local food pantries, to build micro-enterprises and more."

Operations: How it Works and How it Will be Implemented

First Phase: The quickest way to ramp up food recovery is to fund a full-time staff person or contractor with one of the partner organizations. The Gleaning Milwaukee Coalition is one option for consideration. This coalition currently has no staff, but has experience marshaling volunteers. It aspires to rescue food from new sources, such as businesses and institutions that are not now involved with food rescue and distribution.

Second Phase: Within two years, it is recommended that a multi-faceted public-private partnership with staff under the guidance of a Steering Committee be created. This structure will create the greatest and most long-lasting impact. Staff may be supplied by any of the partners. The existing strong network of organizations must be included and built upon. The partnership may take different forms, but must use resources from non-profits, business, and government. Programs must make the most of existing knowledge, capacities, and assets, creating new tools and resources to complement or expand existing programs.

The creation of neighborhood food hubs may be a useful model to explore. The existing network of Neighborhood Service Providers, NIDs, BIDs, senior centers, community centers, and food pantries could be used to jump-start a system. Existing strong programs may be expanded. Neighborhood staffing and locations will

△Graphic by GRAEF.

facilitate communications, food donations, and distribution. In addition, established facilities and staff will build credibility and trust with residents/ recipients.

Education and Outreach

FEED MKE should develop an education and outreach campaign to encourage residents, restaurant owners, grocery stores, and institutional cafeterias to more accurately manage the amount of food they prepare relative to demand. This campaign should draw on existing assets such as Natural Resources Defense Council's "Save the Food" campaign and other cities' successful programs. These educational assets must be delivered through various media including print, web, mobile, signage, and video, and should be customizable for individual communities and partners. A dedicated website will be an important connection for these assets and provide information about the program. It must include resources for residential, commercial, institutional, and food service facilities. Resources such as food storage guidance, recipes, waste audit tools, cost calculators, games, and activities will be available for download. Collaboration with schools on education and outreach is an important aspect of instilling food waste reduction behavior into the next generation. The City should support compost projects at schools.

One example of a successful food waste reduction initiative is from Nashville, TN. Milwaukee could structure an outreach campaign similar to Nashville's Mayor's Food Saver Challenge, which engages local businesses to prevent wasted food, donate surplus food, and recycle food scraps. Participating businesses have focused on educating staff and customers on food waste issues and reduction, donating surplus food to food distribution organizations, diverting food scraps from the landfill to be used as animal feed, and establishing composting processes. All of these aspects could be replicated in a Milwaukee program.

Operations

Creating an efficient and effective partnership or collaboration is not an easy task but is paramount. Ramping up gleaning (food rescue from farms, gardens, fruit trees, households, restaurants, businesses, and institutions such as hospitals and schools/universities) will be an important element. Facilitating communications with technology (website and app) between producers and consumers will be a vital tool. Mapping of resources will be important. FEED MKE seeks to build on existing capacity and networks resulting in more food distributed and less food waste ending up in landfills.

Research and Changing Policy

For FEED MKE to function effectively, some further study and some policy changes are needed, specifically:

Identifying the types and volumes of food that could be rescued. Starting points include the DNR 2021 Waste Characterization Study and self-audits along with reporting by businesses through tools such as those developed for NRDC's Save the Food campaign

- Identifying barriers and opportunities for food donation, handling, and distribution. Focus groups should be convened including individuals and organizations currently rescuing food, food producers such as restaurants and grocery stores, food banks, and pantries
- Encourage or incentivize businesses to reduce the amount of food they waste, donate surplus food, and compost food scraps, and provide technical assistance to help them do so
- Revise legislation and ordinances that are currently barriers to recovery and distribution of excess food. Some model ordinances have already been written by NRDC and other organizations.

- Establish standards for food storage, transportation, and handling with input from health inspectors and food safety experts throughout Milwaukee County.
- Adopt an organic waste ban or mandatory diversion policy and enforce any mandate implemented
- List lessons learned from municipalities currently working with NRDC and participating in Save the Food efforts.
- List lessons learned from the two years of grants from the City's Fresh Food Access Fund.
- Conduct research to better understand the reasons and circumstances for food insecurity.

Equity Focus

The name, "FEED MKE" emphasizes the equity aim of the collaboration to promote equity by reducing food insecurity and improving health. It aims to improve equitable access to healthy food by prioritizing vulnerable communities and eliminating barriers to healthy food access..

Accelerating Impact

Funding and other resources for the planning/ program development and implementation phases are available, including but not limited to:

- The City should continue the $250,000 in annual budget allocations for Fresh Food Access and use a portion to fund FEED MKE. Community Development grants through the City or County may also be used
- Federal funds (ARPA, CARES, infrastructure) to Milwaukee County might be accessed
- USDA and USEPA grants are available. Funding should include paid participation by collaborators. (Units of government often must be the applicant)
- The State of Wisconsin may fund FEED MKE as the pilot food waste project recommended in the Governor's Climate Change Report
- NRDC, ReFED and other nonprofits have staff and resources that can be consulted or brought into Milwaukee. NRDC's Save the Food program is a noteworthy example
- Private or local corporate foundations focused on food, equity, and economic issues may provide funding. Nonprofits may apply on behalf of the collaborative
- Multiple municipalities in the U.S. have launched Save the Food programs, allowing for examples and funding ideas for the creation of FEED MKE.

Secondary Waste Reduction Strategies

The following strategies related to waste reduction should also be explored:

1. Create a Community-Wide Reusable Food Service Container System

Under this strategy, a private sector service provider would deliver clean containers to grocers and restaurants, pickup dirty containers, and take them to a secondary location to wash and sanitize. Grocers and restaurants pay a service fee to use the containers to package to-go orders or various food products. Users either pay a flat rate subscription fee to take part in the program or pay a deposit upon receipt of a container, which is refunded when the container is returned. Containers should be durable and dishwasher safe, but also recyclable in the event that a container is broken, worn out, or discarded.

2. Improve the Recovery Rate and Quality of Recycled Materials in Milwaukee

The infrastructure and staff to collect and process these materials already exists. Capturing more economic value from these assets requires recovering more already-recyclable materials and ensuring those materials are as free of contamination as possible. Funding for public outreach and education, along with a concerted effort to align messaging and bin design with adjacent suburbs, is key to making it easy for residents to participate correctly. Existing programs, websites, and creative assets including those found on the City's recycling website, Keep

Greater Milwaukee Beautiful, and EPA's recycling website should be leveraged to reduce initial costs.

The revenue that Milwaukee receives from selling collected recycled materials offsets operating costs. Improving the quality of the recycled materials, and especially keeping out items like plastic film and mixed-material packaging that cause operational problems, is critical to maximizing the return on the City's investment in its recycling program.

3. Promote Composting of Food and Other Organic Wastes (Long-Term Objective)

The long-range objective of developing a county-wide organics collection system is important to pursue. Composting organic wastes that cannot be rescued for human or animal use will reduce GHG emissions by keeping those wastes out of landfills.

This is a long-range objective as the City strives to obtain the resources necessary for a composting program. In 2017-2018, the City participated in a study led by UW Extension to assess how composting could be ramped up to a citywide program. Funded by USDA, a team reviewed other cities and looked at the waste and composting system in Milwaukee. The study found Milwaukee lacks a company and a site (property) large enough to handle the volume of organic waste Milwaukee generates, so these two items should be a focus.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RESILIENCE AMBASSADORS

Highlight equity-specific strategies and develop a Resilience Ambassadors in order to educate, adapt, mitigate, and prepare for the impacts of climate change on the City's infrastructure and people.

△Photo courtesy of David Thomas.

WHY IS THIS IMPORTANT?

Despite the increasingly prevalent impacts of a changing climate, many of Milwaukee's residents are unaware or unable to take more aggressive action to protect themselves, their homes, and the City they love. While governments at various levels (local, state, and federal) often create programs to assist residents, public communication and promotion about new and existing programs is often underfunded. As a result, many residents do not know about existing programs, let alone new initiatives. The Resilience Ambassadors proposal is intended to connect the dots between policies and programs that can support, encourage, and inspire large-scale action. Particular focus is geared towards supporting the City's most underserved and at-risk community members and unraveling decades of environmental injustice.

LEADING BY EXAMPLE

In 2019, the City of Milwaukee passed its Green Infrastructure Plan. The term "green infrastructure" is used to describe a variety of practices, from permeable pavement to rain barrels and rain gardens, that help reduce flood risk and water pollution by increasing the infiltration of stormwater into the soil or capturing and storing stormwater for later use. By 2030, Milwaukee will add approximately 36 million gallons of stormwater storage by implementing green infrastructure. This is the equivalent of adding 143 acres of green space throughout the City. The Resilience Ambassadors can help promote the benefits and accessibility of green infrastructure at scales both large and small.

COMMUNITY VOICES

I'm tired of living in one of the worst cities for Black people to live. I hope that by incorporating equity into this plan real benefits will come to communities of color and that systems of oppression will be eliminated. Milwaukee has been one of the most segregated cities for a long time. It's about time substantial efforts are made to redress this.

We must care for the earth, and love our neighbors equally for all humanity to live a life." Milwaukee Public Library should create community education for children and adults about likely climate change in Milwaukee and how to prepare.

Prep to receive international newcomers. We should get ready to orient incoming foreign climate migrant and refugee families to Milwaukee's culture and resources by developing Welcome to Milwaukee orientation education and resources. Foreign newcomers need to learn about living in Milwaukee and Milwaukeeans need to know a service exists that is orienting new immigrants to our culture as smoothly as possible.

CITY STRATEGY

The Resilience Ambassadors Proposal

The City of Milwaukee Environmental Collaboration Office, particularly the ECO-Neighborhoods Program, will work in partnership with trusted community-based organizations to secure funding and training for employees of those organizations to help connect residents to programs to make their homes and communities more resilient to climate change, including the following. The Resilience Ambassadors Program will include:

- City of Milwaukee Anti-Displacement Programs:
  - City of Milwaukee Program Resources
  - MKE United Anti-Displacement Fund
- Weatherization and Energy Efficiency Programs:
  - Weatherization Programs
  - Me^2 Energy Efficiency Program
- MMSD Resources to Manage Water on Residential Properties
- MMSD Resources to Install Green Infrastructure Practices
- Flood Insurance Information
- Disaster Relief

Resilience Ambassadors Pilot Program

The City of Milwaukee Environmental Collaboration Office applied for and received a grant from the U.S. Environmental Protection Agency to assist with environmental justice initiatives. This grant program aims to connect those residents, families, and households at the most risk of threats to their health and homes from climate change impacts to available resources to lessen the severity of those impacts. Moreover, the program seeks to uncover barriers to greater uptake of available programs and resources. The grant can provide initial funding to begin the Resilience Ambassadors, such as commencing a pilot phase and assessing the program's initial effectiveness. Therefore, the following strategies and recommendations are intended to serve as a guide to future program design and priorities.

The City's strategy for the Resilience Ambassadors Program is organized according to different threats residents face from climate change, as outlined below. Beneath each topic area are recommendations to incorporate into the final Program.

Extreme Heat

- Increase funding to Milwaukee County Parks and/or the Milwaukee Parks Foundation to maintain the parks that provide green space, splash pads, and pools to help community members cool down on extreme heat days
- Support swim safety and swimming lessons
- Promote $5 swimming lessons available through Milwaukee Public Schools Recreation
- Propose high school students get free training to become Milwaukee County lifeguards
- Work with the Milwaukee County Extreme Heat Task Force to explore the need for a program to subsidize affordable, energy-efficient fans or air conditioners for the most vulnerable residents
- Identify City and County-Owned Buildings where roofs can be painted white (or similar treatment) or a green roof can be added to reduce the urban heat island effect and cool buildings
- Promote the ability for commercial property owners to use the City of Milwaukee Property Assessed Clean Energy (PACE) Program to help cover the cost of painting roofs white or adding a green roof to reduce the urban heat island effect and cool buildings
- **Cross-cutting recommendation from the Healthy Home Upgrades Big Idea:** Support efforts to increase energy efficiency projects to keep homes cooler during extreme heat events.

Extreme Storms and Flooding

- Explore managing the 500-year floodplain for new development in Milwaukee County.
- Encourage Milwaukee County municipalities to include a priority list of neighborhoods frequently flooded in their stormwater management plans.
- Implement the City of Milwaukee Green Infrastructure Plan, with its goal of capturing 36 million gallons of water from each rainfall in green infrastructure by 2030
- Continue engaging through Wisconsin Local Governments Climate Coalition on Climate Resilience best practices
- Support the MMSD Resilience Plan's recommendation to conduct a criticality analysis of electric, gas and other utility infrastructure
- **Cross-cutting recommendation from People Centered Transportation and Urban Design:** Lower parking requirements and include parking maximums to reduce the amount of impervious surfaces in the City of Milwaukee.
- **Cross-cutting recommendation from Protect and Restore Nature in the City:** Support Urban Tree Canopy and other Vegetative Restoration

Public Health: Food Security

- Support good farming practices as recommended by the State of Wisconsin Climate Change Task Force
- Support studies to prevent food insecurity, such as the Southeastern Wisconsin Regional Planning Commission's Regional Food System Plan for Southeast Wisconsin

Public Health & Diseases

- Coordinate with local health departments and organizations on campaigns to increase public education around diseases spread by mosquitoes and ticks that could become more prevalent due to climate change, including West Nile Virus, Lyme Disease, La Crosse Encephalitis, other vector-borne diseases, including how to reduce the breeding ground for mosquitoes and protect from ticks
- Support clean-up efforts to reduce mosquito breeding grounds such as Milwaukee Riverkeeper's Annual River Clean-Up event
- Support awareness campaigns around extreme heat, ozone, and allergens, as these threats are likely to increase due to climate change
- Work with environmental agencies and non-profit organizations to increase monitoring of air quality in underserved areas

Milwaukee as a Climate Haven

- Raise awareness of the City of Milwaukee Anti-Displacement Policy through the Resilience Ambassadors to avoid future potential "climate gentrification"
- Support City and County programs to prevent absentee owners and support owner-occupied residences
- Encourage redevelopment of vacant and brownfield sites to increase affordable housing stock
- Evaluate resources available to "climate migrants" to help those moving to Milwaukee settle into the area
- **Cross-cutting recommendation from the Healthy Home Upgrades Big Idea:** Renovate City-owned homes for energy efficiency, lead abatement and other determinants of healthy homes. This recommendation received $15 million in American Rescue Plan Act funds to help implement.

IMPLEMENTATION & ACCOUNTABILITY

△Photo courtesy of the Urban Ecology Center.

THE IMPLEMENTATION MATRIX

The outcome of the Climate and Equity Plan is to not only provide recommendations for the City to become more equitable through climate action, but to provide the City with the tools to track its progress with the recommended actions. This cannot be done by simply listing recommendations in a document; in order for the City to fulfill the Plan's goals, assigning accountability is vital.

As part of this plan, an Implementation Matrix has been created that delivers on this need of accountability. The Matrix provides a template for the City to assign responsibility and measure progress for each of the recommendations. In designing the matrix, the City cataloged the recommendations from several key planning documents or resources that were approved by the CCTFCEE for building the foundation of the plan. Different groups created their own recommendations, each written in plans or deliverables tailored towards the groups or people they represent.

The Implementation Matrix is a one-stop resource that not only stitches together these recommendations, but also provides other useful information for each of the recommendations. This additional information includes: feasibility of implementation, sources of funding, quantitative performance metrics, and relationships to the CCTFCEE's 10 Big Ideas.

The Implementation Matrix is designed to be periodically reviewed and updated as partnerships evolve over time, progress towards goals is evaluated, technologies improve, and new funding sources become available. Therefore, the Matrix is not intended to serve as a static document. Lead roles and partnerships may change over time as key lessons are learned, new information is made available, and department resources change. In addition, as the impacts of climate change on the City shift, so too should the specific targets and tracking metrics. By recognizing these inevitable shifts and the need to assess roles and responsibilities as the Plan evolves, Milwaukee can maximize the efficiency and impact of Plan implementation.

The Implementation Matrix is also a central, accessible, and organized resource to track technology development and changing funding resources over time. Technology in the clean technology sector is evolving at a rapid pace. One only has to look at the exponential increase in solar panel efficiency and electric car battery range in the last decade to witness the vast research and development in the industry. Monitoring and updating new technology through the Implementation Matrix can ensure the City is positioned to utilize the best available technologies to meet its goals. Furthermore, updating the Matrix as funding sources ebb and flow can position Milwaukee to maximize financial resources, especially those that provide direct benefits to underrepresented community members. Even as this Climate and Equity Plan was under development, significant federal funding became available via the Infrastructure Reduction Act. Updating the Implementation Matrix with changes to existing and/or new funding resources is a key method to ensure the City can scale-up actions to achieve its goals.

The next page shows an example of the 10 simplified worksheets that will be created for the 10 Big Ideas. A full matrix will be available once we have received public feedback on this draft and made changes to the main document.

NATURE IN THE CITY

Vision:
Conserve natural habitats and reintroduce native trees and plants to areas overwhelmed with paved surfaces.

Total Cost Range:

$$$$$	= > $5 Million
$$$$	= $1 - $5 Million
$$$	= $500,000 - $1 Million
$$	=$250,000 - $500,000
$	= <$250,000

		Government Action					Community Outcome					
GHG POTENTIAL	STRATEGY	GOVERNMENT ACTION	Data Source	Annual Need Goal	City's Cost To Funding	Existing Funding	Desired Outcome(s)	Existing Funding	Data Source (External)	Baseline Year	# For Baseline Year	Qualitative Benchmark
XXX $MtCO_2E$	*Strategy #1*	Government Action #1		$	$	$						
XXX $MtCO_2E$	*Strategy #2*	Government Action #2		$	$	$						
		Government Action #3		$	$	$						

△Photo by Steve Bell.

Improving Milwaukee's performance in the ACEEE Clean Energy Scorecard Rankings

The American Council for an Energy Efficient Economy (ACEEE) produces an annual "City Clean Energy Scorecard", which it defines as: "the go-to resource for tracking clean energy plans, policies, and progress in large cities across the United States. It compiles information on local policies and actions to advance energy efficiency and the move toward a cleaner electric grid and fuels, comparing 100 large cities across all energy sectors. It also assesses cities' focus on equity, policy performance, and smart growth across these sectors." The scorecard allocates points according to the following five categories:

- Community-Wide Initiatives
- Buildings Policies
- Transportation Policies
- Energy & Water Utilities
- Local Government Operations

ACEEE released the results of the 2021 Scorecard, accounting for all local policies adopted by July 1, 2021, and ranked Milwaukee 53rd out of the 100 cities evaluated. The City's overall score was 25 out of a potential 100 points. Notably, Milwaukee's rank dropped 17 spots between 2020-2021. Milwaukee ranks lower than the average 30 points of many peers identified as stable-growth cities in large metropolitan areas.

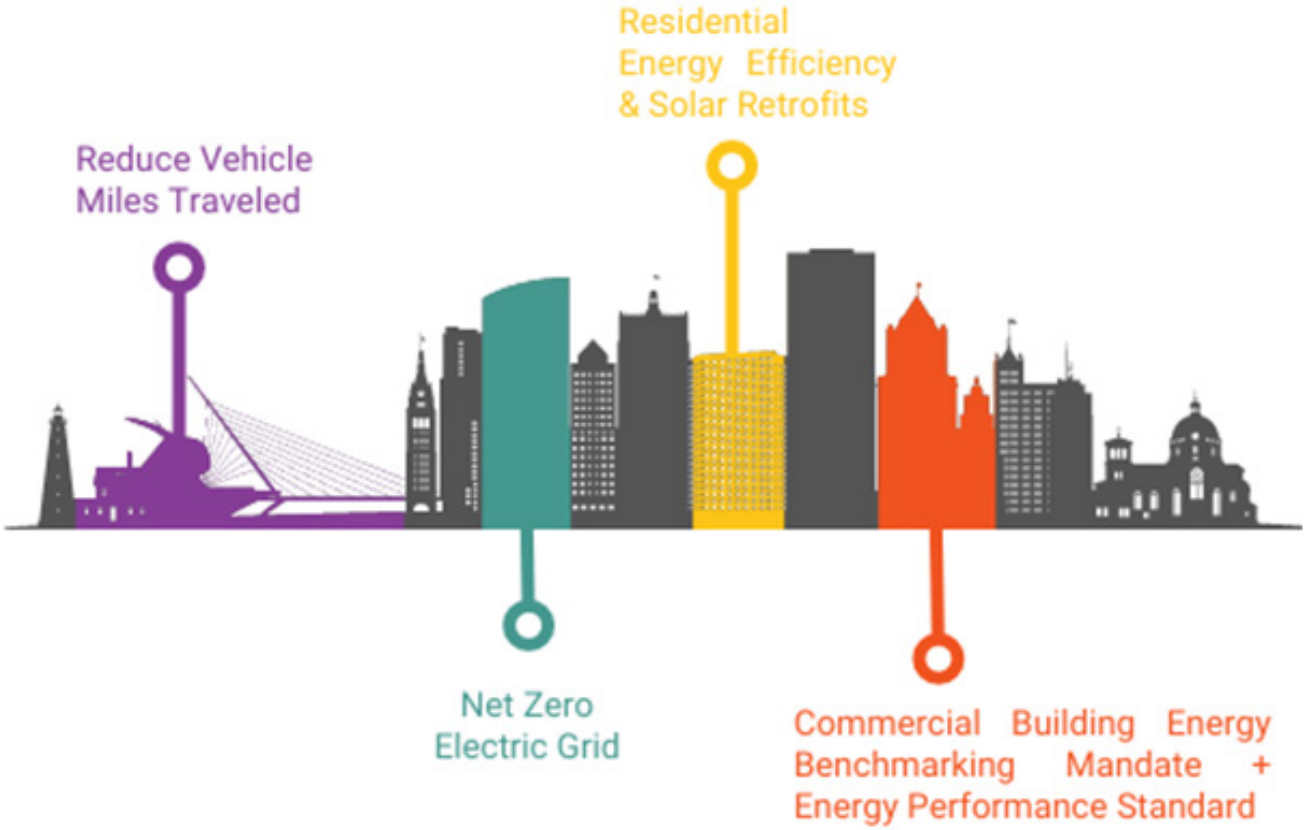
Of the five categories, Milwaukee ranked the lowest in the "Local Government Operations" (0.5/10 points), "Building Policies" (4/15 points), and "Transportation Policies" categories, representing considerable room for improvement. There are several hindrances that may prevent Milwaukee from achieving a perfect score in these and other categories. ACEEE describes: "For example, each city's score accounts for utilities' energy efficiency investments, even if those utilities are investor owned. Each score also reflects the stringency of the building energy code in the city, even if that code is set at the state level."

The Climate and Equity Plan provides multiple pathways to improve Milwaukee's score and rank in the City Clean Energy Scorecard. A common critique in Milwaukee's evaluation was that ACEEE could not find information to evaluate the City's policies and programs. At the most basic level, Milwaukee can improve its score by the successful adoption and implementation of this Plan: "Across all cities…analyzed, 38% of new clean energy actions were related to the creation and adoption of a clean energy plan, partnership, goal, or government procedure." By adopting this Plan, ACEEE can recognize the City's commitment to clean energy and equity solutions and accurately track progress towards the goals.

ACEEE also recognizes: "Moving forward, all cities can improve their scores by increasing their commitment to racial and social equity, adopting more mandatory policies designed to improve the energy performance of existing buildings, and adopting and tracking progress toward stringent community-wide energy savings and transportation sector goals."

Impact of the Climate and Equity Plan

Within the Climate and Equity Plan, the City sets specific goals and key performance indicators for greenhouse gas (GHG) emissions reduction,



△Diagram by GRAEF.

equity and economic development improvements, building energy performance, and transportation improvements:

- GHG Emissions Reduction Target
- Equity Target
- Big Idea: Commercial Building Energy Benchmarking + Building Performance Standards
- Big Idea: People Centered Transportation and Urban Design (of note, ACEEE indicated that "only three cities have adopted a goal to reduce vehicle miles traveled (VMT) or transportation GHG emissions and are on track to achieve it")
- Big Idea: Electrify Transportation

ACEEE also awards points to cities if advocacy efforts are directed to adopting certain policies and programs. Through the Climate and Equity Plan, the Milwaukee ECO team has renewed and deepened the City's commitment to continue efforts to intervene in relevant dockets and cases at the Wisconsin Public Service Commission through the Wisconsin Local Governments Climate Coalition (WLGCC.org) to encourage improved energy efficiency, weatherization, and pre-weatherization programs and policies, and for the State of Wisconsin to update commercial and residential building codes to the latest International Energy Conservation Code (IECC) and ASHRAE Standards 90.1 without amendments. Of note, ACEEE indicates: "Compared to other utilities, We Energies shows low savings as a percentage of sales for both electric efficiency and natural gas efficiency programs." ECO's efforts can help reduce market, regulatory, and information barriers to clean energy projects.

Milwaukee also stands to gain more points through this Plan's focus on equity. According to ACEEE: "Only 30 of the 177 new clean energy actions were equity-driven initiatives—less than

20% of the total. Given that we increased points awarded for equity efforts, this led many cities to lose points relative to their scores in last year's Scorecard."

Regarding its position among peer cities, ACEEE recommends Milwaukee can improve its ranking through:

- Establishing goals for GHG emissions reductions in municipal operations
- Taking additional steps to ensure that builders comply with energy codes
- Adopting energy benchmarking and rental energy disclosure policies
- Enforcing mandatory or incentivize voluntary building energy performance and location-efficient land use codes or standards
- Offering technical assistance, training, and/or funding to support existing clean energy programs or services
- Directly designing and funding projects that affect the energy use of urban buildings and transportation systems
- Establishing inclusive procurement policies or a comprehensive retrofit strategy

FINANCE

The transformative change envisioned in the Climate and Equity Plan will not become a reality unless there is a way to pay for it. The plan will require billions of dollars in investments from governments, utilities, and the private sector. Billions of dollars are already expended annually in our economy, but in support of the fossil fuel infrastructure or to repair the damage already being inflicted by climate change. Making the vision of the Climate and Equity Plan a reality will require a combination of new funding sources and redirecting existing expenditures.

Redirecting Existing Spending

Many of the new projects will require new funding sources. But the first funding source for many of the 10 Big Ideas is to redirect funding that is currently supporting the fossil fuel economy and redirecting it to support the clean energy economy. For example, the City and State of Wisconsin spend millions of dollars on road projects annually, primarily to support fossil fuel power vehicles. The existing funding for these roads can be used to support the multi-modal transportation options outlined in this plan, or partially redirected to support transit. The State of Wisconsin also spends millions of dollars to expand the freeway system, which only tends to inefficiently promote exurban development while cities struggle to maintain their existing infrastructure. A fix-it-first strategy to road building that supports well designed local complete streets will yield healthier, more climate friendly communities.

Governments and property owners can also redirect a portion of their annual utility expenses into energy saving projects using various financing tools. Energy efficient vehicles, lighting, and heating and cooling equipment or hybrid vehicles can sometimes cost more upfront, but yield lifetime operating savings that can justify the investment. The City of Milwaukee has been a leader in establishing energy finance programs to help municipal government, commercial businesses, and homeowners finance energy efficiency and renewable energy projects so they can "pay as they save" on their utility bills.

1. Property Assessed Clean Energy (PACE) financing has financed more than $40 million of projects in Milwaukee and helps commercial buildings finance energy efficiency, renewable energy, green infrastructure, electric vehicle charging, and resiliency projects. PACE financing leverages private capital that ties the financing into the property, rather than the owner. Additional information is available at Milwaukee.gov/PACE

2. The Milwaukee Energy Efficiency Program, or Me^2, provides home energy efficiency loans for insulation, air sealing, furnaces, ENERGY STAR® windows and other home improvements. Similarly, the Milwaukee Shines solar program provides loans home for solar energy projects. Information at Milwaukee.gov/me2 and Milwaukee.gov/solar.

3. Energy Saving Performance Contracts are financing structure in which companies provide energy efficiency services with guaranteed savings. Energy Service Companies design, build, arrange financing and guarantee the savings on their projects. The City of Milwaukee recently completed a $2 million energy saving performance contract at Milwaukee Public Library's Central Branch.

Milwaukee's City budget is severely constrained by a host of cost pressures coupled with extreme revenue limitations imposed by the State of Wisconsin on the City. These cost constraints make even maintaining new services difficult, let alone adding new programs and investments. However, the City of Milwaukee still spends over $1.5 billion annually. The budget is a document of priorities and service delivery. It is reviewed annually with an eye toward efficiency, equity, positive outcomes for the community, and financial sustainability. Using **a whole of government approach**, the annual budgeting process should incorporate review procedures

to ensure departmental budget requests are in alignment with the Climate and Equity Plan, or at least don't run counter to it.

New Federal Resources

2022 was a momentous year for climate investment. President Joe Biden signed into law both t*he Infrastructure Investment and Jobs Act (IIJA)* and *the Inflation Reduction Act (IRA)*. The IIJA provide major new funding for traditional infrastructure but also new funding for electric vehicle charging and other climate improvements. The IRA provided billions in funding for climate improvement including tax credits for renewable energy, home electrification, and host of other opportunities.

The following summary was graciously provided by the **Cities Climate Law Initiative, Sabin Center for Climate Change Law at Columbia Law School.**

Inflation Reduction Act:

Sec. 60114: Climate Pollution Reduction Grants. Two appropriations to be administered by the EPA are open to municipalities for climate action planning and reduction of greenhouse gas pollution. The first is a $250 million appropriation to support the development of plans to reduce greenhouse gas pollution in support of later projects that implement such pollution reductions. The EPA is to publish a funding opportunity announcement within 270 days, and at least one grant must be made in each state. The second appropriation is for $4.75 billion for grants to implement GHG pollution reductions. Many of the details remain to be determined by the EPA, but applications for funding will need to include "information regarding the degree to which greenhouse gas air pollution is projected to be reduced in total and with respect to low-income and disadvantaged communities." States, Indian tribes, and air pollution control agencies are also eligible for funding. The funding for planning is set to remain available until September 30, 2031 and the funding for implementation projects is set to remain available until September 30, 2026.

Sec. 60201: Environmental and Climate Justice Block Grants. This new block grant program will make $2.8 billion available for (1) "community-led air and other pollution monitoring, prevention, and remediation, and investments in low- and zero-emission and resilient technologies"; (2) mitigation of urban heat islands, extreme heat, wood heater emissions, and wildfires; (3) reducing indoor air pollution; (4) climate resilience and adaptation; and (5) "facilitating engagement of disadvantaged communities in State and Federal advisory groups, workshops, rulemakings, and other public processes." In addition to these direct funding amounts, a $200 million appropriation is made for technical assistance in connection with the foregoing. Local governments are among those eligible for grants, in partnership with community groups. The funding is set to remain available until September 30, 2026.

Sec. 60103: Greenhouse Gas Reduction Fund. A new greenhouse gas reduction fund, administered by the EPA, will provide billions of dollars in direct and indirect investment in projects to reduce greenhouse gas emissions at the local level. Municipalities are eligible for this funding, as are states, Tribal governments, and nonprofit entities that provide and leverage capital to finance projects to reduce greenhouse gas emissions (e.g., "green banks"). First, $7 billion is to be made available for grants, loans, and financial and technical assistance "to enable low-income and disadvantaged communities to deploy or benefit from zero-emission technologies," including rooftop solar, and other GHG reduction activities. Second, $11.97 billion is made available for grants to provide direct and indirect investment in projects, activities, or technologies that (1) reduce or avoid greenhouse gas and other air pollution by leveraging investment from the private sector or (2) "assist[s] communities in the efforts of those communities to reduce or avoid greenhouse gas" and other air pollution. And third, $8 billion is made available for the

same activities specifically in low-income and disadvantaged communities. All amounts are to be made available within 180 days and remain available until September 30, 2024. Many details of how the green banks will function and be funded are yet to be determined.

Infrastructure Investment and Jobs Act:

Sec. 40522: Energy Efficiency and Conservation Block Grants. This block grant program will fund "programs financing energy efficiency, renewable energy, and zero-emission transportation (and associated infrastructure), capital improvements, projects, and programs," including "loan programs and performance contracting programs, for leveraging of additional public and private sector funds." $550 million is made available nationally for FY 2022 of which Milwaukee is expected to receive $645,000.

Additional details are available at the website for the Office of Energy Efficiency and Renewable Energy under Energy Efficiency and Conservation Block Grant Program – Bipartisan Infrastructure Law 2021.

Sec. 40109: State Energy Program. This provision allocates $500 million nationally in additional funding over five years to the State Energy Program, which "provides funding and technical assistance to states, territories, and the District of Columbia to enhance energy security, advance state-led energy initiatives, and increase energy affordability." This could be used for projects relating to building or transportation energy efficiency. The State is the entity eligible to apply for funding. Additional details are available at the website for the Office of Energy Efficiency and Renewable Energy under State Energy Program

Funding the 10 Big Ideas

TEN BIG IDEAS		NARRATIVE DESCRIPTION OF FUNDING PROGRAMS
General		The City of Milwaukee is eligible for significant federal funding for the implementation of the Climate and Equity Plan. The recent Inflation Reduction Act (the"IRA"), which became law in August 2022, offers $5 billion in grants for climate action planning and for projects to reduce greenhouse gas pollution.[33] The City is directly eligible to apply for this funding. The IRA sets aside another $3 billion for environmental and climate justice "block grants," a new program through which the City, in collaboration with its community partners, may apply for funding for projects as varied as air pollution monitoring and prevention, reducing indoor air pollution, mitigation of urban heat, and climate resilience and adaptation efforts.[34] A new "green bank" is also being set up to provide significant funding, and to leverage private capital, to reduce climate pollution.[35] The Infrastructure Investment and Jobs Act of 2021 also provides funding opportunities for this Plan. In particular, an energy efficiency and conservation block grant program will provide funding for energy efficiency, renewable energy, and low-emissions transportation projects.[36] The IIJA also funds Wisconsin's state energy program, which provides assistance with efforts aimed at energy efficiency and affordability, including many of the programs in this Plan.[37]
1	Green Jobs Accelerator	Carrying out the Climate and Equity Plan will create a wide array of new jobs for Milwaukeeans, who will lead the way in decarbonizing the City. The IRA and the IIJA will fund training and workforce development programs to help grow this new sector of the City's economy. Grant funding is available in both laws to train and educate contractors on energy efficiency and building electrification projects,[38] as well as to conduct energy audits of local buildings.[39] Additional funds are available to train workers in the transportation sector, including for the maintenance and operation of electric vehicles and chargers[40] and for construction of surface transportation projects.[41] Local community groups, along with the City, are also eligible to apply for funding for career skills training programs.[42]

TEN BIG IDEAS		NARRATIVE DESCRIPTION OF FUNDING PROGRAMS
2	Healthy Home Energy Upgrades	New incentives, to the tune of thousands of dollars per household, are now or soon will be available to help Milwaukeeans upgrade their homes. Two new rebate programs, the Home Owner Managing Energy Savings (HOMES)[43] and the High-Efficiency Electric Home Rebate (HEEHRA)[44] programs, will be administered by the State of Wisconsin and will offer up to $8,000 per household for energy efficiency improvements and an additional thousands of dollars in rebates for the purchase of high-performance heat pumps and other electric home appliances. An additional tax credit will offer up to $1,200 per year for home improvements including energy audits, new heating appliances, and new windows and doors.[45] The IIJA also expands the existing weatherization assistance program[46] and the home energy assistance program[47] for low-income households, which provide funding for energy efficiency improvements and rising energy costs. For residential landlords, a separate grant program will also fund building energy audits and upgrades.[48]
3	New Net-Zero Energy Homes	A new tax credit offers up to $5,000 per new or renovated residential unit for homes built to the federal Energy Star or zero-energy ready standards.[49] This credit will help both individual homeowners and housing developers with the cost to upgrade home energy and emissions performance. Both the IRA and the IIJA also offer significant funding to the state of Wisconsin to adopt the most up-to-date building energy codes,[50] ensuring that new homes are constructed with the best possible energy performance and thermal comfort. The City can work with the state to advocate for the adoption of these high-performance building energy codes.
4	Commercial Energy Benchmarking and Building Performance Standards	New federal programs offer grants for energy efficiency and renewable energy improvements at schools[51] and for non-profit community organizations[52] in Milwaukee. Additionally, funding is offered to the state of Wisconsin to provide loans for commercial and residential energy audits and building upgrades.[53] A new tax deduction, valued at between $2.50 and $5.00 per square foot, will also help commercial building owners reduce greenhouse gas emissions.[54] The City of Milwaukee can also take advantage of this tax incentive to reduce emissions from municipal buildings.

TEN BIG IDEAS		NARRATIVE DESCRIPTION OF FUNDING PROGRAMS
5	People Centered Transportation and Urban Design	A number of new federal programs are available to fund upgrades to Milwaukee's neighborhoods and active transportation infrastructure. A Federal Highway Administration program can pay for "complete streets" and other bicycling and pedestrian infrastructure projects, as well as to connect communities to transit and essential destinations and to remove or mitigate the impacts of high-traffic freeways.[55] Additional Department of Transportation funding can also fund these active transportation and access-to-transit projects.[56] Other funding allocations, available to the City of Milwaukee or its state and regional partners, include those for transit,[57] micromobility,[58] congestion mitigation,[59] restoring community connectivity,[60] improving transportation sustainability and reducing pollution,[61] Vision Zero[62] and safe routes for children to walk and bike to school.[63] Additionally, new funding is available to help the City navigate federal requirements that can otherwise present barriers to people-centered transportation projects.[64]
6	Electrify Transportation	Significant new incentives will be available for electric vehicles. For individual Milwaukeeans, a new tax credit offers up to $7,500 for the purchase of a new electric vehicle and $4,000 for a used electric vehicle, subject to eligibility limitations.[65] Commercial vehicle owners will also be able to take advantage of tax credits of up to $7,500 for light- and medium-duty vehicles and up to $40,000 for heavy-duty vehicles.[66] The City of Milwaukee may upgrade its vehicle fleet both through the monetization of this tax credit and through a grant program to cover the costs of heavy-duty vehicles like buses and associated charging equipment.[67] Other grant programs are available to the City or its state partners to fund transportation electrification and EV charging,[68] low- and no-emissions buses[69] and school buses,[70] and for electrification at ports.[71] Together, these tax incentives and grant programs can dramatically increase EV affordability and make EV charging convenient and reliable.
7	Greening the Electric Grid	Major changes to the tax code will help catalyze the development of clean, renewable energy resources like wind and solar power. For individual Milwaukeeans, a residential clean energy tax credit will offer up to 30 percent of the cost of residential rooftop solar and geothermal heating projects.[72] Renewable energy developers will also be able to take advantage of expanded tax credits for investment in and production of these clean energy sources. The City of Milwaukee, too, will have access to many of these tax benefits in a way it never has before, through a change allowing the City to receive tax credit amounts as direct payments.[73] This will significantly augment the City's ability to invest in solar arrays, energy storage, and other renewable energy development.[74] In addition to these tax incentives, new grant programs can fund grid resiliency projects,[75] renewable energy at schools,[76] and community-led renewable energy projects.[77]

TEN BIG IDEAS		NARRATIVE DESCRIPTION OF FUNDING PROGRAMS
8	Protect and Restore Nature in the City	New grant programs set aside funding for tree planting[78] and removal of impermeable pavements,[79] as well as for Great Lakes resiliency projects including those to restore and protect marine habitats.[80] All of these actions can help prepare Milwaukee for a changing climate and increasingly intense storms, as well as to make neighborhoods across Milwaukee more pleasant places to live and work.
9	Food Waste Reduction	--
10	Resilience Ambassadors	The City will depend on resilience ambassadors from all corners of Milwaukee to carry out the Climate and Equity Plan. Specific funding is available through the IRA's Environmental and Climate Justice Block Grant program, which allows the City to partner with local community organizations to apply for funding for a broad array of projects, including to engage community members in advisory groups, workshops, and other public processes.[81]

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▽Photos by Steve White Films.

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▽Photos by Steve White Films.

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