M E M O R A N D U M

TO: City Planning Commission

FROM: Wendy L. Rampson, Planning Manager

SUBJECT: **Resolution Supporting Adoption of the Ann Arbor Climate Action Plan**

DATE: November 20, 2012

PROPOSED PLANNING COMMISSION MOTION

RESOLVED, That the Ann Arbor City Planning Commission hereby approves the "Resolution Supporting Adoption of the Ann Arbor Climate Action Plan" dated November 20, 2012 and directs Planning and Development Services staff to transmit this resolution to City Council.

STAFF RECOMMENDATION

Staff recommends **approval** of the attached resolution in support of the draft Ann Arbor Climate Action Plan (CAP).

STAFF REPORT

The draft Climate Action Plan (attached) is a result of a two year grant from the Michigan Department of Environmental Quality (MDEQ) that helped establish a committee of the Energy Commission to oversee drafting of the Plan. This group, aided by city staff and consultants from the Clean Energy Coalition (CEC), consisted of members from the Energy, Environmental, and Planning Commissions, as well as other individuals representing groups active locally on this issue.

Over eighty recommendations are found in the Plan, which is organized by the major categories and goals described in the "Sustainability Framework," which is currently going through the process of incorporation into the City's Master Plan. The Plan focuses on mitigating emissions, while beginning to describe ways Ann Arbor can adapt and be resilient to climate changes underway and expected in our region.

Prepared by: Nathan Geisler, Energy Programs Association, Systems Planning

Attachments: Proposed Resolution Supporting Adoption of the Ann Arbor Climate Action Plan
Climate Action Plan Executive Summary

c: Systems Planning

Resolution Supporting Adoption of the Ann Arbor Climate Action Plan

Whereas, The City of Ann Arbor has demonstrated a history of leadership in promoting energy conservation, energy efficiency, and renewable energy, developing its first Energy Plan in 1984 and establishing a citizen Energy Commission; and

Whereas, The City of Ann Arbor has 10 standing City Council-approved environmental goals set on July 16, 2007 in Resolution R-330-7-07 that include: “Eliminate net greenhouse gas emissions and other destabilizing climate impacts,” and “Use 100% renewable energy”; and

Whereas, The City of Ann Arbor set updated Energy Challenge goals on April 19, 2011 in Resolution R-11-142 to reduce municipal greenhouse emissions 50% and community-wide emissions 8% by 2015 as well as increasing renewable energy targets; and

Whereas, City Council recently initiated Master Plan adoption of 16 goals on July 2, 2012 in Resolution R-12-300 as part of the Sustainability Framework, which includes Climate and Energy as one of four primary goal areas to advance local sustainability; and

Whereas, Ann Arbor City Council accepted a two-year $50,000 Pollution Prevention grant from the Michigan Department of Environmental Quality on September 7, 2010 in Resolution R-10-326 to develop a Climate Action Plan which outlines strategies to mitigate greenhouse gas emissions throughout the community to help meet the Energy Challenge and the goals outlined above; and

Whereas, The Ann Arbor Energy Commission, through its established bylaws, created a committee consisting of representatives from the Energy, Environmental, and Planning Commissions as well as other individuals representing outside organizations actively involved in climate change issues to help develop this Plan; and

Whereas, This special subcommittee worked with staff and consultants to develop new mid-term and long-term targets for greenhouse gas reductions and actions based on dozens of existing climate action plans from other U.S. cities and other emerging ideas; and

Whereas, Staff and the subcommittee presented findings and sought input from the public at the Climate and Energy Forum on March 8, 2012 and various public commission meetings since initiating the Plan’s development; and

Whereas, The societal economic costs of not acting to mitigate climate change are expected to far exceed timely investments in emissions reduction measures, as documented in the UK’s Stern Report of 2006 and other analyses; and

Whereas, The Ann Arbor Climate Action Plan sets mid-range targets that align with the University of Michigan to reduce community greenhouse emissions 25% by 2025, and an additional target of 90% by 2050 (from 2000 year baseline levels) to meet and surpass reductions necessary to avoid major climatic disruptions as cited by such bodies as the Intergovernmental Panel on Climate Change (IPCC); and

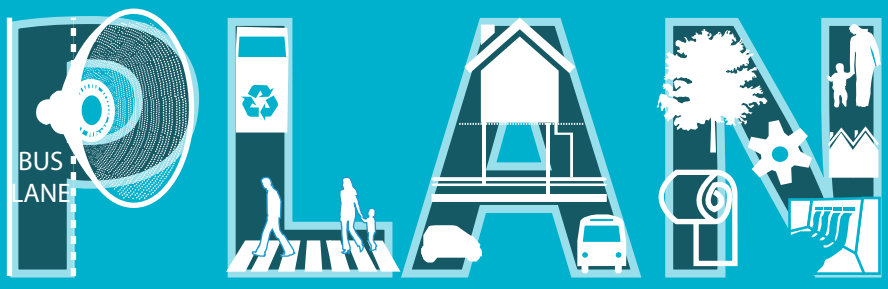
Whereas, The City’s Energy Commission, at its October 9, 2012 meeting, and the Environmental Commission, at its October 25, 2012 meeting, passed resolutions recommending City Council approval of the Climate Action Plan; and

Whereas, That as with all projects requiring significant city investment, relevant components of this Plan would come before City Council for ultimate authorization;

NOW THEREFORE BE IT RESOLVED, That the Ann Arbor City Planning Commission recommends City Council adopt the Ann Arbor Climate Action Plan to demonstrate continued leadership and guide progress towards reducing our community's greenhouse gas contributions, and that an implementation strategy be further developed based on Plan recommendations;

BE IT FURTHER RESOLVED, That the City integrate the best available climate science into all city planning efforts and to recognize actions that mitigate greenhouse gas emissions and are adaptive to climate change make city systems more resilient.

City of Ann Arbor



2012

a2energy.org

CITY OF ANN ARBOR
CLIMATE ACTION PLAN
EXECUTIVE SUMMARY

The City of Ann Arbor Climate Action Plan

Climate change is not a future problem: it is happening now. Unprecedented disruptions are happening locally and globally, and immediate, impactful action is needed to mitigate emissions of greenhouse gases (GHGs) contributing to this global challenge.

This Climate Action Plan is community focused, meaning it is not limited to addressing municipal government emissions, which in Ann Arbor make up less than two percent of the entire community's emissions inventory. The actions found in the Plan may not all be feasible immediately; some may never be possible. There also may be emerging or unexplored ideas not discussed in these pages that will be identified in the future. As with any large-scale project or endeavor, actions that the municipality ultimately implements that require upfront investments will be brought before decision makers for consideration.

Underlying this Plan is the belief that the consequences to society and natural systems from continued inaction far outweigh the costs and challenges associated with the implementation of the proposed actions.

The Climate Action Plan recognizes the substantial scientific evidence that predicts a changing climate and the real role of cities in evaluating and managing the risks threatening city residents and municipal systems.

This executive summary provides an overview of:

- The likely effects of climate change to Ann Arbor and the Great Lakes Region;
- The inventory of City GHG emissions in 2000 and 2010 and the relative contributions from the Commercial, Residential, Transportation, Waste Management, and University of Michigan sectors; and
- Recommended GHG targets and categories of actions to mitigate and adapt to a changing climate.

This Climate Action Plan also recognizes the important role of the University of Michigan (UM) as not only a large generator of community GHG emissions, but also a leader in developing a GHG reduction plan that is underway and making progress. Opportunities for collaboration between the City and University are ongoing on several fronts and should continue in the years ahead.

Climate change, as discussed in this report, refers to the rapid climate shifts observed in recent years attributed to persistent anthropogenic (human-caused) changes in the composition of the atmosphere. Man- made GHGs in the Earth's atmosphere are changing the heat balance of the planet causing overall global temperature increases, which, in turn, threaten global public health, economies, and food and water supplies.

The City of Ann Arbor is actively working with local universities and their research centers, such as the Great Lakes Integrated Sciences and Assessments Center (GLISA), to assemble the best available scientific forecasts on the effects of climate change.

The predicted effects of accelerating warming in the Great Lakes region include:

- Decreased winter ice cover;
- Increased extreme weather events;
- Changing rainfall patterns disruptive to crop productivity;
- Shifts in distribution and composition of animal, insect, and floral species which may radically disrupt existing ecosystems; and
- Risk of new diseases in the region traditionally found in warmer climates.

The Likely Effects of Climate Change

The Inventory — Comparing GHGs 2000 to 2010

Total GHG emissions across the Ann Arbor community in 2010, with UM included, were over 2.2 million metric tons of CO_2e. This is up slightly from 2.19 million metric tons in 2000. Ann Arbor is largely built out to its geographic boundary, but a decline in commercial/industrial emissions during this time and a concurrent uptick in activity and emissions at UM nearly leveled off the appearance of a significant change in emissions. The GHG inventory attempts to only track emissions within the city limits.

The Residential Sector

The Residential sector created **approximately 22 percent** of total community emissions. The Residential sector experienced a modest increase of 3.4 percent between 2000 and 2010.

Climate change contributes to overall warmer temperatures and increased high-heat intensity days in the summer. This means there will likely be an increase in electricity-related emissions (e.g., to power air conditioners) and a reduction in natural gas emissions (e.g., to provide home heating in winter). Without substantial increases in the amount of renewably generated electricity in the DTE grid, the Residential sector will remain a major source of GHG emissions as the grid is currently dominated by coal-fired power.

The Commercial/Industrial Sector

The Commercial/Industrial sector made up **approximately 25 percent** of 2010 community emissions. While this was the largest sector in 2000, after an estimated 23 percent decrease in 2010, it became the second-largest sector. Approximately 25 percent of the decline since 2000 in Commercial/Industrial emissions is explained by UM purchasing the 2 million-square-foot former Pfizer world headquarters campus that was re-opened as the North Campus Research Complex in 2010, thereby transfering emissions from this property to the UM sector. Remaining emissions reductions are possibly attributable to economic factors less easily pinpointed and spread out across a number of properties and businesses. While there was a decline in the total emissions in this sector, as more businesses reactivate underutilized building space in the future, Commercial/Industrial emissions could climb again. Price fluctuations for fuels, natural gas in particular, are also anticipated to impact this sector's emissions. Measures such as those identified in this Plan will need to be taken to mitigate consumption or improve building energy efficiency.

The Transportation Sector

The Transportation sector emissions made up **approximately 22 percent** of total 2010 emissions. This sector experienced a slight decrease in 2010 from 2000 levels. While total vehicle miles traveled have increased over this period, improvements in fuel efficiency are the likely reason emissions from this sector have decreased.

As in the building sectors, there are and will be technological advances that improve the "greenness" of the community's fleet of vehicles. Many residents are already taking it upon themselves to drive hybrid and more fuel-efficient cars. Even with these advances, continually improving options for walking, biking, busing, and better integrating land uses to reduce travel distances are essential to reducing GHG emissions in this sector.

An important limitation to this inventory is the lack of information on emissions resulting from the production of items we purchase, use, and discard. A few communities are beginning to factor these emissions into their inventories, and future City GHG inventories and Plan updates would likely find that materials consumption in the community is a major source of GHG emissions that are caused by city consumption but occur outside of the City. This is similar to the use of electricity that is consumed locally, but produced by fossil fuels like coal outside city limits.

The Waste Sector

The Waste sector decreased more than 25 percent from 2000 to 2010 because of increased recycling rates and a decrease in waste collection volumes throughout the City.

While the Waste sector includes annual solid waste collection and the embedded future emissions from landfilling, annual methane released from the closed Ann Arbor landfill, and annual process emissions from wastewater treatment, total emissions still make up **less than 1 percent** of total community GHG emissions.

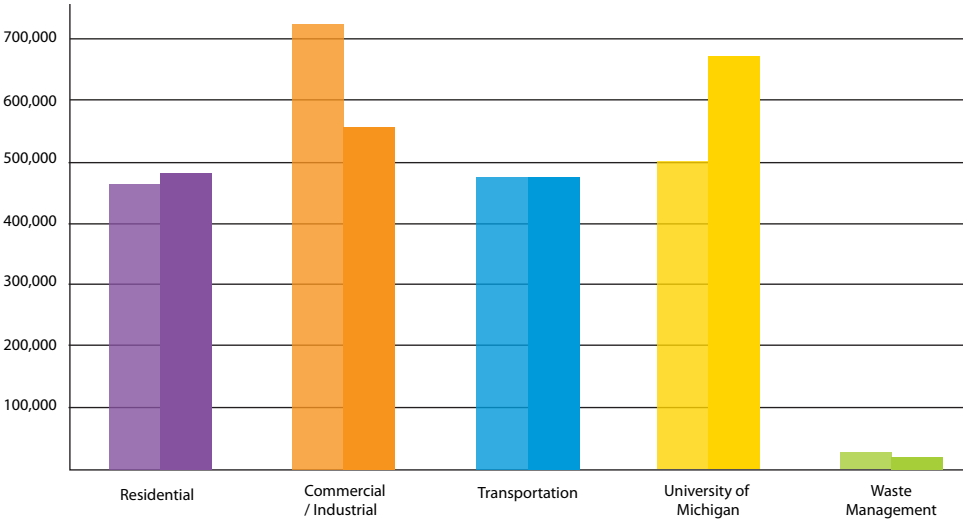


Figure 1: Total 2000 GHG emissions (left) compared to total 2010 GHG emissions (right)

Since implementing single-stream recycling in 2010, trash tonnages have decreased by 10 percent and recycling rates have increased by 24 percent. The City should continue to look for ways to reduce waste and increase the amount of material that is recycled or reused.

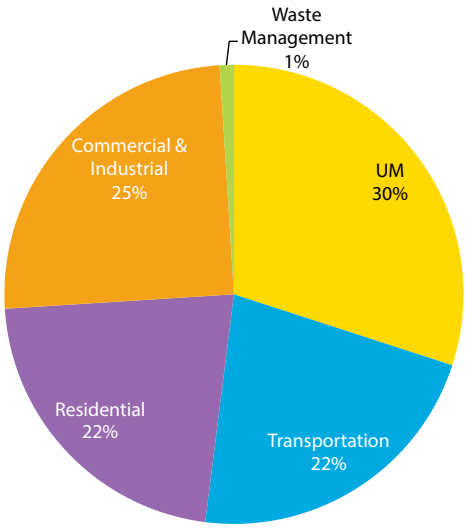


Figure 2: 2010 GHG inventory

The University of Michigan

UM is treated as its own sector given that its own GHG reduction plan is underway and detailed emissions data are available.[1] **Approximately 30 percent** of community emissions in 2010 derive from UM. Ann Arbor's Climate Action Plan represents a continued partnership with UM and its facilities staff, and the Plan incorporates UM's commitments as a vital part of reducing future GHG emissions.

Between 2000 and 2010, UM activities and building square footage grew significantly. As stated in the Planet Blue Sustainability 2011 Annual Report: "[UM] is currently in the midst of an unprecedented period of growth." While emissions have increased at UM since 2000, the energy intensity (as measured by BTUs/person/square foot) has dropped annually in recent years as a result of energy efficiency improvements and emissions reductions strategies.

Recommended Targets and Actions

The Climate Action Task Force has identified the discontinuation of the use of fossil fuels as critical to the successful reduction of GHGs. By taking strong action, Ann Arbor would be able to not only move the City to zero use of fossil fuels by 2050 but also provide the leadership and a path for other communities to follow.

Ann Arbor would not be alone in calling for major reductions by mid-century, and a major shift in energy sources, over the coming decades. In fact, Ann Arbor would be aligning its goals with the best available climate science and would be joining the ranks of other leading governmental entities. For instance, the State of Maryland Climate Action Plan calls for a 90 percent reduction by 2050 (from 2006 levels), and other city climate action plans from across the country aspire to an 80 percent or more reduction by 2050 (e.g., Michigan's Climate Action Plan). Of course, for this to happen, larger moves toward renewable energy will be essential over the next 30 to 40 years. These changes will affect more than just Ann Arbor and will require structural shifts that are more fundamental and widespread than the actions or ideas laid out in this Plan. Whether by state or national regulations, such as a stronger renewable energy portfolio standard, or by other economic forces and societal will, the 2050 GHG reductions targeted here are only possible through a massive rethinking of the country's electricity, heating, and transportation fuel source system and supporting infrastructure.

The Climate Action Plan recommends three targets for community-wide GHG emissions reductions, all of which are relative to the year 2000 baseline.

- Short-term target (2011 Energy Challenge, City Council resolution R-11-142, April 19, 2011):

  Reduce CO_2e emissions 8 percent by 2015

- Mid-term target (aligns with University of Michigan 2025 target):

  Reduce CO_2e emissions 25 percent by 2025

- Long-term target: (meet optimal climate scenario[2,3]):

  Reduce CO_2e emissions 90 percent by 2050

For purposes of presentation in the report, and to align with the City of Ann Arbor's Sustainability Framework that will direct future City plans, goals, and priorities, actions detailed in this Plan have been grouped into four main categories: Energy and Buildings, Land Use and Access, Resource Management, and Community and Health.

Energy and Buildings

Resource Management

Land Use and Access

Community and Health

Table 1 breaks down the climate action categories and subcategories, number of recommended actions, and cumulative GHG reduction estimates outlined in this report. Not every action identified could be modeled for its GHG emission impact, so emission reductions shown by category, if all actions are implemented, would have a larger impact than is reflected in the estimates shown.

Many recommended actions depend not only on City Council approval but also participation from members of the community and local businesses or other entities. Thus, future collaboration among residents, businesses, local organizations, city government, UM, and other stakeholders is essential to design and implement solutions that achieve the recommended GHG reductions.

While this plan recommends many specific actions, the implementation details will be developed separately. Each of the recommended actions with any significant financial costs to the municipality will be brought before City Council for discussion, public comment, and decisions.

Action Categories	**Action Subcategories**	**# of Actions**	**Estimated GHG Emissions Reduction ($MTCO_2e$)**
Energy and Buildings	Higher Performing Buildings Energy Source Renewable Energy	25	381,607
Land Use and Access	Integrated Land Use Transportation Options Sustainable Systems	21	44,102
Resource Management	Responsible Resource Use Local Food Healthy Ecosystems	25	35,522
Community and Health	Engaged Community Safe Community	13	18,577

Table 1: Climate action categories and subcategories

In order to reach the 2025 GHG reduction target of 25 percent below year 2000 levels, almost all of the actions proposed in the Plan would need to be implemented. Figure 2a shows the predicted effects from the four action categories proposed in the Plan. If fully implemented, assuming no large increase in incremental consumption over 15 years, community emissions would be gradually reduced to 28 percent of 2000 levels by 2025.

Some actions will have an immediate impact when implemented, while others will take a decade or more to see full effect. Since UM has begun its own effort to reduce emissions 25 percent by 2025, the projection curve omits UM emissions, and assumes they are on pace with planned reductions.

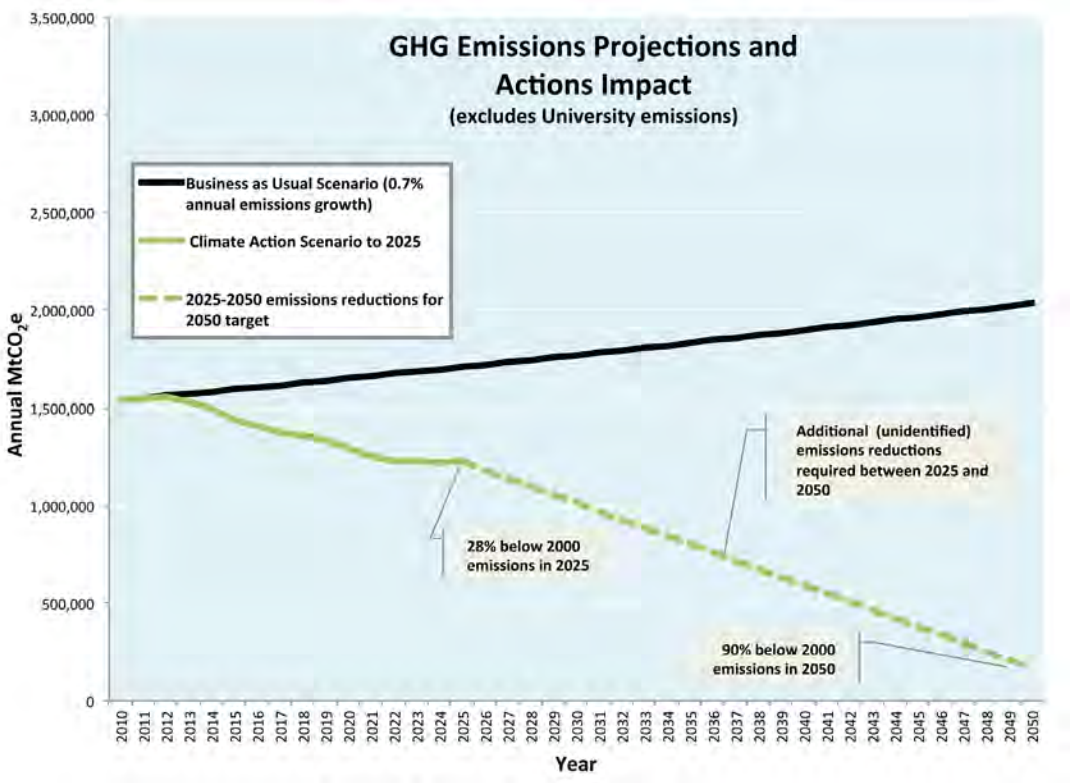


Figure 2a: GHG Emissions Projections and Actions Impact

To achieve the long-term target, a 90 percent GHG reduction by 2050, major shifts in energy sources must occur — changes that most likely eliminate reliance on fossil fuels by the building and transportation sectors. This Plan cannot predict what actions should occur during that distant timeframe, but it will likely require a significant shift from fossil fuels to a broad set of renewable energy sources. Implementing the identified actions from now to 2025 will better position Ann Arbor to enact policies or influence decisions affecting the source and course of fuel and energy supplies in the longer 38-year horizon, out to 2050.

Ann Arbor must also begin to plan for and attempt to adapt to the effects of climate change across the community and within municipal systems. Adaptation and mitigation efforts combined will produce the greatest results and should be treated as a set of actions, not as alternatives to each other. Even the best mitigation efforts cannot eliminate the expected impacts of climate change over the first half of the century and beyond. This Plan recommends five specific strategies that the City of Ann Arbor and its residents can use to react effectively and efficiently to climate-related challenges:

- Implement "no regrets" adaptation actions now
- Ensure an integrated systems planning approach to the building and natural infrastructure for all climate change planning scenarios
- Protect citizens from health and safety hazards
- Integrate climate projections into all City planning across all systems
- Update and maintain technology and plans to support emergency management responses to extreme climate events

These strategies are intended to build resilience, prepare for extreme events, and prevent future negative outcomes. However, since this Plan predominantly focuses on detailing climate mitigation strategies, the City should pursue additional ways to outline a more detailed, thorough, and specific climate adaptation strategy that encompasses the over-arching strategies above. As more research and policy tools emerge to help cities understand the impending and current local impacts of climate change, Ann Arbor will be positioned to effectively respond to one of the most pressing issues we face.

Adaptation

For a copy of the full Climate Action Plan, visit www.a2energy.org/climate

Executive Summary Endnotes:

1. http://www.ocs.umich.edu/greenhouse.html
2. http://www.planning.org/pas/memo/open/jan2009/
3. http://pubs.giss.nasa.gov/docs/2008/2008_Hansen_etal.pdf