CITY OF URBANA

CLIMATE ACTION PLAN

PHASE 1: INITIAL STRATEGIES 2013-2015

City of Urbana, Illinois

ACKNOWLEDGEMENTS

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Comments on the Urbana Climate Action Plan Phase 1 can be made via:

Mail: A completed Public Input Form (Appendix D) can be mailed to City of Urbana, 400 S Vine Street, Urbana, Illinois 61801.

Website: Comments on the Climate Action Plan Phase I can be made at www.urbanaillinois.us/climateactionplan .

Discuss Climate Action in Urbana at:

Facebook: www.facebook.com/sustainableurbana

A MESSAGE FROM THE MAYOR

August 31, 2012

Dear Citizens of Urbana,

As climate change emerged as an international problem, cities around the world have taken the lead in finding solutions. Cities act because they recognize that they will deal with the human costs of climate change. National governments still struggle to come to agreement on this issue. Cities are able to move more quickly. Many cities are reducing greenhouse gases not only in their own operations but by educating the public about practical action we all can take.

Urbana is a small city, so what difference can we make? In fact, a few Urbana residents have made a big difference already. The University of Illinois, a top research university, brings bright minds together .

Don Wuebbles, University of Illinois climate scientist, and one of the recipients of the 2007 Nobel Prize for the international Intergovernmental Panel on Climate Change, helped document the reality of climate change and the need to reduce greenhouse gases.

Nick Holonyak, Jr., University of Illinois Bardeen professor of Electrical and Computer Engineering, invented the LED. Professor Holonyak, who lives in Urbana, has transformed lighting systems worldwide. At the C40 Large Cities Climate Summit in Seoul, Korea in 2009 the largest cities on earth were talking about installing LED lighting and the energy savings they achieved.

At the kind invitation of Professor Wuebbles and the City of Seoul, Marya Ryan, Chair of Urbana's Sustainability Advisory Commission, and I attended the 2009 meeting in Seoul (oddly enough, I was the only American mayor present, although other U.S. cities sent staff). Mayors and officials from all over the world-- Beijing, Sydney, Copenhagen, London and many others-- shared ideas. All realize we face the same challenges and can learn from one another.

The City of Urbana Climate Action Plan is our commitment to streamline municipal operations and to educate our citizens and others about how we can reduce the threat of climate change. Students come to the University of Illinois from around the world. They are the future leaders in their countries. Urbana's implementation of the ideas in this plan can be part of their education outside the classroom. And we can learn from them. So a small city like Urbana can have a big impact.

My initial charge to the Sustainability Advisory Commission was to consider conservation of both energy and water. This first report deals only with energy. They plan to deal with water issues next. All these plans are works in progress that will be modified as we move forward.

Marya Ryan has ably chaired the Sustainability Advisory Commission and wrote an initial draft of this report. We thank her and all who have served on the Commission as well as the staff of the city's Community Development and Public Works departments for the many months they have spent on developing this plan.

Laurel Lunt Prussing

CONTENTS

5 GOALS : 15 ACTIONS

THE URBANA CLIMATE ACTION PLAN PHASE I RECOMMENDS FIFTEEN COMMUNITY-WIDE ACTIONS TO ACHIEVE FIVE GREENHOUSE GAS EMISSIONS REDUCTION GOALS:

1

REDUCE EMISSIONS FROM BUILDING ENERGY CONSUMPTION.

Action 1 Reduce emissions from commercial sector building electricity consumption.
Action 2 Reduce emissions from residential sector building electricity consumption.
Action 3 Reduce emissions from residential sector building natural gas consumption.

2

REDUCE EMISSIONS FROM GASOLINE CONSUMPTION.

Action 1 Support sustainable transportation through infrastructure improvements.
Action 2 Promote a culture of sustainable transportation.
Action 3 Encourage participation in sustainable transportation programs.
Action 4 Consider transportation sector emissions projections in land-use planning decisions.

3

FORMULATE STRATEGIES TO REDUCE EMISSIONS FROM RENTAL AND INDUSTRIAL SECTORS.

Action 1 Form a task force to study special considerations for rental properties.
Action 2 Form a task force to study special considerations for the industrial sector.

4

PREPARE FOR CLIMATE CHANGE IMPACTS.

Action 1 Form a task force to study special considerations for adapting to local climate change impacts.

5

PURSUE COORDINATION AND OUTREACH.

Action 1 Coordinate city plans and policies with climate action goals.
Action 2 Encourage energy efficient behavior and individual actions.
Action 3 Encourage energy efficiency in new developments.
Action 4 Encourage participation in existing sustainability programs.
Action 5 Monitor progress towards climate action goals.

EXECUTIVE SUMMARY

A vast body of climate science research and an overwhelming scientific consensus establishes that climate change is a real and significant threat driven by human activity, primarily the burning of fossil fuels. Local response to this threat, as individuals and as a city, presents opportunities to create a more livable, equitable and resilient community.

Anticipated climate change impacts have profound implications on the availability of water and other natural resources, biodiversity, human health and economic systems in the Midwest. Potential climate change impacts in the region include an increase in the frequency, length and severity of heat waves; a significant reduction in the Great Lakes water levels; an increase in winter and spring precipitation; and an increase in floods, droughts, insects, weeds, and threats to native species. Our community must prepare to adapt to these potential impacts of climate change.[1]

By using energy more efficiently, harnessing renewable sources of energy and improving access to a less polluting transportation system, a city can reduce greenhouse gas emissions, improve air quality and save dollars. By building a local food system, implementing a weatherization program, and improving bicycle and pedestrian infrastructure, a city can create jobs, invest in the community and improve its residents' health and quality of life.

Taking a leadership role in the response to climate change concerns, Urbana Mayor Laurel Prussing signed the U.S. Mayors Climate Protection Agreement in 2007. Since then, the City has joined the International Council for Local Environmental Initiatives' (ICLEI) Cities for Climate Protection® (CCP) campaign. Urbana has pledged to take action against the negative impacts of greenhouse gas emissions by optimizing City operations and implementing climate change protection programs for the wider community.

In 2008, the Mayor and the Urbana City Council created a Sustainability Advisory Commission (SAC), composed of seven appointed community members, to identify and recommend goals for the sustainable management of energy, natural resources and water to the Mayor and City Council. The Commission's initial objective to meet this mandate has been the development of a Climate Action Plan to guide the community's efforts to reduce its emissions footprint. The Climate Action Plan includes an inventory of the sources of emissions, sets emissions reduction targets, and proposes actions to meet these emissions reduction targets.

Research by the Intergovernmental Panel on Climate Change (IPCC) suggests that emissions must be stabilized at a rate of 60 percent below 1990 levels in order to minimize global warming, and avoid the worst risks of uncontrolled climate change. Urbana lacks access to its energy consumption data from 1990; therefore the year 2007 is the 'baseline inventory year' against which future energy consumption is monitored and greenhouse gas emissions reduction strategies are formulated. In order to achieve the needed reductions indicated by the IPCC research, the SAC has adopted a long-term goal of reducing community-wide emissions by 80 percent below 2007 levels by the year 2050.

The SAC recommends a 25 percent reduction by 2020 to put the City on track to reach an 80 percent reduction by 2050. The 25 percent emissions reduction target is both aggressive and achievable and is based on estimates of the impact of current and planned programs. The 2020 and 2050 targets are in line with those set by the State of Illinois, other states, and in legislation introduced in the US Congress and other countries.[2]

Phased Implementation:

Recognizing that community-wide reductions in greenhouse gas emissions require community-wide participation, the Urbana Climate Action Plan follows a phased implementation strategy. Phase I actions will be implemented in the short term, at little or no additional cost to the City. Over the next two years, as Phase I strategies are implemented, feedback will be gathered on community-wide participation through surveys, task forces, focus groups, an online forum, and targeted conversations with key stakeholders. The Climate Action Plan will be a living document which will undergo revisions as improvements in data availability and modeling analysis occur. The City will review the progress of Phase 1 activities annually including an appendix containing public comment results. Based on data gathered during the implementation of Phase I, a Phase II Climate Action Plan will be prepared, which will recommend additional strategies

[1]Global Climate Change Impacts in the United States, Thomas R.Karl, Jerry M.Melillo, and Thomas C.Peterson, (eds.). Cambridge University Press, 2009.
[2] A LOOK AT EMISSIONS TARGETS. (n.d.). Retrieved July 07, 2012, from Center for Climate and Energy Solutions: http://www.c2es.org/what_s_bring_done/targets

to reach long-term emissions reduction targets.

The following five goals have shaped the Climate Action Plan Phase I:

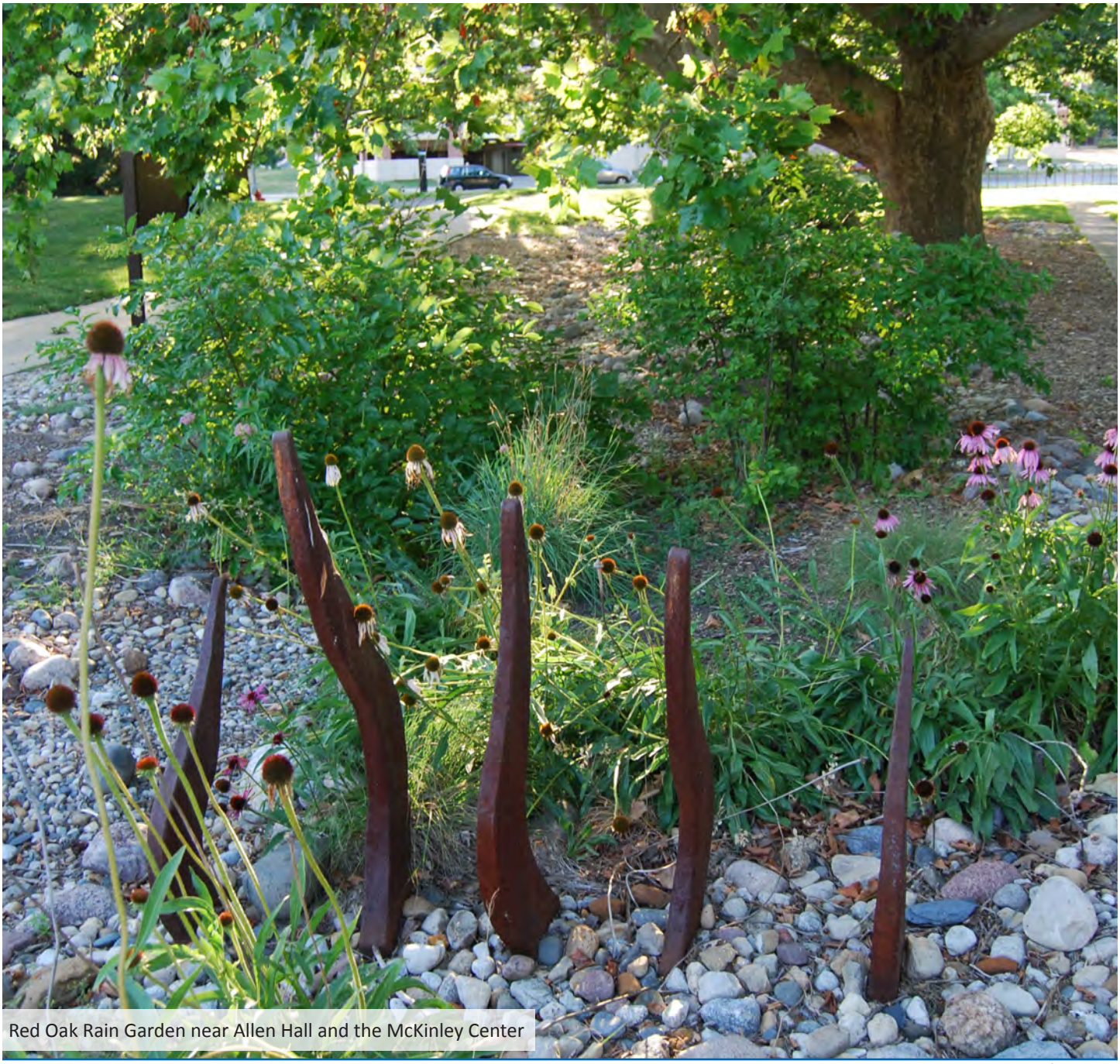
1. Reduce emissions from building energy consumption**.**
2. Reduce emissions from gasoline consumption.
3. Formulate strategies to reduce emissions from rental and industrial sectors.
4. Prepare for climate change impacts.
5. Pursue coordination and outreach.

By adopting the Climate Action Plan Phase I, the City of Urbana:

- Establishes its vision for the sustainability of natural resources.
- Commits to a set of underlying principles that will frame climate action planning for the years to come.
- Prioritizes the desire to continually improve the quality of life for every Urbana resident. Recognizing that the forces driving emissions are linked to development, it is important to integrate economic development with sustainability goals.
- Identifies a 2007 greenhouse gas emissions baseline for Urbana of approximately 548,700 metric tons of CO_2 equivalent (MT CO_2e) and a projected 2020 inventory of about 638,800 MT CO_2e under a "business as usual" scenario.[3] Emissions from the University of Illinois buildings are not included in the inventories as these are accounted for in the University's Climate Action Plan.
- Commits to a goal to reduce Urbana's greenhouse gas emissions by 25 percent below 2007 emissions levels by the year 2020 regardless of growth. Achieving this goal depends on the effectiveness of Phase I strategies and the pending identification of Phase II strategies.
- Agrees to pursue a set of greenhouse gas reduction strategies that can be implemented on a short timeline at modest or no cost. Strategies are intended to be implemented by both the city government and by the public at large.
- Establishes the Sustainability Advisory Commission's role in review of matters related to greenhouse gas emissions reduction.
- Seeks to make Urbana a climate action leader and a source of assistance for climate action in other communities in the region.

[3] Business as Usual: The baseline scenario or the business-as-usual forecast is a depiction of the future consequences of continuing current trends in population, economy, urban development, technology and human behavior with respect to energy consumption.

1. BACKGROUND



Red Oak Rain Garden near Allen Hall and the McKinley Center

1.1 INTRODUCTION

Never in the past 1,000 years has the planet warmed at a faster rate than in the past century, and the most recent decade has been the warmest on record.

The overwhelming scientific consensus is that human activity is changing our climate, in large part due to the burning of fossil fuels which create heat-trapping "greenhouse gases" (GHG) such as carbon dioxide (CO_2). Continued warming at this rate can result in decreased agricultural output, increased catastrophic weather events such as droughts and floods, and the displacement of entire populations due to rising sea levels.

Although the United States accounts for only 4 percent of the world's population, it is responsible for emitting 20 percent of the world's greenhouse gases. As per Urbana's baseline emissions inventory the community was responsible for 548,700 metric tons of carbon dioxide equivalent units (MT CO_2e) in 2007. At current rates of increase, Urbana's output can be expected to increase 16 percent by 2020. Reducing greenhouse gas emissions can potentially slow the rate of climate change and decrease overall effects. A Climate Action Plan is a guide for reducing community-wide greenhouse gas emissions and planning community wide adaptation to potential climate change related phenomena.

Responding to the local and global concerns, Urbana Mayor Laurel Prussing signed the U.S. Mayors Climate Protection Agreement in 2007, and since then the City has joined the International Council for Local Environmental Initiatives (ICLEI) Cities for Climate Protection® (CCP) campaign (See Appendix A). By doing so, the City of Urbana has pledged to reduce greenhouse gas emissions for City operations and the larger community. In 2008, the Mayor and the City Council created a Sustainability Advisory Commission (SAC), composed of seven appointed community members, to identify and recommend goals to achieve the sustainable management of natural resources, water and energy in particular, to the Mayor and City Council. The Commission's initial objective to meet this mandate has been the development of a Climate Action Plan.

The Climate Action Plan Phase I, developed by the City of Urbana Sustainability Advisory Commission, presents the first of two phases of a Climate Action Plan for the City of Urbana. Actions suggested for Phase I are designed for prompt implementation. A second phase with a more comprehensive set of strategies will follow after extended public and stakeholder input through the implementation of Phase I. Phase I goals and actions respond to residents' comments and suggestions received through public input sessions and outreach efforts organized by the City of Urbana between 2008-2012. Recommended strategies are intended for the operations of the municipal government as well as for Urbana residents and businesses to adopt.

Within Illinois, the City of Chicago and City of Evanston have adopted Climate Action Plans. Other communities in the United States including Madison, WI; Los Angeles, CA; Denver, CO; Kansas City, MO; Portland, OR; Austin, TX; Salt Lake City, UT and King County, WA have also adopted a community-wide Climate Action Plan. Closer to Urbana, Dubuque, IA and Iowa City, IA have completed their greenhouse gas inventory report which is the first step to creating a climate action plan.

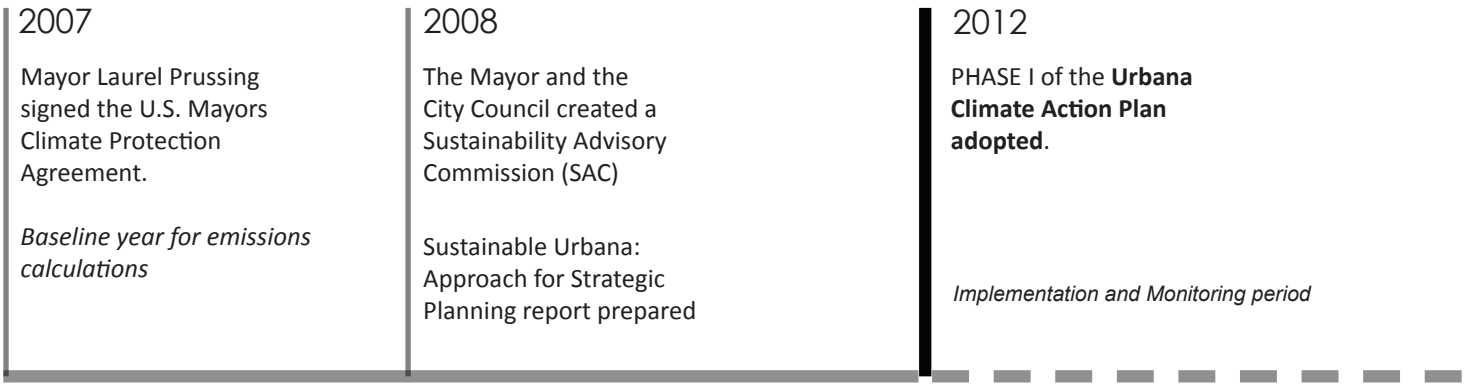


Figure 1. Proposed Urbana Climate Action Timeline

1.1 INTRODUCTION

Urbana Kids' Bike Rodeo

Crystal Lake Park

Solar Panels in the winter at the Equinox House

Volunteers at an Electronics Recycling Event

2014

PHASE II of the **Urbana Climate Action Plan** to be adopted

Implementation and Monitoring period

2020

Goal to reduce emissions by 25% of Urbana's 2007 CO_2 emissions level.

Implementation and Monitoring period

2050

Goal to reduce emissions by 80% of Urbana's 2007 CO_2 emissions level.

A. GREENHOUSE GAS EFFECT [4]

Human influences have led to large increases in heat-trapping gases over the past century. The Earth's climate depends on the functioning of a 'natural greenhouse effect'. This effect is a result of heat-trapping gases in the atmosphere, also known as green-house gases, like water vapor, carbon dioxide, ozone, methane and nitrous oxide. These gases absorb heat radiated from the Earth's surface and the lower atmosphere and then radiate much of that energy back towards the Earth's surface. Without this natural green-house effect, the average surface temperature of the Earth would be 60°F colder. However, human activities, primarily the burning of fossil fuels (coal, oil, and natural gas) have been releasing additional heat-trapping gases, intensifying the natural greenhouse effect and changing the Earth's climate.

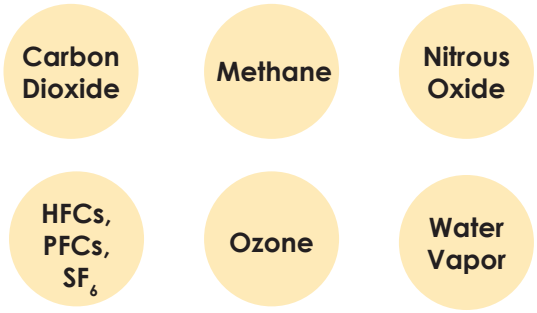


Figure 2. Heat-trapping Gases

Global Warming Potential of Heat-Trapping Gases:

Depending on how well a gas absorbs energy and how long it stays in the atmosphere, certain greenhouse gases are more effective at warming the Earth than others. The Global Warming Potential (GWP) for a gas is a measure of the total energy that a gas absorbs over a particular period of time (usually 100 years) compared to carbon dioxide. For example, methane is 21 times more powerful than carbon dioxide and nitrous oxide is 300 times more powerful than carbon dioxide. For detailed information on greenhouse gases and human activities causing their emission, please read Appendix B.

Other Human Influences:

In addition to global-scale climate effects of heat-trapping gases, human activities also produce regional and local effects. Some of these activities partially offset the warming caused by greenhouse gases while others increase warming. These include land surface changes such as the cutting and burning of forests, replacement of natural vegetation with agriculture and cities, and large-scale irrigation.

B. LOCAL AND NATIONAL IMPACTS [4]

Climate change is a global concern with local impacts.

Impacts in the Midwest:

- During the summer, public health and the quality of life, especially in cities, are likely to be negatively affected by increasing heat waves, reduced air quality, and an increase in insect and waterborne diseases. In winter, warming will have mixed impacts.
- A significant reduction in Great Lakes water levels projected under a higher emissions scenario may lead to impacts on shipping infrastructure, beaches and ecosystems.
- A likely increase in precipitation in the winter and spring months, heavier downpours and greater evaporation in summer may lead to more frequent periods of both droughts and floods, as well as water deficits.
- A longer growing season will create the potential for increased crop yields. However, increases in heat waves, floods, droughts, insects and weeds will present major challenges to the management of crops, livestock, and forests.
- Native species will face increasing threats from rapidly changing climate conditions, pests, diseases, loss of habitat and invasive species moving from warmer regions.

Global and National Impacts:

U.S. average temperature has risen by more than 2°F over the past 50 years and is projected to rise more in the future. Precipitation has increased by an average of 5 percent over the past 50 years. Projections indicate that northern areas will become wetter, and southern areas, and particularly the west will become drier. The amount of rain falling in the heaviest downpours has increased approximately 20 percent on average in the past century and this trend is very likely to continue.

- Many types of extreme weather events, such as heat waves and regional droughts have become more frequent and intense during the past 40 to 50 years.
- The destructive energy of Atlantic hurricanes has increased in recent decades, and is likely to increase in this century. In the eastern Pacific, the strongest hurricanes have become stronger since the 1980s, even while the total number of storms has decreased.
- Sea level has risen along most of the U.S. coast over the last 50 years, and will rise more in the future.
- Cold-season storm tracks are shifting northward and the strongest storms are likely to become stronger and more frequent.
- Arctic sea ice is declining rapidly and this is very likely to continue.

[4] Global Climate Change Impacts in the United States, Thomas R.Karl, Jerry M.Melillo, and Thomas C.Peterson, (eds.). Cambridge University Press, 2009.

C. CATEGORIES OF HUMAN RESPONSES

Human responses to reduce the risk of climate change can be classified into three categories, namely:

Research: Expanding our understanding of climate change impacts.

There is a clear need to increase our understanding of how ecological, social and economic systems, and human health and infrastructure will be affected by climate change. New understanding is possible through a mix of activities including sustained and systematic observations, field and laboratory experiments, model development, and integrated impact assessment. This will require shared learning among researchers, engineers, water managers, policy makers, residents and other stakeholders.

Mitigation: Human intervention to reduce the sources or enhance the sinks of greenhouse gases.

The way we develop our communities and use energy derived from fossil fuels has significant impact on greenhouse gas emissions. Mitigation reduces the negative impacts of climate change by focusing on the sources and sinks of greenhouse gases. Mitigation implemented at the local and regional level can produce global benefits. These benefits may be noticeable in several decades because of the long residence time of greenhouse gases in the atmosphere.

Adaptation: Making communities more resilient to the effects of a changing climate.

Effects of climate change are already observable in several communities. Adaptation involves adjustments in natural and human systems in response to actual or anticipated climate change effects to moderate harm to the community and exploit beneficial opportunities. In addition to having local and immediate benefits, addressing adaptation early can mitigate vulnerability and risk at a later date.

The Urbana Climate Action Plan Phase I goals are to be achieved through a combination of education and research activities and mitigation and adaptation strategies.

D. SPHERES OF ACTION

Responses to climate change impacts are being proposed and implemented at global, national, state, local and individual scales.

Global Action:

The United Nations Framework Convention on Climate Change (UNFCC) leads international efforts to investigate and combat climate change. Recognizing the problem of potential global climate change, the World Meteorological Organization (WMO) and the United Nations Environment Program (UNEP) established the Intergovernmental Panel on Climate Change (IPCC) in 1988. The IPCC assesses on a comprehensive, objective, open and transparent basis the scientific, technical and socioeconomic information relevant to understanding the risk associated with human-induced climate change, its potential impacts and options for adaptation and mitigation. In 1997, 10,000 international delegates, observers and journalists gathered in Kyoto, Japan to participate in the drafting and adoption of the Kyoto Protocol pledging industrialized nations to reduce their collective greenhouse gas emissions by 5 percent below 1990 levels by 2012.

National and State Action:

The Department of Energy (DOE), Environmental Protection Agency (EPA), the Department of Housing and Urban Development (HUD), and the American Recovery and Reinvestment Act (ARRA) of 2009, among others, have provided grant funds to assist in the deployment of energy efficiency, green building, mass transit and other sustainability-related programs across the country. In 2010 and 2011, EPA established new fuel efficiency standards for cars, light and heavy-duty trucks, and buses which will dramatically reduce GHG emissions from the transportation sector. In May 2010, the EPA issued a rule that established thresholds for GHG emissions that define when permits are required for new and existing industrial facilities. Facilities responsible for nearly 70 percent of national GHG emissions from stationary sources will be subjected to permitting requirements under this rule.

Local Action:

To meet local climate action goals, Mayor Prussing signed the U.S. Mayors Climate Protection Agreement in 2007, pledging the city to strive to exceed Kyoto Protocol targets. Furthermore, several Urbana residents, businesses and non-profits are actively pursuing energy efficiency and sustainability efforts.

1.3 THE BENEFITS OF LOCAL ACTION

Urban areas are major consumers of energy and thus are responsible for a majority of greenhouse gas emissions. Energy is needed to support daily activities and public and private infrastructure. Urban areas grow in terms of population and geographic area. Sprawling patterns of development increase transportation energy use, as well as the energy needed to power lights, appliances and heat buildings. Solid waste produced by urban areas represent greenhouse gas emissions from a product's manufacturing process to the methane released as it decomposes in landfills.

Local governments can use their decision-making and purchasing powers to increase energy efficiency and reduce greenhouse gas emissions. Local governments possess regulatory and economic tools that make communities greener and more energy and transportation efficient. These powers include zoning and land use decisions, control over building codes and licenses, infrastructure investments, municipal service delivery and jurisdiction over recreation, school and park areas.

For example, within the transportation sector, money can be saved through energy efficient driving habits and substantial economic benefit can be created by investing in public transportation, and bicycle and pedestrian infrastructure. These include increased real estate values, investment in neighborhood development and direct savings for residents coping with high prices of gasoline. Increased public transportation also benefits the elderly, children and low-income individuals. According to the American Public Transportation Association, investments in mass transit provide an economic stimulus far exceeding the original investment, through increased jobs, profit, and tax revenue. Cities that take action to address global warming pollution have cleaner air, better sidewalks and energy efficient buildings.

Urbana Bicyclists

1.4 DEVELOPMENT AND EMISSIONS

Urbana's approach to development and greenhouse gas emissions focuses on the economy's energy efficiency and the greenhouse gas intensity of Urbana's sources of energy.

Four economy-wide factors impact the energy related greenhouse gas emissions of a community: [5]

1. Population
2. Economic Development
3. Energy Efficiency
4. Greenhouse Gas Intensity

Altering these factors, alone or in combination, can influence emissions. For example, as a city develops, there is an increase in the energy required to power various human activities. However, the quantity of resultant emissions is a factor of the quality of development (energy efficiency) and the sources of the energy supply (greenhouse gas intensity). Improving the energy efficiency of new and existing developments decreases the energy intensity of a community and contributes to the reduction of greenhouse gas emissions. Similarly, by transitioning to renewable and less polluting sources of energy, excessive greenhouse gas emissions can be mitigated.

Urbana's Climate Action Plan recognizes that it is crucial for Urbana to continue to develop economically and progress towards becoming a more vibrant, attractive and resilient community. Therefore, the Urbana Climate Action Plan focuses on those actions which improve the energy efficiency of the economy and the greenhouse gas intensity of the sources supplying energy to the community. These factors are represented in Equation A:

Equation A: **Urbana's Climate Action Plan focuses on these two factors.**

$$GHG^{**} = \frac{GDP^{***}}{Person} \times Population \times \underbrace{\left(\frac{Energy}{GDP}\right)}_{\text{Energy Efficiency}} \times \underbrace{\left(\frac{GHG}{Energy}\right)}_{\text{Greenhouse Gas Intensity}}$$

** GHG: Greenhouse Gas
*** GDP: Gross Domestic Product

[5] Adapted from Baumert, K. A., Herzog, T., & Pershing, J. (2005). Navigating the Numbers - Greenhouse Gas Data and International Climate Policy. World Resources Institute.

1.5 A PHASED APPROACH

The phased strategy of the Climate Action Plan reflects the understanding that community-wide climate action goals can be reached only through the broad and active participation of the public. Phased implementation creates the opportunities to gather feedback from members of the public to assess current actions, correct trajectories and reach informed decisions. Accordingly, the Climate Action Plan will be a living document which will undergo revisions as improvements in data availability and modeling analysis occur. The City will review the progress of Phase 1 activities annually including an appendix containing public comment results. During Phase I, the City will implement the Phase I strategies outlined in this document. Simultaneously, the City will engage the public on Phase I strategies and the direction for Phase II strategies as part of an ongoing process of public dialogue. The anticipated time frame for implementation of Phase I strategies is two years from the City Council's adoption of Phase I.

2012
Phase 1 Urbana Climate Action Plan adopted

2013-2015
Phase I implementation and public engagement period

2015
Phase 2 Urbana Climate Action Plan adopted

Over the next two years,

1. Phase I strategies will be assessed by asking the public:

- How well are Phase I strategies working?
- What are the reasons for participating or not participating in Phase I strategies?
- What are the barriers that limit the public's participation in Phase I strategies?

2. Public input will be gathered through a combination of the following public engagement methods:

- Conversations with Urbana's neighborhood associations and community organizations;
- Task forces to address specific sectors;
- Targeted interviews with key stakeholders;
- Mail and online surveys;
- An online portal;
- Public input sessions.

3. Public input will help develop Phase II through:

- The contribution of ideas for effective strategies by the public;
- Assessing the participation of residents in Phase I strategies;
- Identifying strategies to reduce specific barriers to participation.

Based on data gathered over the next two years, a Phase II document will be written which will define additional strategies to take the City the rest of the way to its greenhouse gas emissions reduction goal.

Over the implementation period of Phase I, the SAC and the City of Urbana will continue to coordinate with other climate planning efforts within Champaign County and seek opportunities to shape this plan toward an integrated regional approach.

1.6 CITY OF URBANA SUSTAINABILITY VISION STATEMENT

The City of Urbana defines sustainability as progress that meet the needs of the present generation without compromising the ability of future generations to meet their needs. Sustainable development requires the consideration of environmental, equity and economic factors, also known as a triple bottom-line approach towards future development. The Sustainability Advisory Commission recognizes that a healthy economy is diverse, equitable and dynamic, and prioritizes community resilience and security. On the basis on several discussions and examples of Sustainability Vision Statements of several communities across the United States, the Sustainability Advisory Commission drafted the following Sustainability Vision Statement for the City of Urbana:

The City of Urbana is committed to meeting the needs of today's residents without compromising the ability of future generations to meet their needs.

The City of Urbana therefore works toward:

1. **Supporting a healthy, diverse and equitable economy;**
2. **Increasing resilience and community security with respect to food, water, energy and other human needs;**
3. **Enhancing quality of life through stewardship of natural resources, restoration of ecological integrity, and conservation of open space.**

1.7 CITY OF URBANA CLIMATE PLANNING PRINCIPLES

The following Climate Planning Principles are based on the 'environmental sustainability' and 'quality of life' sections of the Urbana City Council and Mayoral Goals. These were adopted by City Council in February 2010, and updated in May 2012. The City Council and Mayoral goals represent the common point of understanding from which the planning and government of Urbana proceeds.

1. Promote innovative programs, regional partnerships and incorporate best management practices that promote energy conservation and efficiency in building construction, operations, and maintenance, in residential development, business and industrial activities, transportation, municipal and government operations, and in all other areas where energy resources are used.

2. Increase Urbana's reliance on clean, renewable energy sources including, but not limited to the City's proactive participation in opportunities to make clean, renewable energy available to the public.

3. Ensure equitable access and impact of climate action programs to all members of the Urbana community.

4. Work to attract green businesses and industries as a fundamental part of economic development activities.

5. Assist existing businesses in efforts to operate with less greenhouse gas emissions.

6. Pursue climate action strategies that are cost effective.

7. Support downtown development, land-use planning, parks, amenities, and transportation infrastructure that improves the quality of life in Urbana while reducing its carbon footprint.

8. Cooperate and collaborate with other governmental entities to promote greenhouse gas emissions reduction.

9. Promote and expand existing sustainability projects including the UCycle recycling program and the Urbana Market at the Square, and encourage sustainable landscaping and gardening.

1.8 PUBLIC ENGAGEMENT

Public input sessions in February and March, 2010

Public input on the Phase I Climate Action Plan was gathered through a written survey at public input sessions organized by the City between February and March 2010. Since 2010, this survey has also been made available to residents on the City's website. Written comments on the Plan were also gathered at Urbana's Market at the Square. Public Input Sessions were held at the Urbana Civic Center at 108 Water Street in Urbana on February 24, 2010 and March 11, 2010. Input was specifically sought on the Urbana greenhouse gas inventory and the proposed goal of reducing community-wide greenhouse gas emissions by 25 percent by the year 2020.

The feedback received through the public input session has been considered in defining Phase I actions. A majority of the participants from the 2010 workshop were in the process of reducing their personal or business energy consumption. Several participants reported having successfully implemented a project to reduce energy consumption.

Comments fell into one or more of the following categories:

Education	Improve access to technical expertise, information and workshops on water and energy conservation, and the steps individuals can take to reduce greenhouse gas emissions.
Transportation & Planning	Improve infrastructure to support bicycling, walking and public transportation use, avoid sprawl, introduce more electric vehicles and improve pedestrian access to bus stops.
Energy	Improve access to renewable energy sources and access to residential energy audits, introduce smart metering and support energy efficient buildings.
Financial	Improve access to financing options to support retrofits, renewable energy installations, energy efficient buildings and incentivize reducing energy use.
Miscellaneous	Introduce a carbon offset program, coordinate with the University, provide more opportunity to buy local produce, locate more grocery stores within walking distance, encourage native landscaping species, assist residents in prioritizing actions to reduce greenhouse gas emissions.

1.8 PUBLIC ENGAGEMENT

In addition to the above comments, suggestions were also received for policy, incentive, training, outreach and education programs.

Following the Sustainability Advisory Commission's approval of the final draft for public review on September 4, 2012, the draft Plan was posted on the City of Urbana website along with a feedback web-form. Copies of the Plan along with comment cards were also made available at the Urbana Free Library. Additionally, the draft Plan was available to the public at Urbana's Market at the Square on September 15 and 22. On October 2, 2012 the City held an open house in the City Council Chambers to take comment on the final draft plan. The open house was publicized on the City's website and via a press release to local media. The availability of the draft plan for public review was also publicized via a news article on the City's website; the City's Sustainability Facebook page; on Smile Politely, an independent online magazine in Champaign-Urbana; via a press release in local media; and via video coverage on WICD (ABC) news. City staff members were interviewed by the Daily Illini. Additionally, staff emailed and called neighborhood associations with list-serves.

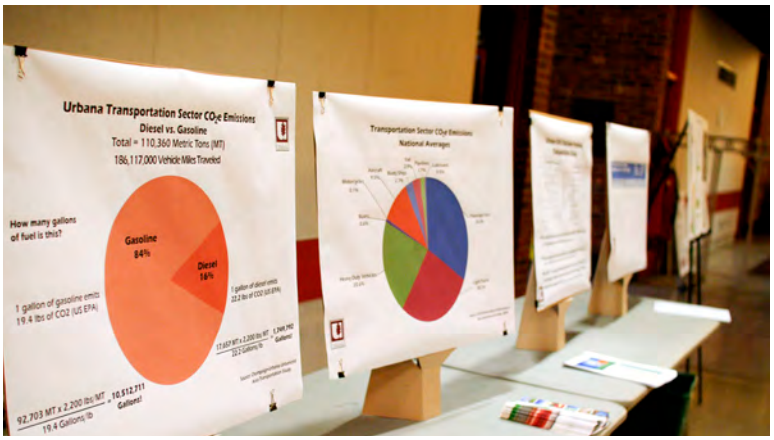
Public comment received to date is described in Appendix C.

Comments on the Urbana Climate Action Plan Phase 1 can be made via:

Mail: A completed Public Input Form (Appendix D) can be mailed to City of Urbana, 400 S Vine Street, Urbana, Illinois 61801.

Website: Comments on the Climate Action Plan Phase I can be made at www.urbanaillinois.us/climateactionplan.

Discuss Climate Action in Urbana on Facebook: www.facebook.com/sustainableurbana



Public input sessions in February and May, 2010

1.9 CURRENT PLANS

The City of Urbana has adopted a number of sustainability-related plans and studies. The Urbana Climate Action Plan will complement other City documents as part of a "System of Plans". The following section summarizes the most crucial plans relevant to the Climate Action Plan Phase I.

A. 2008 SUSTAINABLE URBANA: APPROACH FOR STRATEGIC PLANNING REPORT

In 2008, the City of Urbana presented a report articulating Urbana's approach to developing a Sustainability Strategic Plan. The report built on sustainability activities initiated by the City from 2007, including brainstorming sessions on ways to reduce Urbana's environmental footprint, the Mayor's endorsement of the U.S. Mayor Climate Protection Agreement in May 2007 and a public forum convened by the Mayor in February 2008 entitled "Sustainability: What You Can Do". The Approach to Strategic Planning Report explains Urbana's sustainability initiatives within the context of other city plans and achievements. The report establishes the City's broad sustainability goals, provides implementation strategies and articulates a future course of action. These include the commitment to exceed the Kyoto Protocol target for a 5 percent reduction in greenhouse gas emissions from 1990 levels by 2012.

B. 2005 URBANA COMPREHENSIVE PLAN

The Comprehensive Plan guides planning and development policy for the City and the one-and-half mile territory adjacent to the City limits. It is the primary planning document for the City and greatly affects how Urbana will develop. Four main principles make up the foundation of the Comprehensive plan: Quality of Life, Sensible Growth, Services and Infrastructure, and Mobility. Each principle has multiple goals, several of which are helpful in guiding strategies for reducing greenhouse gas emissions. For example, ensuring land use patterns conserve energy, minimizing the impact of natural and man-made disasters, preserving natural resources and environmentally sensitive areas (Quality of Life: goals 5,6,8); promoting infill development and encouraging compact, contiguous and sensible growth, increasing the vitality of downtown Urbana (Sensible Growth: goals 15, 18, 22); encouraging development where infrastructure already exists, protecting areas from increases in runoff and localized flooding, and improving quality of life through social services, affordable housing and economic opportunity (Services and Infrastructure: goals 34, 36, 39); and optimizing existing transportation systems, improving access to transportation modes, creating a multi-modal system, avoiding development which is overly-dependent on the automobile, improving pedestrian and bicycle facilities, and integrating land-use and transportation concerns for new projects (Mobility: goals 45-50). In 2012, the Urbana Comprehensive Plan was amended to include a 'Complete Streets Element'. Complete streets are designed and operated to enable safe access for pedestrians, bicyclists, motorists and transit riders of all ages and abilities to enable safe passage along and across a street.

C. 2009 LONG RANGE TRANSPORTATION PLAN

The Long Range Transportation Plan (LRTP) is a federally mandated document that is updated every five years by the Champaign County Regional Planning Commission. The Plan details how the urbanized area transportation system will evolve over the next twenty five years. The current LRTP looks at the projected evolution of automobile, bicycle, pedestrian, bus transit, rail and air travel to the year 2035, in order to identify regionally beneficial transportation projects to receive federal funding. The LRTP goals support greenhouse gas reduction by encouraging non-single occupancy vehicle travel (Goal 1); advocating compact development and mixed-use development and redevelopment to create a more walkable, sustainable, and efficient development pattern (Goal 2); requiring a transportation system having convenient multi-modal access to all parts of the urbanized area with the capacity to increase mobility during peak traffic hours (Goal 5); providing facilities for non-auto modes of transportation in order to improve mobility and decrease the number of vehicles on our roadways (Goal 6); adopting an approach to transportation planning which promotes environmental stewardship and energy conservation (Goal 7); and prioritizing improvement to existing roadways and adding pedestrian, bicycle and transit facilities where needed (Goal 12).

D. 2004 CHAMPAIGN COUNTY GREENWAYS AND TRAILS PLAN

The Greenways and Trails Plan is a county-wide plan, designed to foster interagency coordination in order to implement an integrated greenways and trails system for the Champaign County area. The plan guides the development of pedestrian paths, bikeways, public open spaces, and other greenways over the period of 2004-2024. Greenways and trails provide many environmental benefits, including:

- Making communities better places to live by preserving and creating open spaces.
- Encouraging physical fitness and healthy lifestyles.
- Creating new opportunities for outdoor recreation and non-motorized transportation.
- Strengthening local economies.
- Preserving culturally and historically valuable areas.

The plan's goals address the issue of sustainability and energy consumption and include a commitment to providing all Champaign County residents with a system of bikeways, bicycle routes, pedestrian paths, trails, and other greenways that provides connections between residents, schools and workplaces, other travel modes, major activity centers and recreational sites. The plan also suggests creating a greenways and trails system that emphasizes safety, user-friendliness, efficiency, mobility, and convenience.

E. 2012 DOWNTOWN URBANA PLAN

The 2012 Downtown Urbana Plan's purpose is to guide the development of downtown in matching the needs of the community. The plan envisions a economically vibrant, publicly accessible, culturally thriving downtown, that is well connected to surrounding neighborhoods. A mix of businesses, residences and other attractions in downtown can promote sustainable and healthy lifestyles. Goals relevant to the Climate Action Plan include promoting urban-style infill development, improving mobility to and from downtown, and reducing downtown Urbana's environmental impact.

F. 2008 BONEYARD CREEK MASTER PLAN

The 2008 Boneyard Creek Master Plan is intended to transform Boneyard Creek from a highly-urbanized drainage ditch into a significant public amenity, which will provide a destination for leisure and enjoyment, while improving the local pedestrian and bicycle network, protecting and enhancing wildlife and habitat, and improving flood control and water quality. The Boneyard Creek runs through the core of downtown Urbana, in a half-mile stretch between Main and Vine Streets. By realizing the potential for of Boneyard Creek, Urbana will not only have a premium public amenity within the transit friendly downtown area, but also be able to reduce downtown Urbana's environmental impact.

G. 2010 URBANA BICYCLE MASTER PLAN

The City of Urbana Bicycle Master Plan reflects the Urbana City Council goal to "Get Urbana Bicycling." The Bicycle Master Plan builds on the 2004 Champaign County Greenways and Trails Plan by identifying bicycle transportation improvements throughout the City, which include:

1. Achieving a 50 percent increase in bicycle mode share in Urbana for all trip purposes in the next five years.
2. Achieving a Bicycle Friendly Community award through the League of American Bicyclists.
3. Substantially expanding the bicycle network.

The Bicycle Master Plan goals are being implemented by creating and maintaining the bicycling network, increasing the safety of the bicycling network, providing supporting facilities to make bicycling transportation more convenient, educating residents about alternative modes of transportation, and actively securing funding for bicycle improvement

programs. This includes dedicating a percentage of the Capital Improvement Projects funding for construction projects to bicycle infrastructure improvements.

H. 2009 CHAMPAIGN COUNTY MULTI-JURISDICTIONAL NATURAL HAZARD MITIGATION PLAN

There are now many observed, well-documented impacts of climate change on natural resources and ecosystems in many regions in the United States and the world. The observed changes in temperatures, intensity of storms, occurrence of floods and droughts, and potential impact on human health, are projected to grow in number and magnitude. Adapting to climate change effects presents a major challenge for emergency management leaders.

The Champaign County Multi-Jurisdictional Natural Hazard Mitigation Plan (HMP) identifies local hazard mitigation goals and objectives, and specific hazard mitigation actions to implement over the long term that will reduce risk and potential future losses associated with the occurrence of natural hazards before they occur. The following Hazard Mitigation Goals are important for climate change adaptation planning:

Goal 1: Minimize avoidable deaths and injuries due to natural hazards through education, warning systems and protective infrastructure;
Goal 2: Protect existing and new infrastructure from impacts of natural hazards;
Goal 3: Include natural hazard mitigation in local government plans and regulations; and
Goal 4: Coordinate natural hazard mitigation efforts of participating jurisdictions.

Adaptation activities may be described as a “new layer to existing planning agendas”. Key steps included in the HMP include identifying vulnerabilities, valuation of impacts, prioritization of alternatives and adoption of appropriate planning instruments.

1.10 CURRENT ACTIONS

Urbana businesses, organizations and individuals are actively pursuing sustainability programs and energy efficiency activities. The following section describes a few of several diverse sustainability approaches being practiced in Urbana. The City of Urbana is committed to supporting resident-driven activities through administrative and financial assistance, and a learning approach towards new ideas and proposals.

A. COMMUNITY ACTIONS

Crystal View Townhomes

• Brinshore Development • Homestead Corporation of Champaign-Urbana • Housing Authority of Champaign County

Crystal View Townhomes replaced public housing with 73 mixed-income townhomes, apartments and single-family units, the majority of which are set aside for low and very low income families. The environmentally friendly project includes district geothermal heating and cooling, energy efficient light emitting diode (LED) street lights and a roundabout which also acts as a bio-swale to direct rainwater runoff to a nearby creek.

The City invested several grants and loans into the project which helped fund three of the 73 units and supported the installation of public infrastructure. More information can be found at http://crystalviewtownhomes.com.

North-side play areas

Community Center

Dublin Passive House • e-co lab: Ecological Construction Laboratory Project

Dublin Passive House is a newly constructed single-family affordable home designed and built by e-co lab, a housing development organization of the Urbana HOME consortium. It consists of two bedrooms and a den, and is targeted at a first-time home buyer. The two-story, 1330 square-foot home consumes 90 percent less energy for heating and cooling than a standard home of its size. On average, the home cuts 75 percent of its total energy consumption each month when compared to a standard home.

By using free solar energy, super insulation, air-tightness, eliminating thermal bridging, and other passive design principles, Dublin house performs as one of the most energy efficient homes in the state of Illinois. The walls, roof, and floor of the Dublin House are thicker than standard construction due to the amount of insulation. This insulation makes the house like a thermos bottle; it slows and blocks heat transmission from the outside to inside, keeping the inside at a relatively constant temperature even if an extreme temperature hits the outside. It is also virtually air tight, which eliminates drafts and exposure to outdoor air temperature. Because there are no leaks or poor seals to let fresh air in, the Dublin house has an Energy Recovery Ventilator (ERV) that constantly cycles fresh air into the house and stale air out. Thermal bridging or heat transfer between the internal space and the external building enclosure, is eliminated to keep heat from easily flowing out of the house along the path of least resistance.

Additionally, the variation in the sun from season to season is used for passive solar heating. Because of this, the Dublin

House has very large south-facing windows to capture the sun's free energy. Above these windows lies a trellis, where Concord grapes will grow, providing excellent summer shading, and then -- bare in the winter -- letting the sun's energy warm the home. More information can be found at www.e-colab.org, or by calling e-co lab at 217 344 1294.

View from the South-East

Bedroom 1

Bathroom

South Facade

Green Business Certification Program • Illinois Green Business Association (IGBA)

The Illinois Green Business Association certification program seeks to increase awareness of sustainable business practices and what sustainability means to a customer and the community. The IGBA program and services help businesses reduce energy consumption, greenhouse gas emissions, and pollution. The program encourages businesses to take a leadership role and exemplify sustainable business practices in the communities they serve. Green certification demonstrates tangible results for resource and cost reductions and verifies businesses green claims. Additional benefits include reduced energy and water consumption, a decreased bottom line, increased public relations, improved employee morale, a culture of responsible consumerism, a transparent process to becoming a"green business", and examples of green practices for the workplace and home.

Certified Urbana businesses include Busey Bank and Common Ground Food Co-Op. The Art Mart and Clark Lindsey Village are currently enrolled in the certification program. To achieve certification, businesses must complete certain required Green Management Practices (GMPs) and 50% of the remaining GMPs depending on their applicability to a business, providing flexibility to match the businesses structure and culture. GMPs include both the physical equipment in a business as well as daily policies and procedures that can lead to reduced environmental impact.

The IGBA assists businesses in assessing, completing and verifying their green practices. Once a business is certified and

has verified all its green practices, the IGBA assists with marketing the businesses green efforts to their customers and the community, with a focus on education and transparency. A business receives certification in nine areas of sustainable business practice, which include:

1. Energy Conservation
2. Water Conservation
3. Waste Reduction and Recycling
4. Pollution Prevention
5. Transportation
6. Landscape
7. General Employee Practices (Program Awareness)
8. Purchasing
9. Community Development

More information can be found at http://illinoisgba.com or by calling IGBA at 217 531 2179.

Busey Bank (Corporation Wide)
Certified Green Business

Common Ground Food Co-op
Certified Green Business

Equinox Net Zero Energy House • Newell Instruments

The Equinox House in Urbana is a 'zero energy building' (ZEB), meaning it generates enough energy on-site to power house operations and an electric vehicle for approximately 8,000 - 10,000 miles. Designed and constructed by Newell Instruments for Ty and Debra Newell, the house has a barrier-free, single story floor plan.

A primary aspect of the house design is a 8.2kW solar photovoltaic (PV) energy collection system producing 10,000 kWh per year in Illinois weather conditions. Of this energy, 8,000 kWh is sufficient for the two-person family's energy requirements. The remainder - 2,000 kWh - will be used to power an electric vehicle. The house is 'grid-tied' meaning it feeds energy back and forth to the electric grid. At night, the house borrows energy from the grid and during the day, it feeds excess electricity into the utility grid helping it with peak demands. A typical house with modern construction in central Illinois requires 24,000 kWh of energy consumption per year. The Equinox house is predicted to require 7,200 kWh per year, or less than 1/3rd the requirement of a typical modern house. This was possible through a combination of energy efficient measures, for example, a smart house design including a roof overhang which acts as a solar reflector in the winter and as a solar shade in the summer, using high-performance roof, walls and windows, and an intelligent multi-functioned comfort conditioning system developed by Newell Instruments. Energy efficient appliances, such as a heat pump water heater (HPWH) and high performance laundry and kitchen appliances contribute to the reduction in household energy demand. The marginal additional cost of using energy efficient appliances is to be recovered through the substantial operational cost savings due to the reduced energy demand through the appliances' lifespan.

1.10 CURRENT ACTIONS

The Equinox House is also designed to operate on rain water collected from the roof. The rainwater collection system designed by Newell instruments incorporates divertors that collect debris during initial rainfall and divert remaining water to a 1700 gallon cistern. The cistern is buried in the backyard with connecting pipes located below the freezing level for the region. A pumping station includes a remote monitoring system for measuring the cistern water level which can be supplemented by potable (city) water in case the levels drops too low. Current approval by the Illinois State Department of Public Health allows Equinox House to only use rain water for toilets. A number of commercial buildings in Illinois also have rainwater supplied to toilets. Equinox house is one of the first private residences in an Illinois municipality to receive this approval. Plumbing is designed so that rain water can be safely used for 80 percent of residents' requirements in the future, when this is permitted by the Department of Public Health.

More information on equinox house can be found online at http://buildequinox.com/, or by contacting Newell Instruments at http://buildequinox.com/about/contact-us/.

View from street

Solar PV panels in back yard.

View from Street in winter with solar panels in the rear.

1.10 CURRENT ACTIONS

Urbana's Heritage and Energy

Located in the heart of the prairie in central Illinois, the City of Urbana enjoys a wonderful stock of historic commercial and residential buildings with a history and architecture that help illustrate the evolution of the community. Preservation saves energy by taking advantage of the non-recoverable energy embodied in existing buildings and extending their use. Most often, the total energy investment needed to renovate and operate a historic building is less than the energy required to construct and operate new facilities, even though new buildings may use less energy annually for operations. The City of Urbana recognizes that preservation and sustainability are inextricably linked and finding a way to preserve our built environment and yet make it more sustainable is a very important part of the future for both fields. The Urbana Historic Preservation Commission has designated thirteen properties as Historic Landmarks in Urbana. Additionally, there are there are three designated Historic Districts in Urbana - the West Main Street Historic District, the Joseph Royer Historic District and the Buena Vista Court Historic District.

The Halberstadt House

The Urbana-Lincoln Hotel

Municipal Facilities

Fleet Division:

25 percent of the City's current vehicle fleet is flex fuel or hybrid Flex Fuel (E-85) vehicles. All City diesel equipment is fueled on an 11-18 percent bio-diesel blend.

Arbor Division:

The Arbor Division recently installed GPS units in compost delivery trucks and purchased a larger trailer to make delivery efforts much more efficient. The Division has also invested in a rechargeable battery powered blower for clean-up in the Downtown Business District which accounts for 25 percent of the Division's clean-up work.

Public Works:

The Public Works Department's Electric Section performs a twice yearly Signal Coordination check which is specifically designed as an emissions reduction and fuel savings measure by enabling platoons of cars to move through an area with the least number of stops possible. Per federal mandate, as of January 1, 2009, the City when purchasing roadway luminaires, must be in compliance with the Energy Independence & Security Act (EISA) of 2007. Under EISA, certain light ballasts must meet stringent efficiency standards. Furthermore, almost all T12 fluorescent lamps in City facilities have been replaced with more efficient T8 and T5 lamps. Almost all incandescent bulbs in City facilities have been replaced with Compact Fluorescent Lamps (CFLs). Public Works has an anti-idling policy for all its vehicles.

Office Equipment:
Energy Star designation is required for all appliance and office equipment purchases at the City of Urbana. To better control building temperature, programmable thermostats have been installed in all City buildings where feasible.

Solar Powered Parking Lights:
The City recently installed twenty solar power parking signs around downtown Urbana. The project was financed by funds collected through parking fees and permits. The solar powered signs were significantly more affordable than electric powered signs.

B. RECYCLING IN URBANA


Curbside Recycling Bins


Recycling at Sweetcorn Festival


Electronics Recycling


Recycling Education

U-Cycle:
Urbana's residential recycling program, U-CYCLE, began in 1986 and was one of the first citywide recycling programs offered in Illinois. Urbana's curbside recycling program services an estimated 18,000 residents in single-family through four-unit dwellings. The U-CYCLE program expanded in 1999 when recycling was offered to all residents in multifamily dwellings including apartment buildings, dormitories, fraternities/sororities, rooming houses and condominiums and serves an estimated 15,000 residents in Urbana.

By recycling, Urbana residents conserve natural resources, reduce reliance on fossil fuels, and foster economic growth through the recovery and reuse of marketable commodities. The U-CYCLE program has created nine jobs in the recycling industry. In 2011, there was a 36 percent recycling rate for U-CYCLE programs and landscape recycling combined. In 2009 and 2010 the recycling rate for the combined programs including landscape recycling was 37 percent. Resident participation rates in the U-CYCLE program average 60 percent.

Furthermore, U-CYCLE has initiated sustainability efforts in the community at the annual Urbana Sweetcorn Festival beginning in 2008, including the implementation of recycling tents for patrons to recycle beverage cups and compost corn cobs at the festival. These tents are staffed with volunteers that educate patrons on recycling and distribute U-CYCLE information and giveaways. In addition, the recycling coordinator has developed a section of the festival called "Green Alley" that highlights local environmental initiatives and organizations in the community, and offers eco-entertainment to promote environmental awareness. In 2011, U-CYCLE collected more than 800 lbs. of recycling and 15 cubic yards of corn cobs for composting from the festival.

Battery and Electronics Recycling:
The City of Urbana developed the battery drop-off recycling program in 2007, and has organized county-wide electronics recycling events since 2007. Since implementation in 2007, the battery recycling collection program has been very

successful, with an average of 10,000 lbs. of batteries recycled annually. By recycling batteries, Urbana residents keep toxic materials such as mercury, lead, cadmium and lithium from entering landfills or groundwater. Recycling single-use batteries also recovers zinc, manganese dioxide and silver for reuse. Additional sustainability efforts include conducting county-wide electronics recycling collection events from 2007 to the present. Collection events from 2007 – 2011 resulted in a total of 662 tons of electronics scrap being collected and recycled. Overall, there has been a 475 percent increase in electronics recycled at county-wide events during this period. Recycling obsolete electronics encourages the safe management of hazardous components, supports the recovery and reuse of valuable materials, and helps reduce the pollution and energy use tied to the production of new electronics.

The U.S. EPA estimates that consumer electronics-- including TVs, computers, audio equipment and phones-- make up nearly 2 percent of the municipal waste stream. Assuming consumer electronics make up nearly 2 percent of the municipal waste stream annually, it is estimated that more than 5,800 tons of consumer electronics are present in Champaign County's municipal waste stream. The amount of electronic scrap collected at the county-wide collection events held during 2010 totaled 291 tons, and represents a small fraction of the overall municipal waste stream in Champaign County that was reported to the Illinois EPA that year. Since January 1, 2012, Illinois Public Act 97-0287 has banned 17 electronic items from Illinois landfills, including televisions, computers and printers. The diversion of electronics from Illinois landfills will help prevent heavy metals and other toxic materials from contaminating soil and groundwater with proper recycling and reuse.

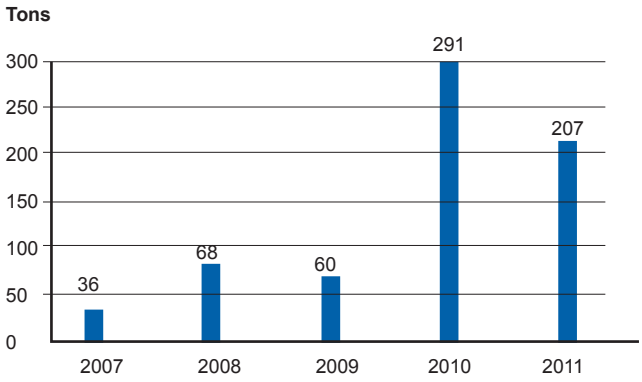


Figure 3. Champaign County Electronics Recycled (2007-2011)

Figure 4. Champaign County Municipal Waste Stream (2010)

Future U-CYCLE Goals:

- Set an official recycling rate goal (e.g. 50 percent by 2025);
- Increase multifamily recycling rates through increased outreach and education efforts;
- Develop a pilot program for food-scrap composting. Explore strategies to fund food-scrap collection costs. Food waste accounts for 14 percent of landfill space (U.S. EPA, 2010); and is the next step in diverting materials from the municipal waste stream.
- Develop a permanent Hazardous Household Waste (HHW) drop-off facility in Champaign County with coordination from Champaign County and county-wide municipalities

Landscape Recycling Center:

Yard debris accounts for 25 percent of all waste in Illinois. The Landscape Recycling Center (LRC), operated by the City of Urbana Public Works Department is a non-profit operating facility providing landscape recycling facilities to Urbana-Champaign and all of Champaign County. At the LRC, grass clippings, and brush and plant cuttings are converted into fertile mulches and composts specially produced to benefit certain types of plants.

C. UNIVERSITY OF ILLINOIS ACTIONS

Carbon Neutral by 2050:

The University of Illinois Climate Action Plan (iCAP) outlines strategies and initiatives for meeting the University's obligations to the American College and University President's Climate Commitment (ACUPCC). The University's Baseline Emissions Inventory was conducted for the year 2008. Based on the 2008 baseline data and the scenario strategies developed by the University, the University's over-arching goal is to become carbon neutral by 2050.

The total campus emissions inventory for fiscal year 2008 (the baseline year) was 570,000 Metric Ton Equivalent ($MtCO_2e$) of carbon dioxide (CO_2). Approximately 85 percent of these emissions are a direct result of the need to heat, cool, and operate campus buildings. Most of the energy produced for building operations comes from the combustion of coal and natural gas at Abbott Power Plant and the rest through purchases of electricity from outside sources. Other emission sources on campus are found in transportation systems and patterns (commuting, fleet, and air-travel), agricultural emissions from the south farms, water use, solid waste, and other fugitive sources.

University Strategies:

The University of Illinois Climate Action Plan (iCAP) outlines strategies and initiatives for conserving energy; reducing coal dependence at the Abbott Power Plant by emphasizing a larger role for natural gas in the near term; moving to renewable energy sources including meeting the State of Illinois' Renewable Portfolio Standards of a 25 percent contribution from renewable energy by 2025; implementing the Campus Bicycle Master Plan and improving bicycling infrastructure; and creating and subsidizing a bike share program and a voluntary carbon registry program to offset air travel impacts. The plan also sets out strategies for reducing emissions related to agriculture by 50 percent by 2020, including the installation of a methane capture process, incentivizing sustainable and organic agriculture practices on campus lands, implementing a bio-fuels initiative to transform agricultural waste into energy, a large scale food composting project, and several other strategies to meet reduction targets.

The University plan also outlines strategies to conserve potable water and reduce related emissions by 40 percent by 2025; incorporate a no-net increase in space policy for the entire campus; and require all new buildings and major renovations to be net energy neutral or a net energy provider by 2025. In terms of waste, the University plans to develop a long-term Zero Waste campus policy and increase waste diversion by 75 percent by 2020. The establishment and use of a local carbon registry for purchasing local carbon offsets and implementing a sustainable landscape plan are proposed strategies to enhance carbon sequestration processes. The iCAP can be accessed online through the University's Office of Sustainability at http://sustainability.illinois.edu/.

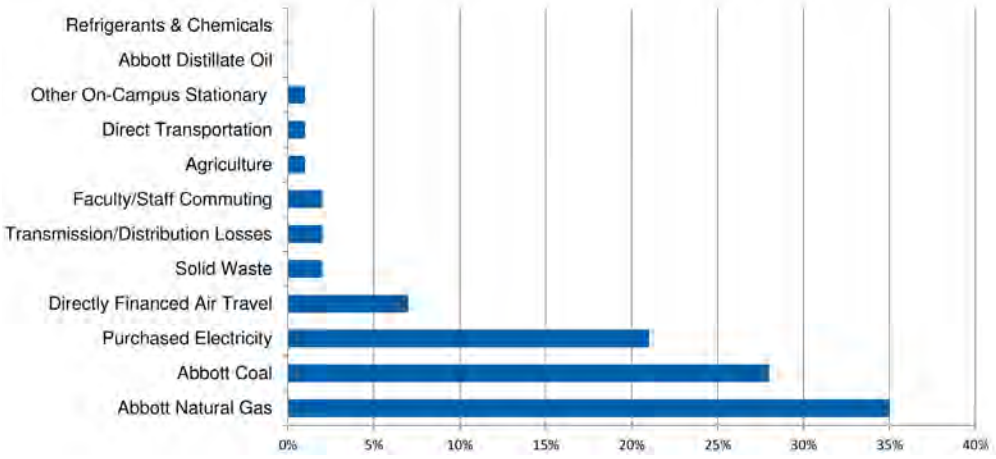


Figure 5. 2008 University of Illinois Carbon Inventory: Baseline Campus Footprint by GHG Emissions Contributors
Source: Reproduced from the UIUC Climate Action Plan (iCAP)

D. CITY OF URBANA ACTIONS

2005

COMPREHENSIVE PLAN:
The City of Urbana enacts the **2005 Comprehensive Plan**, updating its official land use and development policies for the city and extra-territorial planning jurisdiction. A key plan concept is compact and contiguous growth and development. In 2006, the plan won a Gold Award from the American Planning Association
Illinois Chapter.

MAYOR AND CITY COUNCIL SUSTAINABILITY GOALS:
The City Council specified sustainability-related measures among its common goals. Goals included energy conservation.

2007

URBANA COMMITS TO THE U.S. MAYORS CLIMATE PROTECTION PLEDGE
Mayor Prussing signed the **U.S. Mayors Climate Protection Agreement**, pledging the city to strive to meet or beat Kyoto Protocol targets for reducing greenhouse gas emissions in our community.

The Kyoto Protocol calls for U.S. emissions to fall 7% below 1990 levels by 2012.

2008

URBANA SUSTAINABILITY ADVISORY COMMISSION
The Mayor and City Council created a **Sustainability Advisory Commission (SAC)**. The Commission, composed of seven appointed community members, was initially tasked with identifying and recommending to the Mayor and City Council goals to achieve sustainable management of natural resources, water and energy in particular. The Commission's chief objective has been the development of a Climate Action Plan to meet the energy-related dimension of this mandate.

SUSTAINABLE DEVELOPMENT
The City helped fund redevelopment of **Lakeside Terrace Housing Project** as Crystal Lake Townhomes, an affordable housing project with substantial energy saving features such as enhanced insulation, geothermal heating and cool, photo-voltaic panels on the community center, LED street lights, and bio-swale stormwater management.

URBANA ADOPTS BICYCLE MASTER PLAN
The City of Urbana developed a **Bicycle Master Plan** with three goals: 1) To increase bicycle mode share in Urbana for all trip purposes by 50% in the next five years; 2) To achieve a Bicycle Friendly Community award through the League of American Bicyclists; and 3) To substantially expand the bicycle network.

URBANA SUPPORTS ZIP CAR SHARING PROGRAM
City of Urbana provided a financial guarantee to enable establishment of the **ZIP Car Sharing** program in Urbana-Champaign.

2009

URBANA ADOPTS ENERGY EFFICIENT OUTDOOR LIGHTING STANDARDS
City-wide outdoor lighting standards were enacted through a Zoning Ordinance amendment.

URBANA RECEIVES FEDERAL ENERGY EFFICIENCY GRANT
The City applied for and received a Federal Energy Efficiency Community Block Grant, which was used for: municipal building lighting retrofits; a white reflective roof over a portion of the City Building; a partnership with Ameren's Act On Energy program to pay for home energy audits, shell improvements (insulation and air sealing); and installation of compact fluorescent bulbs, sink aerators, low-flow shower heads, and pipe insulation.

SUSTAINABLE TRANSPORTATION
The City endorsed the Champaign-Urbana Urbanized Area Transportation Study (CUUATS) Long Range Transportation Plan 2035 which includes a significant focus on reducing automotive trips.

KEY CITY STAFF GREEN BUILDING QUALIFIED
The City became a member of the U.S. Green Building Council and key personnel reviewing site and building plans became LEED-accredited (Leadership in Energy and Environmental Design).

1.10 CURRENT ACTIONS

2010

ENVIRONMENTAL SUSTAINABILITY A MAYORAL AND COUNCIL GOAL

New City Council and Mayoral Goals are adopted. Goals across six broad categories are established, including "Environmental Sustainability" which contains 12 distinct strategies. **Development of a Climate Action Plan is included as an Environmental Sustainability strategy.**

BICYCLE FRIENDLY COMMUNITY

The League of American Bicyclists designates **Urbana as a Bicycle Friendly Community at the Bronze level**.

BIKE TO WORK DAY

The City of Urbana cosponsors the first **Champaign-Urbana Bike to Work Day** which had over 700 registered participants.

ENVIRONMENTAL SUSTAINABILITY MANAGER

The long-standing City staff position of Environmental Manager was changed to **Environmental Sustainability Manager**. Duties were added to the position, including oversight of climate action/ sustainability plan development and implementation.

ZONING FOR WIND TURBINES

Enacted **zoning standards to allow wind turbines** throughout the City of Urbana and within 1.5 miles of the City limits.

BICYCLING SAFETY EDUCATION

The City cosponsors **'C-U Sharing the Road'**, a bicycle education video that introduces the public to the bicycle infrastructure that is being installed as a result of the Bicycle Master Plan and teaches motorists and bicyclists how to interact with each other on the road.

The City begins **cosponsoring periodic bike rodeos and other bicycle safety and education clinics** to encourage bicycling for transportation.

2011

INFILL DEVELOPMENT

The White Street and Springfield Avenue Corridors Analysis Report was presented to the Urbana City Council. The report presents a concept for achieving green infill development linked with non-automotive transportation choices.

BICYCLE INFRASTRUCTURE AUDIT

The City and the League of Illinois Bicyclists participated in a voluntary audit of recent City Public Works projects.

COMPLETE STREETS

Adopted a **Complete Streets amendment** to the 2005 Comprehensive Plan.

REDUCED PARKING REQUIREMENTS

50 percent reduction in the minimum parking requirements in the Urbana Zoning Ordinance for new residential developments in the CCD (Campus Commercial District) zoning district.

KERR AVENUE MODEL SUSTAINABLE COMMUNITY DEVELOPMENT

To accomplish the Council and Mayoral goal of promoting sustainable, affordable housing development the City issued a request for proposals and ultimately selected a proposal to construct 24 single-family affordable rental units and ten single-family home-buyer units to be sold to eligible low-income buyers on a City donated 3.1 acre site just north of downtown Urbana. **The proposal includes rain-gardens and bioswales, solar powered site lighting, site-wide geothermal heating, native landscaping, high-performance building shells, permeable paving throughout the site and photovoltaic panels for water heating.** The project is to be funded through Low Income Housing Tax Credits through the Illinois Housing Development Authority and is to be supported by the City through its federal Home Investment Partnerships Program dollars, as well as funding from its Tax Increment Financing (TIF) district.

2012

COMMERCIAL RECYCLING ORDINANCE

City adopts an ordinance that requires all licensed Urbana commercial and business hauling services to offer businesses the opportunity to recycle through them or through a sub-contractor. UCycle staff available to conduct waste audits and assist businesses with recycling questions.

MUNICIPAL ELECTRIC AGGREGATION

100% RENEWABLE ENERGY

Urbana voters overwhelmingly approved referendum authorizing **municipal electric aggregation**, which allows the City to bundle – or aggregate – residential and small commercial retail electric accounts and seek bids for cheaper power.

Mayor Laurel Prussing signed a two-year contract with Homefield Energy of Collinsville, that includes **100 percent renewable power** and up to 36 percent savings on the electric supply portion of residents' power bills.

URBANA CLIMATE ACTION PLAN PHASE 1

The City of Urbana adopts the Phase 1 Climate Action Plan which inventories Urbana's 2007 baseline greenhouse gas emissions, and sets a **community-wide emissions reduction target of 25 percent below 2007 levels by 2020 and an 80 percent reduction below 2007 levels by 2050**. Recommended community-wide actions focus on initial strategies to reduce greenhouse gas emissions related to the four largest emissions sectors, namely residential natural gas and electricity consumption, commercial electricity consumption and transportation gasoline consumption.

2. METHODOLOGY, INVENTORY, & PROJECTIONS

The "Share the Road Bus", a part of a multi-year partnership between Champaign County Bikes, The Bike Project and the CUMTD that promoted environmentally-positive activities.

2.1 OVERVIEW

A. CALCULATION MODELS

In signing the U.S. Mayors Climate Protection Agreement in 2007, Mayor Prussing signalled the City's intent to meet or beat Kyoto Protocol targets for reducing the community's greenhouse gas emissions footprint. The City is a member of the International Council for Local Environmental Initiatives' (ICLEI) Cities for Climate Protection® (CCP) campaign. ICLEI works in conjunction with the U.S. Conference of Mayors to track progress and implementation of the U.S. Mayors Climate Protection Agreement.

ICLEI's Cities for Climate Protection® campaign recommends a five-step process for inventorying and reducing a community's greenhouse gas emissions (Figure. 6). Greenhouse gases are accounted and reported as per a community-scale greenhouse gas emissions and reporting protocol produced by ICLEI which ensures measurability, accuracy and reliability. The protocol is specifically designed to be implemented at a reasonable cost, and produce inventories that can be used to show trends over time. Each of the 650 member local governments of the Cities for Climate Protection Program utilizes the emissions reporting protocol ensuring a consistent methodology for calculating greenhouse gas emissions and allowing for comparisons between communities.

The ICLEI protocol articulates standardized emissions factors that are used to convert activity data, like energy usage, into associated greenhouse gas emissions using greenhouse gas emissions factors (Appendix E). The City of Urbana conducted Urbana's greenhouse gas baseline emissions inventory with assistance of the Clean Air and Climate Protection Software (CACP) and the Climate and Air Pollution Planning Assistant (CAPPA) - the recommended software to be used along with the protocol to measure and track the community's greenhouse gas emissions.

The purpose of the baseline emissions inventory is to determine the levels of greenhouse gas emissions that Urbana was responsible for in its baseline year. Once completed, the inventory provides a basis for creating an emissions forecast and setting a reduction target. The CAPPA software enables the quantification of emissions reductions associated with implemented and proposed measures. This information enabled the City to prioritize implementation measures as per their respective suitability for Urbana.

Many other U.S. cities use 1990 as their baseline year, as called for in the U.S. Mayors Climate Protection Agreement. Because the City of Urbana lacks access to reliable data extending back before 2007, the Sustainability Advisory Commission chose 2007 as the baseline year. Urbana's emissions inventory considers emissions from the following major sectors:

i. Residential, commercial and industrial building energy consumption;
ii. Transportation fuel consumption;
iii. Solid waste decomposition.

Even though the electricity used by Urbana residents is produced elsewhere, the emissions associated with it appear in Urbana's inventory. This is standard emissions accounting procedure for assigning emissions resulting from energy production.

KEY ACRONYMS

ICLEI
International Council for Local Environmental Initiatives

CCP
Cities for Climate Protection Campaign

CACP
Clear Air and Climate Protection Software

CAPPA
Climate and Air Pollution Planning Assistant

www.icleiusa.org

1. Conduct a baseline emissions inventory and develop an emissions forecast.
2. Setting an emissions reduction target.
3. Developing an action plan to meet the target.
4. Implement actions in the plan.
5. Monitor and verify emissions reduction progress.

Figure 6.
ICLEI and CCP's 5 step GHG Reduction Process

B. UNIVERSITY OF ILLINOIS EMISSIONS

University buildings have unique and large energy requirements, and University-owned housing has some of the highest residential densities in Urbana. Furthermore, University students use several facilities and services offered by the City. Recognizing the complex overlaps between the City's and the University's energy consumption sectors, the City of Urbana seeks to closely coordinate climate action initiatives with the Office of Sustainability at the University of Illinois.

i. Electricity and natural gas consumption data of University of Illinois buildings in Urbana are not included in the City of Urbana Phase I baseline inventory, as the emissions resulting from the sources of this energy and University activities in these buildings are accounted for in the University's Climate Action Plan (iCAP). See page 31 for a detailed breakdown of University emissions and a description of the actions the University is taking to mitigate emissions related to University energy use.

ii. Emissions related to the University transportation and the solid waste sectors are included in the Urbana Climate Action Plan baseline inventory, as services offered by the City and other non-university jurisdictions, such as improved sustainable transportation infrastructure and higher recycling rates can positively impact emissions related to these sectors.

C. SOURCES OF DATA

An inventory of greenhouse gas emissions requires the collection of energy consumption data from a variety of sectors and sources as described below.

Building Energy:

- Community-wide electricity and natural gas consumption data was sourced from Ameren Illinois Utilities.
- Data from Ameren is based on account type. Depending on the number of units in a building and whether they are separately metered, a residential rental property may have a residential or commercial account. Data for the commercial sector therefore include both residential and commercial properties. Similarly, emissions data for residential rentals may fall into either the commercial or residential categories used in this plan.
- University of Illinois building energy consumption is not included in the City of Urbana Climate Action Plan as the emissions from the sources of this energy are accounted for in the University's Climate Action Plan.

Transportation:

- The Champaign Urbana Urbanized Area Transportation Study (CUUATS) served as the source of transportation data.
- Emissions related to transportation on the UIUC campus are included in this emissions inventory.

Solid Waste:

- Solid waste data was developed based on population estimates, recycling data gathered by City officials, and information on waste generation rates from the Illinois Department of Commerce and Economic Opportunity's 2009 publication "Illinois Commodity / Waste Generation and Characterization Study."
- Emissions related to waste generated on the UIUC campus are included in this emissions inventory.

D. GROWTH FORECASTS FOR THE URBANA CLIMATE ACTION PLAN[1]

The Clean Air and Climate Protection software (CACP) requires a compound annual growth rate (CAGR) for population, employment and vehicle miles travelled in the community for the baseline year and the projection year, in order to model the current and future emissions inventory. The following assumptions and growth rates were used to forecast emissions to 2020.

Population:

Population estimates for the baseline year 2007 and the forecast year 2020 were derived from data and growth rates based on U.S. Census data for the years 2000 and 2010; and Champaign County Regional Planning Commission's (CCRPC) growth projections for 2015 and 2025. As per U.S. Census data, the City of Urbana's population in 2000 was 36,395 and in 2010 was 41,250 with a CAGR of 1.26 percent. Applying this growth rate to the 2000 Census data, Urbana's population in 2007 was approximately 39,700. Deducting the 5,600 University of Illinois student housing residents in Urbana gives us a 2007 net population figure of 34,100. To derive the 2020 population estimate of 42,500 a 1.8 percent CAGR was applied for 2007-2015 and a 0.96 percent CAGR was applied for the period between 2016-2020, based on CCRPC projections for Urbana Traffic Analysis Zone growth rate. Overall, the CAGR for the period between 2007 and 2020 is 1.48 percent.

Employment:

The Champaign Urbana Urbanized Area Transportation Study (CUUATS) completed population and employment projections for the Champaign Urbana Urbanized Area as part of the Long Range Transportation Plan (LRTP) 2035 adopted in 2009. Based on CUUATS commercial and industrial employment numbers for 2007 and projections for 2020, a commercial employment compound annual growth rate (CAGR) of 2.71 percent and an industrial employment CAGR of 1.84 percent was used to calculate emissions projections from these sectors in 2020.

Vehicle Miles Travelled (VMT):

Based on population and employment projections, the CCRPC models daily Vehicle Miles Travelled using the CUUATS Travel Demand Model. For 2005, the annual VMT for Urbana was 179,200,000. As per the CUUATS, daily VMT are projected to increase at a CAGR of 3.02 percent between 2005 and 2015. Since these projections apply to the Urbana Traffic Analysis Zone (TAZ) which is larger than the City of Urbana, the City has taken a conservative approach to VMT increase beyond 2015 and the 3.02 percent CAGR was used for the entirety of the 2007-2020 planning period. Therefore, the 2020 projected annual VMT for the City of Urbana is 280,002,035.

[1] For a complete breakdown of growth forecasts, please refer to Appendix F.

2.2 BASELINE INVENTORY

A. 2007 EMISSIONS BY SECTOR

The 2007 City of Urbana greenhouse gas inventory measures emissions from five sectors. Emissions related to the energy used in University of Illinois buildings are not reflected in the City's inventory as these are accounted for in the University's Climate Action Plan. Emissions related to transportation and solid waste generated on the UIUC campus are included in this emissions inventory. Please refer to page 37 for a detailed explanation.

The residential, commercial, and industrial sectors in Table 1 represent emissions related to:

- Electricity and natural gas used in both private and public sector buildings and facilities served by Ameren Illinois.
- The transportation sector represents emissions related to the burning of fossil fuels to propel all forms of vehicles and equipment.
- The waste sector represents the greenhouse gas emissions that result from the degradation of solid waste disposed in landfills.

TABLE 1. URBANA'S 2007 BASELINE COMMUNITY GREENHOUSE GAS EMISSIONS REPORT BY SECTOR
IN METRIC TONS CO_2 EQUIVALENT[1]

Sector	Quantity[2]
Residential energy used	135,900
Commercial energy used	156,200
Industrial energy used	118,100
Transportation energy used	110,400
Solid waste disposed in landfills	28,100
Total	**548,700**
Non-Campus Population in 2007[3]	34,100
Per Capita Greenhouse Gas Emissions in 2007[4]	**16 MT/Resident**

Notes:
[1] Estimates were calculated using ICLEI's CACP software.
[2] Quantities have been rounded to the nearest hundred, except as noted.
[3] The City of Urbana population figure is estimated from 2000 and 2010 Census Data. University of Illinois on-campus student resident population is not included in calculating per capita emissions noted above.
[4] Per-capita emissions have been rounded to the nearest whole number.

B. 2007 EMISSIONS BY SOURCE:

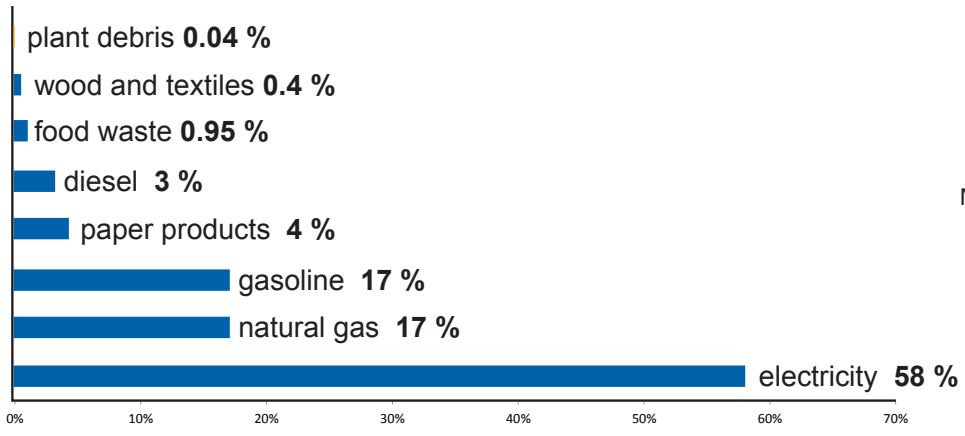


Figure 7. Urbana's 2007 Baseline Community Greenhouse Gas Emissions Report by Source

Note: Estimates were calculated using ICLEI's CACP software.

C. GREENHOUSE GAS EMISSIONS RELATED TO PAPER PRODUCTS, FOOD WASTE, WOOD, TEXTILES AND PLANT DEBRIS

Waste prevention and recycling are jointly referred to as waste reduction. Preventing waste and recycling are potent strategies for reducing greenhouse gas emissions. Waste and greenhouse gas emissions are related in different ways through the life cycle of a product from production to decomposition. At the most basic level, all commodities from food to paper to any type of consumer good and related packaging take energy to produce. Producing this energy results in greenhouse gas emissions. When products are thrown away, in effect, this energy is being thrown away. In the case of paper products in addition to the energy required to produce them, there is also a negative impact resulting from cutting down trees needed to make paper products. When organic products like food, wood, textiles and plant debris are put in a landfill and buried, they break down in a way that causes emissions of methane gas from the landfill. Methane is twenty-one times more powerful a greenhouse gas than carbon dioxide.

Together, waste prevention and recycling help:

1. Reduce emissions from energy consumption:

Manufacturing products from recycled materials typically requires less energy than producing goods from virgin raw materials. Waste prevention is even more effective. By reusing things or using products made with less material, less energy is needed to extract, transport, and process raw materials and to manufacture products. When energy demands reduce, fewer fossil fuels are burned and less carbon dioxide is emitted to the atmosphere.

2. Reduce emissions from incinerators:

Recycling and waste prevention allows materials to be diverted from incinerators and therefore reduces greenhouse gas emissions from waste combustion.

3. Reduce methane emissions from landfills:

Waste recycling (including composting) and prevention diverts organic waste from landfills, reducing methane released when these materials decompose.

4. Increase storage of carbon in trees:

Trees absorb carbon dioxide from the atmosphere and store it in wood, in a process called “carbon sequestration”. Waste prevention and recycling paper reduces the extent of deforestation needed for paper production.

UCycle Recycling Workshop

D. COMPARING URBANA'S PER CAPITA COMMERCIAL AND RESIDENTIAL BUILDING AND TRANSPORTATION SECTOR EMISSIONS WITH CITIES NATION-WIDE

As per a study published in 2011, Urbana's cumulative commercial, residential and transportation per capita greenhouse gas emissions in 2007 are comparable to the 2008 national average.[1] Cities with a smaller per capita greenhouse gas emissions footprint for these sectors include Bloomington, Indiana; Eugene, Oregon; and Burlington, Vermont. Per capita commercial, residential and transportation emissions are related to the density of the urban environment, signifying the importance of infill and transit-oriented development. Figure 8 shows Urbana's ranking in a national context.

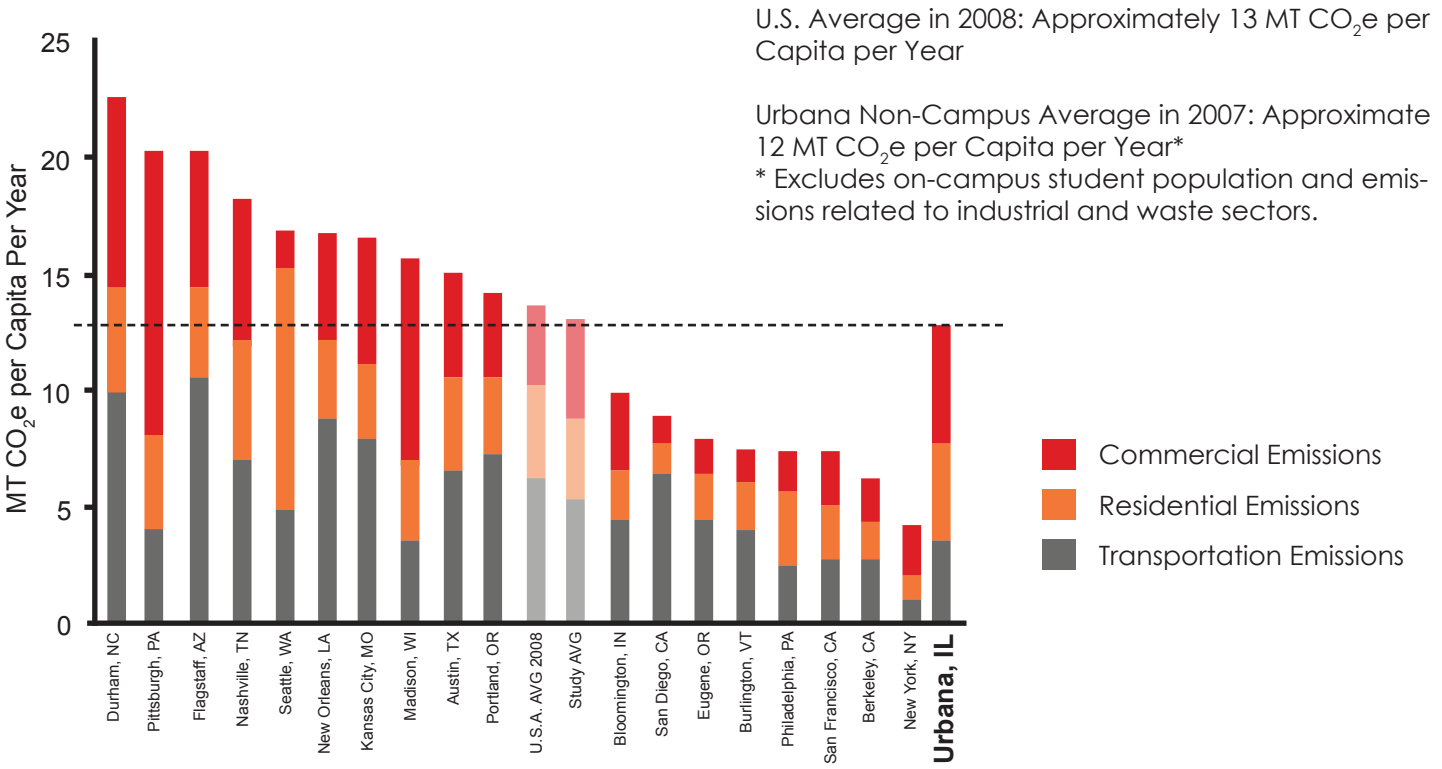


Figure 8. Community Greenhouse Gas Emissions Per Capita for Urbana and 19 U.S. Cities as Compared to the U.S. Average, Excluding Industrial and Waste Sector Emissions [1,2,3,4]

Notes:

[1] Source: Blackhurst et al, 2011. Preparing US community greenhouse gas inventories for climate action plans, Environ. Res. Lett. 6 (July-September 2011) 034003 doi:10.1088/1748-9326/6/3/034003 http://iopscience.iop.org/1748-9326/6/3/034003/fulltext/.

[2] Graphic is modified to include 2007 data for Urbana, Illinois.

[3] This study excluded industrial and waste sector emissions except for Flagstaff AZ, whose industrial emissions from natural gas use are included in the commercial sector due to utility metering practices. Industrial emissions are more difficult to generalize and compare as they stem from facility operations and process fugitive emissions and thus vary by facility.

[4] In the profiled cities, industrial emissions accounted for an average of 10 percent of local emissions, varying from 3 percent to 30 percent. As per the U.S. E.P.A, emissions from solid waste management account for approximately 2 percent of GHG emissions nationally. In 2007, Urbana's industrial sector was responsible for approximately 21 percent of Urbana's total emissions, and the solid waste sector was responsible for approximately 5 percent of Urbana's total emissions.

2.3 EMISSIONS FORECAST

The Urbana Sustainability Advisory Commission chose to focus Urbana's initial planning efforts on reducing emissions by the year 2020. A forecast for 2020 emissions was developed using ICLEI's CACP software. The projected 2020 emissions are a business-as-usual forecast. The business-as-usual forecast is a depiction of the future consequences of continuing current trends in population, economy, urban development, technology and human behavior with respect to energy consumption. A business as usual forecast allows planners to estimate how emissions in the future might increase or decrease, and therefore identify the most appropriate greenhouse gas reduction strategies to help the community achieve its long-range emissions reductions goals. CACP allows for input of projected increases or decreases in various factors over the planning horizon. The 2020 emissions projections were developed utilizing data from the same sources used to develop the 2007 baseline and with growth rates developed by City staff and the Champaign County Regional Planning Commission (CCRPC).

The projected figure is significantly higher than the 2007 baseline because as the population of the city grows, so does energy consumption, both in the residential and commercial sectors.

TABLE 2. URBANA'S 2020 PROJECTED COMMUNITY GREENHOUSE GAS INVENTORY COMPARED WITH THE 2007 BASELINE INVENTORY (IN METRIC TONS CO_2 EQUIVALENT)[1]

Sector	Quantity[2]	
	2007 Baseline	2020 Projection
Residential energy used	135,900	153,100
Commercial energy used	156,200	184,300
Industrial energy used	118,100	149,700
Transportation energy used	110,400	118,100
Solid Waste disposed in landfills	28,100	33,600
Total	**548,700**	**638,800**
Non-Campus Population[3]	34,100	42,500
Per Capita Greenhouse Gas Emissions[4]	**16 MT/Resident**	**15 MT/Resident**

Notes:
[1] Estimates were calculated using ICLEI's CACP software.
[2] Quantities have been rounded to the nearest hundred, except as noted.
[3] The City of Urbana population figure is estimated from 2000 and 2010 Census Data. University of Illinois on-campus student resident population is not included in calculating per capita emissions noted above.
[4] Per-capita emissions have been rounded to the nearest whole number.

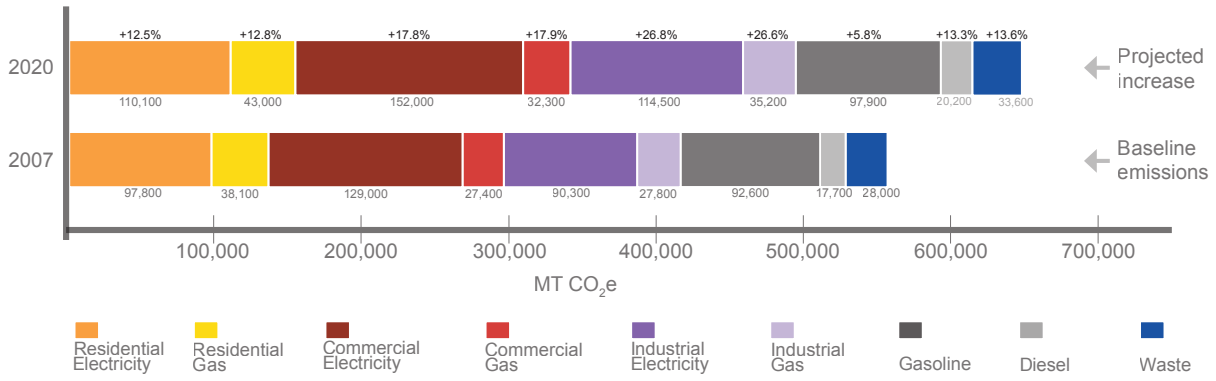


Figure 9. 2007 Baseline Emissions and Projected 2020 Increase in Emissions Under a Business As Usual Scenario by Sector and Source

2.4 EMISSIONS REDUCTION GOALS

A reduction target provides a tangible goal for Urbana's emissions reduction efforts. Urbana's emissions reduction target is 25 percent below 2007 levels by 2020 and an 80 percent reduction below 2007 levels by 2050.

The 25 percent target is aggressive yet achievable. This target is based on estimates of the impact of current and planned programs as well as likely future opportunities to reduce emissions. The target is in line with that set by the State of Illinois as well as targets set by other states and countries, and in legislation introduced in the US Congress.

The 2020 targeted level of emissions is approximately 411,600 metric tons of carbon dioxide equivalent (MT CO_2e). As shown in Figure 10, with business as usual and corresponding emission rates factored in, the likely reduction will have to be 227,200 MT CO_2e.

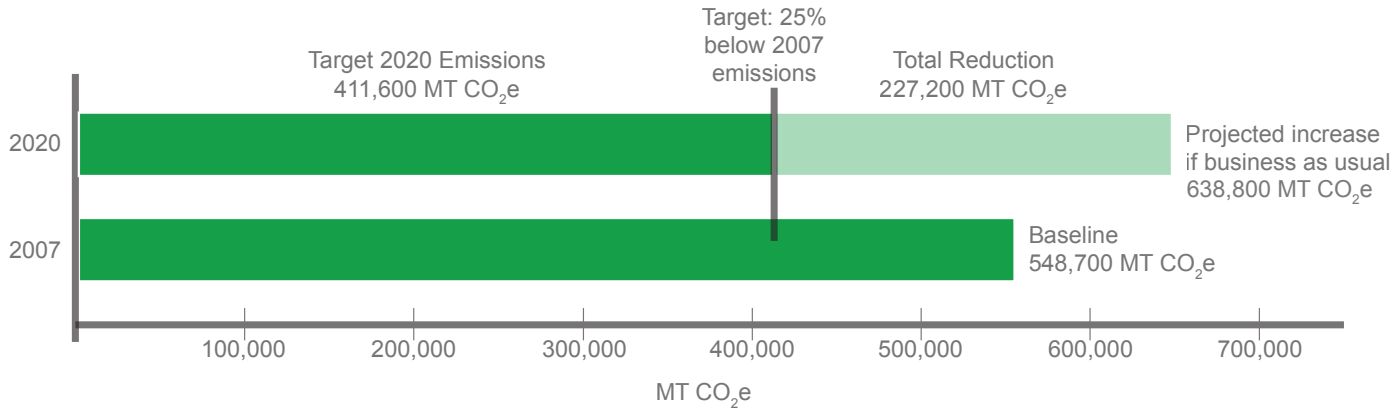


Figure 10. Urbana 2020 - 25% Emissions Reduction Goal [1,2]

Notes:
[1] Estimates were calculated using ICLEI's CACP software.
[2] Quantities have been rounded to the nearest hundred, except as noted.

- Portland, OR - 40% below 1990 levels by the year 2030
- Los Angeles, CA - 35% below 1990 levels by the year 2030
- Salt Lake City, UT - 80% below 2005 by 2040
- Denver, CO - Achieve 1990 levels by the year 2020
- Kansas City, MO - 30% below 2000 levels by year 2020
- Evanston, IL - 17% below 1990 levels by 2020
- Chicago, IL - 25% below 1990 levels by 2020

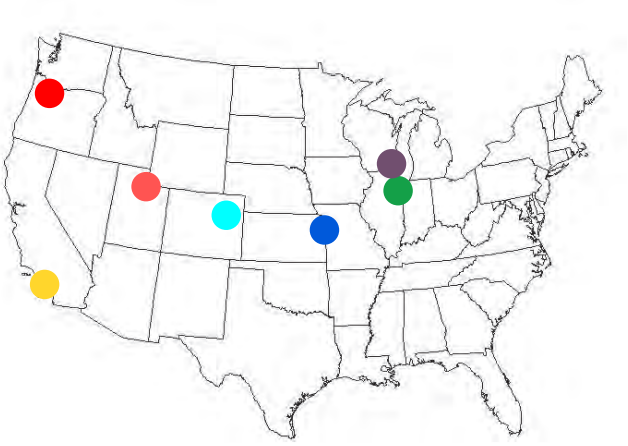


Figure 11. Examples of Greenhouse Gas Reduction Targets across the U.S.

2.5 URBANA'S ENERGY USE

A. MONITORING ENERGY EFFICIENCY

Monitoring progress towards becoming more energy efficient involves comparing community-wide building energy consumption data from year to year. However, some summers are hotter than others, and winter this year may be milder than the last year. Therefore, energy requirements associated with space heating and cooling respond to fluctuating weather conditions and a direct comparison of raw energy consumption data would be misleading as it does not accurately reflect whether the community is becoming more energy efficient.

As a solution, we can compare annual energy use by plotting a graph of monthly energy use against monthly weather conditions. This is done by normalizing community-wide energy consumed per month against a ratio of the Heating Degree Days and Cooling Degree Days in that month.

Heating Degree Days (HDD) is a measure used to estimate the amount of energy required for residential space heating during the cold season. Similarly, Cooling Degree Days (CDD) is a measure used to estimate the amount of air conditioning usage during the warm season. To calculate HDD and CDD, 65°F is assumed to be a comfortable indoor temperature. The mean temperature for the day is calculated by taking the high and low temperature for the day, adding them together and dividing them by two. If the mean temperature is at or above 65°F, then HDD is zero, that is, no energy was needed to heat indoor space. If the mean temperature is below 65°F, the HDD equals 65 minus the mean temperature. For example, if the mean temperature was 55°F, then HDD amount equals 10. Similarly if the mean temperature was at or below 65°F, then the CDD is zero, that is no energy was needed to cool indoor space. If the mean temperature was 75°F, then the CDD amount equals 65 minus the mean temperature, amounting to 10. A monthly HDD value and CDD value is reported by the Illinois State Climatologist for their weather station in Urbana.

By plotting energy consumed against a ratio of HDD and CDD, we can arrive at yearly trends that account for variations in external weather conditions. This allows us to reach a more accurate yearly comparison of energy efficiency of the building stock after eliminating those consumption changes that are a response to variable external weather conditions.

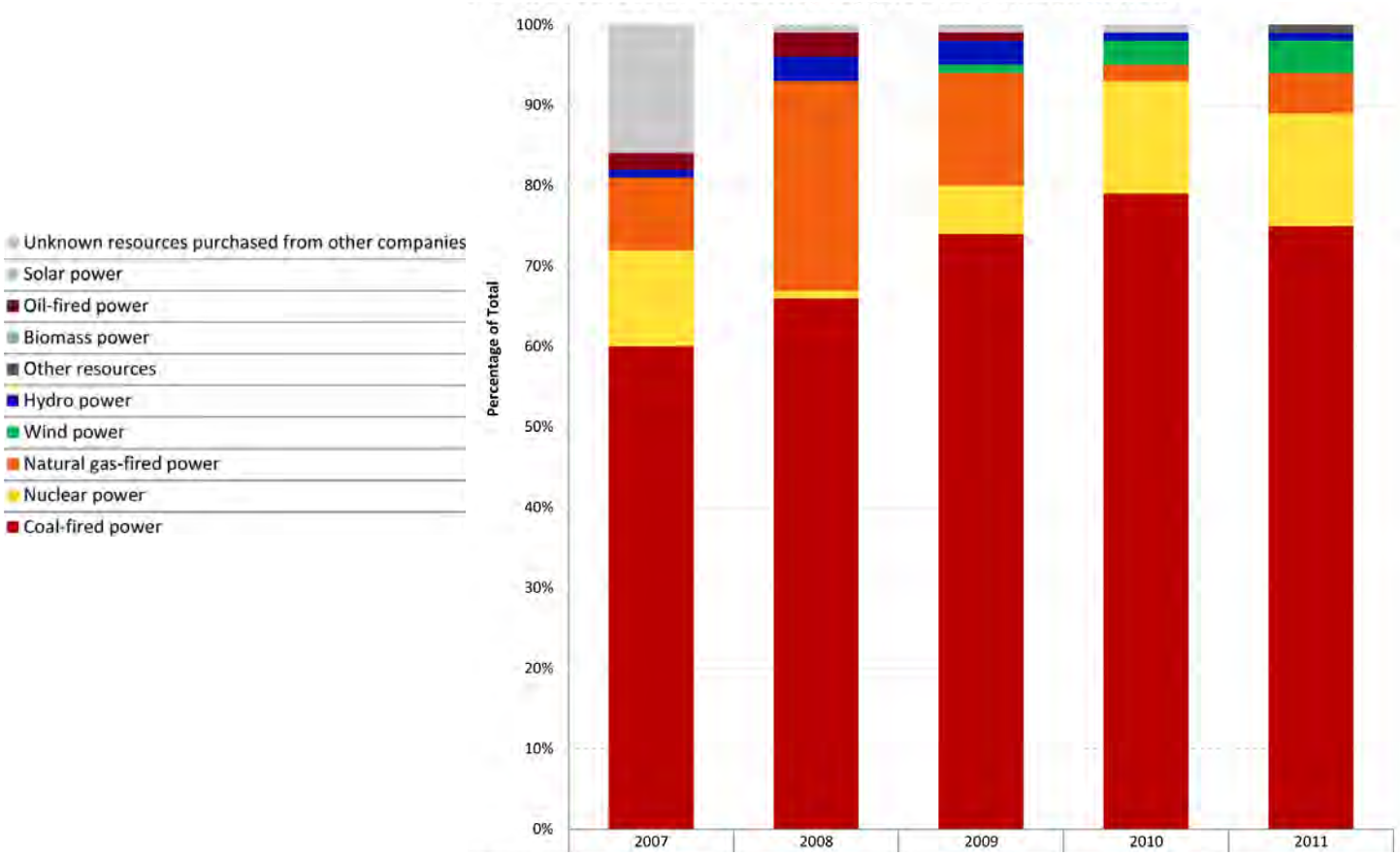
B. WEATHERIZATION

In October 2009, the City of Urbana received an Energy Efficiency and Conservation Block Grant (EECBG) to be used toward reducing its carbon footprint. A part of this grant ($72,000) was used to create an innovative program in partnership with Ameren Illinois' Act On Energy Program. Through this program residents were able to benefit from free residential energy audits and discounts on major envelope improvements. Under this program, residents of Urbana were provided with a free energy analysis of their residence and a compensation of an additional 40 percent of the Act On Energy Incentive available for Ameren customers for undertaking housing shell improvements, namely air sealing, attic insulation and wall insulation. Between 2010 and February 2012, 826 Urbana homes were audited, and 169 homes were retrofitted. Strategies to further reduce residential sector building energy consumption rely on securing additional funding to continue the community weatherization program.

The Champaign County Regional Planning Commission Community Services Department also offers a Illinois Home Weatherization Assistance Program (IHWAP) which is designed to reduce energy costs and improve home comfort levels for low income residents. IHWAP is funded by the U.S. Department of Energy (DOE), the U.S. Department of Health and Human Services (HHS), and the state supplemental Energy Assistance Fund. Between January and May 2012, a total of 982 units were assisted through this program countywide, including 177 multi-family units in Urbana.

C. AMEREN ILLINOIS' TRADITIONAL SOURCES OF ENERGY AND RELATED EMISSIONS AND NUCLEAR WASTE

Figure 12 shows the trends in the sources of the energy supplied for Ameren Illinois' entire service region, and the related greenhouse gas emissions and nuclear waste created for each year between 2007 and 2011.



EMISSIONS TYPE	2007	2008	2009	2010	2011
CARBON DIOXIDE (LBS)	1,625.00	1,825.00	1,844.00	1,800.00	1,768.00
NITROGEN DIOXIDE (LBS)	1.76	2.9	1.66	0.95	1.16
SULFUR DIOXIDE (LBS)	3.67	3.86	3.96	3.31	3.5
HIGH-LEVEL NUCLEAR WASTE (LBS)	0.00	<0.0001	<0.0001	0.0009	0.0008
LOW-LEVEL NUCLEAR WASTE (FT^3)	0.00	< 0.0001	<0.0001	0.0020	0.0002

Figure 12. Trends in the Sources of Electricity Supplied for Ameren Illinois and Related Average Amounts of Emissions and Nuclear Waste Created per 1000 Kilowatt-hours (KWhs) Produced from Known Sources *

*** For every 12 month period ending on June 30th of each year (2007-2011)**

Notes:
1. Source: Illinois Commerce Commission's website: www.icc.illinois.gov/electricity/environmentaldisclosure.aspx
2. On October 1, 2010 AmerenCIPS, AmerenCILCO and AmerenIP merged to form Ameren Illinois. Therefore, the 2011 column represents combined data of the three legacy companies. The columns for the years 2007 - 2010 reflects data for AmerenIP alone.

D. MUNICIPAL ELECTRIC AGGREGATION

Urbana voters approved municipal electric aggregation with a 71 percent vote in the March 20, 2012 referendum. The referendum allowed the City to bundle, or aggregate, residential and small commercial retail electric accounts and seek bids for cheaper power.

Starting in August 2012, Urbana residents and small businesses will benefit from a two-year contract with Homefield Energy of Collinsville provided they choose not to opt out of the electricity aggregation program. As per the contract, 100% of the electricity will either be supplied from renewable sources or will be offset by Renewable Energy Certificates (RECs) sourced from renewable energy generation including hydroelectric, wind and solar energy. Initial enrollment data indicates that 95 percent of Urbana's residential and small commercial retail electricity customers have opted to be a part of the municipal electric aggregation group.

The supplier, Homefield Energy, is required to provide the following quarterly reports to the City:

(i) A Power-Mix report, demonstrating that the supplier generated or purchased electricity with the claimed environmental attributes in amounts sufficient to match the actual consumption by customers; that the same generated energy was not sold to more than one customer; and that the electricity was supplied to the interconnected grid serving customers. This report must show the source of the power and demonstrate that the power supplied was in accordance with the State of Illinois Renewable Portfolio Standard and the federal Clean Air Act regulations and permits.

(ii) An REC report providing competent and reliable evidence to support the fact that the supplier purchased properly certified REC's in a sufficient quantity to offset the non-renewable energy provided in the mix.

(iii) An Aggregation Report showing the number of customers in the aggregation program, the total cost of energy provided to the program as compared to Ameren's default tariff service rates and; the suppliers efforts at customer education.

Balancing Short Term Benefits with the Long Term Risk:

While the supply of 100 percent renewable power through municipal aggregation is a positive achievement in the short time-frame, it is important for the community to continue to aggressively pursue energy efficiency measures to achieve Urbana's long-term emissions reduction goals.

Renewable energy prices may rise relative to other energy sources once beyond the 2012-2014 contract. Under this scenario, it may be financially unviable to continue to purchase renewable energy. Therefore, continued efforts to make the community more energy efficient in the intervening time will help mitigate:

(i) The risk of failing to reach community-wide emissions reductions targets due to a future reliance on non-renewable energy sources and;

(ii) The risk of future higher energy costs for residents from renewable and non-renewable energy sources.

E. RENEWABLE ENERGY CERTIFICATES[6]

Renewable Energy Certificates (RECs) are tradable instruments that can be used to meet voluntary renewable energy targets as well as to meet compliance requirements for renewable energy policies. A REC is a certificate that represents the generation of one megawatt-hour (MWh) of electricity from an eligible source of renewable energy. Each REC denotes the underlying generation electricity source, location of the generation, and year of generation, environmental emissions, and other characteristics associated with the generator. RECs represent the claim to the environmental attributes associated with renewable energy generation.

[6] Source: Guide to Purchasing Green Power, Office of Air, U.S. E.P.A., March 2010

RECs may be bundled (paired by the electric service provider with grid electricity delivered to the buyer) or unbundled from electricity as a stand alone product and paired by the buyer with its grid electricity purchase. RECs combined with plain grid electricity are equivalent to green power purchases from the local utility, no matter where the electricity is sourced.

Because RECs are not tied to the physical delivery of electrons, organizations can purchase green power from suppliers other than local utility providers. RECs therefore help overcome a major barrier to renewable facility development - as the best renewable sources may not be located close to population centers. The sale of RECs allows these more remote renewable energy facilities to benefit from the support for green power.

Figure 13 shows one possible way in which a REC can be traded and used.

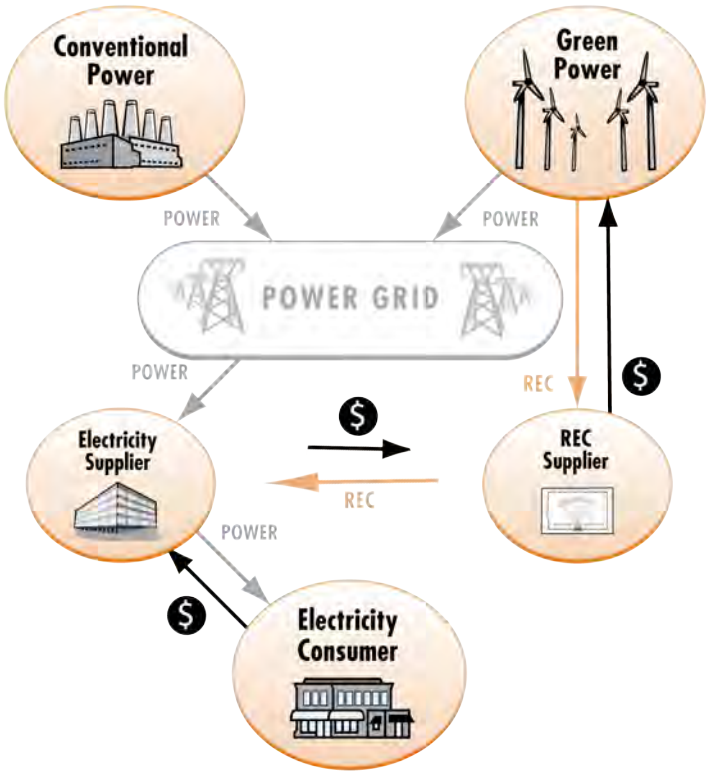


Figure 13. A Possible Renewable Energy Certificate (REC) Transaction Path in a Voluntary Green Power Market

Source: Adapted from Guide to Purchasing Green Power, Office of Air, U.S. E.P.A., March 2010. p. 10

3. GOALS, ACTIONS, & IMPLEMENTATION STRATEGIES

Roundabout on Stebbins Drive in Urbana (Image Courtesy Google Maps)

Curbside Recycling inUrbana

Philo Road, Urbana

3.1 PRIORITY ACTIONS

Phase I of the Urbana Climate Action Plan addresses the following four priority sectors. Together, these sectors account for 66 percent of emissions in Urbana:

1) Electricity, commercial sector;
2) Electricity, residential sector;
3) Gasoline, transportation sector;
4) Natural gas, residential sector.

Additionally, Phase I focuses on outreach, education and coordination.

The strategies recommended in this section have been identified as the most feasible ones to implement in the short term, based on relative ease and low cost of implementation. To the extent possible, strategies leverage existing programs and inter-governmental relationships, in particular, the City of Urbana, City of Champaign, Champaign County, and University of Illinois to pursue opportunities for collaboration on common goals.

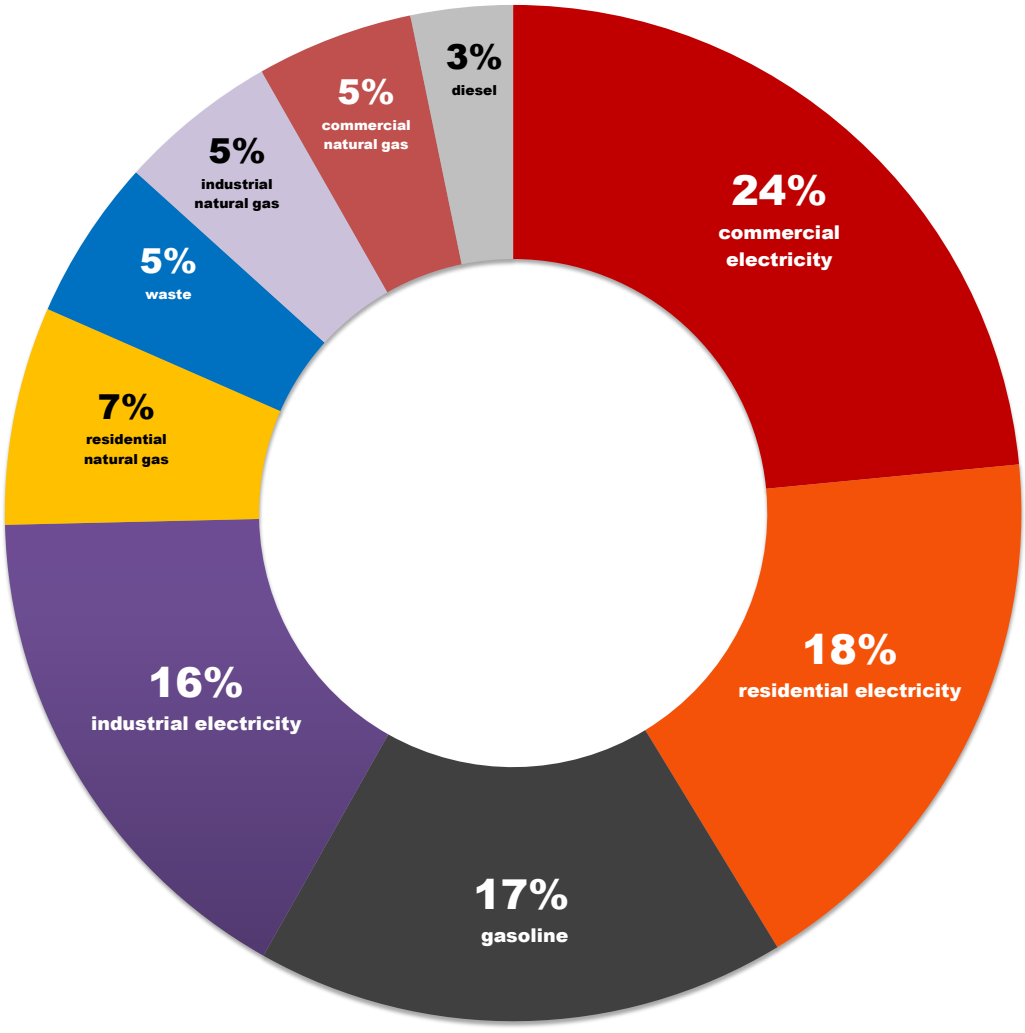


Figure 14. City of Urbana 2007 Baseline Greenhouse Gas Emissions Rank by Source and Sector

Note: Estimates were calculated using ICLEI's CACP software.

Figure 15 below describes one example of the contribution of various actions to Urbana's 2020 emissions reduction target. This example scenario was developed using the ICLEI CAPPA software.

Together, these example actions can help Urbana achieve 80% of it's 2020 greenhouse gas emissions reduction target. [1]

- Purchasing Renewable Energy Certificates for 20% of community electricity requirements can help Urbana achieve **32%** of its emissions reduction target.
- Purchasing Green Electricity for 100% of government operations and 50% of Community electricity requirements can help Urbana achieve **27%** of its emissions reduction target.
- If 100 City Fleet vehicles and 2500 privately-owned vehicles are flexible fuel vehicles able to run on up to 85% ethanol and 15% gasoline it will help Urbana achieve **5%** of its emissions reduction target.
- Targeted outreach and education programs that offer information about and encourage and incentivize conservation measures can help Urbana achieve **5%** of its emissions reduction target.
- Education and individualized surveying of people to find out their interest in automobile alternatives and sending out targeted information on low-carbon transportation options can help Urbana achieve **3%** of its emissions reduction target.
- Outreach and educational programs that offer information about and encourage conservation measures tailored specifically for small businesses and active participation of 500 businesses in green practices can help Urbana achieve **2%** of its emissions reduction target.
- Generating 50kW photovoltaic energy for powering City Operations and 5000 kW photovoltaic energy towards community energy needs will help Urbana achieve **2%** of its emissions reduction target.
- If 50 City Fleet vehicles and 1000 privately-owned vehicles are electric vehicles, it can help Urbana achieve **2%** of its emissions reduction target.
- Replacing inefficient and older lighting fixtures with new electronic ballasts and T-8 size tubes for 50,000 sq ft of City property and 4,000,000 sq ft of private facilities can help Urbana achieve **2%** of its emissions reduction target.

[1] This contribution to be updated after the first quarterly municipal electric aggregation report showing the total energy supplied from green energy sources and the quantity of Renewable Energy Credits (RECs) purchased towards the total energy supplied to Urbana residential and small commercial customers in the municipal electric aggregation program is available.

Figure 15. Examples of Community-Wide Actions and Their Contribution Towards Reaching Emissions Reduction Targets

Source: Climate and Air Pollution Planning Assistant V1.5, ICLEI

EMISSIONS REDUCTION TARGET
227,200 MT CO_2e by 2020

Together, these example actions can help Urbana achieve 10% of it's 2020 GHG emissions reduction target.

- Energy Efficiency Retrofits of 50,000 sq ft of existing Government and 1,500,000 sq ft of existing Community Facilities
- Commercial Energy Code for 1,500,000 sq ft of new construction and renovations
- Lighting Occupancy Sensors for 50,000 sq ft of Government and 1,250,000 sq ft of Community Facilities
- Incentivize and Assist Green Building Efforts for 750,000 sq ft of Community Facilities
- Hybrid Vehicles - 25 hybrids used for Government Operations and 1,000 hybrids used in the Community
- Green Building for 50,000 sq ft of new construction and renovation of Government and 1,000,000 sq ft of Community Facilities.
- Energy Efficiency Retrofit at time of Sale for 3,000 homes sold over 10 years
- 375 businesses participating in Green Business Programs

Together, these example actions can help Urbana achieve 10% of it's 2020 GHG emissions reduction target.

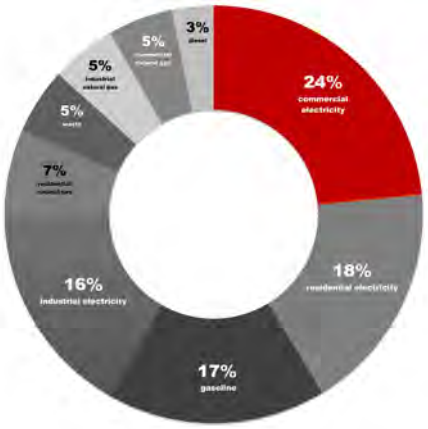
- Limit Idling of Heavy Duty Vehicles (trucks) for 50 government vehicles and 500 community vehicles
- Fleet Conversion of 200 community vehicles to Biodiesel (B20)
- Water Conservation Ordinance (12% on household saving)
- Use Geothermal Heat Pump for Heating and Cooling for 800 homes
- High Efficiency Water Heaters (replace 5 government heaters and 1,500 water heaters in community)
- Provide Free High School Bus Passes to 3,000 students
- Low-income Home Weatherization for 900 homes
- Energy Efficient Vending Machines (replace 5 government and 600 vending machines in the community with ENERGY STAR vending appliances)
- Energy Efficient Affordable Housing (250 homes to be built)
- Energy Efficient Refrigerators (replace 5 government and 2,000 refrigerators in community)
- Compressed Natural Gas (CNG) Vehicles 50 for government vehicles and 400 vehicles in the community
- Energy Efficient Printers (replace 30 government printers and 2,250 printers in the community with ENERGY STAR printers)
- Energy Efficient Computers (replace 125 government computers and 4,000 computers in the community with ENERGY STAR computers)
- Initiate a Carshare (500 participants)
- HVAC Fan Upgrades (upgrade 50,000 sq.ft. government facilities and 2,000,000 sq.ft. community facilities)
- Use Solar Hot Water (500 homes use solar hot water)
- Energy Efficient Copiers (replace 20 government copiers and 1,000 computers in the community with ENERGY STAR copiers)
- Provide Bicycles for Daily Trips (200 City employees offered bicycles or incentives to use bicycles and 300 bicycles made available for the community)
- Increase Chiller Efficiency (upgrade 25,000 sq.ft. government facilities and 800,000 sq.ft. community facilities)
- Electric Vehicle Charging Stations on Parking Structures (provide 200 vehicle charging stations)
- Strict Residential Energy Code for 400 units of new housing construction
- Low-Maintenance Landscaping (on 5 acres of government operations and 500 residences)
- Switch Electric Heat to Natural Gas (for 500 homes)
- Reflective Roofing (for 15,000 sq.ft of government facilities and 500,000 sq. ft. of community buildings)
- LED Holiday Lights (30,000 strings replaced with LED lights)
- Use Smaller Fleet Vehicles (10 smaller vehicles used in government operations and 150 smaller vehicles used in the community)
- Water Saving Shower Heads (2 shower heads replaced for government operations and 1,500 shower heads replaced in the community)
- Bicycling Paths and Facilities (200 employees offered improved bicycle facilities and 2,500 weekly community trips switch from car to bicycle)
- Energy-Efficient Dish Washers (2,000 dishwashers replaced with ENERGY STAR washers in the community)
- Efficient Clothes Washers (2,000 clothes washers replaced with ENERGY STAR washers in the community)
- Offer Loans for Energy Efficiency Improvements (600 homes retrofitted)
- Energy Efficient Computer Monitors (replace 125 government monitors and 4,000 monitors in the community with ENERGY STAR monitors)
- Increase Bus Ridership (500 number of additional daily bus passengers)
- Parking and Lane Incentives for Hybrid Vehicles (50 number of additional hybrids purchased over 10 years)
- Energy Efficient Exit Signs (replace 30 government signs and 800 signs in the community)
- Promote Carpooling and Vanpooling (20 City employees and 1,000 employees in the community offered carpool and vanpool incentives)
- Integrate Bicycles and Transit (250 number of additional daily bike/transit trips replacing car trips)
- Increase Bus Ridership (25 City employees switch from car to bus and 250 number of additional daily bus passengers)
- Green Roofs (for 10,000 sq.ft of government facilities and 200,000 sq. ft. of community buildings)
- Limit Idling of Local Transit Buses and School Buses (for 100 buses)
- Compact Fluorescent Light Bulb (CFL) Distribution (replace 2,500 bulbs)
- Energy Efficient Room Air Conditioners (1,000 window air conditioners replaced with ENERGY STAR units in the community)
- Promote Telecommuting (700 employees in the community offered telecommuting incentives)
- Increase Urban Forest (250 trees planted)
- Exchange Fluorescent Torchieres to Replace Halogen (500 halogen torchieres replaced with fluoresent)
- Increase Boiler Efficiency (upgrade 25,000 sq.ft. government facilities and 1,000,000 sq.ft. community facilities)
- Plant Trees to Shade Buildings (25 trees planted to shade government buildings and 350 trees planted to shade community buildings)
- Energy Efficient Water Coolers (300 water coolers replaced with ENERGY STAR coolers)
- Expand Curbside Recycling Programs (waste diverted from landfills 75lbs/person/year)
- Expand Business Recycling Programs (waste diverted from landfills 50lbs/person/year)
- Water Saving Faucets (replace 30 faucets in government facilities and 1,500 faucets in the community)
- Walking Friendly Environments (1,000 weekly trips switched from car to walking)
- Implement Pay-as-You-Throw Program (waste reduced by 25 lbs/person/year)
- Organics Composting (waste diverted from landfill 40 lbs/person/year)
- Reuse or Recycling of Construction Materials (waste diverted from landfills: 4lbs/sq.ft construction for government operations and 4lbs/sq ft for community construction)
- High Efficiency Toilets (15 toilets or urinals replaced in government operations and 1,000 toilets or urinals replaced in the community)

3.2 GOAL 1: REDUCE EMISSIONS FROM BUILDING ENERGY CONSUMPTION

Action 1: Reduce emissions from commercial sector building electricity consumption.

Electricity use in the commercial sector accounts for 24 percent of emissions in Urbana. The most important end uses of energy in this sector include air conditioning, lighting, and ventilation. A focus on energy efficiency should yield at least 25 percent reduction for emissions from commercial building electric consumption, or 6 percent overall emissions reduction for the City.

Data from Ameren is based on account type. Depending on the number of units in a building and whether they are separately metered, a residential rental property may have a residential or commercial account. Data for the commercial sector therefore include both residential and commercial properties.



IMPLEMENTATION STRATEGIES	IMPLEMENTATION PARTNERS
Energy Efficiency:	
1. Facilitate access and increase the impact of existing technical assistance and incentive programs. Technical assistance is available from organizations like the Smart Energy Design and Assistance Center (SEDAC) and the Illinois Sustainable Technology Center (ISTC), at the University of Illinois at Urbana-Champaign, and the Ameren Act On Energy Program.	• City of Urbana, SEDAC, ISTC, Ameren Illinois, Illinois Green Business Association (IGBA), Urbana Business Association (UBA)
2. Create programs to encourage businesses to retrofit existing buildings and purchase energy star appliances.	• City of Urbana, Illinois Green Business Association (IGBA), Urbana Business Association (UBA)
Financial:	
3. Identify additional sources of funding to leverage existing resources.	• City of Urbana
Information and Outreach:	
4. Organize education programs, create an information platform and organize site visits to completed projects in the community to highlight best practices and facilitate access to existing sources of technical expertise in the community.	• City of Urbana, U.S. Green Building Council Central Illinois Branch (USGBC-IL), Champaign County Sustainability Network (CCNet), Illinois Sustainable Technology Center (ISTC)
5. Identify specific barriers through focus groups and surveys in the local business and commercial community.	• City of Urbana ,Urbana Business Association (UBA), Champaign County Chamber of Commerce, Champaign County Economic Development Corporation (CCEDC)

Existing Programs

- *SEDAC maintains a comprehensive list of Energy Incentive opportunities at http://smartenergy.arch.uiuc.edu/energy-incentives.html.*
- *Public sector customers are eligible for incentives through the Illinois Department of Commerce & Economic Opportunity (DCEO) Illinois Energy Now program.*
- *Energy efficiency incentives for private sector are available to customers of ComEd (electric) through Smart Ideas, Ameren Illinois (gas and electric) through ActOnEnergy, Nicor (gas), North Shore (gas), or Peoples Gas (gas). Eligible business customers can apply for Illinois Energy Efficiency Portfolio Standard (EEPS) money directly through their subscribed utility delivery provider.*
- *Information regarding Illinois Commercial Incentives can be found on the U.S. Department of Energy's database of State Incentives for Renewables and Efficiency at https://www.dsireusa.org*

Associated Advantages

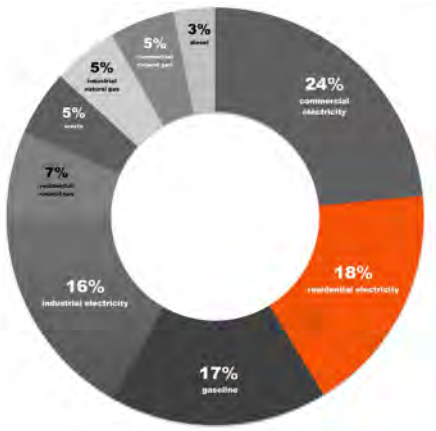
1. Annual energy cost savings
2. Improved air quality and health
3. Green jobs

3.2 GOAL 1: REDUCE EMISSIONS FROM BUILDING ENERGY CONSUMPTION

Action 2: Reduce emissions from residential sector building electricity consumption.

Electricity use in the residential sector accounts for 18 percent of emissions in Urbana. Phase I actions focus on renewable energy through Renewable Energy Certificates (RECs).

Renewable Energy Certificates represent and convey the environmental and other non-power attributes of one megawatt-hour of renewable electricity generation. See page 46 for more information on RECs.



IMPLEMENTATION STRATEGIES	IMPLEMENTATION PARTNERS
Renewable Energy:	
1. Facilitate the use of Renewable Energy Certificates (RECs) through municipal electric aggregation. This alone can result in a major beneficial impact by helping Urbana achieve 32% of its 2020 emissions reduction goal.	• City of Urbana
2. Work towards maintaining purchase of clean renewable energy through municipal electric aggregation over a long-term horizon through discussions with utility companies, the City of Champaign and the University of Illinois.	• City of Urbana
Energy Efficiency:	
3. Create programs to encourage residents to retrofit existing buildings and purchase energy star appliances.	• City of Urbana, Smart Energy Design Assistance Center (SEDAC), Ameren Illinois, Illinois Sustainable Technology Center (ISTC)
Financial:	
4. Identify additional sources of funding to leverage existing resources.	• City of Urbana
Information and Outreach:	
5. Organize education programs, create an information platform and organize site visits to completed projects in the community to highlight best practices and facilitate access to existing sources of technical expertise in the community.	• City of Urbana, U.S. Green Building Council Central Illinois Branch (USGBC-IL), Champaign County Sustainability Network (CCNet), Illinois Sustainable Technology Center (ISTC)
6. Identify specific barriers through focus groups and surveys in the local community.	• City of Urbana

Existing Programs

• SEDAC maintains a comprehensive list of Energy Incentive opportunities at http://smartenergy.arch.uiuc.edu/energy-incentives.html.

• Information regarding Illinois Residential Incentives can be found on the U.S. Department of Energy's database of State Incentives for Renewables and Efficiency at https://www.dsireusa.org.

• Energy efficiency incentives for private sector are available to customers through their subscribed utility delivery provider.

Associated Advantages

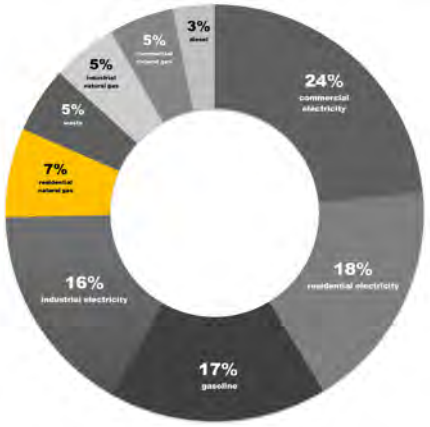
1. Annual energy cost savings
2. Improved air quality and health
3. Green jobs
4. Increased demand for renewable energy investment

3.2 GOAL 1: REDUCE EMISSIONS FROM BUILDING ENERGY CONSUMPTION

Action 3: Reduce emissions from residential sector building natural gas consumption.

Heating is the most significant end use of natural gas in the residential sector. Weatherization and insulation are cost effective techniques for reducing natural gas use in this sector.

Urbana has expended all funds from the U.S. D.O.E. Energy Efficiency Conservation Block Grant, which were used in part to leverage existing incentives from the Ameren Act On Energy Program. In order to continue to drive down natural gas usage in the residential sector, a primary strategy of seeking additional funding to continue Urbana's weatherization program is recommended.



IMPLEMENTATION STRATEGIES	IMPLEMENTATION PARTNERS
Energy Efficiency:	
1. Seek additional funding to continue Urbana's weatherization program.	• City of Urbana, Smart Energy Design Assistance Center (SEDAC), Illinois Sustainable Technology Center (ISTC), Ameren Illinois, U.S. Department of Energy (DOE)
Information and Outreach:	
2. Launch a campaign to encourage residents to use programmable thermostats with appropriate settings and implement simple weatherization techniques.	• City of Urbana, Smart Energy Design Assistance Center (SEDAC), Illinois Sustainable Technology Center (ISTC)
3. Organize education programs, create an information platform and organize site visits to completed projects in the community to highlight best practices and facilitate access to existing sources of technical expertise in the community.	• City of Urbana, Smart Energy Design Assistance Center (SEDAC), U.S. Green Building Council Central Illinois Branch (USGBC-IL), Champaign County Sustainability Network (CCNet), Illinois Sustainable Technology Center (ISTC)
4. Identify specific barriers through focus groups and surveys in the local community.	• City of Urbana

Existing Programs

• SEDAC maintains a comprehensive list of energy incentive opportunities at http://smartenergy.arch.uiuc.edu/energy-incentives.html.

• Information regarding Illinois residential incentives can be found on the U.S. Department of Energy's database of State Incentives for Renewables and Efficiency at https://www.dsireusa.org.

• Energy efficiency incentives for private sector are available to customers through their subscribed utility delivery provider.

Associated Advantages

1. Annual energy cost savings
2. Improved air quality and health
3. Green jobs

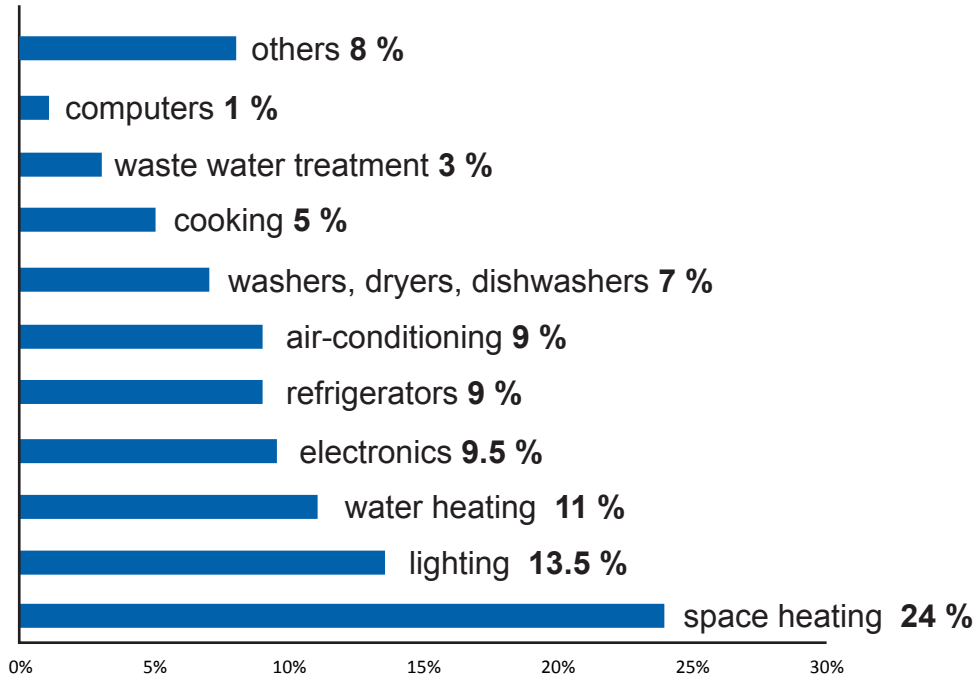


Figure 16. Residential Building Energy Emissions Sources

Source: U.S. Energy Information Administration
Prepared By: Smart Energy Design Assistance Center (SEDAC)

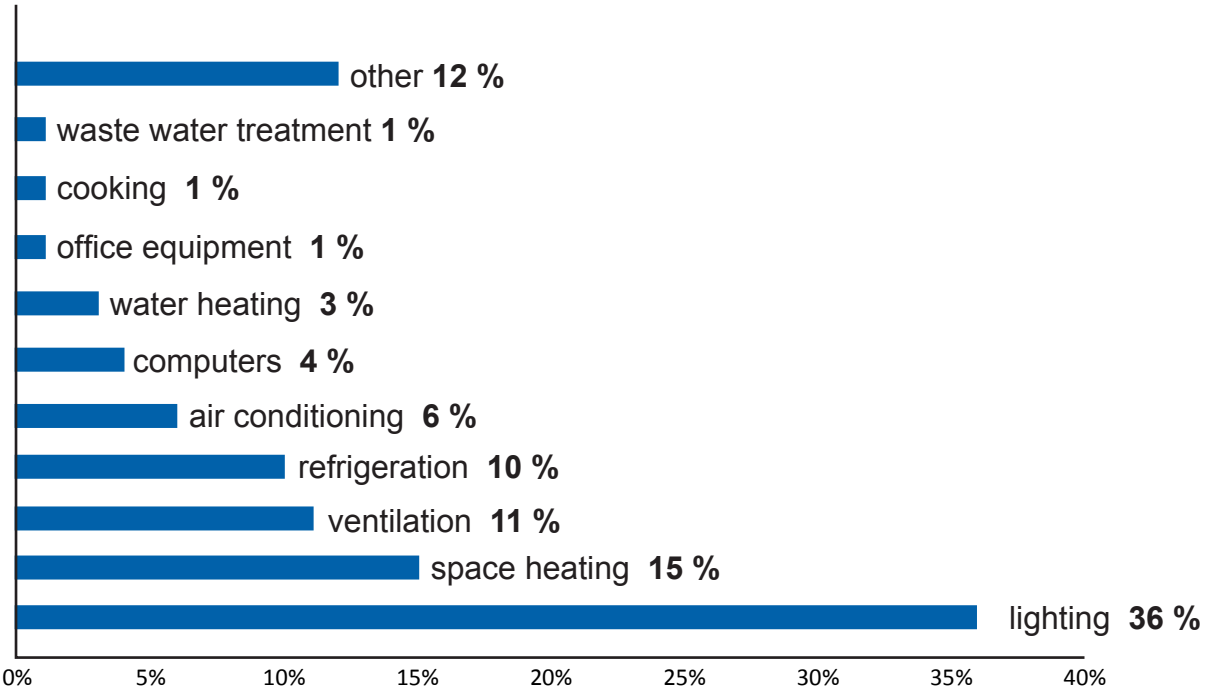


Figure 17. Commercial Building Energy Emissions Sources

Source: U.S. Energy Information Administration
Prepared By: Smart Energy Design Assistance Center (SEDAC)

3.2 GOAL 2: REDUCE EMISSIONS FROM GASOLINE CONSUMPTION

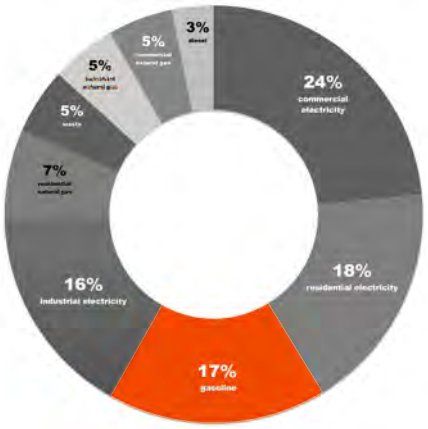
Emissions from the gasoline transportation sector account for 17 percent of Urbana's greenhouse gas emissions, making this a high priority action area. Immediate action in encouraging a reduction in these emissions is necessary through education programs, infrastructure development, and by encouraging shared commuting.

Action 1: Support sustainable transportation through infrastructure improvements.

Action 2: Promote a culture of sustainable transportation.

Action 3: Encourage participation in sustainable transportation programs.

Action 4: Consider transportation sector emissions projections in land-use planning decisions.



Associated Advantages

1. Annual energy cost savings
2. Improved air quality and health
3. Improved fitness
4. Quality of life

IMPLEMENTATION STRATEGIES

IMPLEMENTATION PARTNERS

Energy Efficiency:

1. Pursue bicycle and pedestrian infrastructure improvements.

2. Pursue the development of energy-efficient transportation infrastructure such as modern roundabouts and other yield-controlled intersections, and speed control and traffic-calming measures.

- City of Urbana, Champaign Urbana Urbanized Area Transportation Study (CUUATS), Champaign Urbana Mass Transit District (CUMTD)

Existing Plans

3. Implement recommendations from the 2010 Urbana Bicycle Master Plan, the 2009 Long Range Transportation Plan, and the 2004 Champaign County Greenways and Trails Plan.

- City of Urbana, Champaign Urbana Urbanized Area Transportation Study (CUUATS), Champaign County Regional Planning Commission (CCRPC)

Information and Outreach:

4. Provide and promote education on safe bicycling practices, and for motorists, bicyclists and pedestrians to share the road.

5. Promote energy efficient driving techniques.

6. Encourage residents to use walking or bicycling for at least a part of their weekly transportation needs.

- City of Urbana, Urbana Bicycle and Pedestrian Advisory Committee, Champaign County Bikes, Champaign Urbana Mass Transit District (CUMTD)

7. Pursue local government actions recommended in the State of Illinois Electric Vehicle Advisory Council Report published in December 2011. See Appendix G for a comprehensive list of recommendations.

- City of Urbana

8. Collaborate with local business and institutions to create programs encouraging shared commuting, car-share, bike-share and bike purchase programs.

- City of Urbana, University of Illinois Urbana-Champaign (UIUC), City of Champaign, Champaign County Regional Planning Commission (CCRPC), Champaign Urbana Mass Transit District (CUMTD)

9. Identify specific barriers to adopting more active and energy-efficient transportation behaviors through focus groups and surveys, and provide information and resources to help overcome these barriers.

- City of Urbana

3.2 GOAL 2: REDUCE EMISSIONS FROM GASOLINE CONSUMPTION

Transportation in Urbana

As per the 2010 U.S. Census and 2010 American Community Survey (ACS) 5-year estimates, 12.4 percent of the workers living in the City of Urbana use public transportation (including taxicabs) when travelling to and from work. 17.9 percent walked to work and 5.3 percent of the workers living in Urbana bicycled to work. Table 3 below describes Urbana's commuting to work transportation modes in the regional context.

TABLE 3. COMMUTING TO WORK TRANSPORTATION MODES IN THE CHAMPAIGN-URBANA REGION IN 2010

Transportation Mode	Percentage of Workers in Population Aged 16 or older			
	Urbana	Champaign	Savoy	Bondville
Car, truck, or van; drove alone	51.6%	65.3%	75.8%	82.9%
Car, truck, or van; carpooled	7.7%	7.9%	11.5%	14.4%
Public Transportation (including taxicab)	12.4%	6.7%	4.6%	0.0%
Walked	17.9%	12.4%	0.9%	0.0%
Bicycled	5.3%	2.8%	1.1%	0.8%
Other means	0.5%	1.0%	0.3%	0.0%
Worked at home	4.6%	3.9%	5.7%	1.9%

Source: Champaign-Urbana Urbanized Area Transportation Study (CUUATS), 2011 Report Card
Prepared by the Champaign County Regional Planning Commission

The total mileage of bike facilities, including shared-use an on-street paths, has increased 21 percent throughout the Champaign-Urbana area between 2009 and 2011. As per the 2011 CUUATS Report Card, there has been a 176 percent increase in on-street bike lanes in the past two years, indicating progress towards active transportation modes. Table 4 below describes the miles of bicycle facilities in Urbana in the regional context. As per the 2010 ACS 1-year estimates, a majority of residents in the Champaign-Urbana urbanized area take less then 15 minutes to reach their place of work.

TABLE 4. MILES OF BICYCLE FACILITIES IN THE CHAMPAIGN-URBANA REGION IN 2011

Miles of Bicycle facilities - All (2011)

Path Type	Urbana	Champaign	Savoy	Total
Shared-Use Path (off-street)	5.5	18.3	0.3	24.1
Shared-Use Path (sidepath)	13.7	7.2	0.5	21.4
Divided Shared-Use Path	0.0	4.6	0.0	4.6
Bike Path	0.0	0.0	1.4	1.7
UIUC Bike Path	4.4	1.8	0.0	6.2
Bike Lanes (on-street)	4.9	7.4	0.7	13.1
Shared Lane Markings (sharrows)	0.9	0.8	0.0	1.7

Source: Champaign-Urbana Urbanized Area Transportation Study (CUUATS), 2011 Report Card
Prepared by the Champaign County Regional Planning Commission

3.2 GOAL 3: FORMULATE STRATEGIES TO REDUCE EMISSIONS FROM RENTAL AND INDUSTRIAL SECTORS

Action 1: Form a task force to study special considerations for rental properties.

Rental units make up about two thirds of Urbana's housing units as well as a significant amount of commercial space. Improvements in residential rental units could contribute significantly to the Climate Action Plan goals.

Attaining greenhouse gas reductions in rental units is complicated by the fact that utility bills are often the responsibility of the tenant, and there is little economic incentive to expend capital on energy efficiency for landlords or owners. Rental units are typically ineligible for incentive funds. This conflict has implications for housing affordability and quality of life.

Rental properties are not defined as a category or sector in the greenhouse gas emissions inventory. Even so, there are special considerations related to greenhouse gas emissions strategies for rental properties, regardless of whether they fall into the residential or commercial sector.

Associated Advantages
1. Annual energy cost savings
2. Improved air quality and health
3. Green jobs
4. Quality of life

IMPLEMENTATION STRATEGIES	IMPLEMENTATION PARTNERS
Information and Outreach: 1. Form a task force to study the special considerations of Urbana's rental residential and commercial properties.	• City of Urbana, Urbana Business Association (UBA), Champaign County Chamber of Commerce, Champaign Urbana Tenant Union • City of Urbana, Smart Energy Design Assistance Center (SEDAC), Center for Neighborhood Technology (CNT)
2. Explore programs that can assist renters in making informed housing choices based on knowledge of rent, utilities and transportation costs of residential properties while allowing landlords to compete on true costs.	

Action 2: Form a task force to study special considerations for the industrial sector.

Electric usage by the industrial sector is the fourth largest source of greenhouse gas emissions in Urbana, accounting for 16% of emissions. Because industrial processes vary, it is difficult to make a blanket recommendation for emissions reduction in this sector. In addition, there are implications for economic development that are tied to growth of the city's industrial sector.

IMPLEMENTATION STRATEGIES	IMPLEMENTATION PARTNERS
Information and Outreach: 1. Form a task force of business owners, planning staff, SAC representatives, and energy efficiency subject matter experts to develop greenhouse gas reduction strategies for the industrial sector.	• City of Urbana, Urbana Business Association (UBA), Champaign County Chamber of Commerce, Smart Energy Design Assistance Center (SEDAC), Illinois Green Business Association (IGBA), Champaign County Economic Development Council (CCEDC)

3.2 GOAL 4: PREPARE FOR CLIMATE CHANGE IMPACTS

Action 1: Form a task force to study special considerations for adapting to local climate change impacts.

Goals 1, 2 and 3 outline strategies to mitigate the negative impacts of climate change by focusing on the sources of greenhouse gas emissions. These activities have the potential to create global and long-lasting positive environmental impact. However, effects of climate change are already observable in several regions in the U.S. and other countries. Therefore planning activities involving adjustments to natural and human systems in response to actual or anticipated impacts are vital components of a Climate Action Plan. These activities, known as adaptation activities, can mitigate risk and vulnerability in a community at a later date, in addition to having local and immediate benefits.

The City should anticipate climate change sectors of high risk and should prepare for potential impacts. As a preliminary step, a task force should be created to study potential impacts in Urbana and advocate for the integration of sustainable development practices which will mitigate vulnerability and risk into infrastructure development programs.

Associated Advantages

1. Annual energy cost savings
2. Improved air quality and health
3. Green jobs
4. Adaptation to climate change impact

IMPLEMENTATION STRATEGIES

Information and Outreach:

1. Form a task force of planning staff, public works staff, the SAC, and other subject matter experts to study the special considerations for preparing for local climate change impacts.

IMPLEMENTATION PARTNERS

• City of Urbana, Champaign Urbana Public Health District, University of Illinois, Champaign County Regional Planning Commission (CCRPC), Urbana & Champaign Sanitary District

3.2 GOAL 5: PURSUE COORDINATION AND OUTREACH

Associated Advantages
1. Annual energy cost savings
2. Enhanced cooperation among diverse stakeholders
3. Sharing infrastructure and resources in the community

Coordination

Action 1: Coordinate city plans and policies with climate action goals.

In order to assist the City in reaching its greenhouse gas reduction goal, the Sustainability Advisory Commission will review and make recommendations on city plans. legislation, policies and projects, including:
1. Comprehensive Plan updates
2. Capital Improvement Plan
3. Downtown Strategic Plan updates
4. Ordinances related to building energy use, such as building codes
5. Transportation projects
6. Major land-use and development issues
7. City and regional transportation plans including the Long Range Transportation Plan
8. Bicycle and Pedestrian Master Plan
9. Greenways and Trails Plan
10. Subdivision and Land Development Code
11. Other policies, plans and ordinances whose content relates to greenhouse gas emissions, including but not limited to transportation, economic development and land use.

IMPLEMENTATION STRATEGIES	IMPLEMENTATION PARTNERS
1. Establish a communication protocol for SAC coordination of City plans and policies.	• City of Urbana
2. Form an Inter-Departmental City Green team to coordinate sustainability and climate action activities in an integrated and efficient manner.	• City of Urbana

Information and Outreach

Action 2: Encourage energy efficient behavior and individual actions.

In addition to Goals 1,2, 3 which have the potential to produce significant greenhouse gas reductions, there are numerous steps that we can all take to reduce emissions. These actions largely relate to energy efficiency and consumer choices. They cover a wide range of options such as thermostat settings, local purchases, water conservation and lighting choices. Collectively such activity will be an important part of achieving the overall goals. Educational and other assistance on such options should be made available to building owners and occupants.

Action 3: Encourage energy efficiency in new developments.

When planning and constructing new developments, construction methods, technologies and materials allow for the integration of a high degree of energy efficiency in the building structure. Ensuring that such methods and technologies are employed will help mitigate negative impacts of growth. Planning processes should focus on these critical opportunities.

Action 4: Encourage participation in existing sustainability programs.

The City of Urbana and the wider community is currently invested in several sustainability focused programs and activities. It is a climate action priority to encourage greater participation in these programs.

3.2 GOAL 5: PURSUE COORDINATION AND OUTREACH

IMPLEMENTATION STRATEGIES	IMPLEMENTATION PARTNERS
1. Partner with Neighborhood Associations and stakeholders in the construction, business and industrial sectors to identify specific barriers to participation in climate action activities and areas for integration of economic development goals in climate action goals.	• City of Urbana, United Citizens and Neighbors (UCAN), Downtown Neighborhood Association (DNA), North Broadway Neighbors (NBN), West Urbana Neighborhood Association (WUNA), Historic East Urbana Neighborhood Association (HEUNA), Lierman Neighborhood Action Committee (LNAC), Southeast Urbana Neighborhood Association (SUNA), AmVets II Neighborhood Association, Urbana Community Alternative Policing (UCAP), UBA, IGBA
2. Seek opportunities to collaborate on climate action events and programs with Urbana School District 116.	• City of Urbana, Urbana School District 116
3. Publicize and encourage participation in existing programs.	• City of Urbana

Monitor Progress

Action 5: Monitor progress towards climate action goals.

Monitoring progress on various activities and gathering information on the effectiveness of various strategies is the critical component to achieving the 25 percent greenhouse gas emissions reduction target.

IMPLEMENTATION STRATEGIES	IMPLEMENTATION PARTNERS
1. Define indicators to measure progress towards climate action goals.	• City of Urbana
2. Monitor progress by conducting an emissions inventory at two year intervals.	• City of Urbana
3. Review briefs on aspects of emissions accounting associated with municipal electric aggregation.	• City of Urbana

ADDITIONAL RECOMMENDATIONS:

1. Create a unified online public forum for the Climate Action Plan to facilitate access to information regarding incentives, best practices, existing programs and climate action events for residents and business owners.

2. Develop an online public engagement platform, to sustain community-wide conversation regarding climate action in Urbana.

3. Design and implement an energy efficiency challenge to motivate residents to save energy.

4. Coordinate emissions inventories with regional land-use and transportation planning processes.

5. Advocate required reporting of solid waste and energy consumption data in Illinois.

	Implementation Strategies	Category of Strategy	Priority	Potential Partners
Goal 1	**REDUCE EMISSIONS FROM BUILDING ENERGY CONSUMPTION**			
Action 1	**Reduce Emissions from Commercial Sector Building Electric Consumption**			
1	Facilitate access and increase the impact of existing technical assistance and incentive programs. Technical assistance is available from organizations like the Smart Energy Design and Assistance Center (SEDAC) and the Illinois Sustainable Technology Center (ISTC), at the University of Illinois at Urbana-Champaign, and the Ameren Act On Energy Program.	**Energy Efficiency**	1	City of Urbana, SEDAC, ISTC, Ameren Illinois, IGBA, UBA
2	Create programs to encourage businesses to retrofit existing buildings and purchase energy star appliances.	**Energy Efficiency**	3	City of Urbana , IGBA, UBA
3	Identifiy additional sources of funding to leverage existing resources	**Financial**	1	City of Urbana
4	Organize education programs, create an information platform and organize site visits to completed projects in the community to highlight best practices and facilitate access to existing sources of expertise in the community.	**Information and Outreach**	1	City of Urbana, USGBC-IL, CCNet, ISTC
5	Identify specific barriers through focus groups and surveys in the local business and commercial community.	**Information and Outreach**	2	City of Urbana, UBA, Champaign County Chamber of Commerce, CCEDC
Action 2	**Reduce Emissions from Residential Sector Building Electric Consumption**			
1	Facilitate the use of Renewable Energy Certificates (RECs) through municipal electric aggregation. This alone can result in a major beneficial impact by helping Urbana achieve 32% of its 2020 emissions reduction goal.	**Renewable Energy**	1	City of Urbana
2	Work towards maintaining purchase of clean renewable energy through municipal electric aggregation over a long-term horizon through discussions with Utility companies, the City of Champaign and the University of Illinois.	**Renewable Energy**	1	City of Urbana
3	Create programs to encourage residents to retrofit existing buildings and purchase energy star appliances.	**Energy Efficiency**	3	City of Urbana, SEDAC, Ameren Illinois, ISTC
4	Identifiy additional sources of funding to leverage existing resources.	**Financial**	1	City of Urbana
5	Organize education programs, create an information platform and organize site visits to completed projects in the community to highlight best practices and facilitate access to existing sources of expertise in the community.	**Information and Outreach**	1	City of Urbana, USGBC-IL, CCNet, ISTC
6	Identify specific barriers through focus groups and surveys in the local community.	**Information and Outreach**	2	City of Urbana
Action 3	**Reduce Emissions from Residential Sector Building Natural Gas Consumption**			
1	Seek additional funding to continue Urbana's weatherization program.	**Financial**	1	City of Urbana, SEDAC, ISTC, Ameren Illinois, U.S. Department of Energy
2	Launch a campaign to encourage residents to use programmable thermostats with appropriate settings and implement simple weatherization techniques.	**Information and Outreach**	1	City of Urbana, SEDAC
3	Organize education programs, create an information platform and organize site visits to completed projects in the community to highlight best practices and facilitate access to existing sources of expertise in the community.	**Information and Outreach**	1	City of Urbana, SEDAC, USGBC-IL, CCNet, ISTC
4	Identify specific barriers through focus groups and surveys in the local community.	**Information and Outreach**	2	City of Urbana

Acronyms used:

ISTC: Illinois Sustainable Technology Center
CCEDC: Champaign County Economic Development Corporation
CCRPC: Champaign County Regional Planning Commission
CUUATS: Champaign Urbana Urbanized Traffic Study
SEDAC: Smart Energy Design Assistance Center
USGBC-IL: U.S. Green Building Council Central Illinois Branch
IGBA: Illinois Green Business Association
CCNet: Champaign County Sustainability Network
CNT: Center for Neighborhood Technology
CUMTD: Champaign-Urbana Mass Transit District
UBA: Urbana Business Association

	Implementation Strategies	Category of Strategy	Priority	Potential Partners
Goal 2	**REDUCE EMISSIONS FROM GASOLINE CONSUMPTION**			
Action 1	**Support sustainable transportation through infrastructure improvements.**			
Action 2	**Promote a culture of sustainable transportation.**			
Action 3	**Encourage participation in sustainable transportation programs.**			
Action 4	**Consider transportation sector emissions projections in land-use planning decisions.**			
1	Pursue bicycle and pedestrian infrastructure improvements.	**Energy Efficiency**	1	City of Urbana, CUUATS, CUMTD
2	Pursue the development of energy-efficient transportation infrastructure such as modern roundabouts and other yield-controlled intersections, and speed control and traffic-calming measures.	**Energy Efficiency**	2	City of Urbana, CUUATS, CUMTD
3	Implment recommendations from the 2010 Urbana Bicycle Master Plan, the 2009 Long Range Transportation Plan, and the 2004 Champaign County Greenways and Trails Plan.	**Existing Plans**	2	City of Urbana,CUUATS, CCRPC
4	Provide and promote education on safe bicycling practices, and for motorists, bicyclists and pedestrians to share the road.	**Information and Outreach**	1	City of Urbana, Urbana Bicycle and Pedestrian Advisory Committee, Champaign County Bikes, CUMTD
5	Promote energy efficient driving techniques.	**Information and Outreach**	1	City of Urbana, Urbana Bicycle and Pedestrian Advisory Committee, Champaign County Bikes, CUMTD
6	Encourage residents to use walking or bicycling for at least a part of their weekly transportation needs.	**Information and Outreach**	2	City of Urbana, Urbana Bicycle and Pedestrian Advisory Committee, Champaign County Bikes, CUMTD
7	Pursue local government actions recommended in the State of Illinois Electric Vehicle Advisory Council Report published in December 2011. See Appendix G for a comprehensive list of recommendations.	**Information and Outreach**	3	City of Urbana
8	Collaborate with local business and institutions to create programs encouraging shared commuting, car-share, bike-share and bike purchase programs.	**Information and Outreach**	2	City of Urbana, UIUC, City of Champaign,CCRPC, CUMTD
9	Identify specific barriers to adopting more active and energy-efficient transportation behaviors through focus groups and surveys, and provide information and resources to help overcome these barriers.	**Information and Outreach**	1	City of Urbana
	Implementation Strategies	**Category of Strategy**	**Priority**	**Potential Partners**
Goal 3	**FORMULATE STRATEGIES TO REDUCE EMISSIONS FROM RENTAL AND INDUSTRIAL SECTORS**			
Action 1	**Form a Task Force to study special considerations for Rental Properties.**			
1	Form a task force to study the special considerations of Urbana's rental residential and commercial properties.	**Information and Outreach**	1	City of Urbana, UBA, Champaign County Chamber of Commerce, Champaign Urbana Tenant Union
2	Explore programs that can assist renters in making informed housing choices based on knowledge of rent, utilities and transportation costs of residential properties while allowing landlords to compete on true costs.	**Information and Outreach**	2	City of Urbana, SEDAC, CNT
Action 2	**Form a Task Force to study special considerations for the Industrial Sector.**			
1	Form a task force of business owners, planning staff, SAC representatives, and energy efficiency subject matter experts to develop greenhouse gas reduction strategies for the industrial sector.	**Information and Outreach**	1	City of Urbana, UBA, Champaign County Chamber of Commerce, SEDAC, IGBA, CCEDC

	Implementation Strategies	Category of Strategy	Priority	Potential Partners
Goal 4	**PREPARE FOR CLIMATE CHANGE IMPACTS**			
Action 1	**Form a Task Force to study special considerations for preparing for local climate change impacts.**			
1	Form a task force of planning staff, public works staff, the SAC, and other subject matter experts to study the special considerations for preparing for local climate change impacts.	**Information and Outreach**	1	City of Urbana, Champaign Urbana Public Health District, University of Illinois, Champaign County Regional Planning Commission, Urbana & Champaign Sanitary District
Goal 5	**PURSUE COORDINATION AND OUTREACH**			
Action 1	**Sustainability Advisory Commission coordination of City Plans and Policies.**			
1	Establish a communication protocol for SAC coordination of City plans and policies.	**Coordination**	1	City of Urbana
2	Form an Inter-Departmental City Green team to coordinate sustainability and climate action activities in an integrated and efficient manner.	**Coordination**	1	City of Urbana
Action 2	**Encourage energy efficient behavior and individual actions.**			
Action 3	**Encourage energy efficiency in new developments.**			
Action 4	**Encourage participation in existing sustainability programs.**			
1	Partner with Neighborhood Associations and stakeholders in the construction, business and industrial sectors to identify specific barriers to participation in Climate Action activities and areas for integration of economic development goals in climate action goals.	**Information and Outreach**	1	City of Urbana, United Citizens and Neighbors (UCAN), Downtown Neighborhood Association (DNA), North Broadway Neighbors (NBN), West Urbana Neighborhood Association (WUNA), Historic East Urbana Neighborhood Association (HEUNA), Lierman Neighborhood Action Committee (LNAC), Southeast Urbana Neighborhood Association (SUNA), AmVets II Neighborhood Association, Urbana Community Alternative Policing (UCAP), UBA, IGBA
2	Seek opportunities to collaborate on Climate Action events and programs with Urbana School District 116.	**Information and Outreach**	3	City of Urbana, Urbana School District 116
3	Publicize and encourage participation in existing programs.	**Information and Outreach**	2	City of Urbana
Action 5	**Monitor progress on climate action goals.**			
1	Define indicators to measure progress towards climate action goals.	**Monitoring**	1	City of Urbana
2	Monitor progress by conducting an emissions inventory at two year intervals.	**Monitoring**	1	City of Urbana
3	Receive briefs on aspects of emissions accounting associated with municipal electric aggregation.	**Monitoring**	2	City of Urbana

Acronyms used:

ISTC: Illinois Sustainable Technology Center
CCEDC: Champaign County Economic Development Corporation
CCRPC: Champaign County Regional Planning Commission
CUUATS: Champaign Urbana Urbanized Traffic Study
SEDAC: Smart Energy Design Assistance Center
USGBC-IL: U.S. Green Building Council Central Illinois Branch
IGBA: Illinois Green Business Association
CCNet: Champaign County Sustainability Network
CNT: Center for Neighborhood Technology
CUMTD: Champaign-Urbana Mass Transit District
UBA: Urbana Business Association

3.4 FUTURE STEPS AND CHALLENGES TO CLIMATE ACTION

Over the next two years from the City Council's adoption of Phase I, the strategies identified in this plan will be implemented and their effectiveness will be assessed through conversations with community organizations and resident groups, interviews with key stakeholders, surveys and public input sessions. Based on data gathered over the next two years, a Phase II document will be written defining additional strategies to take the City the rest of the way to its greenhouse gas emission reduction goal.

Successful implementation of the Urbana Climate Action Plan will have to negotiate a number of challenges that can make achieving the plan's goals difficult:

FUNDING

Identifying sources of funding for the plan's implementation strategies in an uncertain economic condition. Urbana is fortunate to have a number of institutions already addressing greenhouse gas emissions that can be utilized to implement the plan's strategies. Many of these are listed in the plan's implementation table. Furthermore, the City will pursue grant opportunities to fund the plan's implementation strategies.

BALANCING LOCAL GOVERNMENT PRIORITIES

Local governments have a great number of priorities and obligations in their service to residents. Implementation of the Climate Action Plan will be most successful where the actions can be tailored to create co-benefits serving additional local government priorities.

REGIONAL COLLABORATION

Regional Collaboration represents both opportunity and challenge. It's understood that when municipalities, agencies, and organizations collaborate on efforts of mutual concern, they take advantage of economies of scale and avoid working at cross purposes. However, in practice, regional collaboration is very difficult as the parties have to negotiate varying priorities, resources, and publics. Urbana's Climate Action Plan will be benefit from engaging potential partners early, often, and face to face.

DETERMINING BARRIERS TO ADOPTING SUSTAINABLE BEHAVIORS

Research has shown that adopting sustainable behaviors requires more than simply posting information on a website. The City will need to seek out existing research or conduct our own research to determine the most effective means to engage residents in sustainable behaviors through community-based social marketing strategies such as commitments, social diffusion, prompts, norms, and communication.

DATA COLLECTION

Timely, comprehensive, and detailed data is necessary for tuning implementation strategies and judging the results of actions undertaken. Sometimes, reliable data does not exist. But where it does exist, it can be time consuming to collect and analyze. Furthermore, data necessary to plan climate action implementation strategies often resides with many different agencies and companies with varying degrees of privacy regarding the sharing of data. The City will benefit from developing partnerships with data suppliers that appropriate types of data are supplied in regular intervals.

4. APPENDICES

4.1 TABLE OF FIGURES

4.2 TABLE OF TABLES

4.3 ACRONYMS AND ABBREVIATIONS

ACS	American Community Survey
ARRA	American Recovery and Reinvestment Act
CACP	Clean Air and Climate Protection Software
CAGR	Compound Annual Growth Rate
CAPPA	Climate and Air Pollution Planning Assistant
CCD	Campus Commercial District
CCEDC	Champaign County Economic Development Corporation
CCNet	Champaign County Sustainability Network
CCP	Cities for Climate Protection Campaign
CCRPC	Champaign County Regional Planning Commission
CDD	Cooling Degree Days
CFL	Compact Fluorescent Light Bulb
CNG	Compressed Natural Gas
CNT	Center for Neighborhood Technology
CUMTD	Champaign-Urbana Mass Transit District
CUUATS	Champaign-Urbana Urbanized Area Transportation Study
D.O.E.	U.S. Department of Energy
DNA	Downtown Neighborhood Association
EECBG	Energy Efficiency Community Block Grant
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GWP	Global Warming Potential
H.U.D.	Department of Housing and Urban Development
HDD	Heating Degree Days
HEUNA	Historic East Urbana Neighborhood Association
HMP	Hazard Mitigation Plan
iCAP	University of Illinois Climate Action Plan
ICLEI	International Council for Local Government Initiatives
IGBA	Illinois Green Business Association
IPCC	Intergovernmental Panel on Climate Change
ISTC	Illinois Sustainable Technology Center
KWH	Kilowatt-hour
LED	Light Emitting Diode
LEED	Leadership in Energy and Environmental Design
LNAC	Lierman Neighborhood Action Committee
LRC	Landscape Recycling Center
LRTP	Long Range Transportation Plan
$MtCO2_e$	Metric Tonnes of Carbon Dioxide equivalent
MWh	Megawatt-hour
NBN	North Broadway Neighbors
REC	Renewable Energy Certificates
SAC	City of Urbana Sustainability Advisory Commission
SEDAC	Smart Energy Design Assistance Center
SUNA	Southeast Urbana Neighborhood Association
TAZ	Traffic Analysis Zone
U.S. E.P.A.	U.S. Environmental Protection Agency
U.S.G.B.C-IL	U.S. Green Building Council Illinois Branch
UBA	Urbana Business Association
UCAN	United Citizens and Neighbors
UCAP	Urbana Community Alternative Policing
UNEP	United Nations Environmental Project
UNFCC	United Nations Framework Convention on Climate Change
VMT	Vehicle Miles Travelled
WMO	World Meteorological Organization
WUNA	West Urbana Neighborhood Association

4.4 APPENDIX A: U.S. MAYORS CLIMATE PROTECTION AGREEMENT

The U.S. Mayors Climate Protection Agreement

(As endorsed by the 73rd Annual U.S. Conference of Mayors meeting, Chicago, 2005)

A. We urge the federal government and state governments to enact policies and programs to meet or beat the target of reducing global warming pollution levels to 7 percent below 1990 levels by 2012, including efforts to: reduce the United States' dependence on fossil fuels and accelerate the development of clean, economical energy resources and fuel-efficient technologies such as conservation, methane recovery for energy generation, waste to energy, wind and solar energy, fuel cells, efficient motor vehicles, and biofuels;

B. We urge the U.S. Congress to pass bipartisan greenhouse gas reduction legislation that 1) includes clear timetables and emissions limits and 2) a flexible, market-based system of tradable allowances among emitting industries; and

C. We will strive to meet or exceed Kyoto Protocol targets for reducing global warming pollution by taking actions in our own operations and communities such as:

1. Inventory global warming emissions in City operations and in the community, set reduction targets and create an action plan.
2. Adopt and enforce land-use policies that reduce sprawl, preserve open space, and create compact, walkable urban communities;
3. Promote transportation options such as bicycle trails, commute trip reduction programs, incentives for car pooling and public transit;
4. Increase the use of clean, alternative energy by, for example, investing in "green tags", advocating for the development of renewable energy resources, recovering landfill methane for energy production, and supporting the use of waste to energy technology;
5. Make energy efficiency a priority through building code improvements, retrofitting city facilities with energy efficient lighting and urging employees to conserve energy and save money;
6. Purchase only Energy Star equipment and appliances for City use;
7. Practice and promote sustainable building practices using the U.S. Green Building Council's LEED program or a similar system;
8. Increase the average fuel efficiency of municipal fleet vehicles; reduce the number of vehicles; launch an employee education program including anti-idling messages; convert diesel vehicles to bio-diesel;
9. Evaluate opportunities to increase pump efficiency in water and wastewater systems; recover wastewater treatment methane for energy production;
10. Increase recycling rates in City operations and in the community;
11. Maintain healthy urban forests; promote tree planting to increase shading and to absorb CO2; and
12. Help educate the public, schools, other jurisdictions, professional associations, business and industry about reducing global warming pollution.

Green House Gas	Chemical Formula	Emissions and Trends	Main Sources of Emission	Lifetime in Atmosphere	Global Warming Potential (100 -year)*
Carbon Dioxide	CO_2	(CO_2) is the primary greenhouse gas emitted through human activities. In 2010, CO_2 accounted for about 84% of all U.S. greenhouse gas emissions from human activities. Carbon dioxide is naturally present in the atmosphere as part of the Earth's carbon cycle (the natural circulation of carbon among the atmosphere, oceans, soil, plants, and animals). Human activities are altering the carbon cycle--both by adding more CO_2 to the atmosphere and by influencing the ability of natural sinks, like forests, to remove CO_2 from the atmosphere. While CO_2 emissions come from a variety of natural sources, human-related emissions are responsible for the increase that has occurred in the atmosphere since the industrial revolution.	**(i) Electricity:** The combustion of fossil fuels to generate electricity is the largest single source of CO_2 emissions in the nation, accounting for about 40% of total U.S. CO_2 emissions and 33% of total U.S. greenhouse gas emissions in 2009. The type of fossil fuel used to generate electricity will emit different amounts of CO_2. To produce a given amount of electricity, burning coal will produce more CO_2 than oil or natural gas. **(ii) Transportation:** The combustion of fossil fuels. such as gasoline and diesel to transport people and goods is the second largest source of CO_2 emissions, accounting for about 31% of total U.S. CO_2 emissions and 26% of total U.S. greenhouse gas emissions in 2010. This category includes transportation sources such as highway vehicles, air travel, marine transportation, and rail. **(iii) Industry:** Many industrial processes emit CO_2 through fossil fuel combustion. Several processes also produce CO_2 emissions through chemical reactions that do not involve combustion, for example, the production and consumption of mineral products such as cement, the production of metals such as iron and steel, and the production of chemicals. Various industrial processes accounted for about 14% of total U.S. CO_2 emissions and 20% of total U.S. greenhouse gas emissions in 2010.	50-200 years	1
Methane	CH_4	Methane (CH_4) is the second most prevalent greenhouse gas emitted in the United States from human activities. In 2010, CH_4 accounted for about 10% of all U.S. greenhouse gas emissions from human activities. Methane is emitted by natural sources such as wetlands, as well as human activities such as leakage from natural gas systems and the raising of livestock. Natural processes in soil and chemical reactions in the atmosphere help remove CH_4 from the atmosphere. Methane's lifetime in the atmosphere is much shorter than carbon dioxide (CO_2), but CH_4 is more efficient at trapping radiation than CO_2. Pound for pound, the comparative impact of CH_4 on climate change is over 20 times greater than CO_2 over a 100-year period.	**(i) Industry:** Natural gas and petroleum systems are the largest source of CH_4 emissions from industry in the United States. Methane is the primary component of natural gas. Some CH_4 is emitted to the atmosphere during the production, processing, storage, transmission, and distribution of natural gas. Because gas is often found alongside petroleum, the production, refinement, transportation, and storage of crude oil is also a source of CH_4 emissions. **(ii) Agriculture:** Domestic livestock such as cattle, buffalo, sheep, goats, and camels produce large amounts of CH_4 as part of their normal digestive process. Also, when animals' manure is stored or managed in lagoons or holding tanks, CH_4 is produced. Because humans raise these animals for food, the emissions are considered human-related. Globally, the Agriculture sector is the primary source of CH_4 emissions. **(iii) Waste from Homes and Businesses:** Methane is generated in landfills as waste decomposes and in the treatment of wastewater. Landfills are the third largest source of CH_4 emissions in the United States	12 years	21
Nitrous Oxide	N_2O	In 2010, nitrous oxide (N_2O) accounted for about 4% of all U.S. greenhouse gas emissions from human activities. Nitrous oxide is naturally present in the atmosphere as part of the Earth's nitrogen cycle, and has a variety of natural sources. However, human activities such as agriculture, fossil fuel combustion, wastewater management, and industrial processes are increasing the amount of N_2O in the atmosphere. Nitrous oxide molecules stay in the atmosphere for an average of 120 years before being removed by a sink or destroyed through chemical reactions. The impact of 1 pound of N_2O on warming the atmosphere is over 300 times that of 1 pound of carbon dioxide.	**(i) Agriculture:** Nitrous oxide is emitted when people add nitrogen to the soil through the use of synthetic fertilizers. Agricultural soil management is the largest source of N_2O emissions in the United States, accounting for about 68% of total U.S. N_2O emissions in 2010. Nitrous oxide is also emitted during the breakdown of nitrogen in livestock manure and urine, which contributed to 6% of N_2O emissions in 2010. **(ii) Transportation:** Nitrous oxide is emitted when transportation fuels are burned. Motor vehicles, including passenger cars and trucks, are the primary source of N_2O emissions from transportation. The amount of N_2O emitted from transportation depends on the type of fuel and vehicle technology, maintenance, and operating practices. **(iii) Industry:** Nitrous oxide is generated as a byproduct during the production of nitric acid, which is used to make synthetic commercial fertilizer, and in the production of adipic acid, which is used to make fibers, like nylon, and other synthetic products.	120 years	310
F-gases	HFCs, PFCs, SF6	Fluorinated gases have no natural sources and only come from human-related activities. They are emitted through a variety of industrial processes such as aluminum and semiconductor manufacturing. Many fluorinated gases have very high global warming potentials (GWPs) relative to other greenhouse gases, so small atmospheric concentrations can have large effects on global temperatures. They can also have long atmospheric lifetimes--in some cases, lasting thousands of years. Like other long-lived greenhouse gases, fluorinated gases are well-mixed in the atmosphere, spreading around the world after they're emitted. Fluorinated gases are removed from the atmosphere only when they are destroyed by sunlight in the far upper atmosphere. In general, fluorinated gases are the most potent and longest lasting type of greenhouse gases emitted by human activities.	**(i) Substitution of Ozone Depleting substances:** Hydrofluorocarbons are used as refrigerants, aerosol propellants, solvents, and fire retardants. The major emissions source of these compounds is their use as refrigerants--for example, in air conditioning systems in both vehicles and buildings. These chemicals were developed as a replacement for chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) because they do not deplete the stratospheric ozone layer. Chlorofluorocarbons and HCFCs are being phased out under an international agreement, called the Montreal Protocol. Unfortunately, HFCs are potent greenhouse gases with long atmospheric lifetimes and high GWPs, and they are released into the atmosphere through leaks, servicing, and disposal of equipment in which they are used. **(ii) Industry:** Perfluorocarbons are compounds produced as a by-product of various industrial processes associated with aluminum production and the manufacturing of semiconductors. Like HFCs, PFCs generally have long atmospheric lifetimes and high GWPs. Sulfur hexafluoride is used in magnesium processing and semiconductor manufacturing, as well as a tracer gas for leak detection. HFC-23 is produced as a by-product of HCFC-22 production. **(iii) Transmission and Distribution of Electricity:** Sulfur hexafluoride is used in electrical transmission equipment, including circuit breakers. The GWP of SF6 is 23,900, making it the most potent greenhouse gases that the Intergovernmental Panel on Climate Change has evaluated.	HFCs: 1-270 years PFCs: 800-50,000 years SF6: 3,200 years	HFCs: 140-11,700 PFCs: 6,500-9,200 SF6: 23,900
Ozone	O_3	Ozone is continuously produced and destroyed in the atmosphere by chemical reactions. In the troposphere, the lowest 5 to 10 miles of the atmosphere near the surface, human activities have increased the ozone concentration through the release of gases such as carbon monoxide, hydrocarbons, and nitrogen oxides. These gases undergo chemical reactions to produce ozone in the presence of sunlight. In addition to trapping heat, excess ozone in the troposphere causes respiratory illnesses and other human health problems.	Human activities such as transportation, agriculture, industry and waste decomposition have increased the ozone concentration through the release of gases such as carbon monoxide, hydrocarbons, and nitrogen oxides.	22 days	
Water Vapor		Water vapor is the most important and abundant greenhouse gas in the atmosphere. Human activities produce only a very small increase in water vapor through irrigation and combustion processes. However, the surface warming caused by human-produced increases in other greenhouse gases leads to an increase in atmospheric water vapor, since a warmer climate increases evaporation and allows the atmosphere to hold more moisture. This creates an amplifying "feedback loop," leading to more warming.	Irrigation and combustion processes, surface warming caused by other human-produced greenhouse gases leads to an increase in atmposheric water vapor.		

* Depending on how well a gas absorbs energy and how long it stays in the atmosphere, certain greenhouse gases are more effective at warming the Earth than others. The **Global Warming Potential (GWP)** for a gas is a measure of the total energy that a gas absorbs over a particular period of time (usually 100 years) compared to carbon dioxide.

SOURCES:

1. E.P.A, U. (2012, June 14). Greenhouse Gas Emissions. Retrieved July 28, 2012, from U.S. E.P.A Climate Change: http://epa.gov/climatechange/ghgemissions/
2. Global Climate Change Impacts in the United States, Thomas R. Karl, Jerry M. Melillo, and Thomas C. Peterson, (eds.). Cambridge University Press, 2009

Urbana CAP 2010 Public Input Survey Results

Updated Feb. 2011

Survey Respondents

*35 Residents, 12 non-Residents

- 21 Property Owners (Residential?)

*7 Business Managers or Owners

- 6 Commercial
- 1 Transportation

*Business/group considered GHG emissions or energy use

- 11 Identified some greenhouse gas emission sources or energy-saving measures
- 16 In process of a project to reduce energy use or greenhouse gas emissions
- 5 Successfully implemented a project to reduce energy use or greenhouse gas emissions

*Personally considered GHG emissions or energy use

- 21 Identified some greenhouse gas emission sources or energy-saving measures
- 8 In process of a project to reduce energy use or greenhouse gas emissions
- 18 Successfully implemented a project to reduce energy use or greenhouse gas emissions

*Those completing survey indicated they were members of these local non-profit and community groups:

AAOW, Alpha Phi Omega, Books to Prisoners, CCnet, CWIT, CWT, C-U Fit Families, CUMTD Sustainability Committee, C-U Safe Routes To School Project, C-U Symphony, Champaign County Bikes, Common Ground Food Co-op, Community Women's Club, Cosmopolitan Club, Eastern Illinois Foodbank, Educational Resources in Environmental Sciences, Engineers without Borders, Girl Scouts, Green Party, HEUNA, Habitat for Humanity, Heartland Pathways, Illini Carbon, Illinois Green Business Association, Independent Media Center, International Hospitality Centers, Kalyx Center, League of Women Voters, McKinley Presbyterian Church, Prairie Ensemble, Progressive Democrats, RSVP, SEDAC, Sierra Club, Students for Environmental Concerns, Transitions Champaign County, UP Center, Unitarian Universalist Church, U of I Climate Action Plan Operations Committee, U of I Student Senate, University YWCA, University YMCA, Urbana Plan Commission, WEFT, WUNA

Programs or Actions to Assist with GHG Emission Reductions

EDUCATION

- More specific information on steps we can take to reduce CO2 (x3)
- Public education about sustainability (x3)
- Public workshops on water and energy conservation (x2)
- More PSA's regarding things individuals can do
- On-going meetings arranged by tonight's organizers
- Information which can be emailed and distributed to help homeowners especially in low income areas
- Access to expertise on energy efficiency
- A quick assessment and recommendations of what steps we should take to reduce the most energy use
- Live energy usage displays

TRANSPORTATION AND PLANNING

- More/improved bike lanes/paths (x7)
- Easy access to shopping (x2)
- Avoid sprawl
- Public transportation - intercity
- More integrated transportation
- More divided bus routes; better evening and weekend bus schedules
- Provide transit system guides to all apartment dwellers
- Revitalizing downtown/Lincoln Square and other core urban areas for commercial/residential/service uses to allow biking, walking, and other more sustainable transportation
- A snow removal ordinance and program to allow pedestrian access via walking to bus stops
- More covered bike parking and bike lanes
- Require transportation plans for any event over 200 people
- More electric vehicles

ENERGY

- More renewable energy available from the grid (x5)
- Easier access to residential energy audits (x2)
- Know when there is overproduction of electricity
- Home electricity use monitors
- Options to buy sustainable energy only
- Smarter buildings
- Building assessments

FINANCIAL

- Loans and grants to help us pay for any retrofits (x4)
- Options for financing projects (x2)
- Documented savings/improvement by type of project
- Lower cost renewable energy options for home
- Availability of tax incentives for non-profits

- Income tax credits for energy efficient home improvements
- Support for non-profits to retrofit
- Affordable options
- Financial incentives on our power or water bills to somehow make it a no-brainer for us to put attention on reducing energy use
- Low interest loans for renewable energy installations
- Tax incentives for purchase of “green” home appliances
- Incentives for construction of homes meeting Passive House standard

MISCELLANEOUS

- Commercial recycling program (x2)
- Accessible resources for offsetting carbon
- A variety of options to reduce emissions
- Coordination with the university
- Providing more opportunities to buy locally, and to buy locally-sourced products
- Food waste composting program for restaurants
- Locate more grocery stores within walking distance
- Encourage native plants versus turf grass
- Increase local recycling options
- Develop games/competitions to make GHG reduction fun
- City should lead by example
- Help people prioritize – what should they do first to reduce GHG emission?

Barriers to GHG Emission Reductions

- Funding assistance programs needed (x5)
- Technical assistance is needed to overcome barriers (x3)
- Would like to see high speed and light rail systems
- It's a matter of getting the ball rolling and a lack of handout material
- The research time it takes to gather information and apply it to our business
- Bike paths are few and poorly designed. There should be highways for bikes.
- There isn't a commercial recycling program
- Composting difficult for apartment dwellers
- The businesses I would want to patronize do not exist in Urbana (copy shop, office supply store, etc)
- Resistance to making changes necessary to create easier access to active transportation modes in the political process
- Not aware of who provides energy audits or how to sign up for assessment of our facility. Because we don't have outside, objective advice, it is hard to get some of my colleagues to change behavior such as turning off computers on nights and weekends. If we had outside advice from an expert with numerical calculations of what we could save that could give us the information we need to make bigger changes
- Lack of energy infrastructure

Urbana CAP Program or Project Suggestions

- Better planning to avoid sprawl; encourage infill (x4)
- Encourage more renewable energy (x3)
- Community-scale renewable energy generation and purchasing (x2)
- Commercial recycling programs (x2)
- De-privatize our water distribution system (x2)
- Inter-Urban Light Rail/tram (x2)
- PACE (Property Assessed Clean Energy) financing program (x2)
- Residential energy audits and retrofits (x2) - maybe a systematic project where we focus on one neighborhood at a time and show that we can make a meaningful difference in a neighborhood with focused attention.
- Repeats of tonight's performance and regular meetings like this to bring in more people as they become aware of what is being done and what they can do
- Compost program for local restaurants which throw away hundreds of lbs of compostable materials every day
- IGBA green business certification
- Community education helping people understand the need/Resource information where to get good information on sustainability projects/More information and resources for owners of homes and buildings to implement conservation measures
- Contractor education to ensure quality contractors are available
- Energy/sustainability taxes
- Light/electric reduction/LED streetlights
- Better coordination between Urbana, Champaign and U of I
- A strong focus on core redevelopment/Incentives for urban redevelopment
- Focus on family and locally owned businesses/sustainable businesses, etc.
- More resources directed to increasing access and safety to pedestrian and bicycle infrastructure
- Year-round farmers market to buy local foods
- Renewable energy feed-in tariff policy
- Higher energy standards for new constructions or renovations on buildings over 3,000 sq. ft.
- Increase use of hybrid electric public transportation
- Increase use by public of smart driving techniques
- Encourage “grey water” capture systems and composting toilets
- More green roofs and rain gardens
- Develop website for discussion of UCAP
- More bike lanes/paths
- Education on environmentally-preferable shopping
- Encourage hanging of laundry to air-dry
-

- Place no restrictions on residential wind turbines
- Require no minimum parking lot sizes in zoning codes

Additional Input

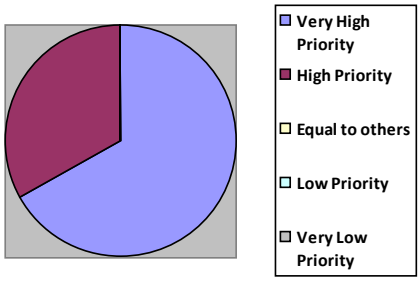
- Good meeting. Interesting graphs on energy use, both residential and commercial. More people need to understand where we are today.
- The light rail study that was done several years ago is more pertinent than ever.
- While I firmly believe that there is much individual homeowners can do to reduce the community's footprint, I feel that the majority of waste comes from commercial and industrial waste. I think that a combined effort of rewards and penalties by the city could have great effects.
- Olympian Drive is the opposite of what the city should be pursuing - it flies counter to sustainable development and the goal of this plan. We can - and should - do better.
- This process is great! We're going to need to show some quick successes or give an annual report of progress so we can feel like we are steadily making progress towards our goals and have some achievements we can celebrate. We need to tell City Council and the public what investment we need to make in order to make this a success. This may take staffing or marketing/outreach budgets or incentive programs and we need to be realistic and optimistic at the same time about doing this project in a big enough way that we truly make the difference.
- I would like recycling available in every business, especially restaurants.

4.4 APPENDIX C: PUBLIC INPUT SURVEY RESULTS

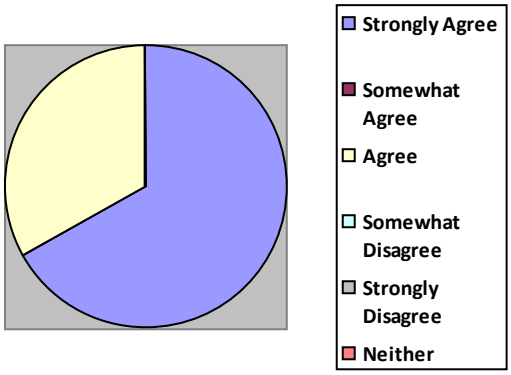
2012 Public Input Results

The Public Review Draft Climate Action Plan and a public comment webform are both on the city website. We have received a small number of comments. Results below:

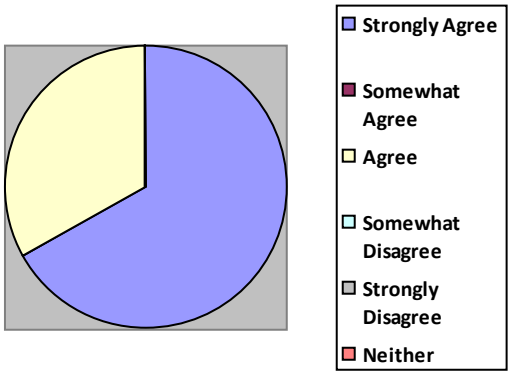
Compared to other priorities of the City of Urbana, working to achieve the goals of the Draft Climate Action Plan should be a:



The Draft Climate Action Plan reflects my personal values:

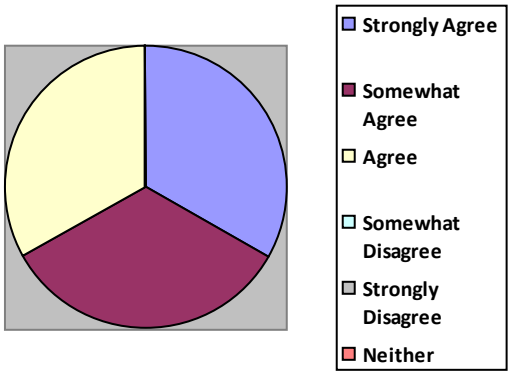


The Draft Climate Action Plan goal of reducing greenhouse gas emissions 25 percent by 2020 is achievable:



The Draft Climate Action Plan goal of reducing greenhouse gas emissions 80 percent by 2050 is achievable:

4.4 APPENDIX C: PUBLIC INPUT SURVEY RESULTS



Some Comments:

“I strongly agree with the initiative to reduce electrical consumption emissions.”

“Good broad based approach.”

“Better mass transit.”

2010:

Urbana Climate Action Plan
Public Input Form

The City of Urbana Sustainability Advisory Commission is soliciting input from various stakeholders on the Urbana Climate Action Plan, a community-wide plan to reduce greenhouse gas emissions. The Commission is preparing a Climate Action Plan recommendation to be presented to the Urbana City Council for review and implementation. Your responses to the following questions will be used to guide the direction of the Climate Action Plan as it is developed. We look forward to your involvement. Please feel free to contact us with questions or comments. Thank you.

1. **Your Name** (optional)**:**_____
2. **Are you a resident of Urbana?** ____Yes ____No
3. **Where do you live?** _____
4. **Do you own property in Urbana?** ____Yes ____No
5. **Do you own or manage a business in Urbana?** ____Yes ____No

   If so, please select the sectors that best describes your business.
   ____Industrial ____Commercial ____Transportation ____Waste ____Residential

6. **Are you involved with any local non-profit organizations or community groups?** __ Yes __No
   If so, please list them: _____
   _____
   _____
   _____
   _____

7. **Check the box below that best describes the extent to which your <u>primary business, non-profit organization, or community group</u> has considered its energy use or greenhouse gas emissions:**
   - ☐ Has not considered
   - ☐ Identified some greenhouse gas emission sources or energy-saving measures
   - ☐ In process of a project to reduce energy use or greenhouse gas emissions
   - ☐ Successfully implemented a project to reduce energy use or greenhouse gas emissions

8. **Check the box below that best describes the extent to which you have considered <u>your personal</u> energy use and greenhouse gas emissions:**
   - ☐ Have not considered
   - ☐ Identified some greenhouse gas emission sources or energy-saving measures
   - ☐ In process of a project to reduce energy use or greenhouse gas emissions
   - ☐ Successfully implemented a project to reduce energy use or greenhouse gas emissions

1

9. **List three (3) things that would assist you, or your organization, in reducing your greenhouse gas emissions.**

_____
_____
_____
_____
_____
_____

10. **Are there any specific barriers that prevent you from utilizing these things described above? If so, please specify.** ___No ___Yes

_____
_____
_____
_____

11. **What programs or projects would you like to be pursued as part of the community-wide Urbana Climate Action Plan?**

_____
_____
_____
_____
_____
_____

12. **Please share any additional input or comments.**

13. **Contact Information** (optional)**:**

Name: _____
Email: _____ Phone: _____
Mailing Address: _____ City, State: _____

☐ **Check here to receive announcements about other Urbana Climate Action Plan and Sustainability efforts (provide contact information above)**

☐ **Check here to receive Sustainability Advisory Commission meeting agendas through e-mail (provide your email address above)**

Return this survey to:

Community Development Services, City of Urbana
400 S. Vine Street, Urbana, IL 61801
Phone: (217) 384-2311, or Fax: (217) 384-0200

2

2012:

What is your zip code:

Compared to other priorities of the City of Urbana, working to achieve the goals of the Draft Climate Action Plan should be a:

A. Very high priority
B. High priority
C. Equal to other priorities
D. Low priority
E. Very low priority

The Draft Climate Action Plan reflects my personal values:

A. Strongly agree
B. Somewhat agree
C. Agree
D. Somewhat disagree
E. Strongly disagree
F Don't agree or disagree

The Draft Climate Action Plan goal of reducing greenhouse gas emissions 25 percent by 2020 is achievable:

A. Strongly agree
B. Somewhat agree
C. Agree
D. Somewhat disagree
E. Strongly disagree
F. Don't agree or disagree

The Draft Climate Action Plan goal of reducing greenhouse gas emissions 80 percent by 2050 is achievable:

A. Strongly agree
B. Somewhat agree
C. Agree
D. Somewhat disagree
E. Strongly disagree
F. Don't agree or disagree

Is there a strategy from the Draft Climate Action Plan that you strongly support? Explain:

Is there a strategy from the Draft Climate Action Plan that you do not support? Explain:

Is there a feasible greenhouse gas emissions reduction strategy or adaptation strategy that you think is missing from the Draft Climate Action Plan?:

DRAFT CLIMATE ACTION PLAN PUBLIC INPUT CARD

DRAFT CLIMATE ACTION PLAN PUBLIC INPUT CARD

What is your zip code:

Compared to other priorities of the City of Urbana, working to achieve the goals of the Draft Climate Action Plan should be a:

A. Very high priority
B. High priority
C. Equal to other priorities
D. Low priority
E. Very low priority

The Draft Climate Action Plan reflects my personal values:

A. Strongly agree
B. Somewhat agree
C. Agree
D. Somewhat disagree
E. Strongly disagree
F Don't agree or disagree

The Draft Climate Action Plan goal of reducing greenhouse gas emissions 25 percent by 2020 is achievable:

A. Strongly agree
B. Somewhat agree
C. Agree
D. Somewhat disagree
E. Strongly disagree
F. Don't agree or disagree

The Draft Climate Action Plan goal of reducing greenhouse gas emissions 80 percent by 2050 is achievable:

A. Strongly agree
B. Somewhat agree
C. Agree
D. Somewhat disagree
E. Strongly disagree
F. Don't agree or disagree

Is there a strategy from the Draft Climate Action Plan that you strongly support? Explain:

Is there a strategy from the Draft Climate Action Plan that you do not support? Explain:

Is there a feasible greenhouse gas emissions reduction strategy or adaptation strategy that you think is missing from the Draft Climate Action Plan?:

4.4 APPENDIX E: CACP GREENHOUSE GAS EMISSIONS FACTORS

How does the Clean Air and Climate Protection (CACP) Software Calculate Emissions?
To facilitate efforts to identify and reduce greenhouse gas emissions, ICLEI developed the Clean Air and Climate Protection (CACP) software package. This software models current and future emissions using population, energy consumption and solid waste generation data. It is worth noting that although the software provides Urbana with a sophisticated and useful tool, calculating emissions from energy use with precision is difficult. The model depends upon numerous assumptions, and it is limited by the quantity and quality of available data. With this in mind, it is useful to think of any specific number generated by the model as an approximate guide to prompt, effective action.

The CACP software determines emissions using specific factors or coefficients according to the type of fuel used. Emissions are aggregated and reported in terms of carbon dioxide equivalent units (CO_2e). Converting all emissions to carbon dioxide equivalent units allows for the consideration of different greenhouse gases in comparable terms. For example, pound-for-pound methane is twenty-one times more powerful than carbon dioxide in its capacity to trap heat, so the model converts one ton of methane emissions to 21 tons of CO_2e.

The emissions coefficients and methodology employed by the software are consistent with national and international inventory standards established by the Intergovernmental Panel on Climate Change (1996 Revised IPCC Guidelines for the Preparation of National GHG Emissions Inventories), the U.S. Voluntary Greenhouse Gas Reporting Guidelines (EIA form 1605), and for emissions generated from solid waste, the U.S. EPA's Waste Reduction Model (WARM).

Emissions Factors Used in Calculations

Source: CACP 2009 software, except as otherwise noted.

Transportation Emissions Factors

Emissions per gallon of gasoline equivalent energy except where noted

Fuel	CO2	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
Gasoline	0.009412727	0.002987237	0.000194796	0.6760215	0.07089627	0.001454457
CNG	0.000054	0.001539708	4.8785E-05	0.1178956	0.00264934	0.000256388
Ethanol		0.46	0	0.82	0.57	0.66

Emissions per gallon of diesel except where noted

Diesel	0.009530909	0.035816328	0.004952337	0.045621	0.01472358	0.004901075
Biodiesel (B20)		0.019781	0	-0.12298	0	-0.11987
Biodiesel (B100)		0.102897	0	-0.47186	0	-0.48113

Emission control technology multipliers (school buses)

Technology	CO2	NOx	SOx	CO	VOCs	PM10
	nondimensional multipliers					
Oxidation Catalyst	1	1	1	0.1	0.1	0.7
Particulate Trap	1	0.975	1	0.1	0.1	0.1

Bulding Energy Emissions Factors

	CO2e (metric tons)	NOx (lbs)	SOx (lbs)	CO (lbs)	VOCs (lbs)	PM10 (lbs)
Natural Gas Emissions / Therm	0.005602187	0.016800507	0.000669309	0.0043341	0.00092447	0.000513236
Fuel Oil Emissions / Gallon	0.01311769	0.611558929	0.040215904	0.1317418	0.04853642	0.0429894

4.4 APPENDIX E: CACP GREENHOUSE GAS EMISSIONS FACTORS

Electricity Emission Factors

All Regions

Utility Specific						
ASCC Alaska Grid (AKGD)	5.71E-04	0.0024795	0.00121	0.00006	0.00000	0.00001
ASCC Miscellaneous (AKMS)	2.34E-04	0.0067906	0.00053	0.00006	0.00000	0.00001
ERCOT All (ERCT)	6.24E-04	0.0008763	0.00320	0.00053	0.00006	0.00046
FRCC All (FRCC)	6.26E-04	0.0020728	0.00358	0.00075	0.00008	0.00066
HICC Miscellaneous (HIMS)	7.83E-04	0.0073289	0.00569	0.00010	0.00000	0.00008
HICC Oahu (HIOA)	8.66E-04	0.002588	0.00360	0.00010	0.00000	0.00008
MRO East (MROE)	8.78E-04	0.0027473	0.00717	0.00060	0.00007	0.00053
MRO West (MROW)	8.72E-04	0.0037138	0.00565	0.00095	0.00011	0.00084
NPCC Long Island (NYLI)	7.34E-04	0.0016385	0.00375	0.00104	0.00012	0.00092
NPCC New England (NEWE)	4.53E-04	0.000863	0.00236	0.00119	0.00013	0.00105
NPCC NYC/Westchester (NYCW)	3.81E-04	0.0007288	0.00060	0.00104	0.00012	0.00092
NPCC Upstate NY (NYUP)	3.45E-04	0.0008319	0.00300	0.00104	0.00012	0.00092
RFC East (RFCE)	5.46E-04	0.0016307	0.00779	0.00056	0.00006	0.00049
RFC Michigan (RFCM)	7.51E-04	0.0023449	0.00740	0.00027	0.00003	0.00024
RFC West (RFCW)	7.35E-04	0.0025807	0.00978	0.00027	0.00003	0.00024
SERC Midwest (SRMW)	8.75E-04	0.0022458	0.00641	0.00060	0.00007	0.00053
SERC Mississippi Valley (SRMV)	4.81E-04	0.0012421	0.00181	0.00019	0.00002	0.00017
SERC South (SRSO)	7.14E-04	0.0020613	0.00887	0.00019	0.00002	0.00017
SERC Tennessee Valley (SRTV)	7.23E-04	0.0024819	0.00674	0.00019	0.00002	0.00017
SERC Virginia/Carolina (SRVC)	5.45E-04	0.0016053	0.00589	0.00019	0.00002	0.00017
SPP North (SPNO)	9.37E-04	0.0038455	0.00666	0.00084	0.00009	0.00074
SPP South (SPSO)	7.86E-04	0.0023695	0.00347	0.00084	0.00009	0.00074
WECC California (CAMX)	3.43E-04	0.0006177	0.00053	0.00057	0.00006	0.00050
WECC Northwest (NWPP)	4.32E-04	0.0015889	0.00124	0.00060	0.00007	0.00053
WECC Rockies (RMPA)	8.97E-04	0.0028128	0.00232	0.00098	0.00011	0.00087
WECC Southwest (AZNM)	6.22E-04	0.0021114	0.00108	0.00098	0.00011	0.00087

Reflective Roof Energy Savings

Utility Region	Electricity kWh/ft^2	Natural Gas therms/ft^2
RFC West (RFCW)	**0.864**	**-0.01**
USA Total	0.925	-0.0087
RFCM, RFCW	0.864	-0.01
ERCT	1.097	-0.0038
RFCE	0.865	-0.0093
SRMW	0.884	-0.0106
MROE, MROW	0.83	-0.0149
NYLI, NYCW, NYUP	0.774	-0.0133
NEWE	0.794	-0.0128
FRCC	1.183	-0.0006
SRMV, SRSO, SRTV, SRVC	0.939	-0.0054
SPNO, SPSO	0.981	-0.0066
NWPP	0.771	-0.0125
RMPA, AZNM	1.048	-0.0061
CAMX	0.842	-0.0033
Alaska	0.73	-0.021
Hawaii	1.268	0

Use the Map Below to Find your Utility Region

Emissions Factors Table

4.4 APPENDIX E: CACP GREENHOUSE GAS EMISSIONS FACTORS

Waste - Life Cycle Emissions Factors	MTCO2e Reduced per ton of Waste Managed		
	Source Reduction	**Recycling**	**Composting**
Aluminum	8.33	13.71	NA
Plastic (mixed)	2.06	1.56	NA
Steel	3.23	1.83	NA
Glass	0.61	0.32	NA
Mixed Paper, Residential Definition	5.72	2.73	NA
Cardboard	4.81	2.33	NA
Magazines/Third-class Mail	7.88	2.29	NA
Newspaper	3.60	1.51	NA
Food Waste	NA	NA	0.16
Yard Trimmings	NA	NA	-0.54
Clay Bricks	0.32	NA	NA
Dimensional Lumber	0.92	1.36	NA

Waste - Landfill Methane Emissions	MTCO2e Reduced per ton of waste Diverted			Recoverable Energy (kWh/ton)
	Natl. Average	**No Recovery**	**Recovery**	
Aluminum	0.00	0.00	0.00	0.00
Plastic (mixed)	0.00	0.00	0.00	0.00
Steel	0.00	0.00	0.00	0.00
Glass	0.00	0.00	0.00	0.00
Mixed Paper, Residential Definition	1.06	2.02	0.50	248.50
Cardboard	1.20	2.27	0.57	279.66
Magazines/Third-class Mail	0.48	0.92	0.23	112.92
Newspaper	0.43	0.81	0.20	99.41
Food Waste	0.77	1.47	0.37	180.85
Yard Trimmings	0.42	0.79	0.20	97.42
Clay Bricks	0.00	0.00	0.00	0.00
Dimensional Lumber	0.62	1.17	0.29	144.51

Landfill Management Button Options	
LFG Capture	FALSE
LFG Utilization	FALSE

CHAMPAIGN COUNTY rpc REGIONAL PLANNING COMMISSION

PLANNING & COMMUNITY DEVELOPMENT
1776 East Washington Street
Urbana, IL 61802

Phone 217.328.3313
Fax 217.328.2426
www.ccrpc.org

To: Bart Hagston, City of Urbana Environmental Sustainability Manager
From: Andrew Levy, Planner II
Date: 6/6/2011
RE: VMT and Employment Projections

Mr. Hagston,

The following information is a response to your request for information that can be used in the Urbana Climate Action Plan. I have provided additional contextual information to help you determine the use and usefulness of the numbers generated by the Champaign Urbana Urbanized Area Transportation Study (CUUATS).

CUUATS completed population and employment projections for the Champaign Urbana Urbanized Area as part of the Long Range Transportation Plan (LRTP) 2035 adopted in 2009. Projections and travel demand model information is based on Traffic Analysis Zones (TAZs). There are 168 TAZs in the Champaign Urbana Urbanized Area. Of these, 65 contain a portion of the City of Urbana or are adjacent to the City. A map is attached showing the Urbana TAZs.

The current projections were completed in 2008 as a part of the LRTP 2035. At that time, population and employment projections were completed for each TAZ. During the update process, city staff was interviewed regarding potential development areas. Population projections for the identified TAZ area are as follows:

2005 – 45,829
2015 – 54,793
2025 – 60,288
2035 – 62,616

Please note that the population in 2005 is larger than the city population because the TAZ area encompasses a larger geographic area than the corporate limits. The 2010 Census population for this geographic area is 49,760.

CUUATS Employment Projections are divided into four categories, Industrial, Education and Government, Service, and Retail. For this summary, Service and Retail are combined to achieve the Commercial employment category. Education and Government sector is not included in this analysis. When the projections were developed, no distinction could be made between changes in employment that might occur during the 2025 – 2035 time range for Urbana. The result was a decision to carryover the population and employment statistics from 2025 to 2035. With Olympian Drive and other projects moving forward at this time, there is potentially new information that could be added to the current projections. CUUATS expects to complete projections again in the near future incorporating Census 2010 data and potential development that can be estimated at that time.

The current series of employment projections show employment growth between 2005 and 2035for commercial and industrial sectors (79.8% and 36.5% respectively). Each projection is based on 10-year development expectations as identified by CUUATS and City of Urbana staff. This rather than a linear type projection, development is estimated on a 10 year basis and population and employment figures are attributed to the expected development. Instead of using a 30 year trend line, 10-year annual compound growth rates can be used to determine interstitial data figures. If more development is expected in the first half of the 10 years, the trend can be modified to suit expectations. The following two tables show the current projections and interstitial data figures using a flat annual compound growth rate.

CUUATS Employment Projections – 2005 to 2035

	2005	2015	2025	2035	Percent Growth 2005-2035
Commercial	12,024	15,935	21,629	21,629	79.8%
Annual Compound Growth Rate	NA	2.86%	3.10%	0%	NA
Industrial	3,496	4,581	4,771	4,771	36.5%
Annual Compound Growth Rate	NA	2.74%	0.41%	0%	NA

Possible Baseline and Horizon Projections for Urbana Climate Action Plan

	2007	2020	Percent Growth 2007-2020
Commercial	12,722	18,004	41.5%
Industrial	3,690	4,674	26.7%

Using these population and employment projections, Daily Vehicle Miles traveled have been modeled using the CUUATS Travel Demand Model. The calculation includes arterial streets, collector streets, and some local roads. Interstates were excluded due to the heavy volume of through traffic. Some local roads were excluded because they are not used in the Travel Demand Model. If Annual Vehicle Miles Traveled are needed, this can be calculated several different ways. The simplest is multiplying by 365 days in the year. An alternate method is to define miles traveled reductions for weekend and holiday travel. I recommend that this type of modification be completed at the direction of the commission or city staff.

Vehicle Miles Traveled for Urbana Traffic Analysis Zones

	2005	2015	2025	2035	Percent Growth 2005-2035
Daily VMT	549,805	740,268	1,084,466	1,110,933	102.1%
Annual VMT (365 days)	200,678,825	270,197,455	395,830,090	405,490,545	NA
Annual Compound Growth Rate	NA	3.02%	3.89%	0.24%	NA

Vehicle miles traveled for the Urbana TAZ area are expected to increase at the rates shown in the table above. The increase between 2025 and 2035 is minimal because population and employment projections were similar for both horizon years. As we receive more information about potential development, this number is expected to change.

For comparison, the Illinois Department of Transportation catalogs annual VMT for each County in Illinois[1]. These numbers could be used to refine or adjust projections as needed. While VMT decreased in recent years past, 2010 saw an increase of VMT in Champaign County.

If these projections do not reflect the thoughts of the Urbana Sustainability Advisory Commission, there are several methodological alternatives that could be considered.

A: The existing employment projections could be used and an average growth rate applied rather than the annual compound growth rates. This would reflect a linear projection and assume that the existing projections are acceptable. An average growth rate could also be applied to Vehicle Miles Traveled. This option does not require additional analysis or use of the travel demand model.

B: The same procedure as described in Option A, but the 2025 projection is used to determine average annual growth rate. This option does not require additional analysis or use of the travel demand model.

C: Establish new projections based on current knowledge of development trends. In order to obtain vehicle miles traveled, the new projections will need to be completed for each TAZ. The new projections will need to be entered into the travel demand model to obtain the resulting Vehicle Miles Traveled.

Note:
The CUUATS travel demand model currently predicts transit trips which are included in the VMT calculation. However, the model is not sensitive to fuel price, parking fees or other policies that may impact transit ridership. This functionality is under development.

Feel free to contact me with questions or concerns. This memo may be cited as the data source.

Sincerely,
Andrew Levy

[1] http://www.dot.il.gov/adttravelstats.html

Forecasted Growth Projections for Climate Action Plan

Prepared by Bart Hagston

These projections are based upon data provided in a 6/6/11 memo from Andrew Levy at CCRPC/CUUATS.

Population

CCRPC projects Urbana Traffic Analysis Zone (TAZ) population. TAZ population is larger than City of Urbana. So I applied the compound annual growth rate (CAGR) I derived from CCRPC to the US Census population data for Urbana.

CCRPC projects Urbana TAZ population for 2005 as 45,829 and 2015 population as 54,793 (1.8% CAGR for 2005 - 2015). Population for 2025 projected at 60,288 (0.96% CAGR for 2015 – 2025).

US Census – Urbana city population in 2000 = 36,395. 2010 = 41,250 (1.26% CAGR for 2000 - 2010).

I applied the 1.26% CAGR to the 2000 Census population for the years 2000 – 2007 to get the 2007 population of 41,250. Since we are deducting 5,600 U of I student housing residents from the Urbana CAP, that gives us a net population for the CAP of 34,129 (41,250-5,600).

To get the 2020 population I applied the 1.8% CAGR derived from CCRPC for the years 2007 – 2015 and applied the 0.96% CAGR for 2016 – 2020. This resulted in a 2020 City population of 48,066. Minus the 5,6000 U of I student housing residents, left a net population for CAP planning purposes of 42,466. Overall, the CAGR for 2007 – 2020 turns out to be 1.48%.

Employment

On page 2 of the CCRPC memo, he points out commercial and industrial employment numbers for 2007 and project numbers for 2020. I took the percent growth for that time period, as stated in the memo, and broke it down into CAGR (as that is what is called for in the CACP inventory software). The CAGR for commercial employment for 2007 – 2020 is 2.71% and for industrial employment for the same period it is 1.84%.

VMT

On page 3 of the CCRPC memo, he points out that VMT between 2005 – 2015 is projected to increase at 3.02% CAGR. The CAGR for 2015 – 2025 is projected even higher. I simply used the 3.02% for the 2007 2020 planning period as I did not have high confidence in the even greater growth percentage projected for 2015 -2025. The numbers provided are for the Urbana TAZ, not City of Urbana, although the growth rates are assumed to be similar. Rod Fletcher had some hand-written notes from CUUATS that indicated the VMT within Urbana city limits for 2005 was 179,200,000. So I applied the 3.02% CAGR to the 2005 VMT to get the miles for 2007 and the projected VMT for 2020 (280,002,035).

The EVAC's recommendations are prioritized based on their timeframe for initiation:

- Short-term – In the next six months after this report is released, i.e., by the end of the Spring 2012 legislative session;
- Medium-term – From six to eighteen months after this report is released, i.e., by the end of the Spring 2013 legislative session;
- Long-term – From eighteen months and forward after this report is released.

1. Encourage and facilitate EV infrastructure installation.

1.1	The General Assembly should ensure that EV charging stations are not regulated as public utilities or Alternative Retail Electric Suppliers (ARES) solely because they provide EV charging services.	Short-term
1.2	DCEO and other stakeholders should convene local government officials and staff to streamline EV-related permitting procedures and building code provisions across local jurisdictions.	Short-term
1.3	DCEO and other stakeholders should coordinate planning efforts to optimize Illinois' network of public EV charging stations.	Short- to medium-term
1.4	State agencies should establish a set of technology standards for any EV charging stations purchased or installed using state funds.	Short- to medium-term
1.5	Electricity providers[1], the Smart Grid Advisory Council, and other stakeholders should collaborate to ensure that smart grid infrastructure supports and leverages EV technologies and applications.	Short- to long-term

2. Encourage EV purchases and charging infrastructure development through incentives.

2.1	DCEO should use state capital funds to create an incentive program for owners of multi-unit residential buildings to install charging stations in shared or common area parking spaces.	Short-term
2.2	The General Assembly and the Governor should support IEPA-proposed legislation to generate additional revenues for the Alternate Fuels Fund through a $1 increase in the annual vehicle license plate renewal fee.	Short- to medium-term
2.3	DCEO and IEPA should use new and existing funding sources to support EV infrastructure installation in strategic locations.	Short- to long-term
2.4	The Governor's Office, in collaboration with state agencies, should work with Illinois' Congressional Delegation to convert the federal EV tax credit (currently up to $7,500) to a rebate or point-of-sale discount.	Medium- to long-term
2.5	State and local governments and businesses should consider creating targeted incentives for EV drivers.	Medium- to long-term

[1] The term "electricity providers" is used to describe collectively the investor-owned utilities, Alternative Retail Electric Suppliers (ARES), municipal utilities, and cooperatives.

2.6	Local governments and commercial fleets should consider adopting ordinances or policies to establish goals for employees' use of EVs.	Long-term
2.7	The Illinois state fleet should work to achieve the EV purchase target established in Governor Quinn's Executive Order 11 (2009).	Long-term

3. Promote efficient and renewable electricity use by EVs.

3.1	Electricity providers should offer time-variant electricity rate options that encourage EV charging during off-peak hours of the day.	Short- to medium-term
3.2	Utilities (to the extent allowed under Integrated Distribution Company (IDC) rules), other electricity providers, and other stakeholders should promote time-variant electricity rate options to EV owners.	Short- to long-term
3.3	ICC Staff should monitor, and other stakeholders should study, early EV charging behavior in Illinois to determine whether additional programs or initiatives are needed to achieve off-peak vehicle charging.	Short- to long-term
3.4	The General Assembly and other stakeholders should enable, support, and incentivize renewable energy installations that offset EV charging loads and provide clean energy to the grid.	Short- to long-term
3.5	Electricity providers and other stakeholders should provide renewable energy supply options for EV owners.	Short- to medium-term
3.6	The General Assembly, or alternatively the ICC, should ensure that renewable energy temporarily stored in batteries can qualify for net-metering.	Short- to medium-term
3.7	The EVAC should continue to monitor whether additional policies are needed to encourage off-peak vehicle charging and integration of EV charging with clean, renewable energy.	Medium-term

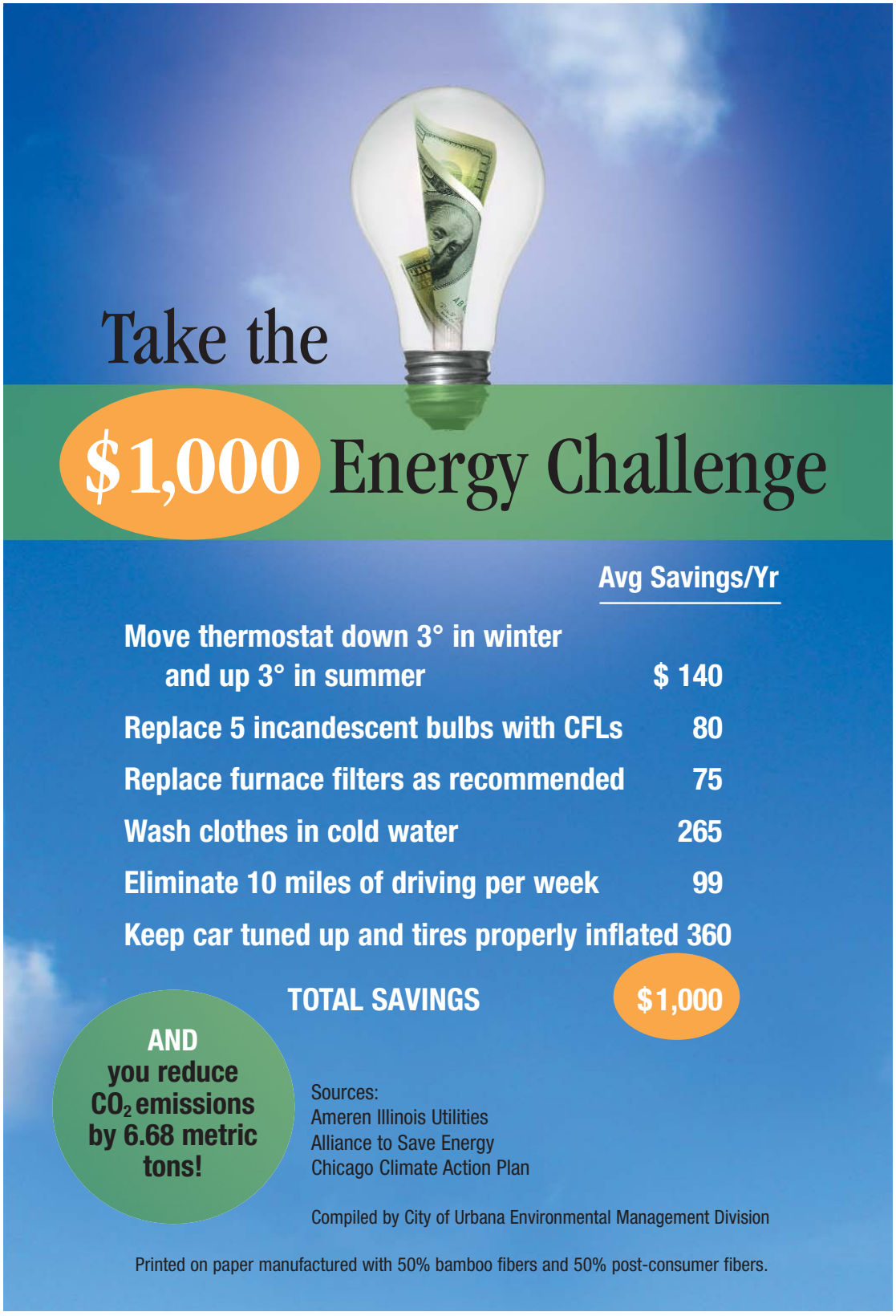
4. Educate the public on EVs, their use and benefits.

4.1	The EVAC should request data annually from appointees and stakeholders to evaluate the efficacy of, and identify needed improvements to, state EV policies, programs, and incentives.	Short-to medium-term
4.2	The Governor and state agencies should publicize the benefits of EVs, the state's EV policies, incentives, and other relevant program information.	Short- to medium-term
4.3	Auto manufacturers and dealers should inform consumers of EV features, incentives, charging procedures, electricity rate options, utility notification for charging stations, and responsible post-life battery options.	Short- to medium-term
4.4	Electricity providers should provide consumers with information on electricity rate options, comparative fuel cost savings, and notification for charging station installations.	Short- to medium-term

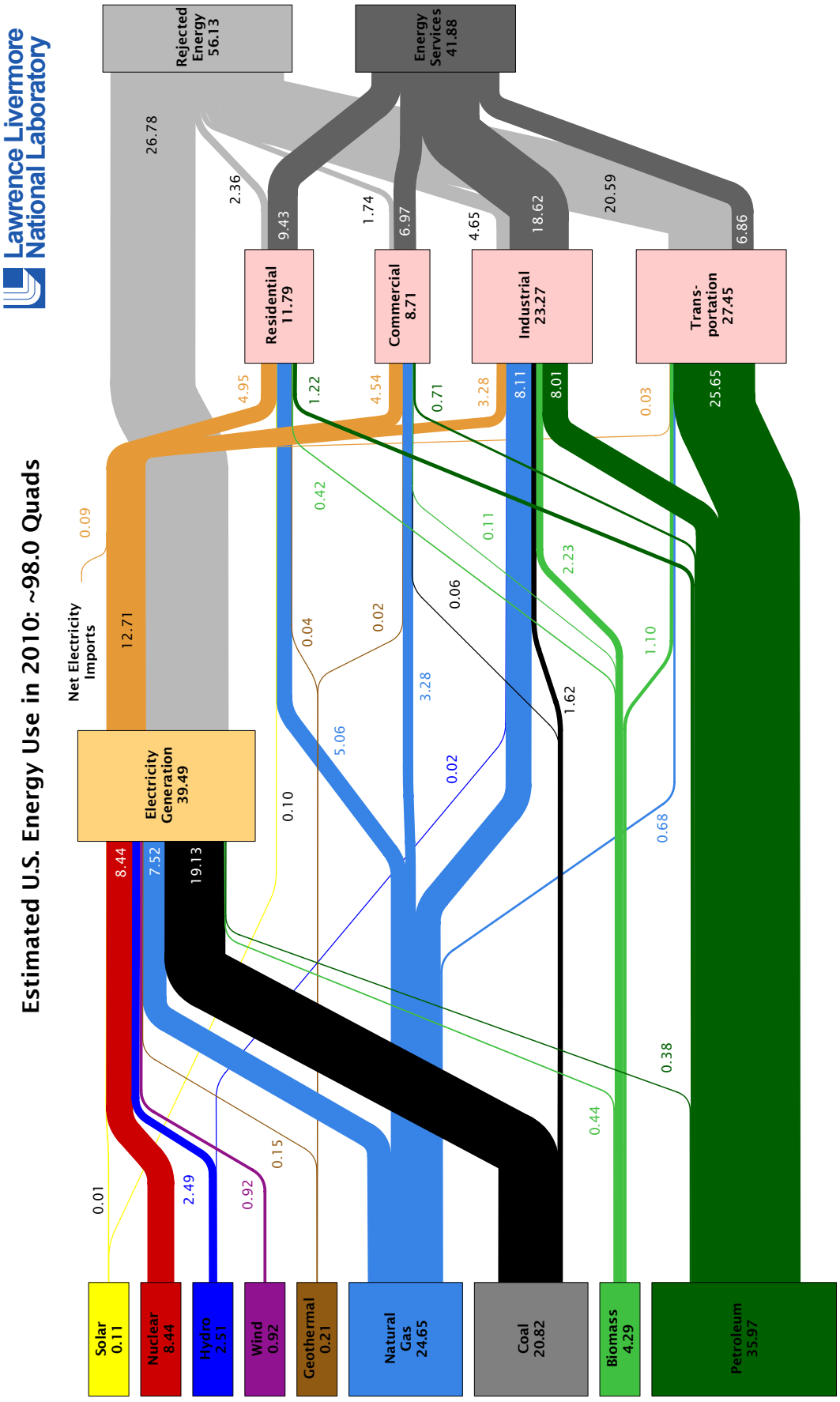
4.5	EV supply equipment (EVSE) providers should provide information on charging station features, specifications, costs, and incentives; installation, operation, and maintenance procedures; electricity rate options; public charging locations; and notification for installations.	Short- to medium-term
4.6	Local governments should provide information and instructions on EV-related local regulations, incentives, electricity rate options, public charging locations, and utility notification for charging stations.	Short- to medium-term
4.7	Environmental and other public interest groups should provide information on the environmental benefits of EVs, responsible post-life battery options, and utility notification for charging stations.	Short- to medium-term
4.8	First responders and public safety organizations should provide information to consumers and public safety personnel regarding safety protocols for EVs and EVSE.	Short- to medium-term
4.9	Educational institutions and providers and the Illinois Green Economy Network (IGEN) should provide information on EVs to their students and communities.	Medium- to long-term

5. Support the EV and EVSE industry and associated job creation in Illinois.

5.1	DCEO should attract EV/EVSE supply chain manufacturing to Illinois through the creation of a business development grant program utilizing state capital funds for EV manufacturing and infrastructure.	Short- to medium-term
5.2	IEPA, DCEO, and other stakeholders should provide non-financial incentives to EV/EVSE manufacturers and service companies to promote locating and expanding in Illinois.	Short- to long-term
5.3	The Governor's Office, DCEO, Argonne National Laboratory, and universities should support research, development, and demonstration of EV- and EVSE-related technologies, including smart grid integration technologies, in Illinois.	Short- to medium-term
5.4	DCEO, the Illinois Science and Technology Coalition (ISTC), the Clean Energy Trust, and universities should support entrepreneurs in the EV/EVSE sector through various existing services and programs.	Short- to long-term
5.5	DCEO, universities, colleges, and IGEN should train new and current members of Illinois' workforce with the knowledge, skills, and expertise that EV/EVSE businesses are seeking.	Medium- to long-term
5.6	IEPA should convene a state working group to explore EV battery end-of-life options, identify the optimal approach among these options, and formulate a plan for implementing the approach.	Medium- to long-term

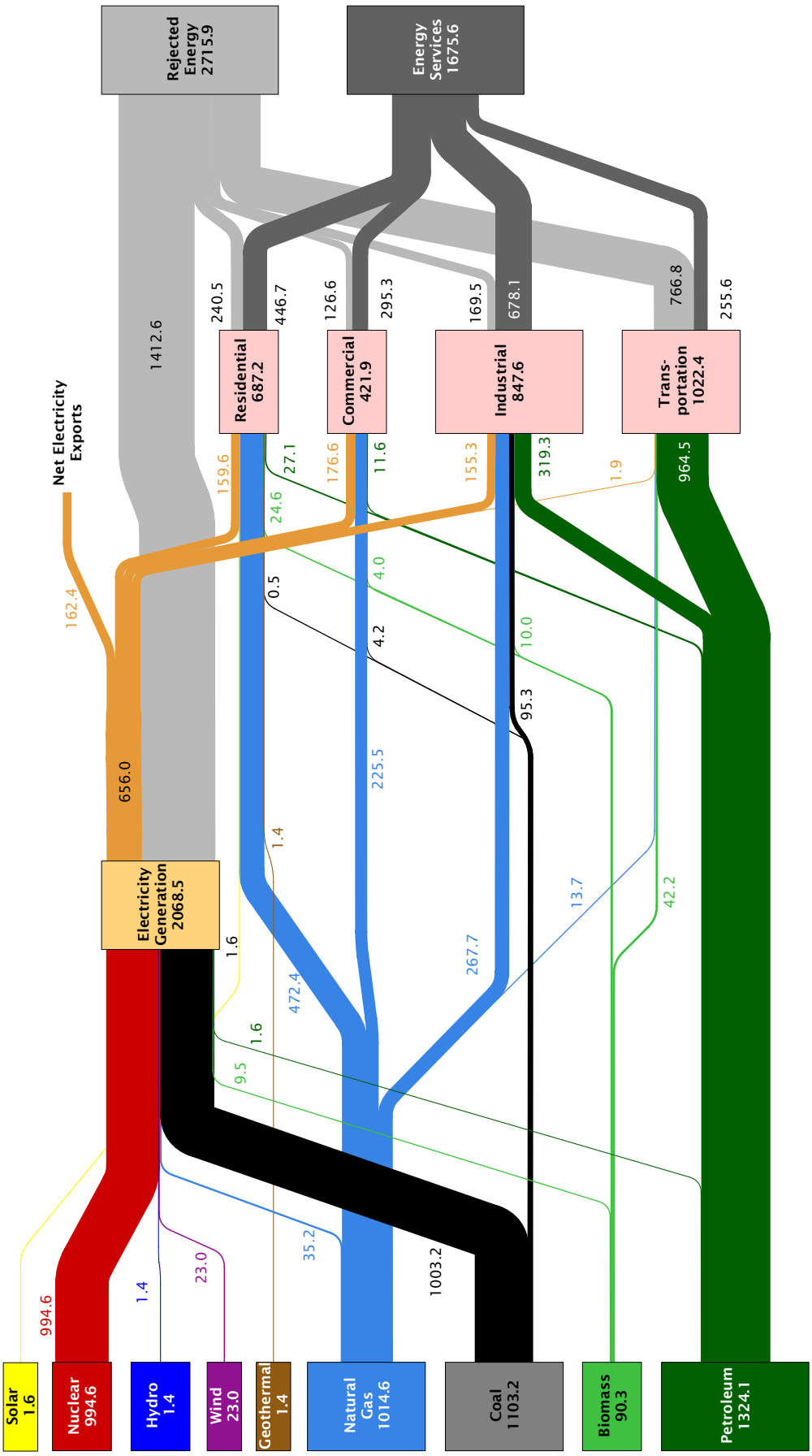

Take the
$1,000 Energy Challenge
Avg Savings/Yr
Move thermostat down 3° in winter and up 3° in summer $ 140
Replace 5 incandescent bulbs with CFLs 80
Replace furnace filters as recommended 75
Wash clothes in cold water 265
Eliminate 10 miles of driving per week 99
Keep car tuned up and tires properly inflated 360
TOTAL SAVINGS $1,000
AND you reduce CO_2 emissions by 6.68 metric tons!
Sources:
Ameren Illinois Utilities
Alliance to Save Energy
Chicago Climate Action Plan
Compiled by City of Urbana Environmental Management Division
Printed on paper manufactured with 50% bamboo fibers and 50% post-consumer fibers.

4.4 APPENDIX J: ENERGY AND EMISSIONS FLOW DIAGRAMS



Source: LLNL 2011. Data is based on DOE/EIA-0384(2010), October 2011. If this information or a reproduction of it is used, credit must be given to the Lawrence Livermore National Laboratory and the Department of Energy, under whose auspices the work was performed. Distributed electricity represents only retail electricity sales and does not include self-generation. EIA reports flows for hydro, wind, solar and geothermal in BTU-equivalent values by assuming a typical fossil fuel plant "heat rate." (see EIA report for explanation of change to geothermal in 2010). The efficiency of electricity production is calculated as the total retail electricity delivered divided by the primary energy input into electricity generation. End use efficiency is estimated as 80% for the residential, commercial and industrial sectors, and as 25% for the transportation sector. Totals may not equal sum of components due to independent rounding. LLNL-MI-410527

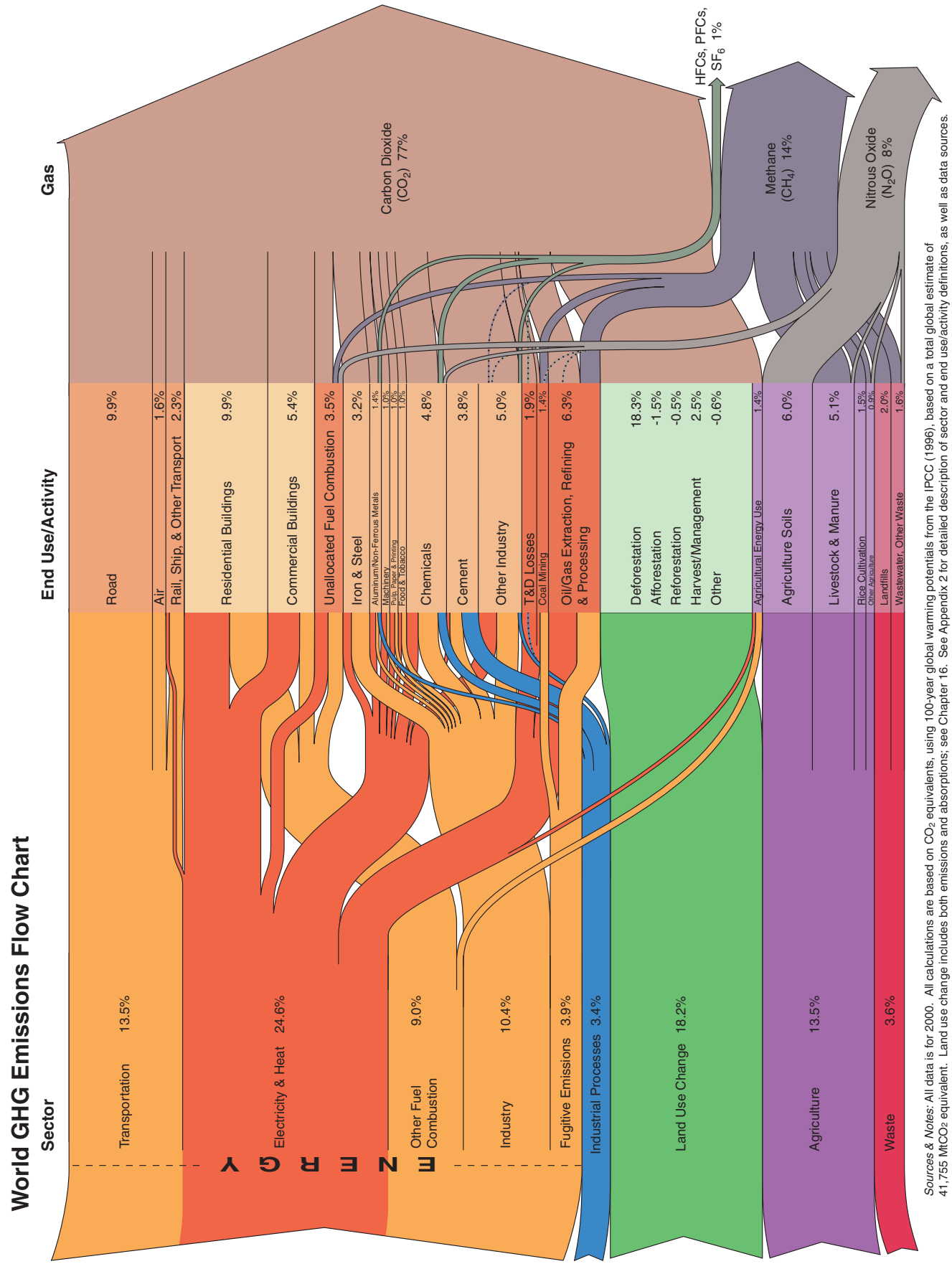
Source: Simon, A., & Belles, R. (2011). Estimated State-Level Energy Flows in 2008, Lawrence Livermore National Lab (LLNL).



Source: LLNL 2010. Data is based on DOE/EIA-0214(2008), June 2010. If this information or a reproduction of it is used, credit must be given to the Lawrence Livermore National Laboratory and the Department of Energy, under whose auspices the work was performed. Distributed electricity represents only retail electricity sales and does not include self-generation. EIA reports flows for non-thermal resources (i.e., hydro, wind and solar) in BTU-equivalent values by assuming a typical fossil fuel plant "heat rate." The efficiency of electricity production is calculated as the total retail electricity delivered divided by the primary energy input into electricity generation. Interstate and international electricity trade are lumped into net imports or exports and are calculated using a system-wide generation efficiency. End use efficiency is estimated as 65% for the residential, 70% for the commercial, 80% for the industrial sector, and as 25% for the transportation sector. Totals may not equal sum of components due to independent rounding. LLNL-MI-410527

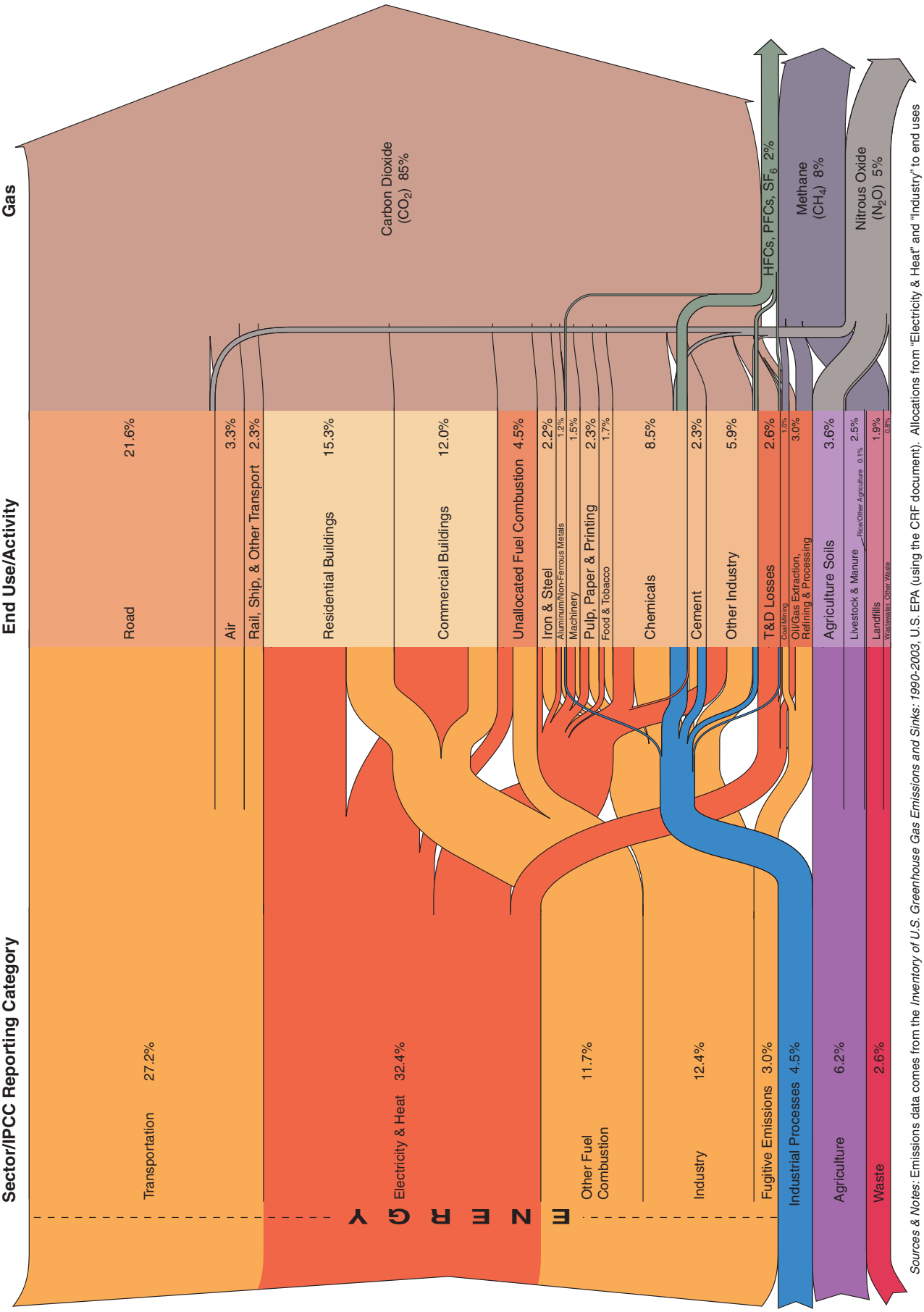
Source: Simon, A., & Belles, R. (2011). Estimated State-Level Energy Flows in 2008, Lawrence Livermore National Lab (LLNL).

4.4 APPENDIX J: ENERGY AND EMISSIONS FLOW DIAGRAMS



Sources & Notes: All data is for 2000. All calculations are based on CO_2 equivalents, using 100-year global warming potentials from the IPCC (1996), based on a total global estimate of 41,755 MtCO_2 equivalent. Land use change includes both emissions and absorptions; see Chapter 16. See Appendix 2 for detailed description of sector and end use/activity definitions, as well as data sources. Dotted lines represent flows of less than 0.1% percent of total GHG emissions.

Source: World Resources Institute www.wri.org
Baumert, K. A., Herzog, T., & Pershing, J. (2005). Navigating the Numbers Greenhouse Gas Data and International Climate Policy. World Resources Institute.



Sources & Notes: Emissions data comes from the *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2003*, U.S. EPA (using the CRF document). Allocations from "Electricity & Heat" and "Industry" to end uses are WRI estimates based on energy use data from the International Energy Agency (IEA, 2005). All data is for 2003. All calculations are based on CO_2 equivalents, using 100-year global warming potentials from the IPCC (1996), based on total U.S. emissions of 6,978 $MtCO_2$ equivalent. Emissions from fuels in international bunkers are included under Transportation. Emissions from solvents are included under Industrial Processes. Emissions and sinks from land use change and forestry (LUCF), which account for a sink of 821.6 $MtCO_2$ equivalent, and flows less than 0.1 percent of total emissions are not shown. For detailed descriptions of sector and

Source: World Resources Institute www.wri.org

4.4 APPENDIX K: URBANA CITY COUNCIL RESOLUTION ADOPTING THE PHASE I CLIMATE ACTION PLAN

CITY OF URBANA

www.urbanaillinois.us/climateactionplan