Minneapolis
Climate Action Plan

A roadmap to reducing citywide greenhouse gas emissions

DRAFT • MAY 3, 2013

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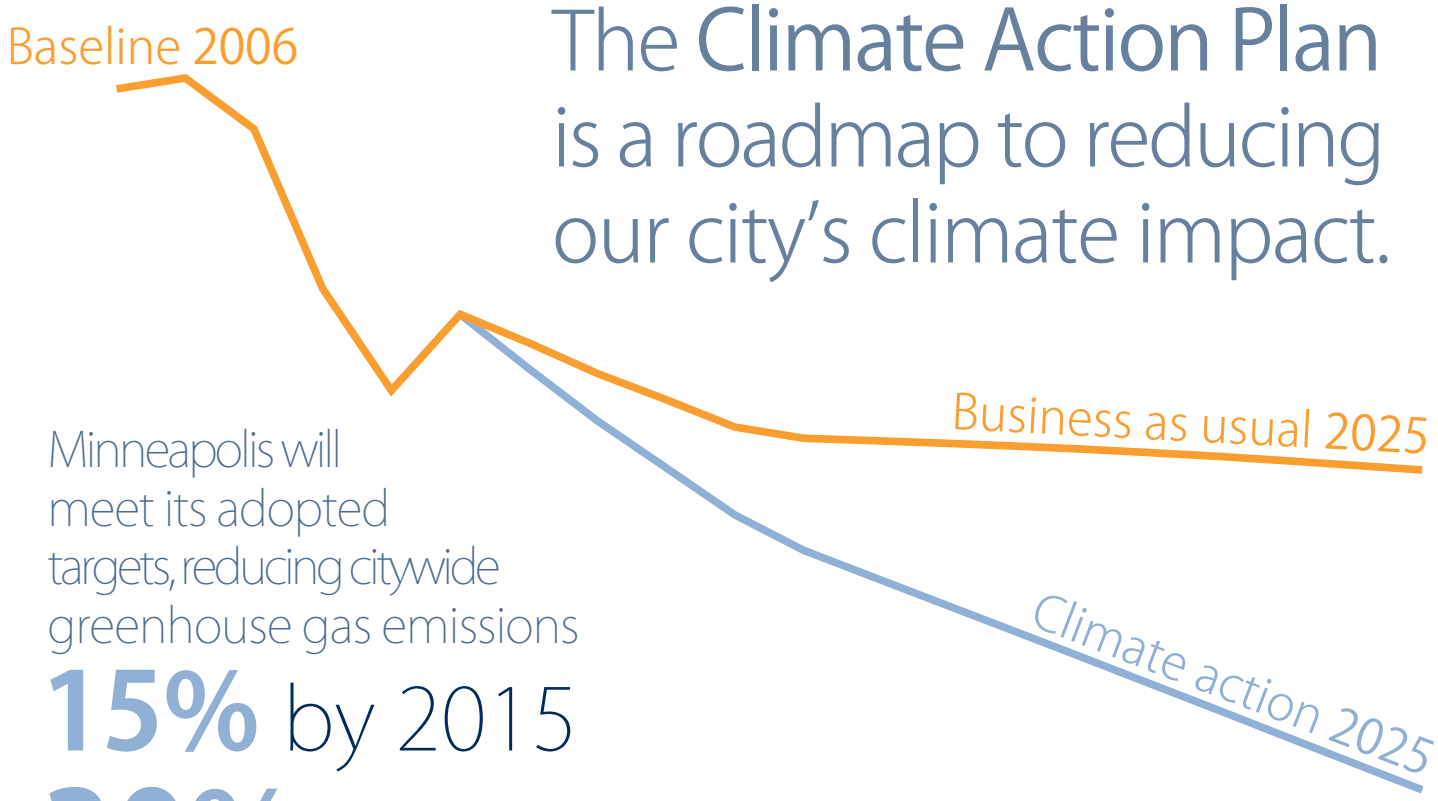
The **Climate Action Plan** is a roadmap to reducing our city's climate impact.



Minneapolis will meet its adopted targets, reducing citywide greenhouse gas emissions

15% by 2015

30% by 2025

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By **2025**, Minneapolis will

Reduce energy use by **17%** and **double** the use of local renewable energy.

Construct **30 miles** of on-street, protected bicycle facilities and raise the bicycle commute mode share to **15%**.

Help **double** regional transit ridership and support safe, **walkable** neighborhoods.

Hold total waste generation **flat** and recycle **half** of all waste citywide.

Reach a composting rate of **15%** of the entire waste stream.

Continue to **grow sustainably and equitably** with more residents, jobs, and opportunity across **all of Minneapolis**.

Executive Summary

Climate change is a defining challenge of this century and even this decade. The scientific consensus holds that increasing concentrations of greenhouse gases in our atmosphere are destabilizing the earth's climate, and that human activity is the primary driver of these emissions. Without rapid action to reduce these emissions, we will face threats to our economic livelihood, public health, and supplies of food, fresh water, and power. These impacts will not be felt equally across the globe: the poorest regions of the world will likely be the hardest hit. Likewise in our own community, low-income and vulnerable citizens face disproportionate impacts from climate change. Across the world, climate change impacts are already being felt through droughts, extreme weather events, disrupted ecosystems, rising sea levels, and ocean acidification.

While the challenge of climate change is not new, it has a renewed urgency. The latest science tells us that we are quickly using up our "carbon budget," the amount of greenhouse gas emissions that can be safely released into the atmosphere. Without significant changes to the trajectory of global emissions, we may reach a point in this decade where significant and dangerous impacts of climate change are locked in.

The worst impacts of climate change are not inevitable. A move to a more energy efficient economy, cleaner, reliable energy sources for transportation and the built environment, and a system that wastes fewer resources has the potential not only to reduce greenhouse gas emissions, but to improve public health, clean our air and water, and keep more dollars in our local economy.

For more than 20 years, the City of Minneapolis has been striving to reduce greenhouse gas emissions, starting with the adoption of the Minneapolis-Saint Paul Urban CO2 Project Plan in 1993. This plan established aggressive greenhouse gas reduction targets through cost-effective strategies. Since that time, Minneapolis has been working to improve the energy efficiency of homes and businesses in the city, broaden access to public transit, and reduce waste sent to landfills or incinerators. Most recently, the Minneapolis City Council revised its greenhouse gas emissions reduction targets in 2012 - to reduce community emissions 15 percent by 2015 and 30 percent by 2025, all from a 2006 baseline. These targets serve as the basis for the development of this plan.

Beginning in early 2012, Minneapolis convened multiple stakeholder groups to develop goals and strategies that would provide a roadmap to our emissions reduction targets. The outcome of this process is a plan that focuses on three key sectors: Buildings & Energy, Transportation & Land Use, and Waste & Recycling. The process also included an Environmental Justice Working Group focused on building social and environmental equity into the plan and examining how those who will be most impacted by climate change can share in the benefits of climate action.

Goals for the implementation of this plan can be found in Chapter 5. Chapter 6 details the greenhouse gas emissions reduction and strategies, which fall primarily into the following categories:

Significantly improve the energy efficiency of our commercial, residential and public buildings. Strategies are identified to improve energy efficiency in commercial and residential buildings 20 and 15 percent respectively by 2025 (from a growth baseline). City and other public buildings will continue to lead the way by aggressively pursuing cost-effective energy efficiency strategies.

Increase our use of local, renewable energy. The plan calls for increasing our use of local or directly purchased renewable energy to 10 percent of the total electricity consumed in the city by 2025. It also encourages the purchase of green power and supports action to make renewables more accessible and widespread. Regulatory changes will be pursued to appropriately value and incentivize renewable energy.

Reduce vehicle miles traveled in Minneapolis while improving accessibility and building walkable, safe, and growing neighborhoods that meet the needs of all residents. Improving access to transit, making walking and biking inviting and safe, and building diverse neighborhoods are priorities. We will identify and promote cleaner fuels for our transportation system.

Shrink our waste stream by reducing waste, encouraging reuse, and increasing recycling of both organic and inorganic material. Improving recycling performance in the city, and expanding composting and the collection of organic material are priorities, with a goal of increasing our recycling rate to 50 percent by 2025. Residents will also have more information about the lifecycle impacts of their purchasing decisions, and we will strive for more efficient processing of our wastewater.

This plan provides a roadmap for Minneapolis' journey to a more climate-stable future. It will require collaboration between government, business, civic organizations and residents, and leadership by elected officials, staff and community members. The plan is not perfect, and should be viewed as a living document that can be revisited as circumstances change and achievements are made. The challenge of climate change requires that we pursue an aggressive, committed, and thoughtful approach, and we can begin with this plan.

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Acknowledgments

The Minneapolis Climate Action Plan is the result of collaboration between representatives from the public, private, and nonprofit sectors, as well as community members from every part of the city. The City of Minneapolis Sustainability Office would like to thank all who have contributed to this project, as it would not have been possible without your time, effort, and passion.

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1. Introduction

The scientific consensus is clear: the earth's climate is changing, and human activities are major contributors to that change. It is also increasingly clear that urgent action is needed in this decade to reverse the trend of increasing global emissions, or the world will be "locked in" to warming that will have catastrophic impacts for future generations.

These impacts will not be felt equally. Many of the poorest regions of the world, which have the least economic, institutional, and technical capacity to cope and adapt, will be hardest hit by sea level rise, drought, extreme heat, and severe weather. Similarly, within our own city, the impacts will not be felt equally. For example, extreme heat events, which are expected to increase, will impact the very young, the elderly, and those without access to air conditioning disproportionately.

While climate change is a global challenge, local action can make a difference. In January 2012, the Minneapolis City Council adopted greenhouse gas emissions reduction targets: reduce citywide greenhouse gas (GHG) emissions 15 percent by 2015, and 30 percent by 2025, using 2006 emissions as a baseline (Figure 1).

This plan is intended as a roadmap for the City of Minneapolis and its partners. It offers a comprehensive set of strategies that, if undertaken, should steer Minneapolis to its emissions reduction goals. This plan is not a guarantee of emissions reduction, however. There are many factors beyond the City's control that affect community emissions. Upon further investigation, some strategies in the plan may not come to fruition or reach the desired emissions impact. In response, the City will continue to closely monitor progress towards community emissions reduction goals, report on progress, and revisit the plan as necessary.

The Climate Action Plan is a product of over a year's worth of collaboration between the City of Minneapolis and dozens of volunteers: technical experts, community members, government agencies, business representatives, environmental justice advocates, and many others who offered their time, expertise, and passion as part of this important effort to reduce Minneapolis' impact on the rapidly changing climate.

Even with deliberate action, the effects of climate change will be felt by Minneapolis residents, along with other communities around the world. The Climate Action Plan is an essential part of a larger effort to mitigate and ultimately adapt to global climate change. The City will continue to partner with individuals, organizations and other government entities to ensure that current and future residents alike are able to enjoy a safe, healthy, and thriving Minneapolis.

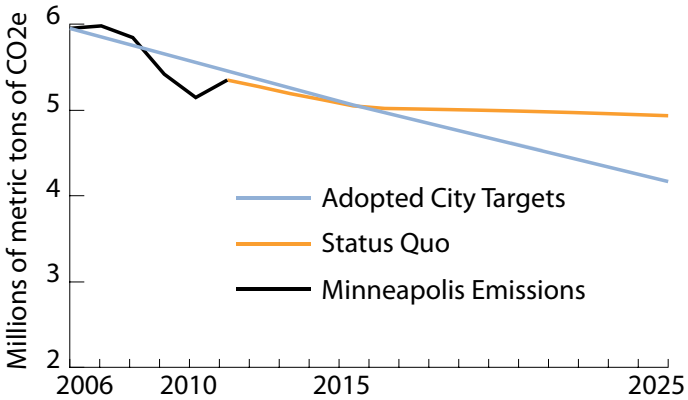

Figure 1. Emissions Reduction Targets

2. Climate Change
Background and Impacts

Causes and global impacts

The earth's climate is changing, with global average temperatures rising 1.4 degrees Fahrenheit (F) between 1901 and 2010, and 0.9F between 1979 and 2010. The ten warmest years in global temperature records have occurred since 1997. Since the beginning of the 21st century, record daily high temperature readings have occurred twice as often as record lows in the United States.[1]

While the climate is not static, many observed changes—such as in temperature, but also in global average sea level, sea ice extent, growing seasons, snowpack, etc.—exceed what can be explained by natural climate variation. Human activities are increasing the concentration of greenhouse gases in the atmosphere, impacting the global climate system and causing a net warming effect on the planet as a whole.[2]

A warmer atmosphere has many effects. Sea levels will continue to rise due to thermal expansion and melting land and sea ice, threatening low-lying coastal areas and even entire island nations. A warmer atmosphere holds more moisture, impacting hydrological systems: some areas can expect more intense storms, while others will experience more droughts.

Weather events will continue to vary as they always have, but climate models project extreme conditions to become proportionately more extreme than in the past – for example, heat waves are likely to last longer and reach higher temperature and humidity thresholds, with severe impacts to ecosystems, agriculture, and population centers across the world.[3]

> *"Most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic GHG concentrations."*
> *– Intergovernmental Panel on Climate Change*

If greenhouse gas emissions from human activities are not significantly reduced, global average temperatures are projected to increase 2F to 11.5F over the coming century, with potentially catastrophic impacts to human populations.[4] Figure 2 shows global temperature scenarios based on different greenhouse gas emissions pathways. The World Bank estimates that even if current commitments to emissions reduction were fully implemented by the global community, there would still be a roughly 20 percent likelihood of experiencing dangerous levels of warming, with warming exceeding 4 Celsius (C) (approximately 7F).[5] In this scenario, the world would face significant impacts from coastal flooding, water scarcity, extreme heat events, significant impacts to coral reefs and associated fisheries, and significant changes in agricultural production in many regions from the increase in both flooding and droughts.

> *"A world in which warming reaches 4° C above preindustrial levels … would be one of unprecedented heat waves, severe drought, and major floods in many regions, with serious impacts on human systems, ecosystems, and associated services."*
> *– World Bank*

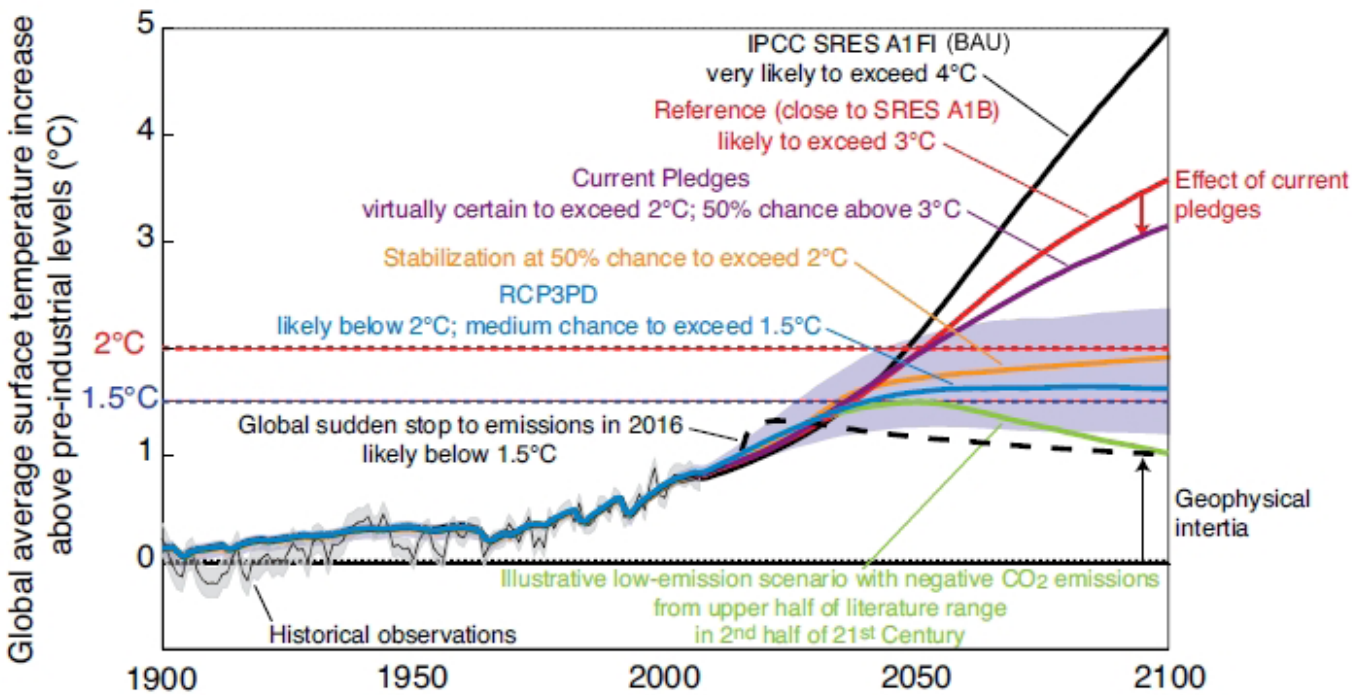

Figure 2. Global Temperature Scenarios

Source: World Bank

Local impacts of climate change

While additional research will help Minneapolitans better understand the very local impacts of climate change, scientists have already identified likely trends at the state and regional level.

In Minnesota and the Minneapolis-Saint Paul region, we are already seeing trends consistent with the expected impacts of a changing climate. Since the 1941-1970 period, average annual precipitation in the Twin Cities has increased 20 percent, in part due to a significant increase in very heavy precipitation events.[6] The Upper Midwest as a whole has seen a 31 percent increase in very heavy precipitation events between 1958 and 2007 (heaviest one percent of all events). Figure 3 illustrates this trend.

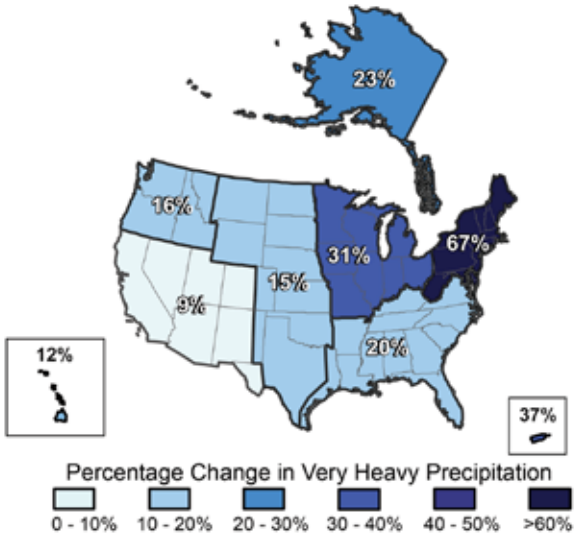

Figure 3. Change in Very Heavy Precipitation (1958-2007)

Source: U.S. Global Change Research Program

Average air temperatures have risen at an increasing rate, with the greatest warming taking place at night and in winter months, a trend consistent with higher concentrations of greenhouse gases in the atmosphere. Figure 4 shows temperature trends in the Twin Cities back to 1873, highlighting the local warming trend. By the end of the 21st century, average temperatures in the Midwest will likely rise from 5.6F to 8.5F, depending on greenhouse gas emissions levels.[7]

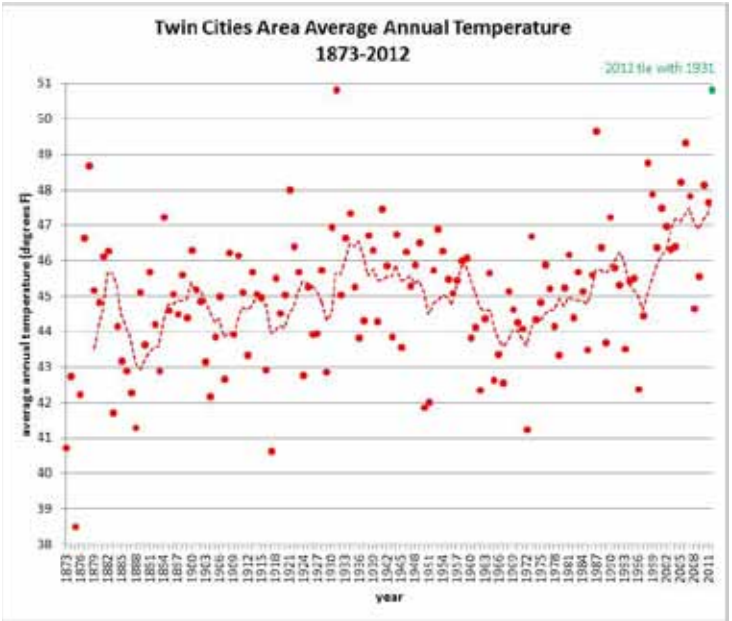

Figure 4. Twin Cities Area Average Annual Temperature (1873-2012)

Source: Minnesota Climate Change Working Group, 2013

Current trends and projections show that as the climate continues to change, Minnesotans should expect more difficult summers, with intense heat waves increasingly common, more prevalent water- and insect-borne diseases, and a greater number of days with low air quality. Floods and droughts alike may be more severe as precipitation events become stronger and summertime evaporation increases. Agriculture and forestry will both face new challenges from changing patterns in weather and ecological systems. Native species will face new pressures and threats as well.[8] Neighborhoods with fewer trees have less shade, and impervious surfaces mean more water enters the stomwater system. In some cases, that system can be overwhelmed, as examples from Duluth (2012) and southeastern Minnesota (2007) illustrate.

The increase in extreme heat events will likely be challenging for Minneapolis. If emissions continue to rise at the current rates, by the end of the century the Minneapolis-Saint Paul area is expected to experience nearly 70 days over 90F, and 28 days over 100F each year. Figure 5 illustrates these changes. In the 1960 – 1990 period, Minneapolis-Saint Paul averaged only 11 days over 90F each year, and less than two days over 100F.[9] The increase in extreme heat events could result in an increase in heat-related deaths and heat-related illnesses. Ozone pollution, which exacerbates lung diseases such as asthma, is also expected to rise in conjunction with temperatures.

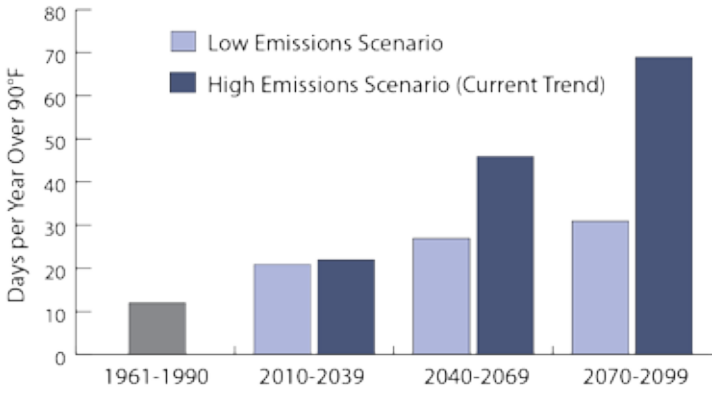

Figure 5. Days Per Year Over 90F

Source: Union of Concerned Scientists, Heat in the Heartland, 2012

Recognizing different impacts and existing disparities within our community

These hazards will affect all Minnesotans, but carry unique risks for the most vulnerable populations, including the elderly, the very young, those with existing health concerns, and lower-income and historically marginalized communities who may not have good access to key services or resources. In Minneapolis, public health impacts of extreme heat or precipitation events and poor air quality days may be exacerbated by the effects of the urban environment, existing exposure to local pollution sources, and lack of access to green space and air conditioning. For example, paved surfaces and many building materials absorb or reflect heat, pushing local air temperatures even higher than they would otherwise be. The size, shape, and placement of buildings can hinder air flow, reducing wind and ventilation.

Minnesotans should expect more difficult summers, with intense heat waves increasingly common, more prevalent water- and insect-borne diseases, and a greater number of days with low air quality.

There are currently disparities in infrastructure, environmental benefits, and environmental impacts across our community. Housing stock quality, transportation opportunities, tree canopy, and access to recycling services vary across Minneapolis neighborhoods, housing types, income classes, and ethnic groups. Disparities in infrastructure quality and environmental impacts often align geographically with historically underrepresented communities, communities of color, and low-income communities.

Recognizing that these disparities may be exacerbated by the impacts of climate change is essential to building a more resilient community. In addition, care must be taken to ensure that the implementation of greenhouse gas emissions reduction strategies does not place additional stress onto communities that are currently experiencing environmental and health burdens.

Many of the strategies in this plan will reduce greenhouse gas emissions while also reducing these existing disparities and creating other co-benefits, such as improved public health. The full set of recommendations from the Environmental Justice Working Group, found in Appendix C, reflects on existing disparities and potential co-benefits.

3. Emissions Profile and Reduction Targets

Reducing citywide greenhouse gas emissions requires knowing what activities by Minneapolis residents and businesses cause those emissions. In 2012, the City of Minneapolis completed an inventory of GHG emissions released within Minneapolis' geographic boundary plus additional emissions from outside the boundary associated with activities in the city (such as the consumption of electricity). The inventory was completed for the years 2006 through 2010, and served as a starting point for Climate Action Plan working groups as they developed emissions reduction strategies. Key findings of the 2006-2010 inventory include:

- GHG emissions fell 13.4 percent from 5.9 million metric tons of carbon dioxide equivalent ($MTCO_2e$) in 2006 to 5.1 million metric tons in 2010. Nearly half of this reduction was the result of Xcel Energy using cleaner sources to produce electricity for the grid.
- Per person GHG emissions fell nearly 15 percent from 15.8 $MTCO_2e$ in 2006 to 13.4 $MTCO_2e$ in 2010.
- Energy use in commercial and residential buildings (primarily from heating and cooling) was the largest source of GHG emissions at 3.3 million $MTCO_2e$ in 2010, representing 65 percent of the total.
- Transportation was the second largest source of GHG emissions at 1.5 million $MTCO_2e$ in 2010 which represents 29 percent of the total. This includes cars and trucks on the road, air travel, and rail and barge traffic in the city.

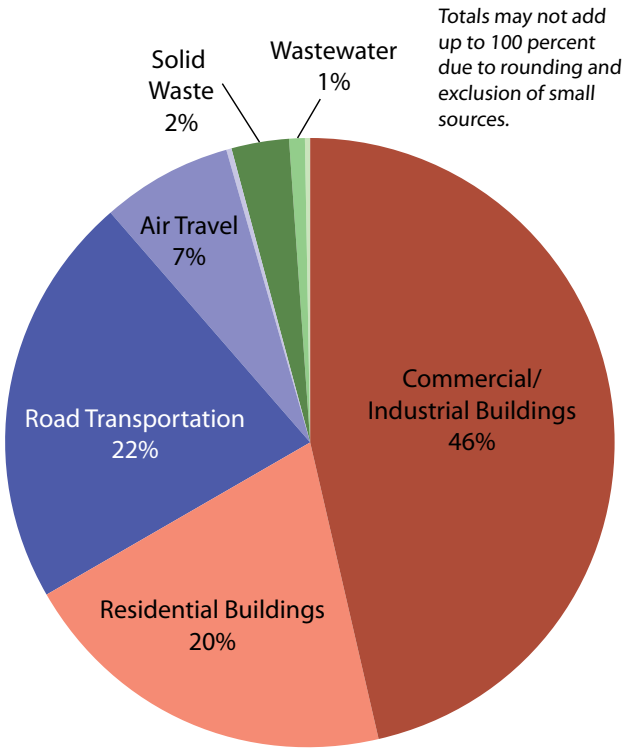

Figure 7. Minneapolis Communitywide Greenhouse Gas Emissions by Sector, 2010

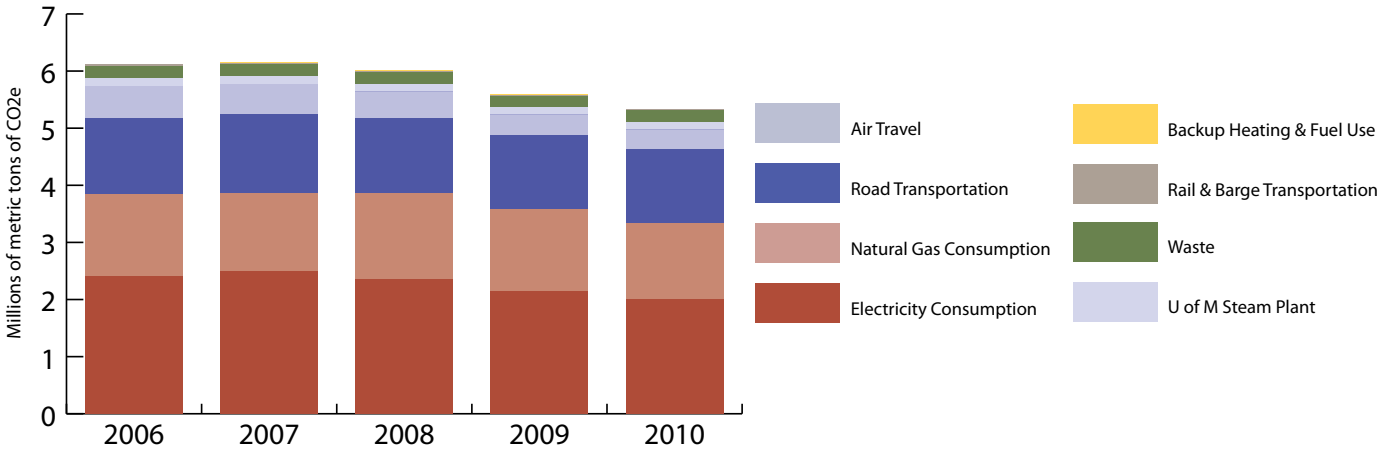

Figure 6. Minneapolis Communitywide Greenhouse Gas Emissions by Source, 2006-2010

- Emissions from waste, including landfill, waste incineration and wastewater treatment processes, represent 3.8 percent of the total GHG emissions in 2010.

- The largest decline in emissions came from the electricity category, with a 16.5 percent, or 400,000 $MTCO_2e$, decline in emissions associated with electricity consumption between 2006 and 2010. While electricity use in the city remained fairly stable (1.42 percent decline between 2006 and 2010), significant reductions in GHG intensity of electricity provided by Xcel led to reductions in electricity-related GHG emissions.

- Emissions from transportation declined by over 280,000 $MTCO_2e$ or 16 percent between 2006 and 2010, making it the second largest source of emissions decline in the city. This change was driven by a reduction in emissions from airport operations, increasing fuel efficiency of cars and trucks, and a small decline in vehicle miles traveled.

- Emissions from natural gas consumption dropped 6.7 percent between 2006 and 2010, or over 96,000 $MTCO_2e$. This corresponds to a similar decline in natural gas usage between 2006 and 2010.

- Winter temperatures have a significant impact on the amount of natural gas consumed. 2008 saw the coldest winter months of the 2006-2010 period (measured in heating degree days), with a general trend of warmer winters in the years after 2008.

The economic downturn in 2007 almost certainly had an impact on greenhouse gas emissions, although the inventory did not attempt to quantify this impact. Between 2007 and 2010, the number of jobs in Minneapolis declined by almost 4 percent, according to data from the State of Minnesota Department of Employment and Economic Development.

Preliminary 201 emissions data

At the time this plan was drafted, preliminary GHG emissions data for 2011 showed a five percent increase in citywide emissions from 2010. This change was driven in part by a change in the greenhouse gas intensity of electricity provided by Xcel Energy, which increased by about four percent from 2010. This change accounted for roughly 35 percent of the increase in emissions from 2010, showing the importance of electricity supply to the city's greenhouse gas goals. In total, Minneapolis consumed less electricity in 2011 than in 2010, and more natural gas. 2011 had more heating degree days than 2010 by about 3.5 percent, meaning colder winter months. Total vehicle miles traveled was also down slightly in 2011 from 2010. Air travel at Minneapolis-Saint Paul International increased from 2010 levels.

The complete Minneapolis Greenhouse Gas Inventories Report, which includes the methodology for quantifying emissions, is available on the City's website. GHG emissions will continue to be tracked annually via the City's Sustainability Indicators program in order to monitor progress toward the emissions reduction targets.

GHG emissions will continue to be tracked annually . . . in order to monitor progress toward the emissions reduction targets.

Greenhouse gas emissions reduction targets

The City of Minneapolis first adopted greenhouse gas emissions reduction targets in 1993, included in the Minneapolis-Saint Paul CO2 Reduction Project. In 2003, the City Council adopted the first greenhouse gas reduction target as part of the Sustainability Indicators. In 2004, Mayor R.T. Rybak signed the U.S. Conference of Mayors Climate Protection Agreement, pledging to take action to reduce emissions. In 2007, the Minnesota legislature passed the Next Generation Energy Act, which contained aggressive targets for reducing greenhouse gas emissions statewide and a renewable energy standard. In 2010, the City Council updated the greenhouse gas emissions reduction targets to be in line with the State of Minnesota goals.

The emissions reduction targets that serve as the motivation for this plan include reducing greenhouse gas emissions 15 percent by 2015 and 30 percent by 2025, all from a 2006 baseline (Figure 8). The City Council has also adopted a goal of reducing GHG emissions from City operations 1.5 percent annually. While this plan includes strategies that would reduce emissions in City operations, and the emissions baseline includes emissions from City facilities, it is not specifically a plan for enterprise improvements. Those efforts are coordinated by the City's Finance and Property Services department, and have shown great results over the past five years (Figure 9).

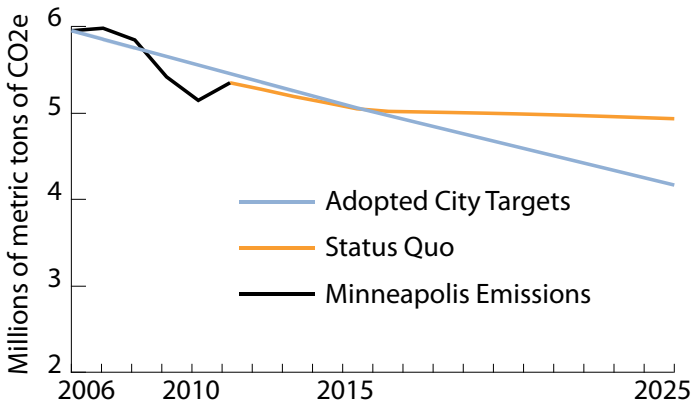

Figure 8. Emissions Reduction Targets

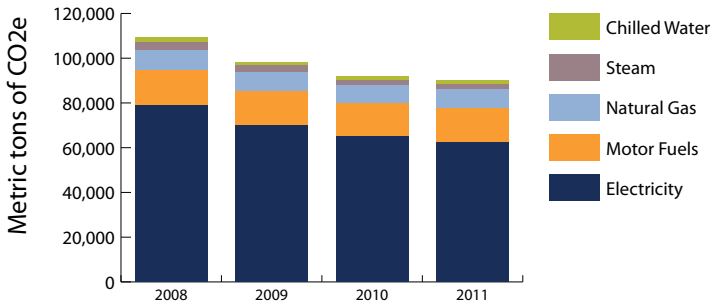

Figure 9. GHG Emissions from City Operations

4. Plan Development

City of Minneapolis staff initiated the Climate Action Plan development process in early 2012 with the formation of three technical working groups and a steering committee, each made up of City and other government agency representatives, technical experts, community representatives, and members of the City's Community Environmental Advisory Commission (CEAC). Along with technical experts, community members and government partners, the Climate Action Plan Steering Committee included two representatives from each Working Group, as well as two staff representatives from the City Council and one from the Mayor's office. A project kickoff meeting at the Minneapolis Central Library in February 2012 attracted over 100 attendees and set the Climate Action planning process into motion.

Between March and August 2012, the three technical working groups met five times each, focusing on three key emissions areas: buildings and energy, transportation and land use, and waste and recycling. The groups reviewed Minneapolis' greenhouse gas emissions in each sector, developed strategies to reduce those emissions, and ultimately forwarded a set of draft emissions reduction goals and strategies to the Steering Committee.

An Environmental Justice Working Group (EJWG) was established in August 2012 after discussions between City officials and representatives from environmental justice organizations. Communications between the environmental justice community and City staff and elected officials can be found in Appendix C. The intent of this effort was to ensure that the voices of those most impacted by both climate change (namely communities of color, American Indians, and low-income communities) were represented and supported within a decision-making capacity in the planning process. In addition to climate impacts, the EJWG sought to ensure that greenhouse gas emissions reduction strategies developed in the planning process did not exacerbate existing inequities or environmental and health burdens faced by Minneapolis communities.

The EJWG reviewed the technical working groups' proposed goals and strategies, and after meeting five

times from September 2012 to January 2013, submitted comments, strategy proposals, and additional recommendations to the Steering Committee in February 2013. All the recommendations that the EJWG sent to the Steering Committee can be found in Appendix C.

Public input

Staff solicited public input on the technical working groups' draft emissions reduction goals and strategies in November and December of 2012. Two public open houses—one each in South and North Minneapolis—attracted over 50 attendees, many of whom provided written comments, which were recorded and shared with the Steering Committee. An online survey garnered 65 additional responses. Project staff also presented the draft goals and strategies to four of the City's volunteer-based advisory groups: the Community Environmental Advisory Commission (CEAC), the Public Health Advisory Committee (PHAC), the Bicycle Advisory Committee (BAC), and the Pedestrian Advisory Committee (PAC). Each group adopted and submitted resolutions supporting the Climate Action Plan and offering comments and priorities.

The Steering Committee met five times between September 2012 and April 2013, reviewing the four working groups' recommendations, public input and feedback, as well as comments from City advisory groups and other interested organizations. The Minnesota Department of Health also presented an analysis of the draft emissions reduction goals and strategies and how they might impact public health in Minneapolis (Appendix D). All Steering Committee meetings were open to the public, and Working Group members attended and gave feedback.

Steering Committee meeting information was communicated directly to committee members and via the project website, which also included meeting materials.

5. Implementation Goals

Minneapolis will meet the adopted 2015 and 2025 greenhouse gas emissions reduction targets. While meeting emissions reduction targets, Minneapolis shall:

1. Prioritize high impact, short timeframe, equitable, and cost effective strategies. Recent science suggests that immediate action (within 5 – 10 years) is necessary to bring down emissions to avoid severe impacts from climate change. This plan will prioritize strategies for implementation that may have the greatest impact on emissions in the short term. While seeking immediate impacts, this plan will acknowledge that we are regularly making decisions that may have impacts that will be felt for 50 or 100 years. We should always be cognizant of impacts on future generations and the impacts already occurring in the present in our most vulnerable communities.

2. Seek strategies with multiple benefits. Wherever possible, implement strategies that provide a range of co-benefits (e.g., job creation, lifecycle cost savings to government or residents, improved public health, or broader awareness of climate impacts). A key co-benefit of climate action is the reduction of fine particulate matter. Fine particulate matter is a serious public health risk and can be reduced with certain strategies as it is often co-emitted with greenhouse gases.[10 11 12 13] Policy makers and the community will need to carefully weigh these multiple benefits and costs while moving Minneapolis toward its emissions reduction targets in an equitable manner. This plan should also avoid shifting emissions or impacts outside of the city.

3. Advance equity in infrastructure and environmental benefits between neighborhoods and communities. Climate action strategies should be implemented in a manner that ensures activities undertaken do not disproportionately negatively impact low-income and communities of color, and that addresses these disparities wherever possible. Neighborhoods that already have cumulative pollution impacts and high energy burdens should be prioritized for strategy implementation. Financial investment should also be directed toward the most disadvantaged communities. Outreach on initiatives should be conducted through community and neighborhood organizations, in multiple languages, to maximize engagement.

4. Monitor progress annually and based on results and new developments, revisit goals and strategies at minimum every three years. The City of Minneapolis will continue to track community-wide greenhouse gas emissions and report on the implementation of climate action strategies and impacts. Reporting should include equity indicators to measure whether the Plan's strategies, financial investments, and emissions and energy burden reductions are being experienced across neighborhoods, income classes, and races equitably in the city.

5. Begin assessing and building resiliency to climate changes and impacts. The Climate Action Plan deals primarily with reducing emissions to mitigate climate change. However, we know that changes to the climate are already being felt in Minneapolis. Minneapolis should explore the potential impacts and responses and build resiliency in local government and the community, with a specific focus on elderly, low-income and communities of color that are the most vulnerable.

6. Greenhouse Gas Emissions Reduction Strategies

Projected emissions impact

The emissions reduction potential of the plan goals and strategies were estimated to determine the feasibility of meeting Minneapolis' greenhouse gas emissions reduction targets. Figure 10 shows the approximate contribution to the 2025 emissions reduction goal for the goals and specific groups of strategies. Figure 11 (opposite) shows an estimate of the emissions reduction potential of the buildings, renewable energy, transportation and waste goals from 2010 to 2025. Meeting the goals set for each strategy area would bring Minneapolis' emissions 19 percent below 2006 levels by 2015, and 33 percent below 2006 levels by 2025.

Buildings and transportation comprise the majority of Minneapolis' greenhouse gas footprint. For this reason, they also make up the largest share of projected emissions savings in 2025, at 66 and 17 percent respectively. Increased renewable energy will account for 13 percent of the savings and waste reduction and recycling efforts will account for 5 percent.

Baseline emissions scenario

Emissions savings projections are made from a status quo baseline that incorporates a number of assumptions about future changes to our energy, transportation and waste systems. Most significantly, the baseline greenhouse gas emissions scenario assumes Xcel

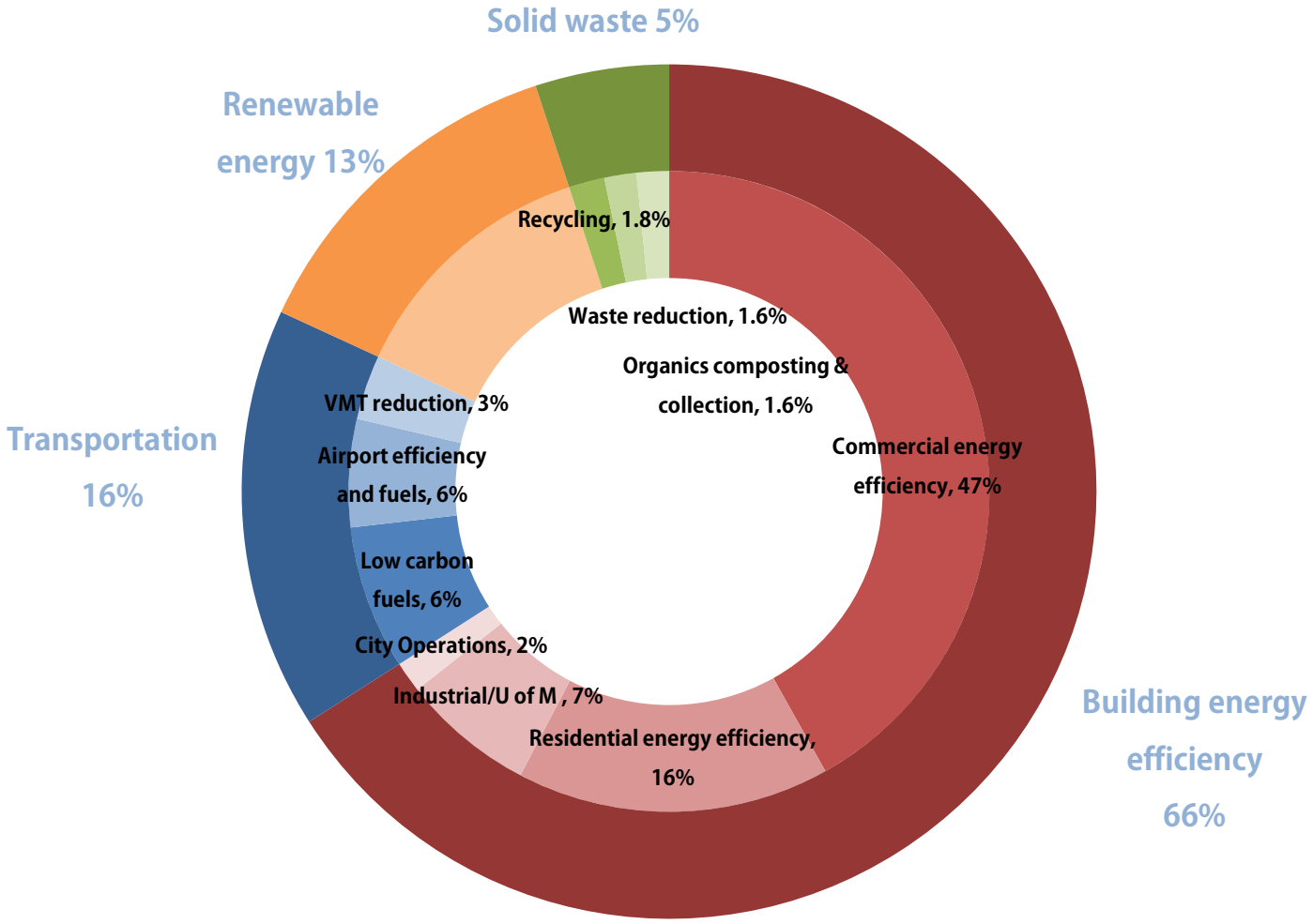

Figure 10. Approximate Contribution to Emissions Reduction (2025)

Energy will continue to provide electricity to Minneapolis with a greenhouse gas intensity consistent with their 2011 Integrated Resource Plan (IRP) filed with the State Public Utilities Commission. These plans show a reduction in the greenhouse gas intensity of electricity between 2010 and 2025, with most of these reductions happening between 2010 and 2015.

The status quo scenario also includes projected improvements to on-road vehicle fuel economy based on the recent agreement to increase the federal Corporate Average Fuel Economy standards for new vehicles.

The status quo scenario also includes assumptions about the growth in energy use to account for population and job growth in Minneapolis. Based on discussions with Xcel Energy and CenterPoint Energy, growth baselines were developed that were used to calculate energy use trends in the future.

Finally, the status quo scenario included assumptions about waste generation and recycling rates in the future. Under this scenario, the total waste stream was expected to growth modestly in the future, and the rate of waste diversion (recycling and composting) from landfills and energy recovery was also expected to increase slowly.

A full description of the assumptions and methodology used to calculate expected emissions in the baseline and plan goals scenarios can be found in Appendix B.

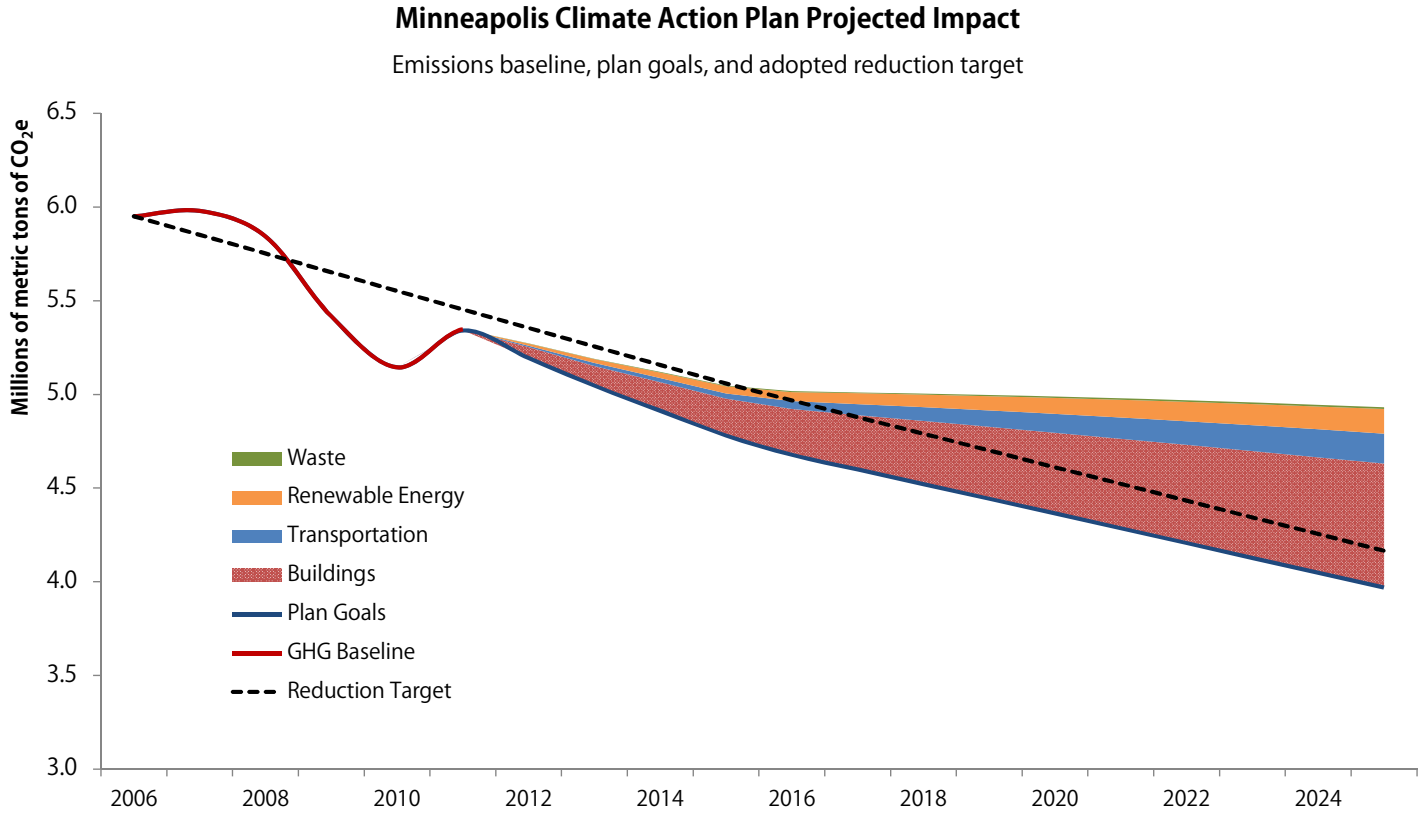

Figure 11. Climate Action Plan Projected Impact

Buildings & Energy

Goals

1. **Achieve 15 percent energy efficiency in residential buildings from the growth baseline by 2025.**

2. **Achieve 20 percent energy efficiency in commercial/industrial buildings from the growth baseline by 2025.**

3. **Increase electricity from local and directly purchased renewables to 10 percent of the total consumed by 2025.**

4. **Achieve a 1.5 percent annual reduction in greenhouse gas emissions from City facilities.**

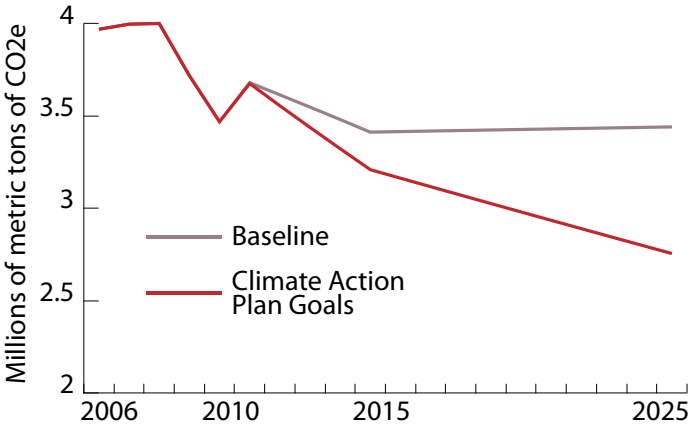

Figure 12. Estimated Emissions Reductions from Buildings and Energy Goals and Strategies

Cross-Cutting Strategies

1. **Develop a Green Zone Initiative.** The Green Zone Initiative will create a city designation for neighborhoods or clusters of neighborhoods that face the cumulative impacts of environmental, social, political and economic vulnerability. A Green Zone is an environmental and economic development tool that targets new green infrastructure and retrofits to an area in a comprehensive manner. Green Zones could correspond with targeted housing and commercial retrofit campaigns, to increase energy efficiency or boost renewable energy installation. Areas with Green Zone designation may better be positioned to access benefits offered by the city as well as state and federal agencies, ranging from targeted pollution reduction to increased funding opportunities.

2. **Launch a public-private energy efficiency campaign to catalyze action in businesses large and small.** Most of the energy in Minneapolis is consumed by businesses, necessitating efforts that businesses and properties can undertake to reduce their energy usage. The aggregated potential energy savings from small businesses can also be significant and should be identified and targeted. Research shows that the most effective energy efficiency programs succeed because they have committed leadership from the top. The City can use its leadership position to bring top City leaders to the table and affirm their commitment to working together to achieve this goal.

3. **Ensure that City facilities and infrastructure, across all neighborhoods, are models of energy-efficiency and renewable energy technology.** The City will investigate opportunities in buildings, street lighting, traffic signals and parking ramps to constantly increase energy efficiency and reduce water use. Those neighborhoods with infrastructure in immediate need should be prioritized. The City-operated water treatment plant is a large energy user, and opportunities for increasing efficiency will be continuously reviewed. Tools like the State's Guaranteed Energy Savings Program could be used to finance retrofits to City buildings. The City will continue to identify opportunities for renewable energy deployment on its facilities to reduce long-term operating costs and demonstrate new technologies.

4. **Continue and expand efforts to promote green jobs that support greenhouse gas emissions reduction goals.** The City of Minneapolis Employment and Training Program will engage in workforce planning, leveraging existing resources and seeking out innovative development opportunities through Step-Up, RENEW Minneapolis and other programming. The potential to develop a City of Lakes Energy Conservation Corps that provides Americorps opportunities with higher education subsidies to low income residents and youth from low-income census tracts will be explored. Future efforts will seek the alignment of educational, internship, and apprenticeship opportunities to produce a certified, well-prepared Minneapolis labor force, directing resources toward conservation and green retrofitting, water conservation, community composting, and green houses.

5. **Support the State's adoption of the latest International Energy Conservation Code (IECC) and International Green Construction Code (IGCC) and adopt the IGCC locally.** The IECC and IGCC will change the building code to require new commercial construction be more water and energy efficient and more durable than under previous versions of the code. If the IGCC is adopted at the state level as an appendix chapter, Minneapolis will need to adopt it locally before it can be in force.

6. **Incentivize energy and water efficiency in private buildings during every interaction with the City.** City departments could promote energy and water efficiency efforts to anyone interacting with the City for regulatory purposes, such as when seeking a permit or participating in design or zoning review. This may be targeted toward certain kinds of buildings that showed high promise for targeted efforts on energy efficiency, such as restaurants.

7. **Require City-financed projects to meet an energy efficiency standard, like Sustainable Buildings 2030 (SB2030).** The State of Minnesota has adopted a requirement that all State bonded projects meet the SB2030 standards. This requires progressively better energy performance from new projects. Similar requirements include Saint Paul's Sustainable Building Policy. Alternatively, or in combination, the City could require projects to complete Xcel Energy's Energy Design Assistance program. In conjunction, the City should review the ratios required for project financing (gap financing to overall project cost) to minimize any disruption to affordable housing construction that may be caused by implementing additional requirements.

8. **Explore opportunities to restructure the mechanical permit fee schedule and other fee schedules to incentivize energy- and water-efficient products and renewable energy.** Mechanical permit fees for products like furnaces are currently based on a percentage of the total value of the work being performed. More energy

efficient products are typically more expensive than less efficient products, in turn increasing the permit fee, which could be a disincentive to contractors and building owners who are considering more efficient equipment. With City staff and stakeholders, explore changes to the permit fee structure (ideally revenue neutral) that would incentivize the installation of more energy- and water-efficient equipment or renewable-supportive building design (e.g., "solar ready" buildings).

9. **Determine the feasibility of establishing conservation-based pricing or structuring of franchise fees and using the franchise agreement to support renewables.** During the update of franchise agreements with Xcel Energy and Centerpoint, Minneapolis should explore options to encourage energy conservation – through utility fee structure or the price passed on to customers. Examples could include structuring fees based on usage per customer or reducing fees if utilities meet energy efficiency goals. Franchise negotiations also provide an opportunity to plan for better integration of distributed solar PV into the grid (e.g., by linking up to the distribution system currently in place in many City rights-of-way).

10. **Evaluate and expand incentives granted for high energy performance.** Density bonuses are currently available to developments in the downtown zoning districts achieving high energy performance and can be used as an amenity for a planned unit development to obtain approvals for alternatives to the zoning regulations. These bonuses could be extended to areas outside of downtown and/or incorporated into other incentive programs. Extend these incentives to buildings that incorporate or are designed to allow for easy installation of significant renewable energy systems and to those in targeted under-invested communities (i.e., a City Green Zone program). Maintaining a diverse mix of housing types and affordability levels is a priority for the city. The displacement of low and moderate income households should be avoided in the implementation of any specific incentive policy.

11. **Develop tools to finance energy efficiency and renewable energy retrofits for commercial and residential buildings that have low barriers to entry and limited risk for local government.** Property-assessed financing, on-bill financing and other financial mechanisms could provide low-interest financing opportunities for homeowners and commercial properties. High interest rates,

the need for perfect credit, and complex program design can all be barriers to widespread adoption of these programs, especially for low-income households. Programs should be designed to maximize participation and provide access to all housing types and income levels. Working through a process led by the State of Minnesota, identify tools that the City or another regional entity can develop to provide more opportunities for energy efficiency and renewable energy financing.

12. **Support the adoption and implementation of emissions reductions plans by other government entities and institutions.** Hennepin County and the University of Minnesota have adopted targets for emissions reduction. Other entities, like health care campuses, may also be taking action on greenhouse gas emissions. Minneapolis should support these and other efforts and collaborate on implementation. The University of Minnesota's goal of achieving net zero emissions by 2050 is particularly ambitious; Minneapolis will support the University's efforts wherever possible.

13. **Support the adoption and implementation of emissions reductions plans by small and minority-owned businesses.** The City of Minneapolis is currently exploring the expansion of the Minnesota Technical Assistance program (MNTAP) to assist small, local businesses assess their energy use and the range of potential retrofits. Expand this program and target outreach to achieve equal representation from minority-owned businesses.

14. **Monitor new technologies and regularly reassess strategies.** There are many new technologies that could hold promise for improving energy efficiency and reducing emissions. Real-time pricing coupled with smarter appliances could reduce costs for electricity consumers and emissions. Advanced energy management technology could reduce wasted energy. These technologies should be implemented wherever feasible.

15. **Identify opportunities to increase conservation efforts within the downtown district heating and cooling system and make the system more efficient using technologies like combined heat and power.** The downtown district heating and cooling system, in total, represents one of the single largest loads in the City. Operated by NRG, the City is a major user, with connected loads including the Convention Center. Because customers on this system do not have access to utility conservation programs, there is an opportunity for the City to help increase the efficiency of the customers on this system. There may also be opportunities to make the district heating itself more efficient. For example, natural gas fired plants could be retrofitted to include combined heat and power generation. Every effort to reduce co-pollutant emissions should be made when considering such opportunities. The City should work with Hennepin County and NRG to determine where these retrofits might make sense.

16. **Identify opportunities to expand the use of district heating systems to new and existing buildings.** The downtown district heating and cooling system provides an efficient alternative to individual building heating and cooling systems.

Identify barriers to expansion into existing and new buildings in downtown. Seek opportunities for expanded district heating and cooling, especially using combined heat and power, outside downtown with new or existing systems.

17. **Work with utility providers and the State of Minnesota to conduct a robust energy end-use analysis to inform future energy planning efforts by the City.** Energy end-use analyses can provide insights into the best options for reducing energy consumption by identifying where energy is used inside a home or business (e.g., space and water heating, air conditioning, appliances, electronics). The Energy Information Agency (EIA) maintains this information for the country in general categories, but only has data through 2005. The State of Minnesota last updated an energy end-use analysis in 1988. Work with the state and utilities to determine if data is available and update an analysis for Minneapolis.

Residential Buildings

1. **Help 75 percent of Minneapolis homeowners participate in whole-house efficiency retrofit programs by 2025, ensuring the distribution reflects the current percentage of low and moderate income home ownership in the city.** The City of Minneapolis provided initial support for the Center for Energy and Environment's (CEE) Community Energy Services (CES) program, which has served about 4,800 Minneapolis owner-occupied homeowners, or just over five percent of the target population. The City could continue to help recruit homeowners into the program, and set a goal of 75 percent of homeowners participating in CES or similar whole-house retrofit program. As these programs expand, the City should assess the geographic and household income distribution the program has achieved. The expansion of CES and similar programs should be undertaken equitably across the City. Where possible, programs should be conducted jointly with other "healthy homes" initiatives like lead abatement.

2. **Help 75 percent of Minneapolis renters and rental property owners participate in efficiency retrofit programs by 2025, with a distribution that reflects the current percentage of low and moderate income rental housing in the city.** Programs targeted to residential rental facilities should be expanded. Existing programs like weatherization are available to low- and moderate-income renters, and as programs expand they should reflect the distribution of household incomes in the community. The split financial incentives between renters and rental property owners must be addressed in order to reduce carbon emissions from rental property. The City should use its rental licensing authority, along with targeted incentives, to increase energy efficiency in rental property, while ensuring that the energy savings benefit renters.

3. **Create time-of-sale and time-of-rent energy label disclosure.** New homeowners and potential tenants are a target group to promote energy upgrades, as they can be more receptive to making these investments (particularly when financing is available). Tenants could also use an asset rating label to make comparisons about energy performance and cost between units or buildings. Minneapolis currently requires a home inspection prior to any Minneapolis home being put on the market (the Truth-in-Housing program). The City could green the Truth-in-Housing program by including the collection of data sufficient to generate an energy label as well as other easily accessible data such as lead paint, history of superfund site, etc. In order to be cost-effective, data collection would need to be as limited as possible while providing useful information to the homeowner. The Center

for Energy and Environment has developed an energy label that is particularly relevant for Minneapolis housing stock that is currently being used in the Community Energy Services residential program, and could be expanded for use in the Truth-in-Housing program. A label for multi-family structures does not yet exist.

4. **Connect and collaborate with other residential energy efficiency efforts.** This includes:

   - Through city contracts, promoting the development of partnerships with low-income and supportive housing serving organizations to ensure that efficiency and renewable programs, incentives, and practices, meet the specific needs of these populations.

   - Helping to promote and work with on-line energy efficiency efforts that build teams and help to increase energy efficiency awareness and actions, including the Minnesota Energy Challenge, and OPOWER's new Facebook application.

   - Promoting appliance trade-ins through City events.

   - Promoting the use of energy benchmarking in Minneapolis multifamily buildings, as through the Minnesota Energy Scorecards program.

Commercial Buildings

1. **Continue to host an annual Energy Reduction Challenge ("Kilowatt Crackdown") for Commercial Buildings in conjunction with the Building Managers and Owners Association (BOMA) and other partners.** BOMA has developed a program, called the Kilowatt Crackdown, which local chapters can implement. Using the EnergySTAR Portfolio Manager tool, building owners track their energy use over the course of a year or two. This is compared to a benchmark of the previous year, and the buildings with the highest energy reduction receive awards. While the Kilowatt Crackdown is currently composed primarily of large commercial buildings, the City should encourage BOMA to expand participation to include more small and medium-sized buildings in the challenge.

2. **Implement the Building Energy Disclosure policy for medium and large commercial buildings.** The recently adopted commercial building energy disclosure policy that requires benchmarking and publication of data annually will help increase the

MeetMinneapolis

impact of energy use information in the marketplace, driving further energy efficiency improvements.

3. **Explore implementation of a commercial asset rating program, such as the Department of Energy's Commercial Building Energy Asset Rating.** Asset ratings provide a tool to evaluate the physical characteristics and as-built energy efficiency of buildings. An asset rating can also identify areas where improvements are needed.

4. **Develop incentives for commercial office buildings to investigate transitioning janitorial work to "Day Shift Cleaning" as a means of reducing energy consumed.** Work with janitors in their building to ensure a worker friendly transition. The City should also investigate the feasibility of implementing Day Shift Cleaning standards for commercial office buildings in Minneapolis.

5. **Develop "green lease" model language that allows building owners and tenants to share the energy savings from building capital improvements.** Tenants and building owners often have a split incentive when it comes to energy efficiency improvements since tenants frequently pay the energy bills. New model language could make more capital improvements likely.

Industrial Buildings

1. **Continue to support a loan program to help businesses including industrial companies to become more energy efficient and expand their businesses.** A relatively small number of Minneapolis industrial customers are responsible for a large proportion of total energy usage in the city. Focusing efforts to increase the energy efficiency of these businesses can have a large impact, while increasing the competitiveness of Minneapolis businesses and support job growth.

Renewable Energy

1. **Support efforts to align utility practices with City and State renewable energy policy.** State and local policies express a clear preference for renewable energy and distributed generation. The City thus supports efforts to reform or eliminate all practices that discourage property owners from adopting on-site renewable energy generation. Efforts could include limiting standby rates, improving interconnection standards, modifying demand charges, expanding net metering benefits to large commercial/industrial businesses, and exploring concepts like feed-in tariffs. The City should continue intergovernmental relations efforts to reduce barriers and encourage development of renewable energy resources.

2. **Implement small to mid-sized business renewable and on-site renewable incentive programs.** Market existing and develop new incentive programs that are targeted to small and mid-sized businesses.

3. **Investigate the feasibility of large-scale renewable energy purchasing for municipal government and/or residents.** The City routinely receives unsolicited requests to invest in bulk purchasing of renewable energy. Establish a proactive review process for these requests and/or explore an RFP process for bulk purchasing.

   - Create policies and programs to promote readiness for renewable energy into all new commercial and residential buildings. A number of cities and states across the nation are creating long-term policy goals and setting in motion building code changes that anticipate the declining cost curve for both solar energy and energy efficiency.

- Develop a "solar-ready" building certification. Existing buildings were not built to accommodate solar energy installations; retrofitting existing buildings adds significant costs to solar energy. Making new buildings "solar-ready" adds virtually no cost to construction costs. The next generation of the city's building infrastructure should accommodate the next generation of energy production. Information on solar-ready building could be distributed during permitting or the design review process (see Cross-Cutting Strategy #4). Solar-readiness could also be incorporated into green building requirements that may be adopted when the City has financial involvement in a project (e.g., affordable housing gap financing, see Cross-Cutting Strategy #5).

4. **Encourage "net-zero" energy buildings.**
Net-zero energy buildings maximize synergies between energy efficiency and distributed energy generation. Policies in other states are anticipating building codes that require net-zero standards for residential buildings as soon as 2020. Minneapolis should plan to capture this transformative market trend through support of state efforts and creation of local incentives.

5. **Support new financing and ownership models for developing Minneapolis' solar resource.**
Support explicit authorization of third-party solar leasing and ownership and enabling community solar projects, and other delivery/financial mechanisms (e.g., cooperatives, sustainable utilities). Third party ownership and leasing models expand access to on-site renewable energy generation by simplifying the adoption process and enabling the cost-effective bundling of tax incentives, long-term financing, installation, and operation and maintenance into a single transaction. Minneapolis residents who do not own property or whose property has a poor solar resource should be enabled to own part of an off-site solar PV installation, and receive a share of the production credits on their utility bill.

Transportation & Land Use

Goals

1. **Reduce automobile vehicle miles traveled (VMT) in Minneapolis while improving accessibility, increasing transportation choices and promoting and accommodating equitable opportunity and growth.**

2. **Support livable, walkable, bikeable, safe and growing neighborhoods that meet the needs of all Minneapolis residents, provide a range of housing types at all income levels, and protect against displacement of and provide opportunities to current residents, businesses and cultural communities.**

3. **Support the Metropolitan Council's goal of doubling regional transit ridership by 2030, while improving access and livability for lower income households most reliant on public transit.**

4. **Grow jobs and housing to support a growing economy and non-auto transportation modes.**

5. **Increase the share of Minneapolis residents and workers choosing non-auto modes for commuting and other trips.**

6. **Through local action and federal and state legislation, support a transition to cleaner fuels and more efficient vehicles.**

7. **Promote and strengthen green infrastructure and natural systems that can build resilience, sequester or reduce emissions, and improve neighborhoods.**

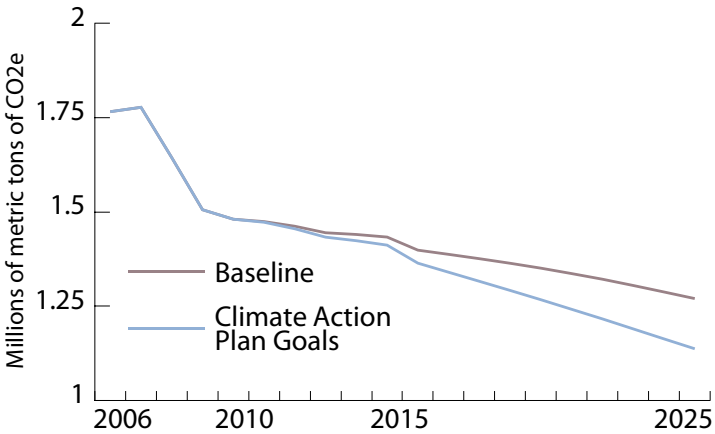

Figure 13. Estimated Emissions Reductions from Transportation and Land Use Goals and Strategies

Planning and Land Use

1. **Plan for and encourage "complete neighborhoods."** Residents of complete neighborhoods can safely and conveniently walk to obtain most of the basic goods and services they need on a daily basis. Access to goods and services varies across the city, and the City should identify gaps through an analysis and implement policy opportunities to eliminate existing inequities. Explore changes to the zoning code to provide maximum flexibility for diverse commercial uses. This could include providing height or density bonuses for leasable ground floor commercial spaces. This could also include "market development" strategies, which would remove barriers for small-scale retail and essential services like daycare centers.

2. **Focus growth along community corridors designated in *The Minneapolis Plan for Sustainable Growth*.** While supporting growth throughout the city, follow the adopted Comprehensive Plan to guide and zone for new, dense development along transit corridors to give residents and businesses multiple transportation options. Growth should preserve and enhance the diversity of housing choices for all income types, while increasing density and increasing energy efficiency. Growth and job opportunities should be structured so that residents currently living along the corridors may benefit. Safeguards against displacement pressures (e.g., lost business revenue during construction, increase in property taxes) of current residents, businesses and cultural communities should be put in place.

3. **Review the zoning code to identify impediments to and potential incentives for the construction and retrofit of green buildings.** Further study may highlight opportunities to "green" the zoning code including:

   - Exempt greenhouses from maximum height calculation on multi-story structures.
   - Exempt additional wall insulation from floor area ratio (FAR) and setback calculations.
   - Allow boiler rooms on the roof of buildings.
   - Incentives in zoning to increase energy efficient construction, renovation and operation of buildings.
   - Incentivizing the inclusion of car-sharing as part of new developments.

4. **Integrate climate change reduction policies into the City's Homegrown Minneapolis and Food Council efforts.** Increasing local food production and access to healthy, local food, may have indirect carbon emissions and climate adaptation functions. Homegrown Minneapolis and the Minneapolis Food Council should implement strategies that further reduce carbon emissions and build climate resilience, while making land for growing healthy food accessible to all neighborhoods and cultural communities in Minneapolis.

5. **Promote natural landscapes in Minneapolis.** Natural perennial landscapes require fewer carbon-intensive inputs, reduce water use, and can have carbon sequestration impacts, while also serving to educate residents about climate change and build climate resilience, especially in terms of stormwater management. The City should encourage private property owners to transition from turf lawns to natural perennial landscapes.

6. **Continue to expand the urban tree canopy and achieve an equitable percentage of tree canopy across residential neighborhoods.** Trees can provide multiple benefits, including air quality improvements, carbon sequestration, and shade

Homegrown Minneapolis
healthy food. healthy city.

that serve a heating and cooling function (reducing electrical demand in the summer and natural gas demand in the winter). The tree canopy in Minneapolis is currently inequitably distributed, with low-income and communities of color most in need often having the least tree cover. Reforestation efforts should continue, with a focus on neighborhoods that currently lack adequate or equitable tree cover. The existing pace of forestation and reforestation may need to increase as new threats like Emerald Ash Borer and extended droughts impact the Minneapolis tree canopy. Most public trees in Minneapolis are overseen by the Minneapolis Park and Recreation Board (MPRB). The City will have to work with the MPRB and private property owners to increase tree canopy on public and private property.

7. **Improve interdepartmental and interagency collaboration on transportation issues, and track progress.** City policy already instructs staff to work across departments on transportation and land use issues; it also recommends both formal and informal collaboration between the City and partners like the Metropolitan Council and Hennepin County. Add accountability to this policy direction by regularly reporting to the public and policymakers on the successes of recent collaborations, and challenges that may be hindering these important partnerships.

Transit and Car Sharing

1. **Address gaps in the existing transit network and level of service.** The *Access Minneapolis* plan identifies existing needs in terms of routes of service frequency, as well as passenger facilities and amenities. As the final alignments of regional transit lines (see Transit & Car Sharing, Strategy #2) mature, additional gaps may emerge. Special attention should be given to low-income and transit-dependent populations when identifying needs. Working with Metro Transit and Hennepin County, and with feedback from impacted communities, continue to address gaps in service.

2. **Support the build-out and upgrade of regional and local transit lines.** The City should support and implement local and regional transit improvements consistent with the *Access Minneapolis* plan in order to reduce VMT and provide more transportation options. The planning and build-out of these lines should incorporate the feedback of low-income and transit-dependent populations to increase transit options and quality of life. Regional transit facilities in the planning or construction phase include Central Corridor LRT, Southwest LRT, Bottineau and 35W Bus Rapid Transit (BRT). Local improvements to the Primary Transit Network (PTN) include streetcar and arterial BRT lines. Transit improvements should include clear, accessible and easy-to-use pedestrian routes to transit stops.

3. **Advocate for an increase to the dedicated funding stream for transit construction and operations at the local, state, and regional level.** The current funding level for transit projects through the Counties Transit Improvement Board (CTIB) utilizes a quarter-cent sales tax to fund transit improvements. The original legislation proposed a half-cent sales tax. Increasing the amount that counties can opt in to use would speed

development of regional transit projects. Local governments could also benefit from additional tools for funding transit construction and operations like value capture along transit corridors.

4. **Work with Metro Transit and property owners to improve capacity and use of transit during special events.** Many attendees of major events at the Metrodome, Target Field, the Convention Center and other locations in Minneapolis use transit, but the City should continue to work to further increase the use of transit and non-auto modes for these events.

5. **Complete the downtown east-west transit spine improvements.** The *Access Minneapolis* plan calls for the upgrade of transit service in the vicinity of Seventh Street. This corridor is the second-busiest in terms of weekday boardings in downtown. This improvement may be similar to the "Marq2" project, which improved travel times and provided dynamic signage to improve user experience and convenience along Marquette and Second Avenues.

6. **Expand car sharing services to on-street spaces.** Parking staff will soon begin the process to bring car-sharing services to on-street spaces in the city. Continue to expand these services as demand and feasibility permit.

7. **Make car sharing convenient and affordable by reducing sales tax on car sharing products to the minimum rate.** Currently, car sharing transactions in Minneapolis are taxed at a higher rate (approx. 12 percent) than the general sales tax rate for Minneapolis (7.775 percent). Consider separating car sharing services from regular rental car service in terms of special sales tax rates.

Active Transportation

1. **Achieve the City's adopted targets for bicycle mode share and bicycle counts and adopt a stretch goal of 15 percent for 2025.** The City has adopted targets for bicycle mode share of six percent by 2012 and seven percent by 2014. In addition, the City has adopted a target to increased cyclists in annual counts by 60 percent over 2008 by 2014. Consider a mode share goal for 2025 of 15 percent.

2. **Revisit minimum bicycle parking requirements to support the City's bicycle mode share targets.** The City is investing in on- and off-street bicycle facilities, and has set targets for bicycle use. Providing sufficient parking that is convenient and safe will be a key in meeting these goals. Existing standards, such as the Association of Pedestrian and Bicycle Professionals parking guide and the City's adopted workplace access and parking guidelines could be reviewed for consistency with current code. Bicycle parking demand may also vary more based on geography than auto parking. More data on local parking demand is needed.

3. **Construct 30 miles of on-street, protected bike facilities (cycle tracks) by 2020 to allow safe and efficient travel for all types of cyclists.** Bicycles are a zero-emissions form of transport. Increasing the perception of safety of on-street bicycle facilities will attract more cyclists to Minneapolis' network of facilities and help to meet mode share goals. Work to ensure that neighborhoods with little existing bicycle infrastructure are part of the discussion on what type of bicycle infrastructure would work for their communities, and receive equitable funds for implementing those projects.

4. **Support implementation of the Pedestrian Master Plan and Bicycle Master Plan.** When walking and biking are safe, efficient, and

comfortable, the benefits are felt community-wide and reduce dependence on automobiles. Monitoring and following up on the Pedestrian and Bicycle Master Plans' recommendations will be integral to meeting greenhouse gas reduction goals across the transportation and land use sectors.

5. **Increase walking as a percentage of trips.** The City should adopt an aggressive goal for increasing the pedestrian travel mode share and the numbers of pedestrians observed in annual counts. The City should work to meet this goal by filling the identified sidewalk gaps in the Pedestrian Master Plan, improving sidewalk snow clearance, improving accessibility for people of all ages and abilities, and increasing the safety of pedestrian crossings.

6. **Support the efforts of special service districts to improve streetscapes and encourage walking and bicycling.** The efforts of special service districts to clear snow, improve and maintain streetscape amenities (like sidewalks and bike parking) and clean litter should be supported. These initiatives will lead to a more inviting pedestrian environment in the City's commercial areas.

7. **Continue "Safe Routes to School" efforts.** The City's Safe Routes to Schools program encourages children to adopt healthy habits of walking and biking. This is done by improving safety near schools through infrastructure projects, as well as fostering a culture of walking and biking in the schools through educational programs.

8. **Adopt a Complete Streets policy.** A Complete Streets policy will demonstrate a commitment to providing adequate pedestrian, transit and bicycle facilities during every road improvement project. While the City already has adopted many elements of Complete Streets work, such as Bicycle and Pedestrian Master Plans and a multi-modal transportation plan, a Complete Streets policy may be necessary to best position the City to compete for outside funding.

Parking Management

1. **Investigate demand-based parking pricing strategies for metered areas.** The city's new parking meters allow for variable pricing. Vary pricing on metered streets, with a goal of achieving one empty spot per block, in order to reduce "cruising" for spots and improve traffic flow.

2. **Continue to adjust minimum parking requirements to better promote alternative modes of transportation.** For example, developers

of multi-family housing currently qualify for a 10 percent reduction in required parking stalls if the parcel is within 300 feet of a transit stop, even though one-quarter mile (1,320 feet) is typically accepted as the distance an average rider will walk to a bus stop.

3. **Support the development of new information technology to reduce "cruising" for parking and make more efficient use of curb and ramp space.** Parking staff are developing new approaches, such as a mobile phone app, which will provide more information to drivers on the location of vacant parking spaces. These types of applications can reduce cruising for parking, which contributes to traffic congestion.

4. **Support the development of a citywide framework for curb space use.** Parking staff will be developing a framework plan to understand how to best use curb space, both for parking, valet services, active transportation and other uses. Climate Action Plan goals for increasing active transportation and holding VMT flat should be considered during this process.

5. **Require or incent parking "unbundling."** Adopt requirements or incentives for developers that parking be separated from commercial space and residential units in lease and sale agreements.

Transportation Demand Management and Intelligent Transportation Systems

1. **Support the Downtown Transportation Management Organization's goal to reduce 4.8 million drive alone trips by 2015.** The Downtown TMO helps commuters get into downtown with less reliance on single-occupancy vehicles. Their efforts are aimed at increasing transit use, ridesharing, biking, and walking.

2. **Explore changes to signal timing to reduce idling, improve traffic flow and accommodate non-auto modes.** City staff are currently reviewing signal timing on a citywide basis. Potential changes to reduce emissions could include "green waves" for cars or cyclists, and changing lights to flashing red/yellow late at night and early in the morning.

3. **Support the expansion of congestion pricing, dynamic signage and other traffic management techniques on regional highways.** Demand-based pricing can help reduce congestion while encouraging carpooling and transit use. Other techniques that have proven beneficial are dynamic signage which can help reroute drivers, and rapid crash response.

4. **Encourage employers to embrace alternative work arrangements for employees.** Results-Only Workplace Environments (ROWE), variable work schedules, telecommuting, and teleconferencing all have the potential to reduce overall trips or spread trips from rush hour into less-congested times. The City can collaborate with the downtown TMO, Downtown Council, and other organizations to provide businesses of all sizes with information and expertise on these practices.

Clean Fuels

1. **Explore regulatory incentives to increasing electric vehicle charging infrastructure.** The inclusion of electric vehicle charging could be incentivized through the zoning code or other city regulations for large multi-family and commercial buildings. As technology and adoption rates of electric vehicles change, the city should revisit these incentives and consider requirements for EV charging in parking code for multi-family and commercial buildings as appropriate based on demand.

2. **Provide electric vehicle charging stations and other alternative fueling options at City-owned facilities where feasible.** Continue to investigate the feasibility of vehicle charging stations at

public facilities. Closely monitor electric vehicle technology to ensure investments are appropriate. Investigate the feasibility of compressed natural gas (CNG) fueling stations where appropriate for City operations and for use by the public or government and industry partners.

3. **Increase the fuel efficiency of the city's licensed taxi and car service fleet.** The current requirement for taxi vehicles is to achieve 23 miles per gallon (MPG) or better in city driving. As the City updates this policy, acheive a higher MPG and/or lower carbon intensity of the fleet through requirements or incentives. Given that taxis are high-mileage vehicles, better fuel efficiency can pay off more quickly than in other applications.

4. **Support the new federal fuel efficiency standards.** On-road vehicle fuel efficiency has a significant impact on the transportation sector emissions in Minneapolis. Changes to the federal CAFE standards will increase the fuel efficiency of vehicles on the road.

5. **Support increased fuel efficiency in public fleets.** Minneapolis has adopted a green fleets policy which calls for fuel efficiency improvements in City-owned vehicles and equipment. Support the efforts of entities like the Metropolitan Council and the State of Minnesota to improve the fuel efficiency of their fleets. In particular, hybrid, fully electric, or natural gas buses have the added benefits of reducing noise pollution and localized air pollutants like particulates in high-traffic areas. Work with Metro Transit to incorporate the use of all cost-effective alternative fuels in their fleets.

6. **Support State efforts to adopt a low-carbon fuel standard.** As outlined in the Minnesota Climate Change Advisory report, support the adoption of a statewide Low-Carbon Fuel Standard, with a goal of reducing the lifecycle carbon intensity of transportation by 12 percent by 2025 from 2007 levels.

7. **Support the development of alternative jet fuels and ensure Minneapolis-Saint Paul International Airport (MSP) is prepared for their increased use.** Most emissions attributable to MSP are produced by jet aircraft. Domestic and foreign airlines have successfully trialed a variety of biofuels, which have been approved for use in commercial flights since July 2011. As production chains mature, the Metropolitan Airports Commission (MAC) and its airline partners will need to be sure MSP facilities are adequately prepared to store and dispense biofuel-blended jet fuel. Minneapolis should also support future regulatory actions designed to accelerate the switch to cleaner-burning jet fuels.

Other Strategies

1. **Continue to shift to LED streetlights.** Replacing conventional bulbs with LEDs can net up to a 50 to 60 percent reduction in energy use. As capital costs come down, continue to replace older bulbs with more efficient LEDs, with a long term goal of

Flickr user redlegsfan21

citywide LED use. During typical street reconstruction projects, which include streetlight retrofits, the cost of upgrade/replacement is assessed to property owners on that street. These assessments can have a higher relative impact on low-income property-owners. For streetlight retrofits, innovative financing mechanisms should be explored to avoid this impact. For example, most of the streetlights in the city are owned by Xcel Energy, and a retrofit may be part of the City's franchise renegotiation with Xcel. Other cities have used grants to fund citywide retrofits.

2. **Support continuing efficiency efforts at Minneapolis-Saint Paul International Airport.** Increasing vehicle fuel efficiency has led to a reduction in greenhouse gas emissions from the airport. Investigate additional partnership opportunities to support MAC in meeting greenhouse gas reduction targets.

3. **Assist the Metropolitan Airports Commission in making MSP the nation's "greenest" airport.** MAC's Stewards of Tomorrow's Airport Resources program identifies numerous projects that could reduce the airport's emissions, ranging from on-site clean energy production to grey water recycling and storm water reclamation. MAC should expand the use of alternative transportation fuels like electricity and natural gas for travelers by developing public charging and fueling stations, and increasing alternative fuel use in its ground operations fleet. The airport's constant flow of travelers makes it an excellent location for demonstrating green technologies and educating the public about the causes and impacts of climate change.

4. **Encourage the Metropolitan Airports Commission to expand its use of renewable energy resources.** MAC is exploring investment in renewable energy sources like wind (from off-site sources), solar, and geothermal. The City has a great deal of experience in this area, particularly with solar photovoltaic and thermal technologies. Staff should share expertise and key lessons as MAC undertakes similar initiatives. Examples from other airports, like Denver International, show that large open spaces with unobstructed solar access can provide good opportunities for solar generation. Changes in state policy around solar energy may also benefit MAC as they pursue renewable energy projects (see Buildings & Energy, Renewable Energy Strategy #1).

5. **Support the implementation of more efficient takeoff and landing procedures at MSP, consistent with City goals to mitigate airport noise.** Efficiency improvements like pre-set flight paths and GPS-based navigation allow aircraft to take off and land while burning less fuel. This technology has the potential to reduce greenhouse gas emissions. The Federal Aviation Administration (FAA) is working with MAC and other local partners to increase the use of these so-called area navigation and required navigation performance procedures.

6. **Encourage the State of Minnesota to permit the testing of autonomous vehicles on public roadways.** In the long term, autonomous vehicles have the potential to reduce the total number of vehicles on the road, increase fuel efficiency and increase safety for cyclists and pedestrians, all of which could have a positive climate impact. Permitting the testing of these vehicles will signal to industry that Minnesota is eager to explore this new technology.

Waste & Recycling

Goals

1. **Achieve a zero percent growth rate in the total waste stream from 2010 levels, with a long-term goal of achieving zero waste.**

2. **Recycle 50 percent of the waste stream (commercial and residential) in Minneapolis by 2025, with a long-term goal of achieiving zero waste.**

3. **Increase organics collection to 15 percent of the waste stream by 2025.**

4. **Reduce the flow of wastewater from Minneapolis and support efforts to make wastewater treatment more energy efficient.**

5. **Increase awareness of the lifecycle impacts of products to address GHGs occurring outside the community.**

Felicity Britton

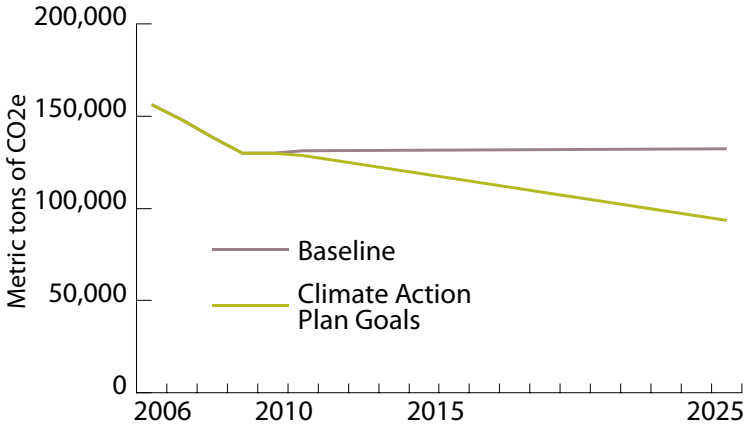

Figure 14. Estimated Emissions Reductions from Waste and Recycling Goals and Strategies

Reducing Waste

1. **Identify consumer products and packaging that are neither recyclable nor compostable and engage companies, consumers and retailers in a campaign to reduce the disposal of such products and packaging through reuse efforts, switch to alternative materials, or make changes to the supply chain.** In addition, the City should participate in and support the efforts of the Minnesota Pollution Control Agency's Product Stewardship Council.

2. **Identify and promote reuse and repair businesses and opportunities which can reduce the disposal of used goods.** Evaluate existing ordinances and remove barriers for reuse and repair opportunities. Connect with the State's reuse network. Examples include "fix-it clinics" or promoting existing businesses with a reuse focus.

3. **Closely track the analysis being conducted by the Minnesota Pollution Control Agency, and ongoing monitoring efforts, to better understand the health and greenhouse gas emissions**

impact of the Hennepin Energy Recovery Center (HERC), consistent with the City goals of reducing the greenhouse gas emissions of our waste stream and reducing cumulative health impacts on Minneapolis communities. Support waste reduction and recycling efforts at both the City and County level to reduce the amount of recyclable material going to HERC.

4. Work with Hennepin County to strengthen existing hazardous waste collection and recycling efforts for CFLs and other hazardous items.

5. Work with Hennepin County and other partner organizations to encourage businesses and residents to purchase reused and reusable goods (i.e., the Choose to Reuse campaign).

6. Expand Green Building programs (such as a requirement for City-financed new construction and renovation projects) to promote a reduction in construction and demolition waste.

7. Expand neighborhood and backyard organic composting through community initiatives across neighborhoods and advocate for updated composting rules at a state level.

8. **Develop innovative marketing and behavioral strategies.** Examples could include behavioral strategies to reduce food waste like signage and reducing tray use, and supporting County efforts for expanded outreach to commercial and multi-family properties.

9. **Undertake a public education campaign to inform residents about opt-out opportunities for materials like phone books and junk mail.** Additionally, explore requiring that businesses like phone directories operate as an opt-in service in Minneapolis.

10. Work with Hennepin County, regional groups and the State of Minnesota to develop better data collection tools and sources, especially for commercial and multifamily waste data.

11. **Require City-financed development projects to meet a green building standard (see Buildings & Energy, Cross-Cutting Strategy #5) that includes a waste reduction and/or recycling standard.** Projects that receive State money must meet Minnesota Green Communities standards, which include rules about construction and debris waste and recycling infrastructure. The City of Minneapolis should follow suit in order to support its existing waste reduction and recycling goals, and to reduce GHG emissions.

Increasing Recycling

1. Support implementation of a single-sort recycling program for curbside pickup.

2. **Continue to expand the types of materials accepted by the City's recycling program.** This could include additional types of plastic or other materials not currently collected. The City will maximize the efficiency of waste and recycling collection through collection schedules, routes

and vehicle technologies and fuels. As expanding recycling collection may have a localized health or air quality impact due to increased truck traffic or facility siting, an analysis should be undertaken prior to any significant expansion of truck routes or facilities, in order to understand the cumulative impacts and benefits of such a facility, and the extent to which nearby communities already face disproportionate environmental impacts.

3. Complete a comprehensive assessment of pricing incentives and penalties for residential waste and recycling services and identify strategies, such as volume-based variable-rate pricing, that could increase recycling and reduce waste.

4. **Enforce the commercial recycling ordinance and undertake an educational campaign to expand recycling options in multi-family housing.** Investigate creating standards for commercial office buildings that require building owners to be responsible for source separating refuse into recyclables and trash. Work with on-site janitors and other affected workers to create effective source separation programs. Culturally appropriate, multilingual educational campaigns should be undertaken in conjunction with community groups.

5. Identify financial and other barriers to recycling in multi-family buildings (e.g., different priorities between property management company and tenants, lack of knowledge of costs).

6. Work with the County to increase the rate of recycling of construction and demolition debris in the city.

7. **Support state adoption of the new International Green Construction Code (IGCC) and adopt the IGCC locally (see Buildings & Energy, Cross-Cutting Strategy #3).** The IGCC includes requirements for diverting construction and debris waste and incorporating recycling infrastructure in the design of projects. If the IGCC is adopted at the state level as an appendix chapter, Minneapolis will need to adopt it locally before it can be in force.

Increase the Composting of Organics

1. **Identify major organic waste producers (e.g., food service, schools, hospitals) and conduct a targeted campaign to increase organics recycling.** Identify corridors (Nicollet Avenue, for example) with a critical mass of large producers that might make organized collection more feasible. Consider an ordinance requiring large producers to divert organics. Closely collaborate with workers and unions to ensure the meeting of composting goals do not compromise worker health and safety, or unduly increase work load.

2. **Based on the results of pilot programs and through a detailed study, determine the feasibility and costs of expanding the collection of source-separated organics at residential properties citywide.** After these costs are known, reassess the best approach for removing organics from the residential waste stream. The potential community health impacts of increased truck traffic (e.g., fine particulate matter emissions) that could result from expanded or new composting operations should be assessed.

3. **Support more options for the local processing of organic waste at both large and small scales.** There are currently few options for processing collected organic waste in the Twin Cities region. Changes to state and county rules, or a stronger local market for organic composting may be necessary to build more processing capacity. The City should open up new opportunities for small scale local composting businesses through zoning

code and possibly licensing changes. Large scale composting facilities will continue to be regulated by the Minnesota Pollution Control Agency. Scale-appropriate safeguards should be adopted to ensure that composting facilities do not disproportionately burden communities already facing cumulative health impacts, but revisions to the City's regulations on small composting businesses should be focused on encouraging their creation.

4. Make City worksites a model for organics composting by developing a collection program for City-owned and (where possible) City-leased buildings.

Addressing Product Lifecycle Impacts

1. Work with Homegrown Minneapolis to incorporate more information on food choice impacts, particularly as it relates to greenhouse gas emissions.

2. Develop educational materials that illustrate the emissions impacts of common products or behaviors, and include these materials in City utility bills.

Reducing Wastewater Treatment Impacts

1. Work with the Metropolitan Council to achieve their energy use goals and track associated impacts on GHG emissions from Minneapolis contribution to wastewater flows.

2. Achieve a 75 percent participation rate in the Community Energy Services program for eligible Minneapolis properties, which includes low-flow water fixture information and installations.

3. **Explore options for expanding the use of greywater systems and water conservation measures in public and private buildings.** This could be included in the local adoption of the new state building codes as an elective or promoted in City-financed projects.

7. Implementation

The Climate Action Plan identifies a broad range of strategies, some of which are very specific, and some that contain broader ideas which will require further investigation. Some strategies can be carried out by actions of staff or elected officials alone, and some require large partnerships across local, regional, and state government or between the public and private sector. Meeting Minneapolis' emissions reduction targets will wide-ranging, coordinated efforts.

A number of strategies identified in the Climate Action Plan are already being undertaken by City departments or our partners. In some cases, this plan supports continuing to pursue those efforts similarly into the future. In other cases it will mean adjusting existing programs or policies to reflect a new emphasis on greenhouse gas emissions reduction in future efforts.

The City of Minneapolis is committed to the role it must play – fostering partnerships, working with businesses and utilities, engaging the community and being a willing and supportive partner. Minneapolis must also lead by continually tracking progress towards our goals, learning from our experiences, and reassessing our approach and strategy.

The Climate Action Plan is a call to action, not just for government, but for everyone who lives, works in, or visits Minneapolis. In order to meet our aggressive goals and do our part to avoid the worst impacts of a changing climate, we must be thoughtful, persistent, and committed.

Implementing strategies

Strategies in this plan may be implemented through a variety of processes – community actions, ordinance changes, program development, partnership building, or advocating for changes to state and federal law. In many cases, additional research and community outreach will be needed before a strategy can be implemented. This will include additional review and approval by the appropriate City staff, stakeholders and elected officials. The passage of this plan does not mean these strategies will happen automatically.

The Climate Action Plan is a call to action, not just for government, but for everyone who lives, works in, or visits Minneapolis. We must be thoughtful, persistent, and committed.

Some strategies may require additional funding sources that have not yet been identified. A coordinated effort will be needed to identify appropriate funding sources whether they are internal or external to the City. As with any initiative, elected officials will need to weigh priorities in the case of limited funding.

For many strategies, it will be especially important to identify and support regional collaborations that can bring emissions reductions and other co-benefits. For example, many transportation projects (e.g., transit investments) are typically planned and constructed by Hennepin County and the Metropolitan Council with Minneapolis as a partner. Regional air quality initiatives, like the Clean Air Dialogue, also rely on cooperation of multiple government and private sector partners to achieve success.

Many strategies in the plan will require community outreach to engage organizations, businesses, and residents. The City should follow best practices for community engagement, including developing outreach plans which engage the community in multiple languages and utilize existing community organizations. Special emphasis should be placed on reaching and engaging those communities that may be most impacted by a changing climate.

city of minneapolis 2012
SUSTAINABILITY report

The City of Minneapolis is committed to citywide economic opportunity, social equality, and environmental sustainability. For the seventh year in a row, the City is tracking progress on 26 sustainability indicators. Monitoring these indicators helps us understand the state of our community and focus on what needs to be done to preserve and enhance our quality of life for future generations.

To learn more about each sustainability indicator and what is being done to achieve Minneapolis' sustainability goals, visit our new website:
www.minneapolismn.gov/sustainability/indicators

Tracking progress

Minneapolis has a long history of reporting progress on environmental, social, and public health goals. The Minneapolis Sustainability Indicators, first adopted in 2005, track progress in these three areas of sustainability through 26 topics and 52 specific goals on an annual basis. Data, activities, and analysis are available at www.minneapolismn.gov/sustainability/indicators.

As in the past, Minneapolis will report annual on community greenhouse gas emissions, as well as recent activities undertaken by the City or community partners. In addition, the City will measure how strategies are implemented across Minneapolis communities, identifying implementation based on geography, income, race, and ethnicity wherever possible. The City may also develop a fuel-poverty definition to understand how emissions reduction strategies can achieve multiple benefits like improving economic well-being. Progress will be reported through the City's Community Environmental Advisory Commission, Results Minneapolis, and through appropriate updates to the City Council, such as the presentation of the annual Sustainability Indicators report.

The Climate Action Plan Working Groups and Steering Committee were made up of community experts who contributed their best ideas and knowledge to the process. However, as with any planning process, a number of assumptions were made in development of the emissions reduction strategies. Due to unforeseen barriers, policy changes at the state and federal level, or a changing marketplace, the implementation path of strategies in the plan may change, or strategies may be more or less successful in reducing emissions than expected.

Minneapolis is committed to revisiting the goals and strategies of the plan as necessary to keep the city on a path to meeting its adopted emissions reduction goals. Changes to the plan could include minor adjustments made by staff, or a more significant stakeholder process if deemed appropriate. The City is committed to including environmental justice representation through the Community Environmental Advisory Commission and other sources in any significant revision of the plan document. The goal is for this plan not to remain on the shelf, but to be a dynamic document that can change with the circumstances, always serving as a useful guide to reduce our climate impact.

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Minimize your climate impact with these everyday actions.

Each person can make a difference. Below are steps that, together, can reduce emissions, save money, and move Minneapolis towards our goals. Measures and emissions and costs savings estimates are from the Minnesota Energy Challenge. Visit www.mnenergychallenge.org to learn more.

Action	CO2 Impact per Household (lbs)	Annual Savings per Household
Buy green power from your utility	2,052	$0
Reduce your heating temperature by two degrees	568	$52
Increase your cooling temperature by two degrees	401	$19
Replace five incandescent bulbs with compact fluorescent (CFL) or LED bulbs that use 75% less energy	535	$26
Use fans instead of A/C on cool summer nights	540	$26
Leave your car at home and take the bus once a week for work, school or errands	881	$154
Wash your clothes in cold water to save money and preserve clothing	385	$35
Dry your clothes outside on a line	1,845	$91
Turn your water heater down to 120F	111	$10
Install a high efficiency showerhead	381	$35
Drive the speed limit and maintain tire pressure for easy gas savings	1,102	$209
Try composting to turn food waste into dirt	80	$0

Sign up for a low-cost home energy visit to find out more ways to save: visit www.mncee.org/hes-mpls

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