



CLIMATE ACTION PLAN

PHASE 2: 2015-2020

City of Urbana, Illinois



ACKNOWLEDGEMENTS

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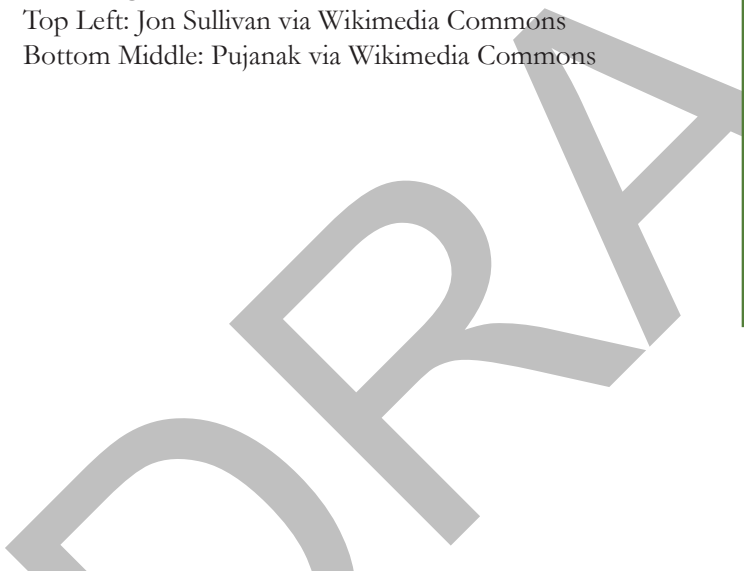
Comments on the Urbana Climate Action Plan Phase 2 can be made via:

Mail: City of Urbana, 706 S. Glover Ave. Urbana, Illinois 61802

Website: www.urbanaininois.us/sustainability

Discuss Climate Action in Urbana at:

Facebook: www.facebook.com/sustainableurbana



MESSAGE PLACEHOLDER PAGE

Date

Dear Citizens of Urbana,

66

DRAFT

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OUR UNDERSTANDING

- Climate change is happening now.
- Some climate impacts are inevitable.
- Some climate impacts are still avoidable if greenhouse gas pollution is reduced.

OUR VALUES

- We value mitigation of climate change to reduce pollution, save money, and improve quality of life.
- We value adaptation to climate impacts to help protect people and property.

OUR GOALS

- 25% reduction in greenhouse gas emissions by 2020 from a 2007 baseline.
- 80% reduction in greenhouse gas emissions by 2050 from a 2007 baseline.
- Adaptation to climate impacts.

6 GOALS : 23 ACTIONS

THE URBANA CLIMATE ACTION PLAN PHASE 2 RECOMMENDS XXXXX COMMUNITY-WIDE ACTIONS TO ACHIEVE XXXX GREENHOUSE GAS EMISSION REDUCTION GOALS:

1 REDUCE EMISSIONS FROM BUILDING ENERGY CONSUMPTION

- Action 1** Propose an ordinance or policy requiring new City facilities to achieve LEED certification
- Action 2** Propose an ordinance incentivizing or requiring new homes to achieve the Designed to Earn the ENERGY STAR certification, LEED certification, or Passive House certification
- Action 3** Propose an ordinance incentivizing or requiring new commercial buildings achieve the Designed to Earn the ENERGY STAR certification, LEED certification, or Passive House certification
- Action 4** Engage Ameren Illinois to facilitate energy data access for commercial facilities through ENERGY STAR Portfolio Manager web services
- Action 5** Seek funding for the Urbana Home Energy Performance program*

2 REDUCE EMISSIONS FROM GASOLINE CONSUMPTION

- Action 1** Evaluate existing zoning and development codes for possible integration of LEED-ND and other green development standards
- Action 2** Reduce single occupancy vehicle mode share from 47% to 40%
- Action 3** Evaluate progress of Bicycle Master Plan goal to increase bicycle mode share to 12%

3 INCREASE RENEWABLE ENERGY PURCHASING AND INSTALLATION

- Action 1** Purchase Green Power Partnership qualified renewable energy credits in future municipal electric aggregation agreements*
- Action 2** Purchase Green Power Partnership qualified renewable energy credits and/or the installation of onsite renewable energy for City facilities
- Action 3** Pursue long term purchase of bundled renewable power and renewable energy credits
- Action 4** Propose strategies to improve the local onsite renewable energy market
- Action 5** Propose strategies to increase renewable energy purchasing in the commercial sector*

4 ADAPT TO CLIMATE CHANGE IMPACTS

- Action 1** Engage the Illinois State Water Survey to evaluate an update to design storm standards
- Action 2** Evaluate funding needed to increase the tree pruning cycle to preserve existing trees
- Action 3** Incorporate pollinator-supportive plant species in City landscapes
- Action 4** Reduce tree species and tree genus proponderance to 5% and 15% respectively

5 PARTNER TO ENHANCE LOCAL PARTICIPATION IN EXISTING PROGRAMS

- Action 1** Partner with existing energy efficiency programs and community groups
- Action 2** Partner with organizations conducting smart grid education and engagement
- Action 3** Partner with the Green Power Partnership
- Action 4** Partner with the local tenant unions

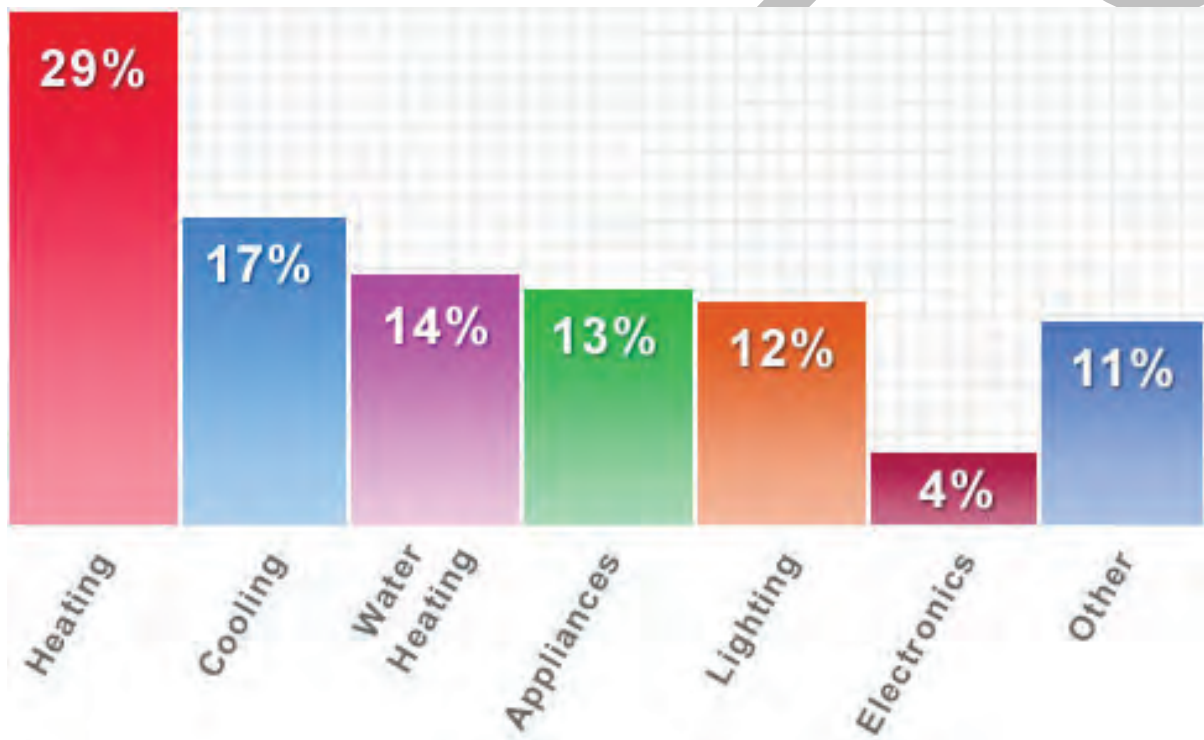
6 MONITOR PROGRESS TOWARDS CLIMATE ACTION PLAN GOALS

- Action 1** Work with the Sustainability Advisory Commission to inventory greenhouse gas emissions and evaluate emissions reduction strategies every two years
- Action 2** Work with the Sustainability Advisory Commission to create a new plan to reduce greenhouse gas emissions for the 2020 to 2050 period

* denotes Actions of Significant Impact listed on page 22

2. BACKGROUND

Typical U.S. Household Consumption



Source: www.energystar.gov

2.1 Background

Key Acronyms and Terms

ActOnEnergy a service of the Ameren Illinois Utilities that provides energy saving resources and incentive programs to their customers

CAP Climate Action Plan Phase 1 for the City of Urbana identifying initial strategies to achieve the goal of reducing community-wide greenhouse gas emissions by 25% by the year 2020 and 80% by 2050 from a 2007 baseline

ENERGY STAR a government-backed program helping businesses and individuals protect the environment through energy efficiency measures

ENERGY STAR Portfolio Manager an online tool used to measure and track energy and water consumption and greenhouse gas emissions for buildings

GHG greenhouse gas

Green Power electricity produced from solar, wind, geothermal, biogas, eligible biomass, and low-impact small hydroelectric sources

Green Power Partnership a voluntary U.S. Environmental Protection Agency program supporting the use of green power and purchase of renewable energy credits from green power sources to reduce the environmental impacts associated with conventional electricity use

ICLEI International Council for Local Environmental Initiatives

Illinois Home Performance a program where home and property owners decrease their energy costs and increase the comfort, safety, durability, and value of their homes by working with qualified contractors to take a “whole-home” approach to energy upgrades

kWh a kilowatt hours is a unit of energy equal to 1,000 watt-hours

LEED Leadership in Energy and Environmental Design is a set of rating systems for the design, construction, operation, and maintenance of green buildings, homes and neighborhoods created and maintained by the United States Green Building Council

LEED-ND LEED for Neighborhood Development is a system for rating and certifying green neighborhoods

MTCO_{2e} Metric Tons of CO₂ (Carbon Dioxide) equivalent

Passive House a voluntary building energy efficiency standard requiring no more than 15 kWh/m² per year (4746 btu/ft² per year) in heating and 15 kWh/m² per year cooling energy OR to be designed with a peak heat load of 10W/m²

RECs renewable energy credits are tradable, non-tangible energy commodities in the United States that represent the environmental attributes of 1000 kWh of renewable electricity generation from sources such as wind or solar

RPS a renewable portfolio standard requires some percentage of a state’s electricity generation be derived from renewable sources

Smart Grid a next-generation electrical power system that is typified by the increased use of communications and information technology in the generation, delivery and consumption of electrical energy

Solar Ready means aspects of building design and construction that ease installation of solar photovoltaic and heating systems at some time after the building is constructed

Therms a unit of energy equivalent to 100,000 British thermal units

TIF Tax Increment Financing is a public sector method to finance redevelopment

U-C ENERGY STAR Challenge a competition sponsored by multiple agencies and organizations in the community where buildings in Urbana and Champaign attempt to achieve the greatest energy use reduction in 2014

Urbana Home Energy Performance a 2010-2012 partnership with Ameren Illinois and the City of Urbana to use American Recovery and Reinvestment Act funds to provide enhanced energy efficiency rebates

2.2 Phase 1 of Urbana's Climate Action Plan

In 2012, Urbana approved Phase 1 of the City's Climate Action Plan which laid out activities through the end of 2014. The purpose of Phase 1 was to implement a small number of tried and true initiatives to reduce greenhouse gasses while also evaluating additional initiatives to implement in Phase 2, including climate change adaptation initiatives.

Phase 1 Actions In Progress or Completed:

- (5%) of energy efficiency project costs rebated in City TIF redevelopment program
- (62) buildings registered in U-C ENERGY STAR Challenge for commercial buildings
- (27) participants in green building tour
- (11) responses to energy efficient commercial behaviors survey
- (84,252) Renewable Energy Credits (RECs) purchased in 2013 through Municipal Electric Aggregation
- (1) meeting with cities, university, and wind energy developer to evaluate bundled power and RECs
- (1) grant application made to fund solar energy market development activities
- (59) responses to energy efficient residential behaviors survey
- (11.8) miles of bicycle infrastructure installed from 2012-2014
- (1) roundabout installation evaluated
- (1) bicycle traffic enforcement and education program established
- (8.5%) of City of Urbana employees participating in 2014 Bike to Work Day Workplace Challenge
- (1) email signature created that highlights available pedestrian/bicycle/bus transportation modes
- (3) bicycles located for City of Urbana employee bike share
- (1) policy established requiring minimum fuel efficiency standards for new City fleet vehicles
- (8) stakeholder participants in energy efficiency in rental properties focus group
- (5) speakers on regional climate impacts and adaptation at Sustainability Advisory Commission meetings
- (5) City Green Team recommendations implemented to improve City environmental performance
- (1) training with Urbana School District teachers on energy and climate issues
- (1) completed greenhouse gas inventory baseline and updated 2013 inventory

Focus Groups and Surveys in section 5. Appendices

- Energy Efficient Residential Behaviors Survey
- Energy Efficient Commercial Behaviors Survey
- Energy Efficient Transportation Behaviors Survey
- Energy Efficiency in Rental Properties Focus Group Summary
- Energy Efficient Industrial Behaviors Focus Group Summary

2.3 Background

RENEWABLE ENERGY CREDITS OR CERTIFICATES

The purchase of renewable energy credits (RECs) for each kWh used by Urbana residents participating in the City's Municipal Electric Aggregation Program is incorporated into the per kWh price participants pay in the program.

From EPA's Green Power Partnership: Renewable Energy Certificates:

RECs represent the environmental and other non-power attributes of renewable electricity generation and are a component of all renewable electricity products. RECs are measured in single megawatt-hour increments and are created at the point of electric generation. Buyers can select RECs based on the generation resource (e.g., wind, solar, geothermal), when the generation occurred, as well as the location of the renewable generator.

RECs provide key information about the generation of renewable electricity delivered to the utility grid. Since RECs represent only the environmental or non-power attributes of renewable electricity generation, they are not subject to electricity delivery constraints. The information conveyed by a REC allows buyers to make specific environmental claims about how their electricity is produced.

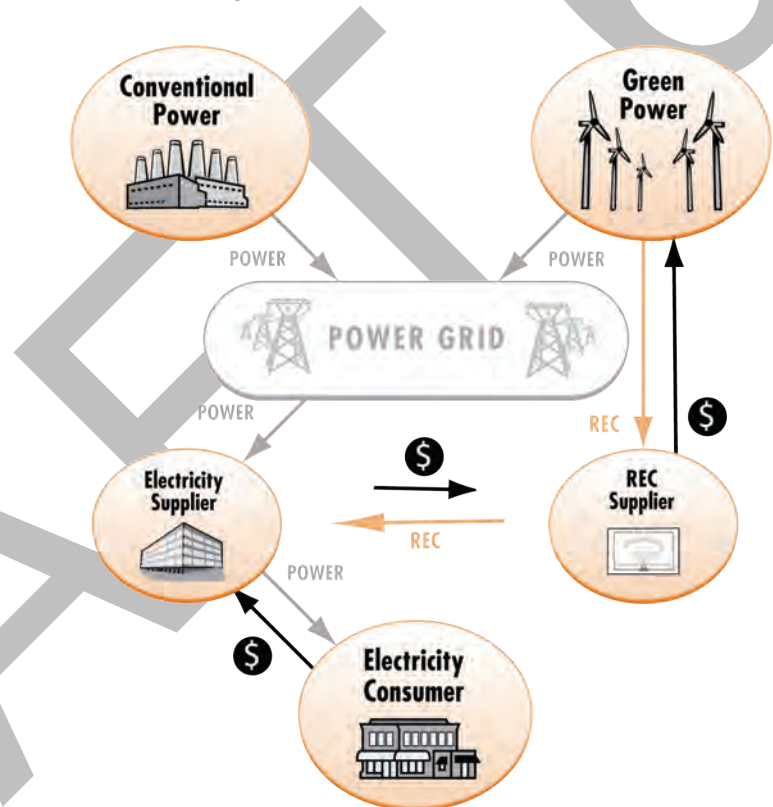
To understand how RECs work, it is helpful to understand how electricity is delivered across the utility grid, as well as what makes renewable electricity generation attractive to individuals and organizational buyers.

Within the United States, electricity demand is met by various types of generation technologies and fuel resources. These electricity generators feed electrons onto the utility grid for delivery to consumers through a complex network of wires and distribution infrastructure. Because the electrons produced from the different technologies and fuel resources are physically the same, it is impossible for individuals or organizations to know what type of generation technology or resource produced the electricity that reaches their particular facility.

RECs help address the issue that the electricity or electrons a consumer receives from their utility does not identify how the electricity was generated. RECs were created to help convey the attributes of electricity generated from renewable resources to buyers. Analogous to the utility delivering the physical electricity through wires, RECs serve as the means to deliver the environmental and non-power attributes of renewable electricity generation to buyers – separate from the physical electricity. (See Figure 1.) All renewable electricity generation can be viewed as having two separate parts:

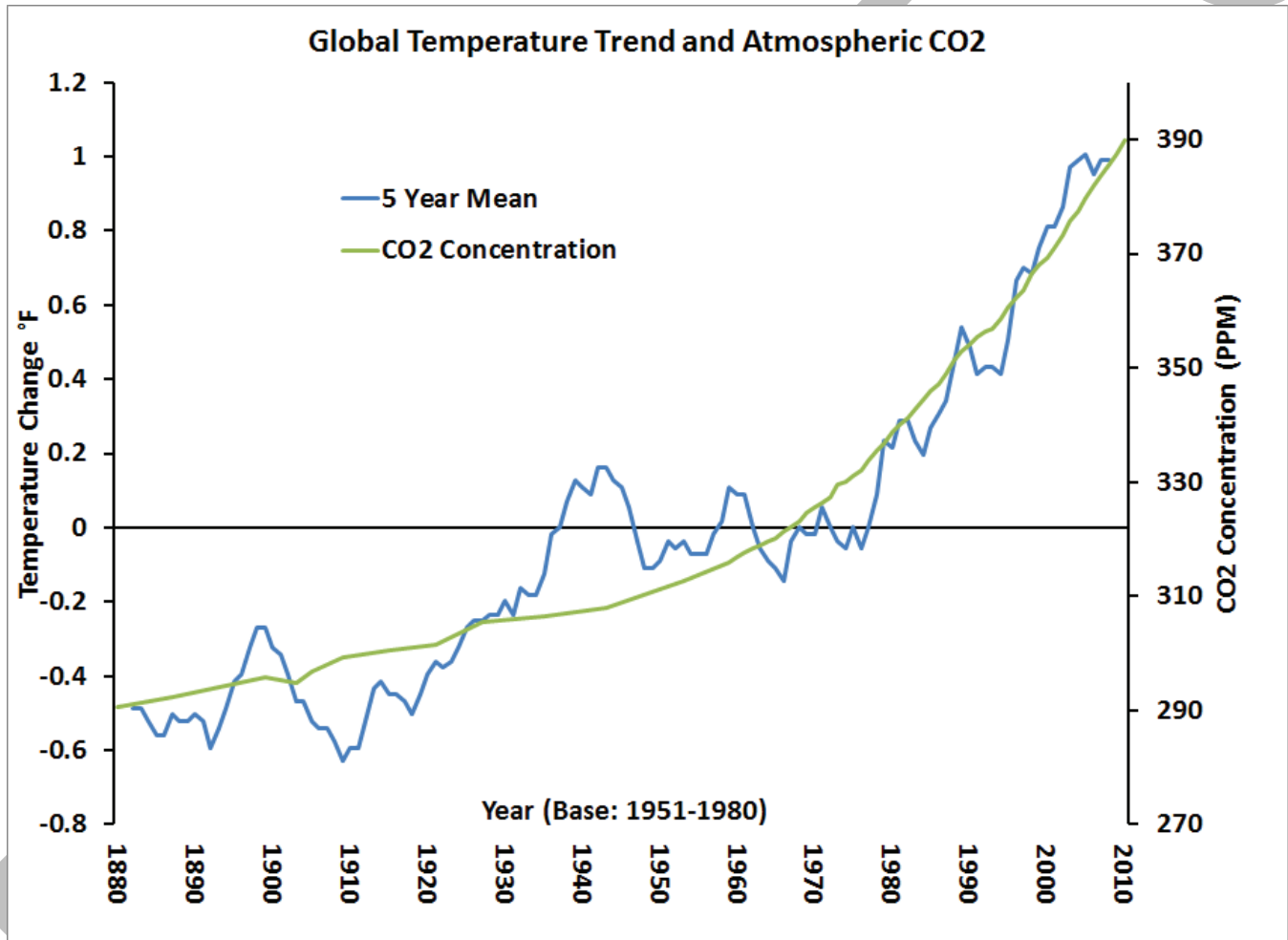
1. The commodity electricity or electrons
2. The environmental and other non-power attributes of generation represented by a REC

Because RECs are monitored and verified, individuals and organizational buyers can buy RECs and be confident that electricity generated on their behalf was done so with renewable energy resources.



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

3. METHODOLOGY, INVENTORY, & PROJECTIONS



Source: Center for Climate and Energy Solutions

3.1 Methodology

CALCULATION METHOD

Greenhouse Gas Protocol:

Urbana, like most cities, uses the U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions “developed by ICLEI-Local Governments for Sustainability USA (ICLEI USA) to respond to the expressed needs of local governments in the United States for a standardized methodology for accounting and reporting on GHG emissions associated with individual communities (www.icleiusa.org).”

Greenhouse Gas Modeling Tool:

Following the development of the U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions, ICLEI developed a new greenhouse gas modeling protocol to match the standards of the new Protocol. ICLEI’s ClearPath program “is an all-in-one suite of online tools to complete GHG inventories, forecasts, and climate action plans at the community-wide or government operations scale (www.icleiusa.org).”

University Related Emissions:

Electricity and natural gas consumption data from University of Illinois buildings in Urbana are not included in the City of Urbana 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). Emissions related to the University transportation and 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.

Baseline Inventory Adjustments:

The City of Urbana baseline inventory was reassessed for the publication of the Climate Action Plan Phase 2. The reassessment was performed for several reasons. ICLEI’s published a new greenhouse gas accounting protocol for the U.S., ICLEI released a more sophisticated greenhouse gas accounting tool, and the utility company changed the manner in which city-wide data is queried and aggregated from their computer systems.



3.2 INVENTORY

A. 2007 GREENHOUSE GAS EMISSIONS

URBANA'S 2007 BASELINE COMMUNITY GREENHOUSE GAS EMISSIONS REPORT BY SECTOR IN METRIC TONS CO₂EQUIVALENT

| Sector | Quantity |
|--|--------------------------|
| Residential energy consumption | 145,610 |
| Commercial energy consumption | 259,684 |
| Industrial energy consumption | 8,658 |
| Transportation energy consumption | 110,189 |
| Solid waste landfilled | 15,389 |
| Water and Wastewater | 325 |
| Total | 539,855 |
| Non-Campus Population in 2007 | 33,968 |
| Per Capita Greenhouse Gas Emissions in 2007 | 15.89 MT/Resident |

B. 2013 GREENHOUSE GAS EMISSIONS

URBANA'S 2013 COMMUNITY GREENHOUSE GAS EMISSIONS REPORT BY SECTOR IN METRIC TONS CO₂EQUIVALENT

| Sector | Quantity |
|--|--------------------------|
| Residential energy consumption | 76,177 |
| Commercial energy consumption | 262,117 |
| Industrial energy consumption | 30,481 |
| Transportation energy consumption | 107,252 |
| Solid waste landfilled | 10,820 |
| Water and Wastewater | 353 |
| Total | 487,200 |
| Non-Campus Population in 2013 | 36,665 |
| Per Capita Greenhouse Gas Emissions in 2013 | 13.29 MT/Resident |

*Residential energy consumption above includes reduction provided by REC purchases in 2013 equalling 69,559 MTCO₂e

C. URBANA'S GREENHOUSE GAS EMISSIONS REDUCTION GOALS

Continuous improvement to reach:

25% reduction in greenhouse gas emissions by 2020 or 404,891 Metric Tons CO₂e total

80% reduction in greenhouse gas emissions by 2050 or 107,971 Metric Tons CO₂e total

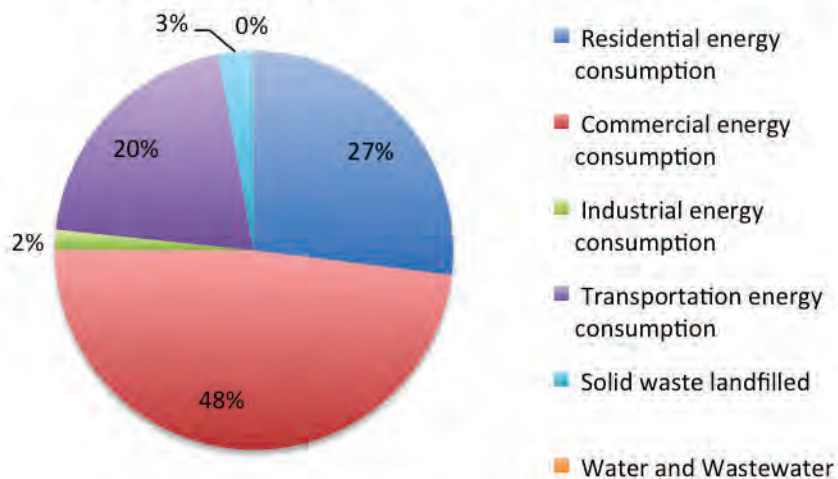
3.2 INVENTORY

D. 2013 GREENHOUSE GAS EMISSIONS COMPARISON TO BASELINE

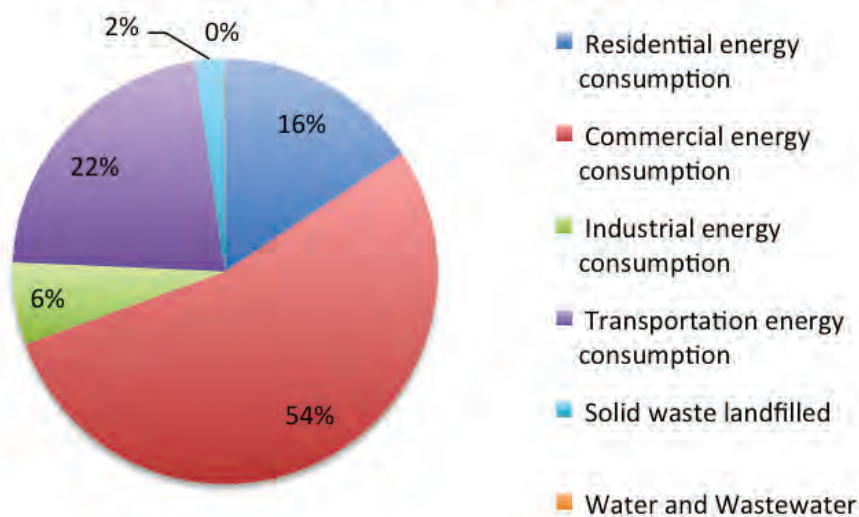
URBANA'S 2007 AND 2013 COMMUNITY GREENHOUSE GAS EMISSIONS REPORT BY SECTOR IN METRIC TONS CO₂

| Sector | 2007 | 2013 | % Change |
|-----------------------------------|----------------|----------------|---------------|
| Residential energy consumption | 145,610 | 76,177 | -47.68% |
| Commercial energy consumption | 259,684 | 262,117 | 0.94% |
| Industrial energy consumption | 8,658 | 30,481 | 252.06% |
| Transportation energy consumption | 110,189 | 107,252 | -2.67% |
| Solid waste landfilled | 15,389 | 10,820 | -29.69% |
| Water and Wastewater | 325 | 353 | 8.62% |
| Total | 539,855 | 487,200 | -9.75% |

2007 GHG Emissions in MTCO₂e

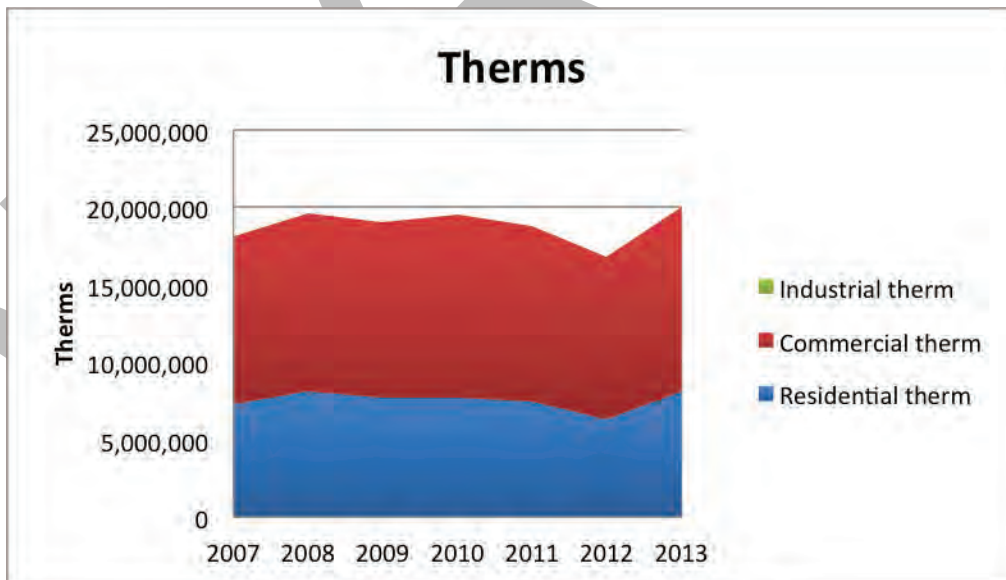
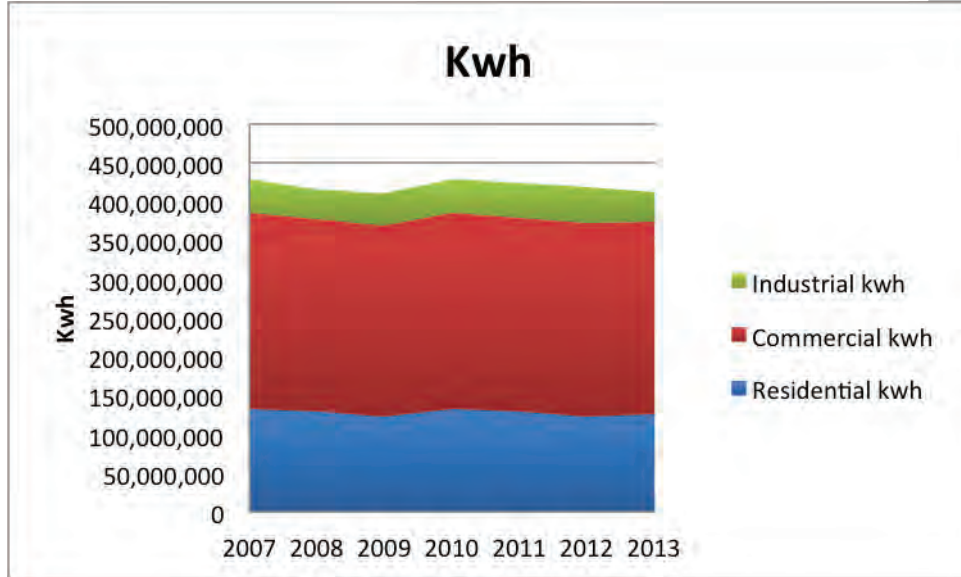


2013 GHG Emissions in MTCO₂e



3.2 INVENTORY

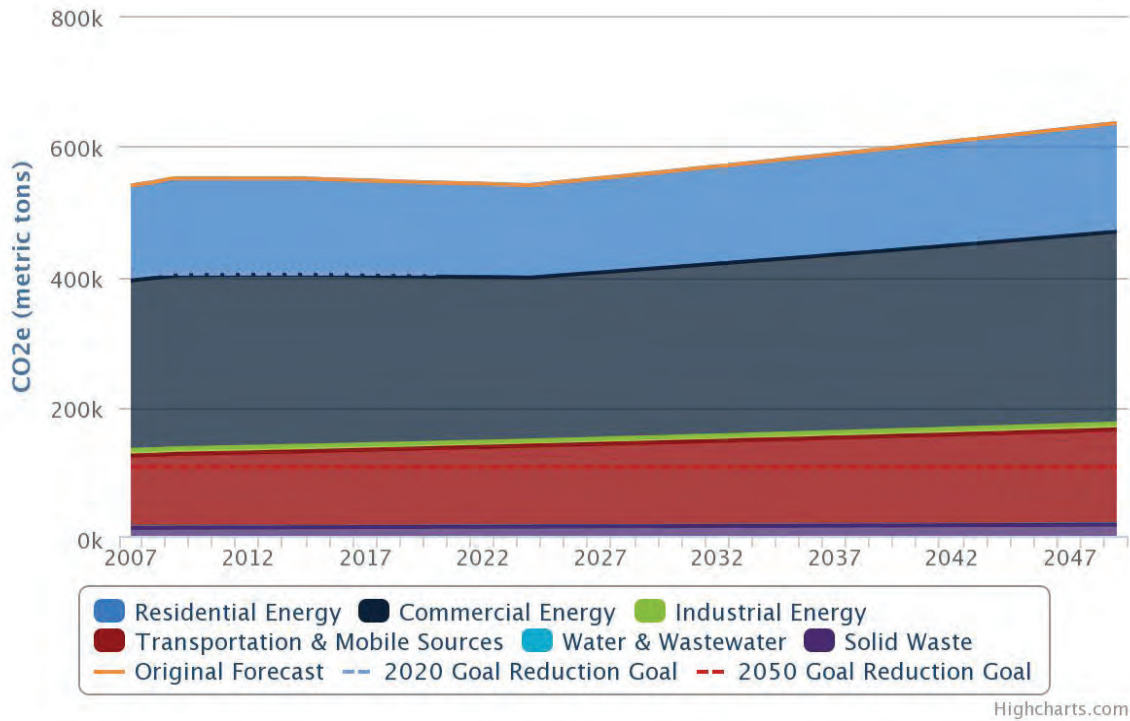
E. UTILITY ELECTRICITY AND GAS CONSUMPTION TRENDS



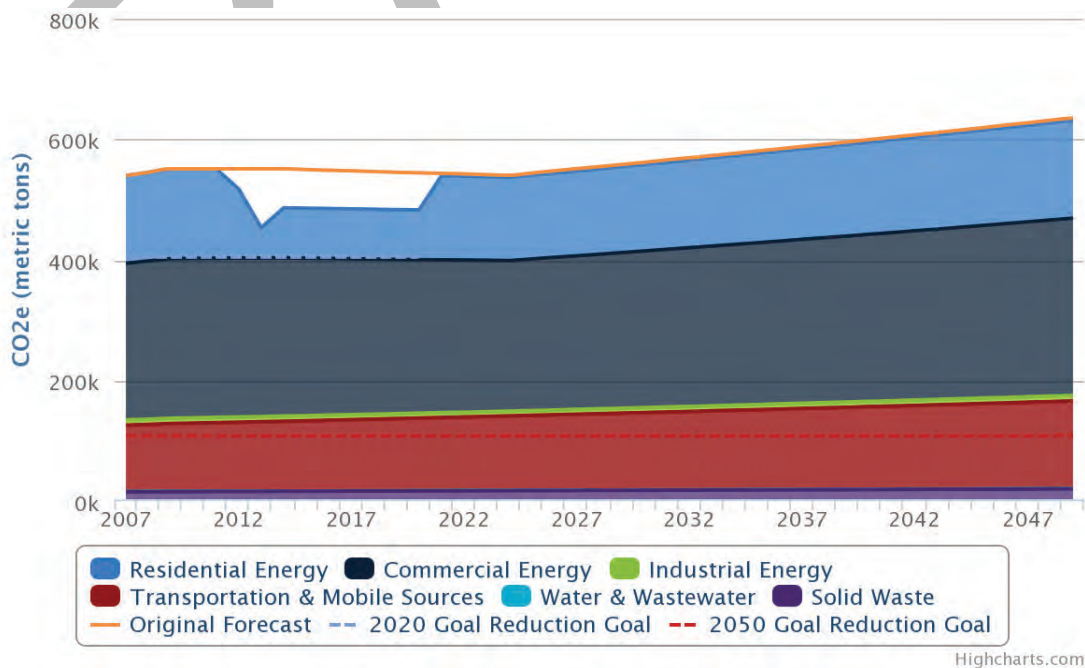
3.3 Projections

A. PLANNING PROJECTIONS

2007 to 2050 GHG Emissions Projection with Renewable Portfolio Standard



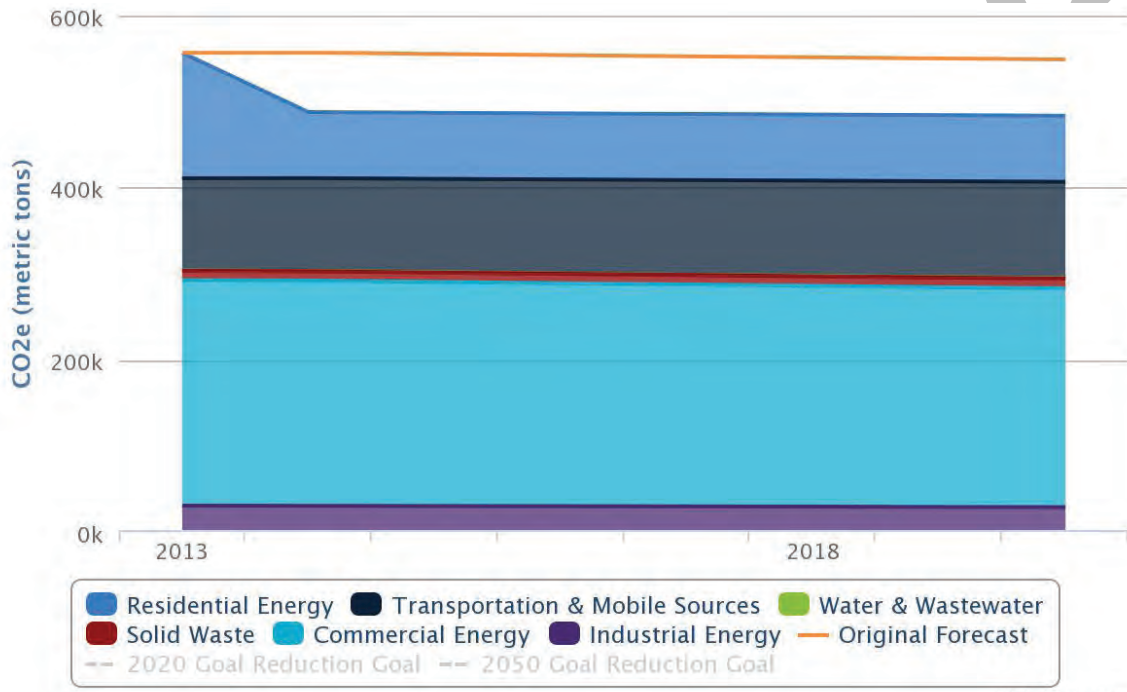
2007 to 2050 GHG Emissions Projection with Renewable Portfolio Standard and RECs through 2020



3.3 Projections

B. PLANNING PROJECTIONS

2013 to 2020 GHG Emissions Projection with Renewable Portfolio Standard and RECs through 2020



Highcharts.com

DRY

4. GOALS & ACTIONS



Source: Champaign-Urbana Mass Transit District

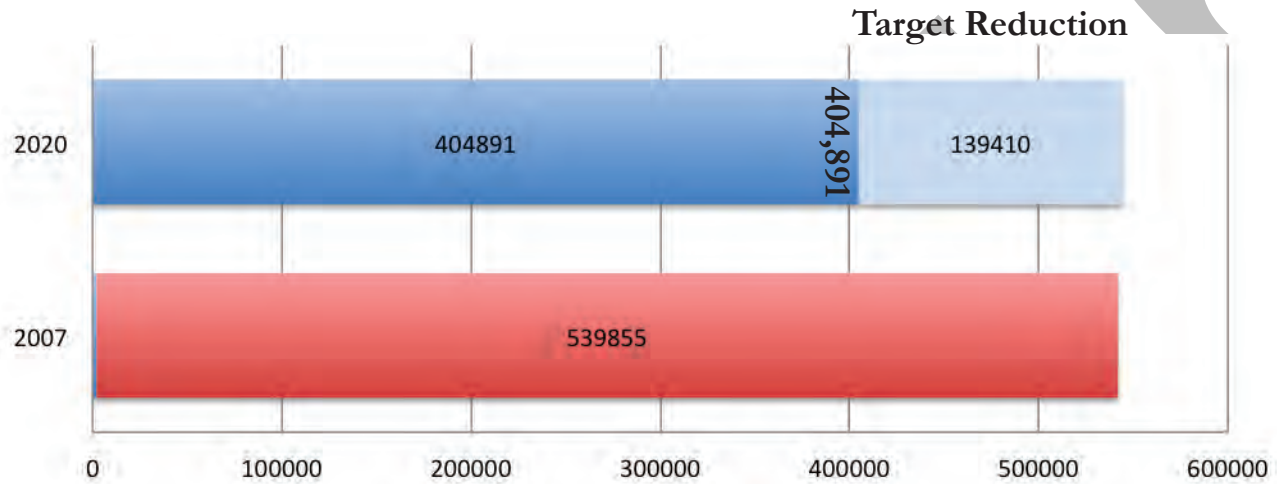
4.1 EMISSIONS REDUCTION GOALS

25% reduction in greenhouse gas emissions by 2020 to 404,891 MTCO₂e total

- A 134,964 MTCO₂e reduction

80% reduction in greenhouse gas emissions by 2050 to 107,971 MTCO₂e total









- A 431,884 MTCO₂e reduction

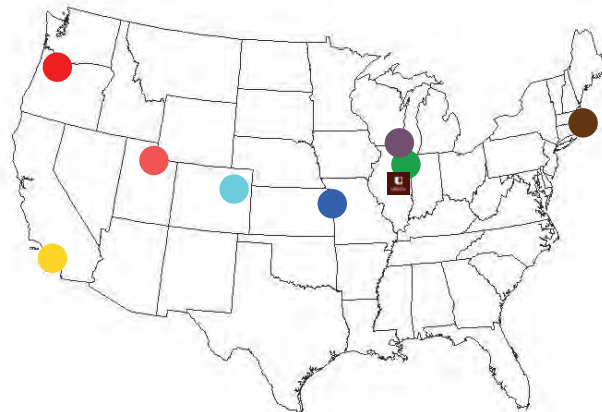


4.1 EMISSIONS REDUCTION GOALS

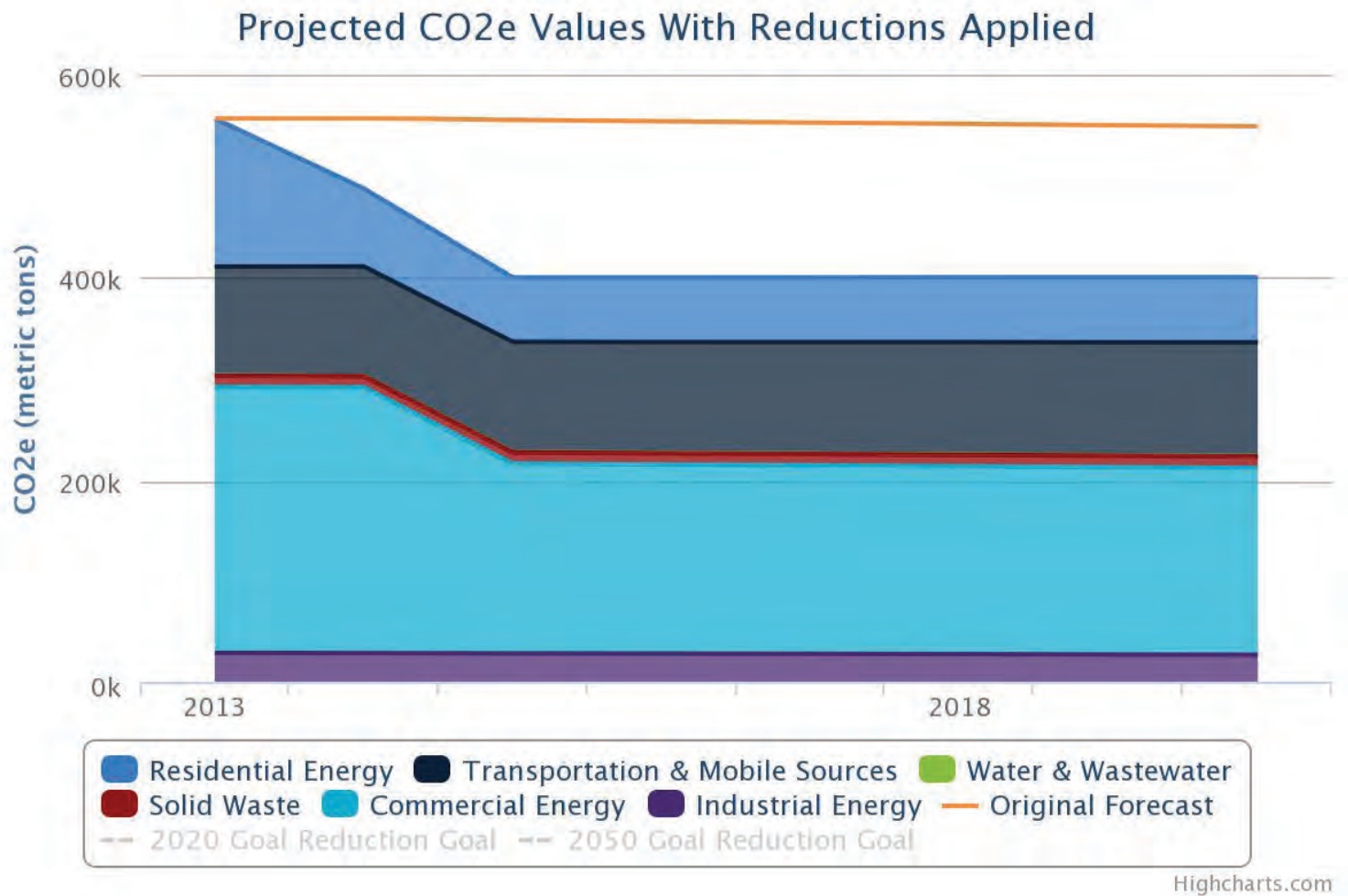
| CITY | GOAL | PROGRESS |
|--|-------------------------------|------------------|
|  Urbana, IL | 25% below 2007 levels by 2020 | -10% as of 2013* |

*Includes accounting for Illinois Renewable Portfolio Standard and purchase of renewable energy credits

| CITY | GOAL | PROGRESS |
|--|-------------------------------|---------------------------------------|
|  Portland, OR | 40% below 1990 levels by 2030 | -6% as of 2010 |
|  Los Angeles, CA | 35% below 1990 levels by 2030 | -7% as of 2012 |
|  Salt Lake City, UT | 80% below 2005 levels by 2040 | No data |
|  Denver, CO | Achieve 1990 levels by 2020 | -4% as of 2012 |
|  Kansas City, MO | 30% below 2000 levels by 2020 | Seeking \$80,000 to conduct inventory |
|  Evanston, IL | 17% below 1990 levels by 2020 | -12% as of 2012 |
|  Chicago, IL | 25% below 1990 levels by 2020 | +2% as of 2010 |
|  Boston, MA | 25% below 2005 levels by 2020 | -11% as of 2011 |



4.2 ACTIONS OF SIGNIFICANT IMPACT



The above scenario demonstrates how the 25% reduction in greenhouse gas emissions by 2020 to 404,891 MTCO₂e total can be met by applying the following strategies:

- **Renewable energy credits purchase for all residential electric use from 2014-2020**
- **Home Energy Performance program rebates from 2014-2020**
- **Energy efficiency and/or renewable energy credits equalling 25% of commercial electric use from 2014-2020**

4.2 ACTIONS OF SIGNIFICANT IMPACT

Renewable Energy Credits Purchase

- Renewable energy credits purchase for all residential electric use from 2014-2020 would achieve 51% of our 2020 reduction goal
- Estimated cost: Zero cost to the City. \$0.0016 per kWh is paid by ratepayers opted into municipal electric aggregation totaling approximately \$134,000.00 per year for our community.

Home Energy Performance Rebates

- Restarting Urbana's Home Energy Performance program from 2014-2020 would achieve 4% of our 2020 reduction goal
- This program offered enhanced rebates for energy efficiency measures undertaken through Ameren ActOnEnergy
- Estimated cost: \$60,000 per year cost to the City. Additional costs to homeowner participants.

Energy Efficiency and/or RECs in Commercial Sector or Other Sector

- Energy efficiency and/or renewable energy credits equalling 25% of commercial electric use from 2014-2020 would achieve 45% of our 2020 reduction goal
- Potential commercial sector strategies may include financial incentives, energy benchmarking, or new financing models
- Estimated cost: Estimated program cost for commercial reduction through financial incentives strategy: \$76,000 per year. Estimated program cost for commercial reduction through benchmarking strategy: \$490,000 per year. Estimated cost for commercial reduction through RECs: \$82,000 per year. Additional costs to business participants.

Marginal Impacts or Cost-Prohibitive Strategies

Other strategies included in this plan help create the context for a more energy-efficient, renewable-friendly future, in addition to other co-benefits. However, these strategies either have a greenhouse gas reduction impact that is marginal or a cost that is prohibitive. Additionally, much of the 'low hanging fruit' of energy efficiency has already been implemented

4.3 GOAL 1: REDUCE EMISSIONS FROM BUILDING ENERGY CONSUMPTION

Action 1: Propose an ordinance or policy requiring new City facilities to achieve LEED Certification

- Such a policy should set a square footage applicability requirement and a minimum level of certification.

Action 2: Propose an ordinance incentivizing or requiring new homes to achieve the Designed to Earn the ENERGY STAR certification, LEED certification, or Passive House certification

- Such a policy should set a square footage applicability requirement and a minimum level of certification.

Action 3: Propose an ordinance incentivizing or requiring new commercial buildings achieve the Designed to Earn the ENERGY STAR certification, LEED certification, or Passive House certification

- Such a policy should set a square footage applicability requirement and a minimum level of certification.
- A 2003 study by KEMA found that the lowest certification level of LEED incurred an extra cost of no more than 2.5% of total project cost.

Action 4: Engage Ameren Illinois to facilitate energy data access for commercial facilities with ENERGY STAR Portfolio Manager Web Services

- ENERGY STAR Portfolio Manager is used by a quarter million commercial buildings across the country to benchmark, track, and improve building energy performance. It is the program used to receive ENERGY STAR certification for a commercial building.
- Portfolio Manager is set up to transfer utility company energy use digitally into the building owner's account saving an enormous amount of time on data input and easing adoption of energy management.*

Action 5: Seek funding for the Urbana Home Energy Performance program

- The Urbana Home Energy Performance program (2010-2012) achieved a very low cost for each MTCO₂e reduced.
- \$5.26 was invested for each MTCO₂e reduced not including the funds spent by Ameren ActOnEnergy.
- \$69.25 was invested for each MTCO₂e reduced including the funds spent by Ameren ActOnEnergy.



Source: U.S. Environmental Protection Agency

4.3 GOAL 2: REDUCE EMISSIONS FROM GASOLINE CONSUMPTION

Action 1: Evaluate existing zoning and development codes for possible integration of LEED-ND and other green development standards

- LEED-ND combines energy efficient buildings with an energy efficient street pattern and urban form to create more sustainable places.

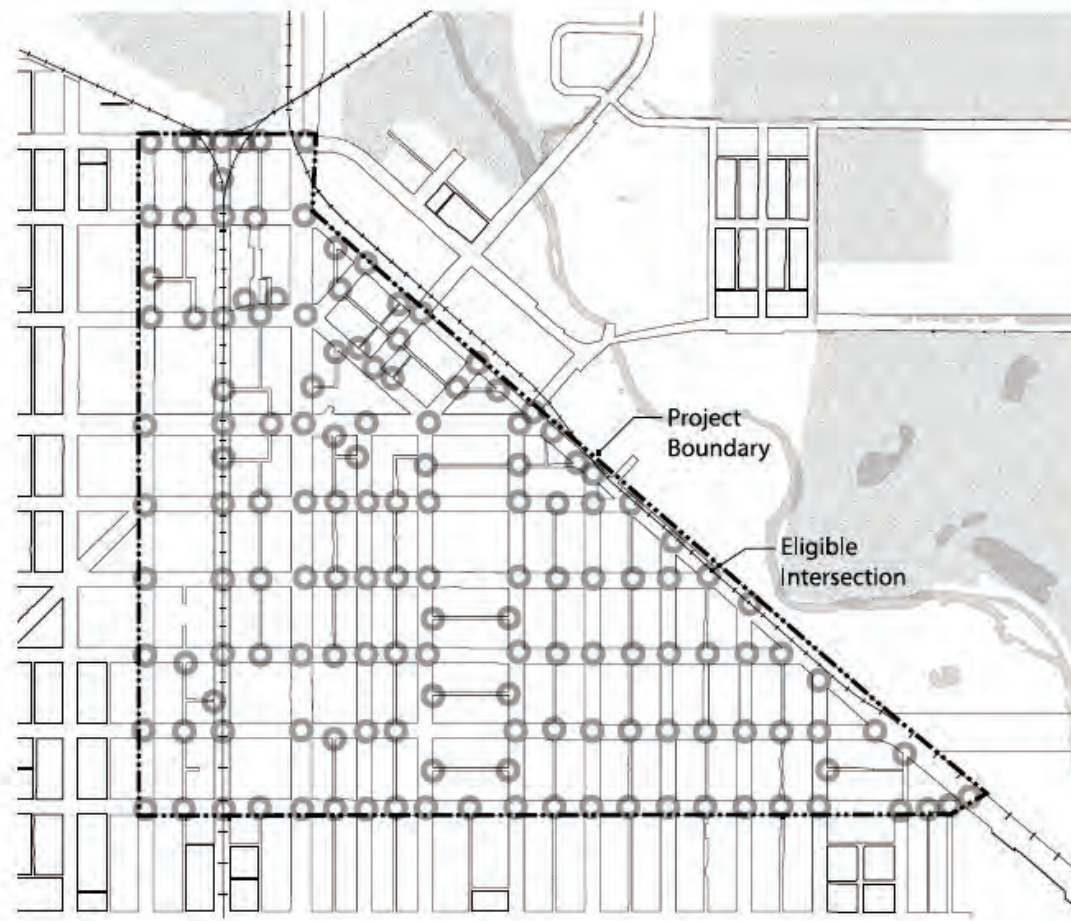
Action 2: Reduce single occupancy vehicle mode share from 47% to 40%

- Evaluate strategies to increase pedestrian, bike, carpool, and bus mode share.

Action 3: Evaluate progress of Bicycle Master Plan Goal to increase bicycle mode share to 12%

- Implement recommendations from the Urbana Bicycle Master Plan to achieve the next level of certification as a Bicycle Friendly Community.

Figure 1. Project site design with 140 eligible intersections per square mile on streets that are not gated



Source: LEED 2009 For Neighborhood Development

4.3 GOAL 3: INCREASE RENEWABLE ENERGY PURCHASING AND INSTALLATION

Action 1: Purchase Green Power Partnership qualified renewable energy credits in future municipal electric aggregation agreements*

- Urbana currently buys RECs equal to 100% of residential electricity use.
- Specification of Illinois generated RECs should be considered.

Action 2: Purchase Green Power Partnership qualified renewable energy credits and/or the installation of onsite renewable energy for City facilities

- Renewable energy credits (RECs) are generated offsite by large renewable energy facilities. They represent an environmental attribute that can be valued in the marketplace and traded, granting the purchaser the environmental attributes.
- Onsite renewables, while more expensive than RECs, provide long term clean energy and price stability.

Action 3: Pursue long term purchase of bundled renewable power and renewable energy credits

- Bundled power and RECs preclude the splitting of the two into separate markets with differing sales prospects.
- Bundled power and RECs on long term contracts send a powerful market signal demonstrating reliable demand for renewable energy.

Action 4: Propose strategies to improve the local onsite renewable energy market

- Services that map rooftop solar energy capacity can reduce uncertainty for potential buyers.
- Permitting practices should be tuned to minimize barriers to onsite renewable energy.
- Group purchasing of rooftop solar can reduce the soft costs of solar installations. Chicago is implementing a group purchase presently.
- Policies that ensure new buildings are 'solar ready' can ease the installation of solar panels at a later date.

Action 5: Propose strategies to increase renewable energy purchasing in the commercial sector*

- Commercial facilities can purchase bundled or unbundled RECs just as the City does for municipal electric aggregation.



Source: Armin Kübelbeck via Wiki Commons

4.3 GOAL 4: ADAPT TO CLIMATE CHANGE IMPACTS

Action 1: Engage the Illinois State Water Survey to evaluate an update to design storm standards

- Design storm standards in Technical Bulletin 70 of the Illinois State Water Survey (part of the Prairie Research Institute at the University of Illinois) define the 50 year storm event as having an intensity duration relationship that has a probability of being equaled or exceeded, on the average, once in a period of 50 years.
- Climate change may necessitate an update of these design standards.

Action 2: Evaluate funding needed to increase the tree pruning cycle to preserve existing trees

- Existing trees will sink more carbon and hold it longer when regularly pruned.
- Current Urbana cycle is thirteen years. The industry standard is five years.

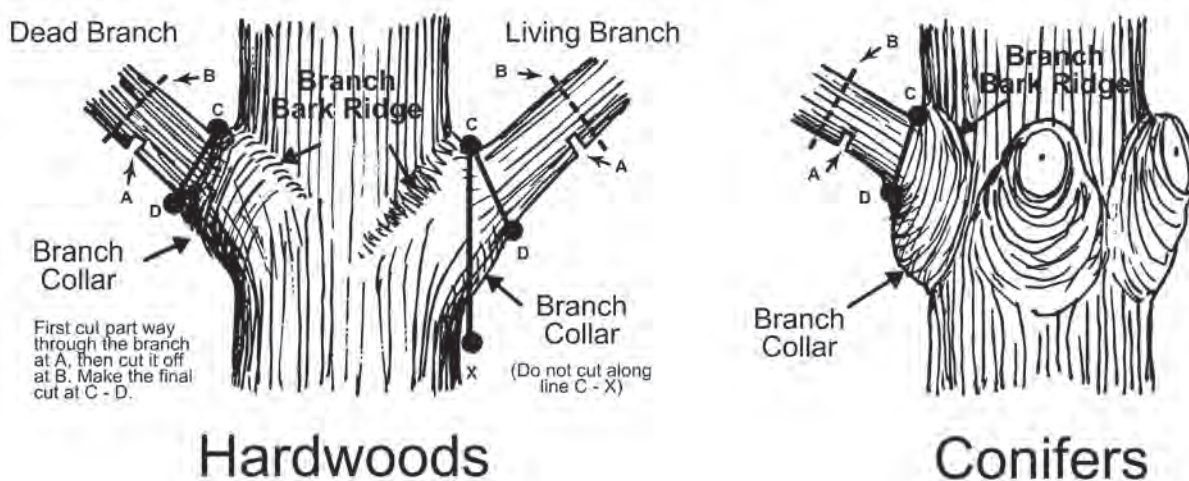
Action 3: Incorporate pollinator-supportive plant species in City landscapes

- Plant selections that provide food and shelter to insect pollinators can support pollination of both food crops and landscape plantings.

Action 4: Reduce tree species, genus, and family preponderance to 5%, 10%, and 30% respectively

- Current best practice in Arboriculture is to have no single species above 10% of the total urban forest and no single genus above 20% and no single family above 30% of the total urban forest. Urbana has no single species above 6% and no single genus above 20%. The percentages of families is unknown.
- Greater diversity in the street trees will minimize vulnerability to extreme weather events.

Proper Pruning Principles



Source: Arbor Day Foundation

4.3 GOAL 5: PARTNER TO ENHANCE LOCAL PARTICIPATION IN EXISTING PROGRAMS

Action 1: Partner with existing energy efficiency programs and community groups

- Utilize partnerships to increase the number of households and businesses in existing programs such as Ameren ActOnEnergy, ENERGY STAR, and Illinois Home Performance.

Action 2: Partner with organizations conducting smart grid education and engagement

- The Illinois Science and Energy Innovation Foundation is making grant funds available to promote and educate smart grid technologies. Urbana can assist local organizations interested in providing public education and engagement on smart grid technologies.

Action 3: Partner with the Green Power Partnership

- Utilize partnerships to increase the number of Urbana businesses participating in the US EPA's Green Power Partnership by using and reporting green power.

Action 4: Partner with the local tenant unions

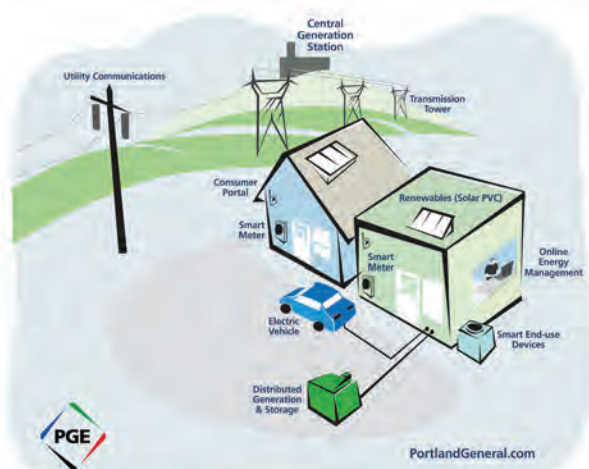
- Work with the tenant unions to promote energy efficient behaviors in rental residences.

GOAL 6: MONITOR PROGRESS TOWARDS CLIMATE ACTION PLAN GOALS

Action 1: Work with the Sustainability Advisory Commission to inventory greenhouse gas emissions and evaluate emissions reduction strategies every two years

Action 2: Work with the Sustainability Advisory Commission to create a new plan to reduce greenhouse gas emissions for the 2020 to 2050 period

Idealized Example of a Smart Grid



Source: Portland General Electric

CLIMATE ACTION PLAN

PHASE 2: 2015-2020

City of Urbana, Illinois

5.1 IMPLEMENTATION SCHEDULE

| START | FINISH | GOAL | ACTION |
|-------|--------|--------|--|
| 2015 | 2015 | Goal 1 | Action 1 Propose an ordinance or policy requiring new City facilities to achieve LEED certification |
| 2015 | 2015 | Goal 2 | Action 1 Evaluate existing zoning and development codes for possible integration of LEED-NID and other green development standards |
| 2015 | 2015 | Goal 4 | Action 1 Engage the Illinois State Water Survey to evaluate an update to design storm standards |
| 2015 | 2016 | Goal 1 | Action 2 Propose an ordinance incentivizing or requiring new homes to achieve the Designed to Earn the ENERGY STAR certification, LEED certification, or Passive House certification |
| 2015 | 2016 | Goal 1 | Action 3 Propose an ordinance incentivizing or requiring new commercial buildings achieve the Designed to Earn the ENERGY STAR certification, LEED certification, or Passive House certification |
| 2015 | 2016 | Goal 4 | Action 2 Evaluate funding needed to increase the tree pruning cycle to preserve existing trees |
| 2015 | 2016 | Goal 5 | Action 1 Partner with existing energy efficiency programs and community groups |
| 2016 | 2016 | Goal 3 | Action 1 Purchase Green Power Partnership qualified renewable energy credits in future municipal electric aggregation agreements |
| 2016 | 2016 | Goal 4 | Action 3 Evaluate strategies to increase proportion of plantings suitable for a warming regional climate |
| 2015 | 2017 | Goal 3 | Action 4 Propose strategies to improve the local onsite renewable energy market |
| 2017 | 2017 | Goal 1 | Action 4 Engage Ameren Illinois to facilitate energy data access for commercial facilities through ENERGY STAR Portfolio Manager web services |
| 2017 | 2017 | Goal 1 | Action 5 Seek funding for the Urbana Home Energy Performance program |
| 2016 | 2018 | Goal 3 | Action 2 Purchase Green Power Partnership qualified renewable energy credits and/or the installation of onsite renewable energy for City facilities |
| 2016 | 2018 | Goal 3 | Action 3 Pursue long term purchase of bundled renewable power and renewable energy credits |
| 2018 | 2018 | Goal 5 | Action 2 Partner with organizations conducting smart grid education and engagement |
| 2018 | 2019 | Goal 3 | Action 5 Propose strategies to increase renewable energy purchasing in the commercial sector |
| 2019 | 2019 | Goal 2 | Action 3 Evaluate progress of Bicycle Master Plan goal to increase bicycle mode share to 12% |
| 2016 | 2020 | Goal 2 | Action 2 Reduce single occupancy vehicle mode share from 47% to 40% |
| 2016 | 2020 | Goal 4 | Action 4 Reduce tree species and tree genus proportionance to 5% and 15% respectively |
| 2016 | 2020 | Goal 6 | Action 1 Work with the Sustainability Advisory Commission to inventory greenhouse gas emissions and evaluate emissions reduction strategies every two years |
| 2019 | 2020 | Goal 5 | Action 3 Partner with the Green Power Partnership |
| 2019 | 2020 | Goal 5 | Action 4 Partner with the local tenant unions |
| 2019 | 2020 | Goal 6 | Action 2 Work with the Sustainability Advisory Commission to create a new plan to reduce greenhouse gas emissions for the 2020 to 2050 period |

5.2 ENERGY EFFICIENT RESIDENTIAL BEHAVIORS SURVEY RESULTS



DEPARTMENT OF PUBLIC WORKS
Environmental Sustainability Division
memorandum

TO: Sustainability Advisory Commission
FROM: Scott R. Tess, Environmental Sustainability Manager
DATE: July 2, 2013
SUBJECT: Residential Energy Survey Results

The Urbana Climate Action Plan calls for investigating barriers to energy efficiency behaviors. By identifying barriers that stand in the way of folks choosing activities that improve energy efficiency and reduce greenhouse gas pollution, the City is able to plan for more effective energy efficiency programs. The following goals are listed in the Climate Action Plan:

Goal 1

Action 2 Reduce emissions from residential sector building electricity consumption.

- Identify specific barriers through focus groups and surveys in the local community.

Goal 1

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

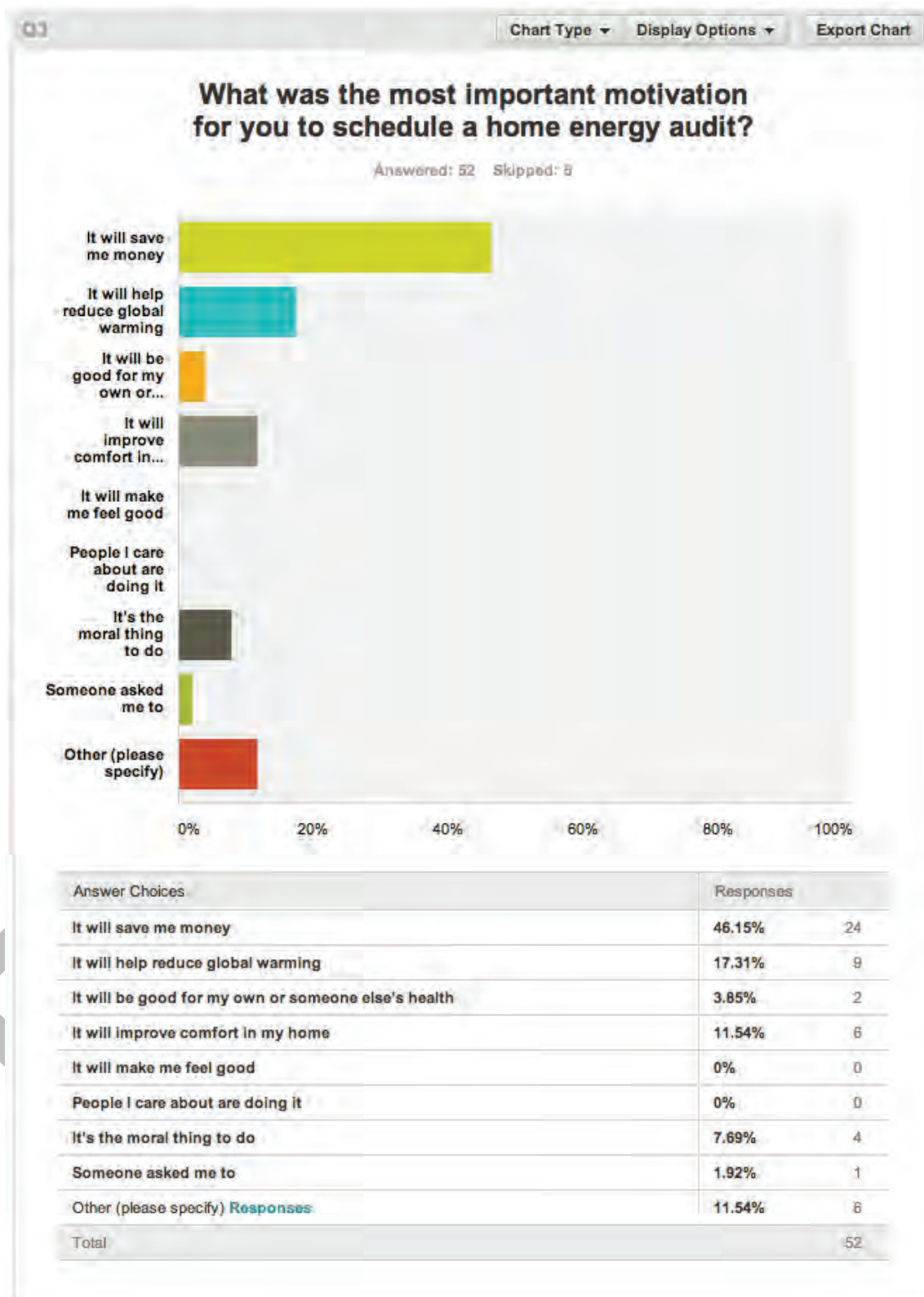
- Identify specific barriers through focus groups and surveys in the local community.

Methodology

The Urbana Home Energy Performance Program used ARRA stimulus funding in 2010 and 2011 to pay for home energy audits and increase energy efficiency rebates in partnership with Ameren Act on Energy. 695 households received an energy audit through this program. 169 households that received an energy audit applied for an energy efficiency improvement rebate, or 24%. Rebates paid down the cost of improvements such as insulation and air sealing. This survey seeks to determine what barriers prevented households that received an energy audit from applying for an energy efficiency improvement rebate.

5.2 ENERGY EFFICIENT RESIDENTIAL BEHAVIORS SURVEY RESULTS

Findings



I already had one done with the last 12 months by Amren

5.2 ENERGY EFFICIENT RESIDENTIAL BEHAVIORS SURVEY RESULTS

6/17/2013 7:21 PM [View respondent's answers](#)

All of the above, plus it didn't cost me much

6/15/2013 2:04 PM [View respondent's answers](#)

It was free

6/14/2013 2:47 PM [View respondent's answers](#)

Energy saving devices provided during audit

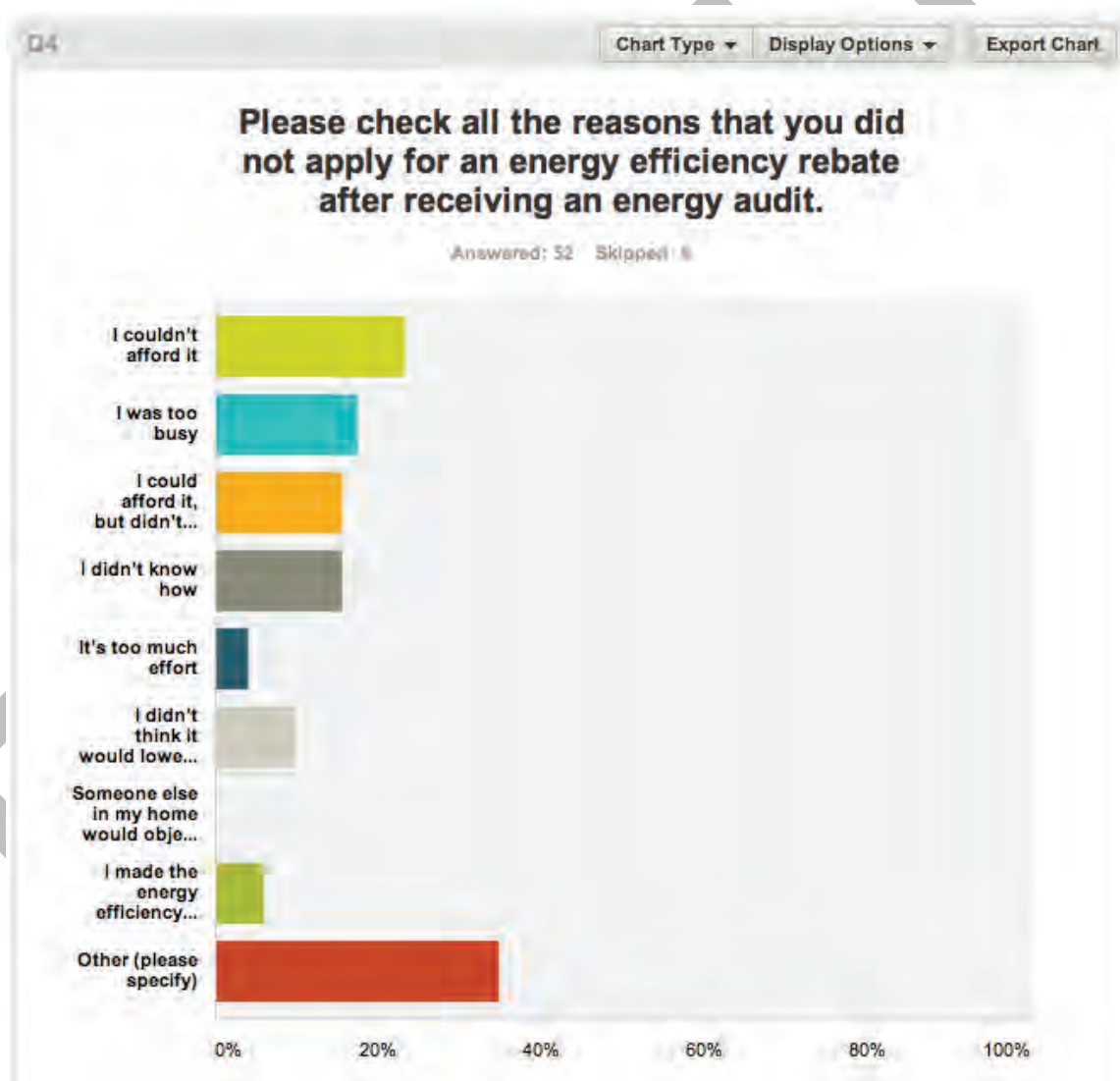
6/11/2013 7:24 PM [View respondent's answers](#)

I don't want to waste energy

6/11/2013 7:26 AM [View respondent's answers](#)

lower my reliance on the power company (I suppose a combination of saving money and comfort)

6/11/2013 7:05 AM [View respondent's answers](#)



5.2 ENERGY EFFICIENT RESIDENTIAL BEHAVIORS SURVEY RESULTS

| Answer Choices | Responses | |
|---|-----------|----|
| I couldn't afford it | 23.08% | 12 |
| I was too busy | 17.31% | 9 |
| I could afford it, but didn't want to spend the money | 15.38% | 8 |
| I didn't know how | 15.38% | 8 |
| It's too much effort | 3.85% | 2 |
| I didn't think it would lower my power bill | 9.62% | 5 |
| Someone else in my home would object to the change | 0% | 0 |
| I made the energy efficiency improvement, but didn't apply for the rebate | 5.77% | 3 |
| Other (please specify) Responses | 34.62% | 18 |
| Total Respondents: 52 | | |

I think We were told there wasn't anything we could do

6/28/2013 11:06 AM [View respondent's answers](#)

home too new and not eligible for incentives

6/27/2013 10:52 AM [View respondent's answers](#)

contractor handled it, I think

6/26/2013 11:35 AM [View respondent's answers](#)

Didn't realize there was a rebate

6/26/2013 8:02 AM [View respondent's answers](#)

Results indicated that improvements would result in minimal savings.

6/23/2013 5:29 PM [View respondent's answers](#)

There was little found that was cost-effective, as I had already done the simple, effective energy saving things. The next step was too expensive and unnecessary in my eyes.

6/15/2013 2:04 PM [View respondent's answers](#)

5.2 ENERGY EFFICIENT RESIDENTIAL BEHAVIORS SURVEY RESULTS

6/11/2013 8:46 AM [View respondent's answers](#)

Contractor costs seemed too high even after the rebate. Also, one contractor included the rebate in his estimate (so I wouldn't need to apply for it) while another said that I needed to apply for the rebate. The inconsistency concerned me.

6/11/2013 7:47 AM [View respondent's answers](#)

Had already made the majority of possible improvements.

6/11/2013 7:05 AM [View respondent's answers](#)

I don't recall this option.

6/10/2013 9:50 PM [View respondent's answers](#)

I moved.

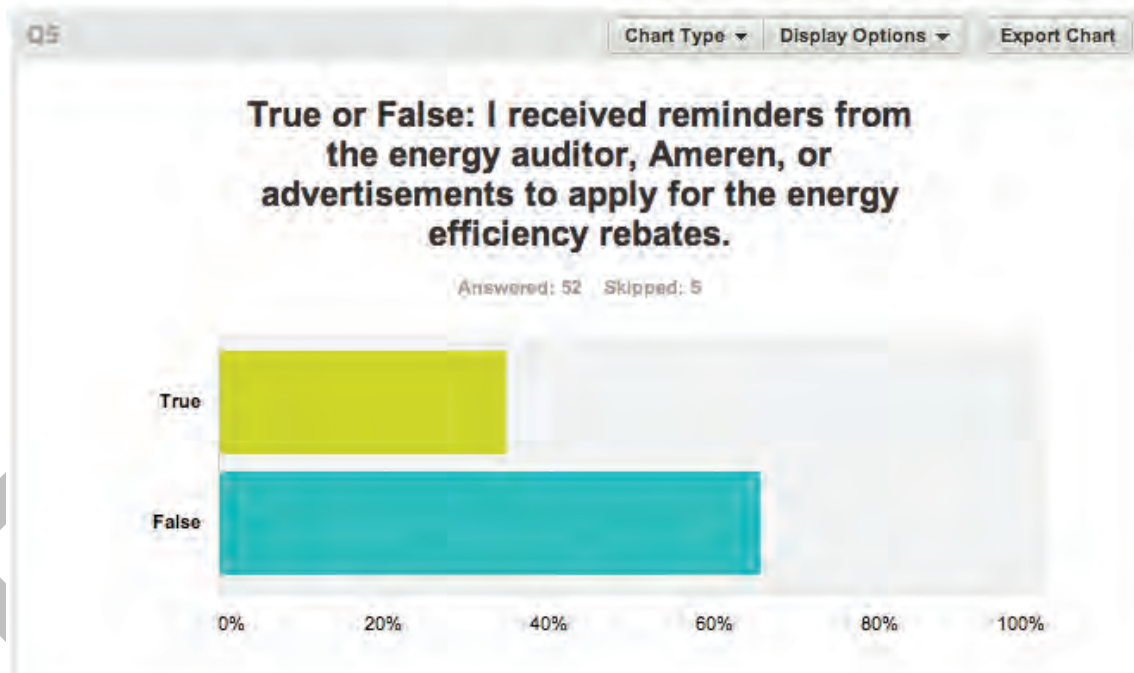
6/10/2013 9:13 PM [View respondent's answers](#)

I did the work myself which was not eligible (I think)

6/10/2013 8:03 PM [View respondent's answers](#)

the energy saving options were not environmentally friendly

6/10/2013 6:35 PM [View respondent's answers](#)



5.3 ENERGY EFFICIENT COMMERCIAL BEHAVIORS SURVEY RESULTS



DEPARTMENT OF PUBLIC WORKS

Environmental Sustainability Division

memorandum

TO: Urbana Sustainability Advisory Commission
FROM: Scott R. Tess, Environmental Sustainability Manager
DATE: March 4, 2014
SUBJECT: Commercial Energy Efficiency Survey

The Urbana Climate Action Plan calls for investigating barriers to energy efficiency behaviors at commercial properties. By identifying barriers that stand in the way of businesses choosing activities that improve energy efficiency and reduce greenhouse gas pollution, the City is able to plan for more effective energy efficiency programs. The following goal is listed in the Climate Action Plan:

Goal 1

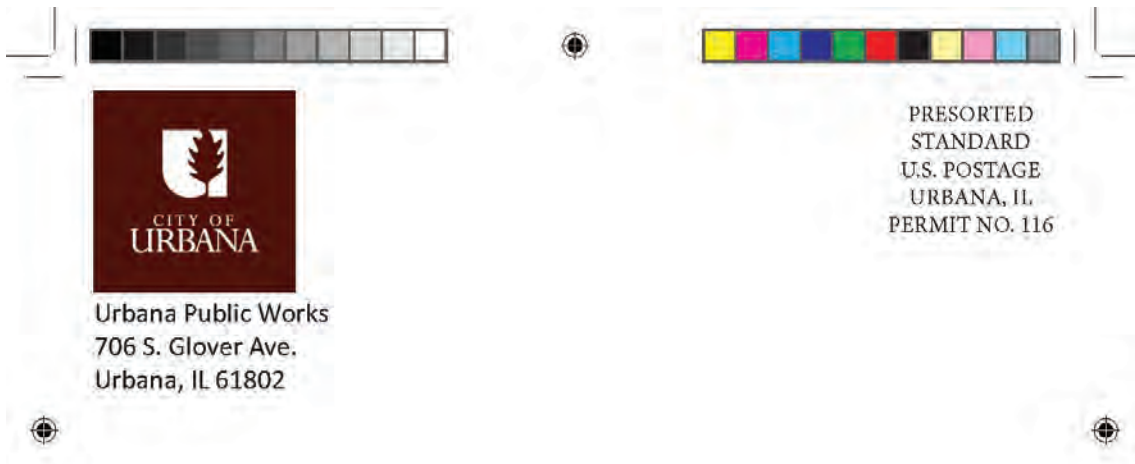
Action 1 Reduce emissions from residential sector building electricity consumption.

- Identify specific barriers through focus groups and surveys in the local business and commercial community.

Methodology

This survey utilized existing city databases to identify addresses for 700 commercial properties in Urbana. A postcard was sent to all the addresses prompting business owners and managers to take the survey online for a chance to win a \$50 Amazon gift card.

5.3 ENERGY EFFICIENT COMMERCIAL BEHAVIORS SURVEY RESULTS



Take this business survey for a chance to win a \$50 Amazon.com gift card!

<https://www.surveymonkey.com/s/NDTN6RZ>



Enter Now to Win a \$50 Amazon Gift Card!

Complete the survey on business energy efficiency by February 14, 2014 to qualify.

Visit <https://www.surveymonkey.com/s/NDTN6RZ> to take this brief survey.

Drawing sponsored by City of Urbana: Scott Tess 217-384-2381 srtess@urbanainllinois.us



Available Cash Incentives



Millions of dollars in cash incentives are available from the award-winning Ameren Illinois ActOnEnergy® Program. These cash incentives will help your business invest in smart energy solutions, which can lower costs by thousands and help boost your bottom line.

For more information on this program, visit: ActOnEnergy.com/Business

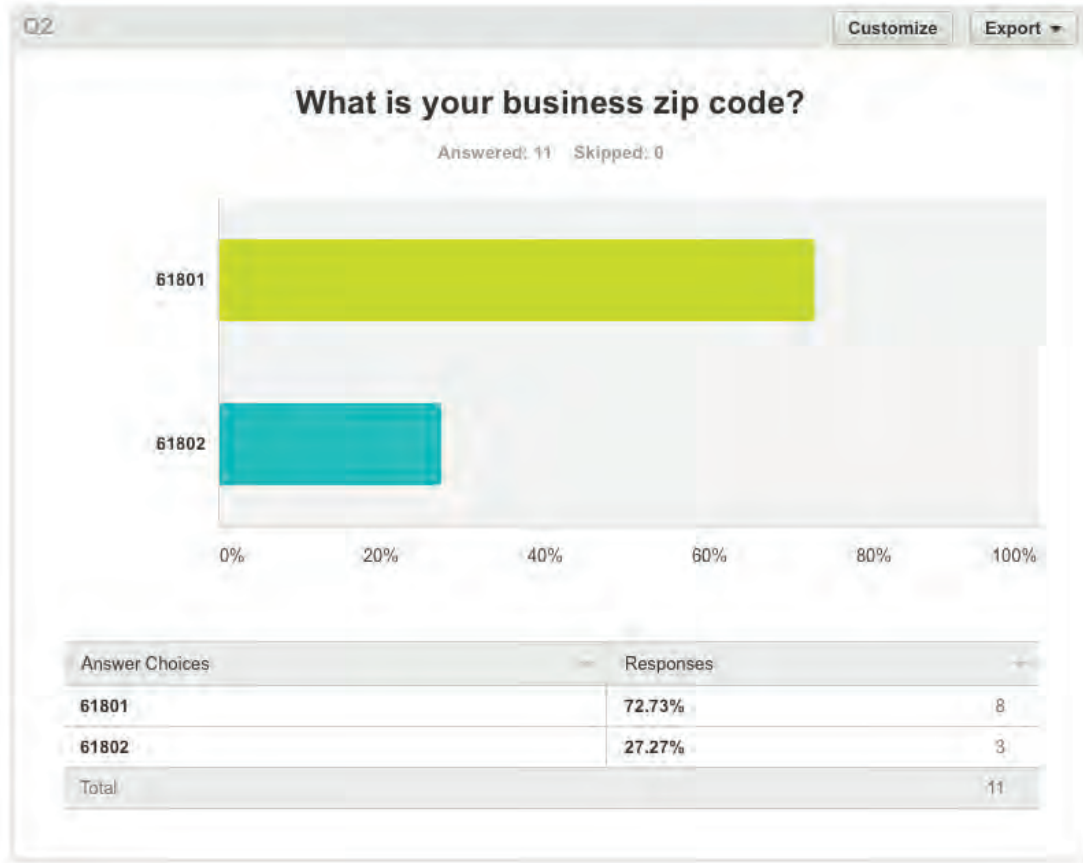
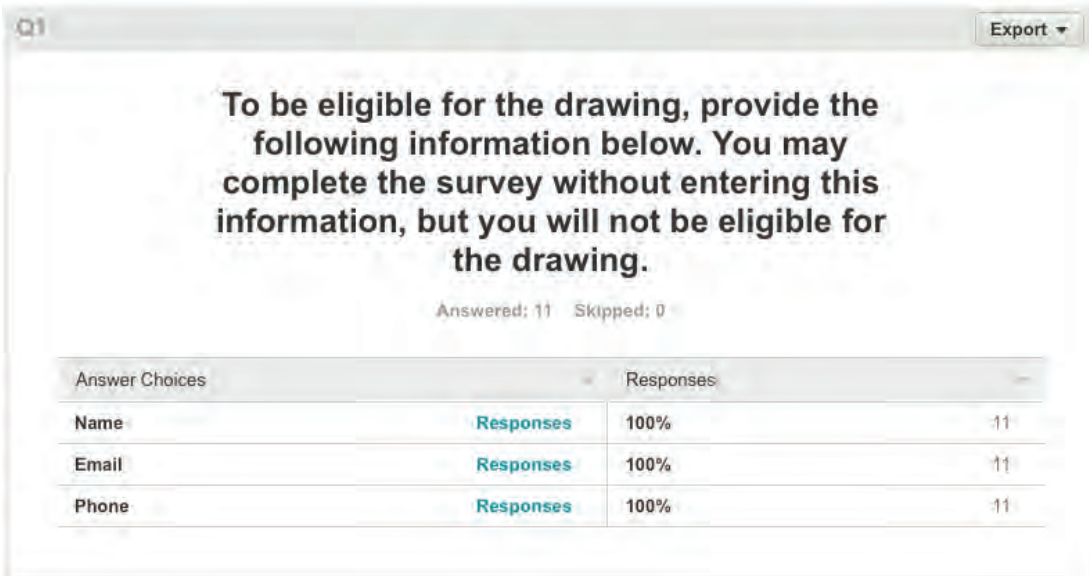


The City of Urbana can provide your business with a cash incentive equal to 5% of your total energy efficiency project cost when your project reduces energy use by 10% or more. The property must be located in one of Urbana's TIF Districts to qualify.

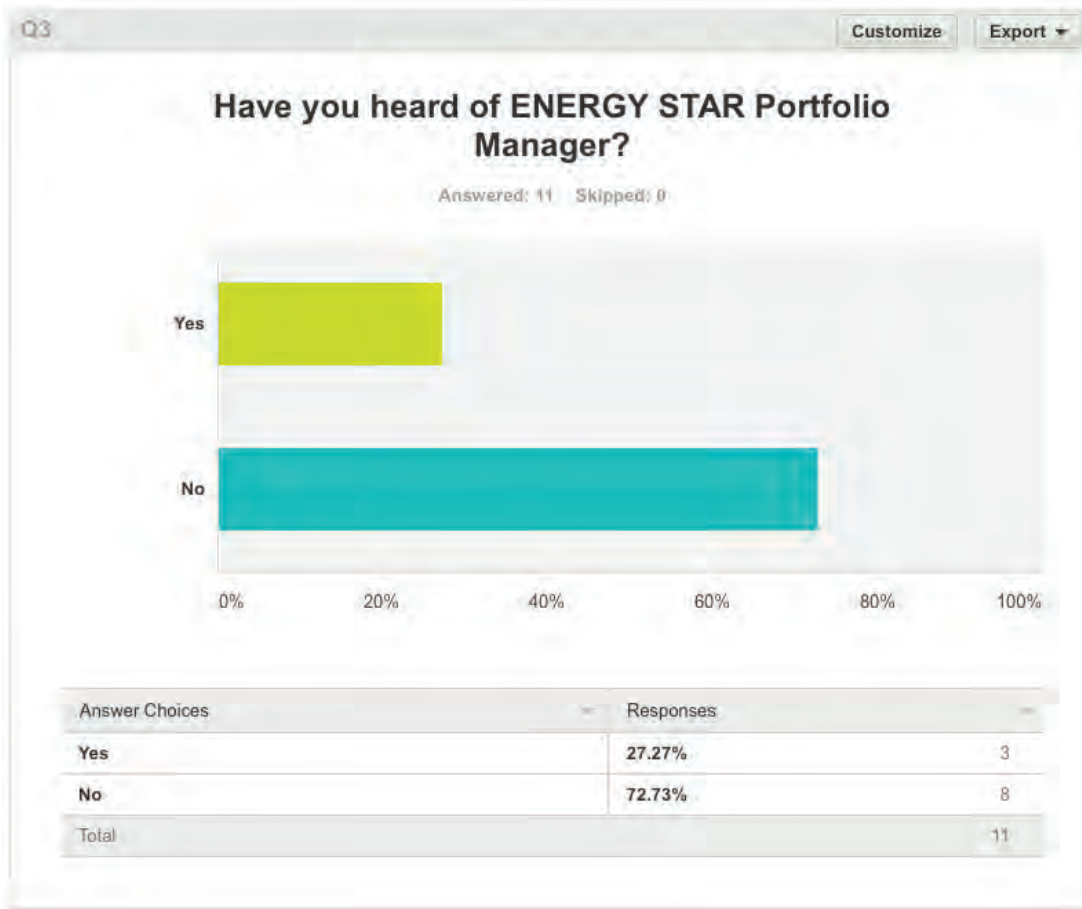
For more information, visit: Urbanainllinois.us/businesses/incentives



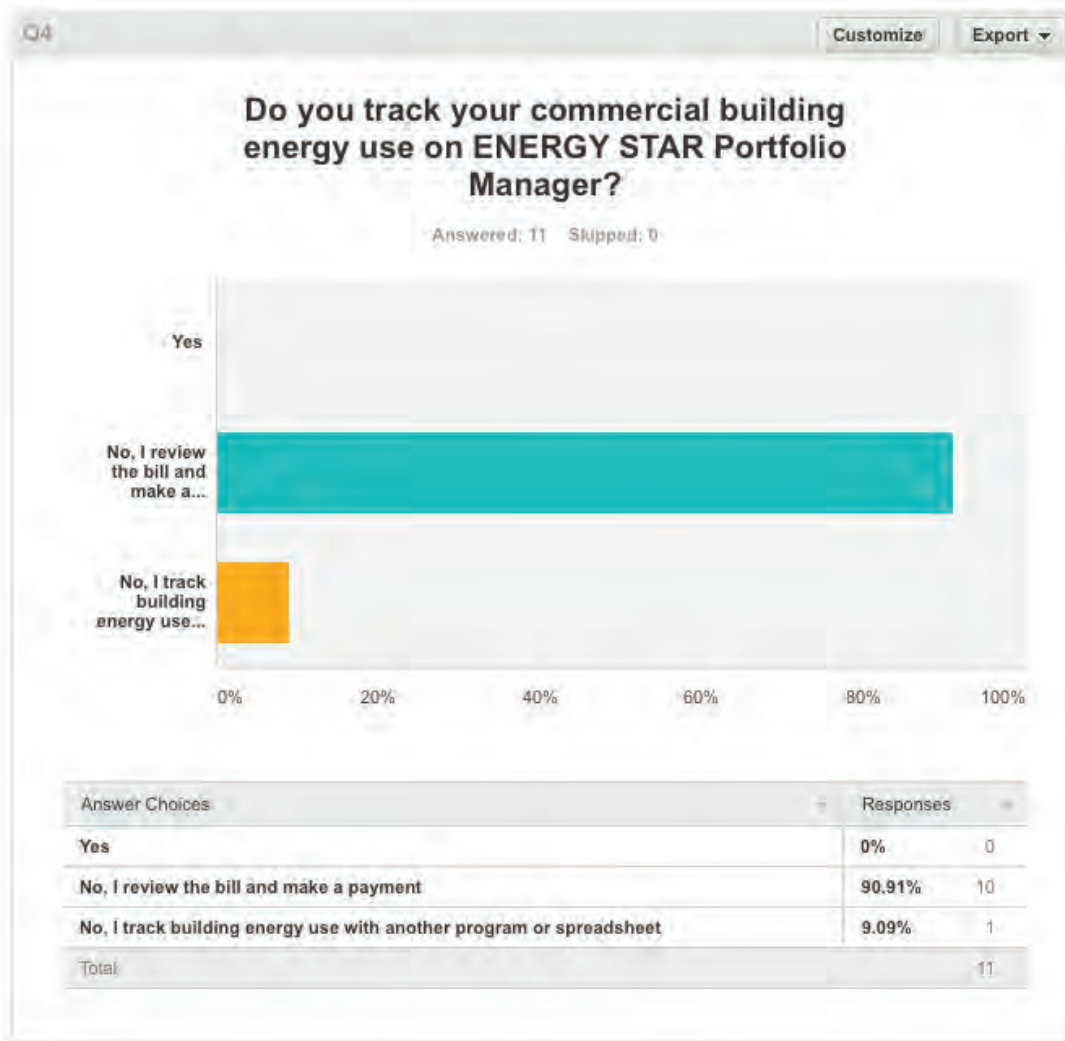
5.3 ENERGY EFFICIENT COMMERCIAL BEHAVIORS SURVEY RESULTS



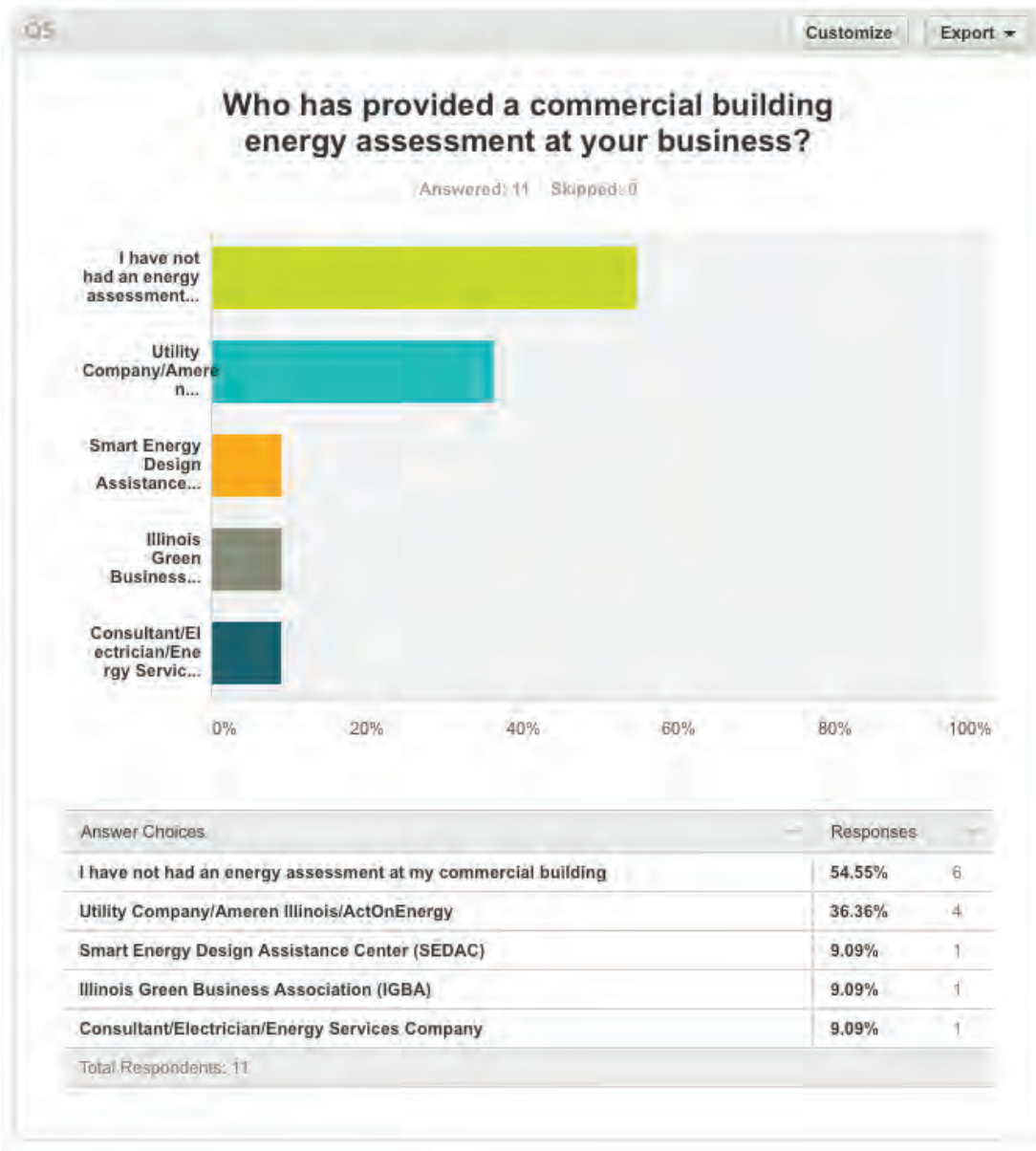
5.3 ENERGY EFFICIENT COMMERCIAL BEHAVIORS SURVEY RESULTS



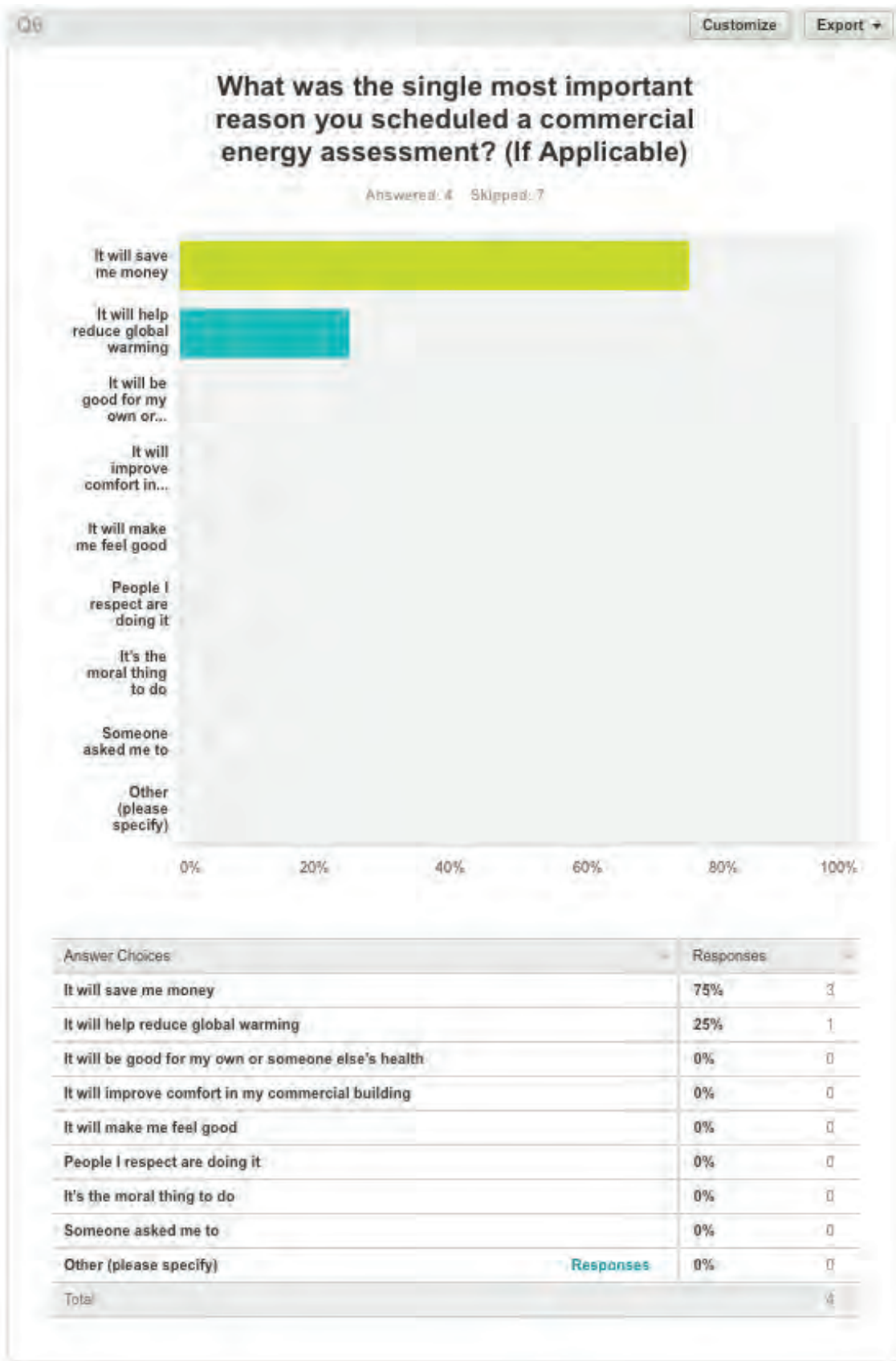
5.3 ENERGY EFFICIENT COMMERCIAL BEHAVIORS SURVEY RESULTS



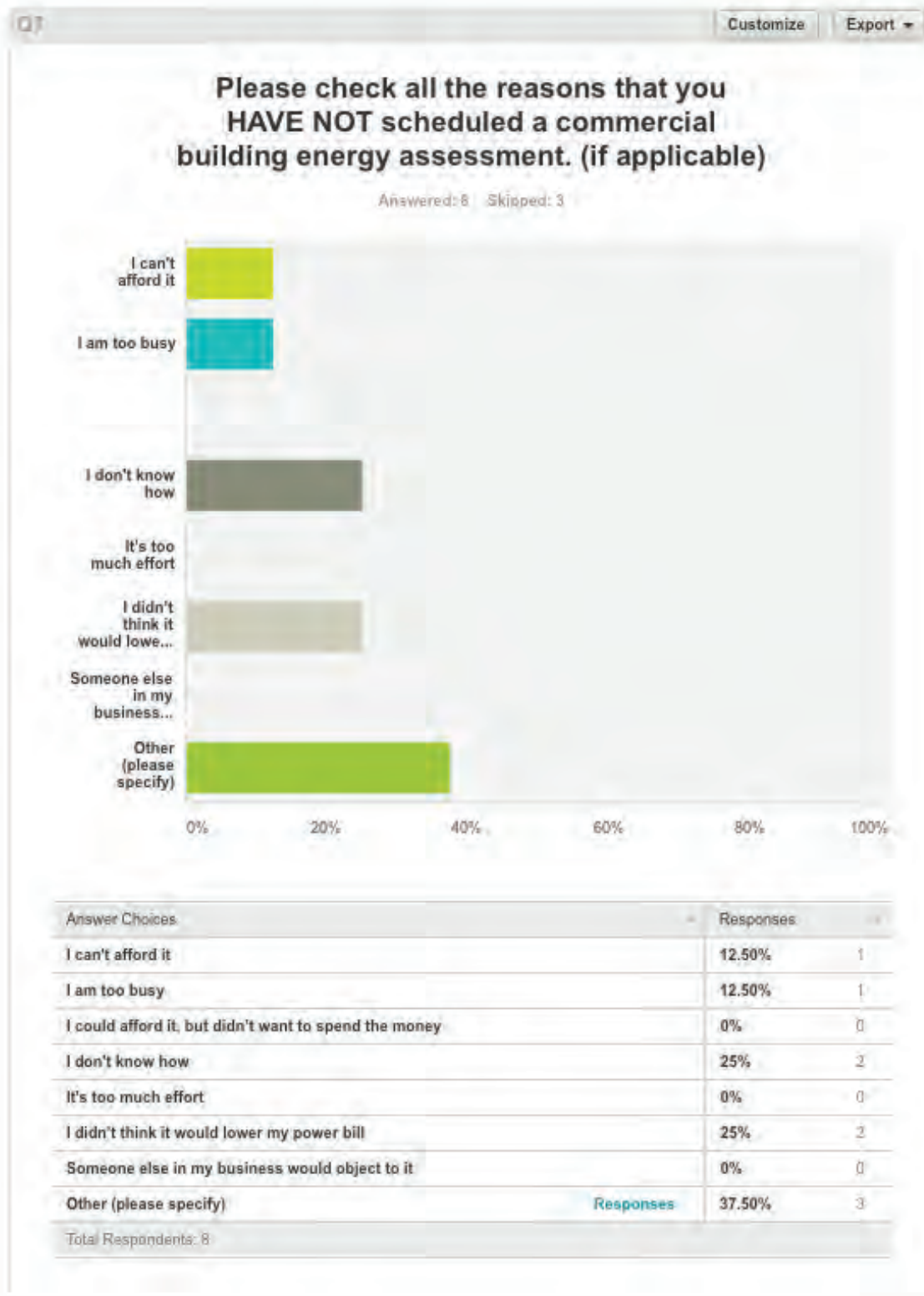
5.3 ENERGY EFFICIENT COMMERCIAL BEHAVIORS SURVEY RESULTS



5.3 ENERGY EFFICIENT COMMERCIAL BEHAVIORS SURVEY RESULTS



5.3 ENERGY EFFICIENT COMMERCIAL BEHAVIORS SURVEY RESULTS



6

5.3 ENERGY EFFICIENT COMMERCIAL BEHAVIORS SURVEY RESULTS

Showing 3 responses

I don't want to think about it.

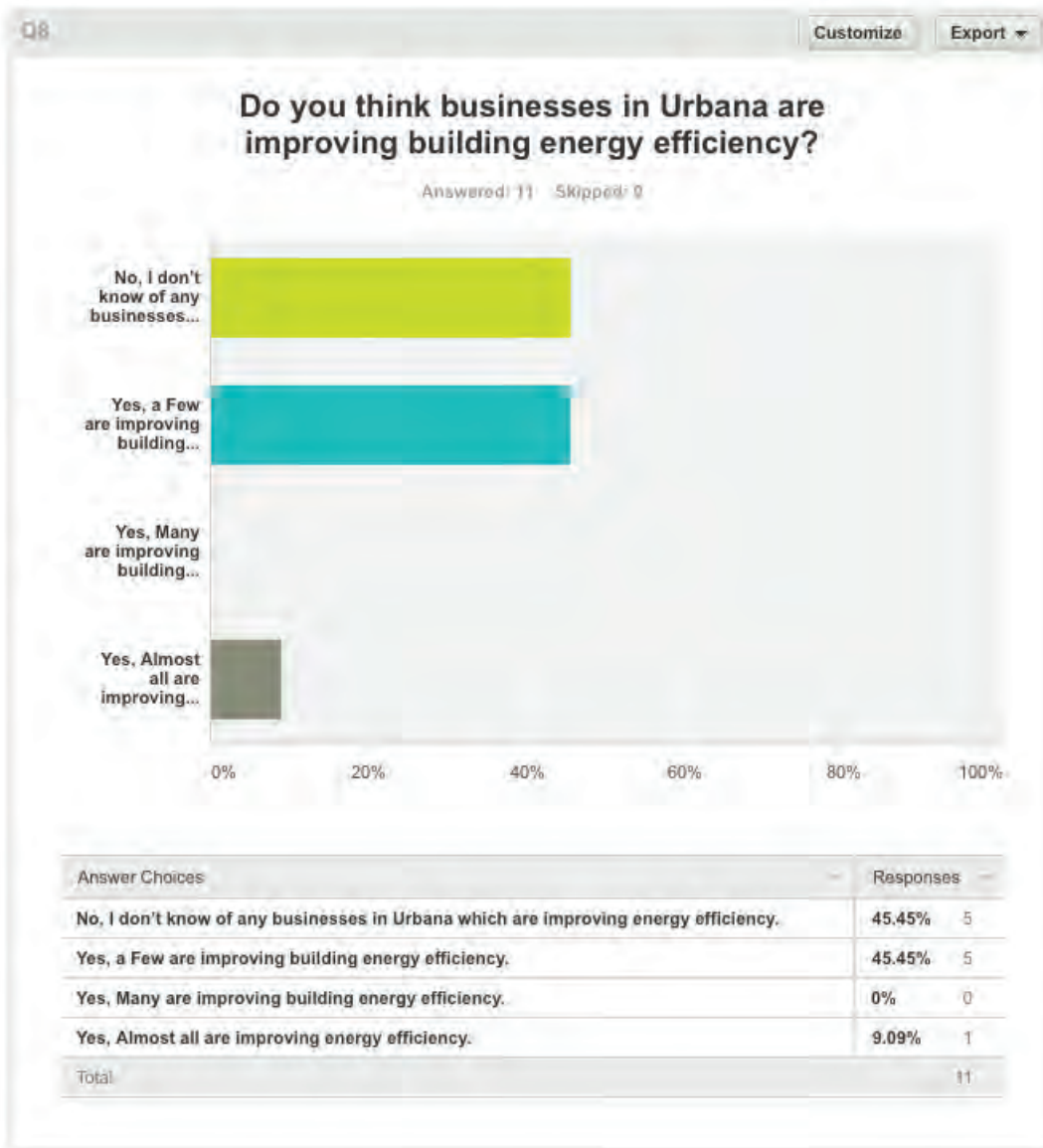
2/5/2014 10:29 AM [View respondent's answers](#)

Unfamiliar with process and costs

2/4/2014 4:56 PM [View respondent's answers](#)

never thought about it

2/3/2014 1:41 PM [View respondent's answers](#)



5.4 ENERGY EFFICIENT TRANSPORTATION BEHAVIORS SURVEY RESULTS



DEPARTMENT OF PUBLIC WORKS

Environmental Sustainability Division

memorandum

TO: Urbana Sustainability Advisory Commission
FROM: Scott R. Tess, Environmental Sustainability Manager
DATE: March 4, 2014
SUBJECT: **Transportation Behaviors**

Impetus

The impetus of this document comes from the Urbana Climate Action Plan Goal 2: Action 2 which calls on City staff to “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.”

Purpose

The purpose of this document is to summarize research commissioned by the Champaign-Urbana Mass Transit District (MTD) for the purposes of addressing Urbana Climate Action Plan Goal 2: Action 2. The findings in the MTD research will inform City of Urbana activities seeking to increase the proportion of sustainable transportation choices.

The findings of the MTD research are contained in the Mobility Implementation Plan (miPLAN) available at http://www.ihavemiplan.com/shared/pdfs/employee_report_spring07.pdf. “The purpose of miPLAN is to: Find out what mobility options Champaign, Urbana & Savoy want as a community, both now and in the future, and then craft a plan to bring those options to fruition.”

“The Champaign-Urbana Urbanized Area Transportation Study (CUUATS), the transportation entity of the Champaign Regional Planning Commission (CCRPC), completed its Long Range Transportation Plan 2025 in 2005. To implement the non-single occupant vehicle mobility recommendations of the LRTP 2025, a Mobility Implementation Plan (miPLAN) Committee was

5.4 ENERGY EFFICIENT TRANSPORTATION BEHAVIORS SURVEY RESULTS

convened. miPLAN is a multi-phased study to identify ways to expand mobility options that provide residents and visitors with more choices and enhance the livability of the region. MiPlan will expand transportation choices that support a greater diversity of living.”

Scope

This document will review survey results from miPLAN. The survey was conducted among employees of several of the larger employers in Champaign and Urbana.

Summary

miPLAN identifies several barriers to choosing more sustainable transportation options. More sustainable means walk, bike, bus, and carpool in increasing order of pollution emissions and expense. Single occupany vehicle (SOV) transportation has the largest pollution emissions profile and is considered the least sustainable transportation choice. The miPLAN survey results identify both advantages and barriers to choosing more sustainable transportation options as identified by survey respondents.

Advantages:

Bicycle: Low cost, low pollution emissions, flexible

Carpool: Save money, companionship, convenience

Bus: Low cost, convenience

Walk: Health, low cost

SOV: Flexibility, work usage, transporting children

Barriers:

Have to use car during the workday

Must use my car for work purposes (not just for personal errands) during the workday

Need car for errands

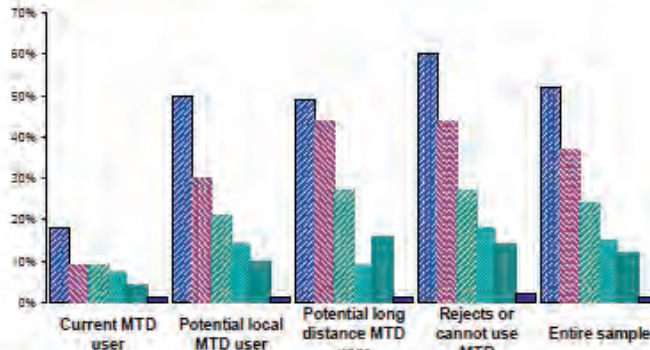
Had to drop children at child care

Stopped for shopping

5.4 ENERGY EFFICIENT TRANSPORTATION BEHAVIORS SURVEY RESULTS

Barriers to using alternative modes to commute

(Source: miPLAN e-Survey of Employees, 2007)



| | | | | | |
|--|-----|-----|-----|-----|-----|
| Have to use car during the workday | 18% | 50% | 49% | 60% | 52% |
| I must use my car for work purposes (not just for personal errands) during the workday | 9% | 30% | 44% | 44% | 37% |
| Need car for errands | 9% | 21% | 27% | 27% | 24% |
| Had to drop children at child care | 7% | 14% | 9% | 18% | 15% |
| Stopped for shopping | 4% | 10% | 16% | 14% | 12% |
| Stopped for entertainment | 1% | 1% | 1% | 2% | 1% |

Figure 30 Barriers to using alternative modes to commute

DRAFT

5.5 ENERGY EFFICIENCY IN RENTAL PROPERTIES FOCUS GROUP SUMMARY



Public Works Department
Environmental
Sustainability Division
706 South Glover Ave
Urbana, Illinois 61802
TEL (217) 384-2381
FAX (217) 384-2400

Rental Properties Energy Efficiency Task Force

Purpose

As directed by the Urbana Climate Action Plan, this task force was conducted to study barriers to innovation and improvement in the energy efficiency of rental properties.

Dates/Times

- May 30, 2013
- 3-5pm

Location

- Engineering Conference Room at Public Works

Facilitator

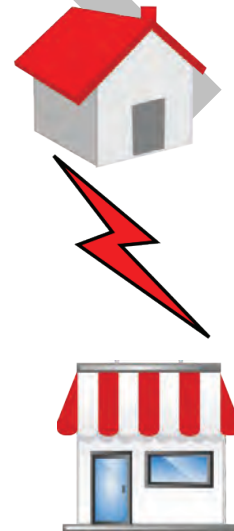
- Scott Tess, Environmental Sustainability Manager

Participants

- Commercial and residential property managers
- Commercial and residential tenants
- City staff

Agenda

- Introductions
- Review of energy efficiency measures
- What stands in the way of energy efficiency improvements in rental properties?
- In your ideal world, how would things work differently?
- Who needs to be involved and what needs to be done?



5.5 ENERGY EFFICIENCY IN RENTAL PROPERTIES FOCUS GROUP SUMMARY

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

Information and Outreach:

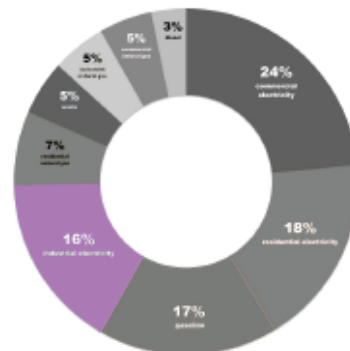
1. Form a task force to study the special considerations of Urbana’s rental residential and commercial properties.
2. Explore programs that can assist renters in making informed housing choices based on knowledge of rent, utilities and transportation costs of residential properties while allowing landlords to compete on true costs.

IMPLEMENTATION PARTNERS

- 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)

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

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.

IMPLEMENTATION PARTNERS

- 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)

5.5 ENERGY EFFICIENCY IN RENTAL PROPERTIES FOCUS GROUP SUMMARY

Smart Energy Design Assistance Center Analysis

| Energy Conservation Measure | Typical ROI | \$/MTCO2E | MTCO2E/\$ |
|-----------------------------|-------------|-----------|-----------|
| Programmable Thermostat | 1 yr | \$97 | 0.0103 |
| Tune Up | 1 yr | \$253 | 0.0040 |
| Motion Sensors | 0.5 yr | \$344 | 0.0029 |
| Sealing | 2 yrs | \$358 | 0.0028 |
| Lighting | 1-5yrs | \$523 | 0.0019 |
| HVAC replacement | 12 yrs | \$890 | 0.0011 |
| Renewable Energy | 20 yrs | \$1,328 | 0.0008 |
| Insulation | 7 yrs | \$1,685 | 0.0006 |
| Window Films/ Film Windows | 3 yrs | \$2,319 | 0.0004 |
| Windows | 25 yrs | \$2,500 | 0.0004 |

5.5 ENERGY EFFICIENCY IN RENTAL PROPERTIES FOCUS GROUP SUMMARY

Summary of Discussion

What stands in the way of energy efficiency improvements in rental properties?

1. Money
2. Split incentive of costs and benefits between property owner and tenant
3. Staff time
4. Tenant education/behavior
5. Info on specific savings from credible source

In your ideal world, how would things work differently?

1. Public access to billing by unit
2. Third party financing for improvements
3. Unified source of information from credible source
4. Tenants would know proper behaviors

Who needs to be involved and what needs to be done?

1. Split incentive
 - a. Public access to home utilities billing
 - i. City role to inquire how this might be possible respecting privacy
 - b. Energy Star Portfolio Manager energy benchmarking voluntary or by ordinance
 - i. City role
2. Financing
 - a. Grant funding to make capital available for energy improvements
 - i. City and professional associations role to seek out
 - b. Rebates/Tax Credits
 - i. Information barrier
 - ii. City and professional associations role to share info

5.5 ENERGY EFFICIENCY IN RENTAL PROPERTIES FOCUS GROUP SUMMARY

3. Unified source of information on energy efficiency opportunities and resources
 - a. Need a single, credible source,
 - i. City Role to forge partnerships and create single point of information
 - b. Digital and print communication
 - c. Agreed to be 1st priority
4. Tenant behaviors for energy efficiency
 - a. City, Student sustainability committee, IGBA, USGBC role
 - i. Provide information and/or programming
 1. Digital and print
 2. Door hangers with programmable thermostat instructions
 - b. Agreed to be the 2nd priority

Conclusion

Creating a single point for information on energy efficiency opportunities and resources including rebates and technical assistance was agreed to be the highest priority. Ideally, this would be completed through a regional platform created in coordination with other municipal and professional agencies. Communications that drive property managers to this single point of information will be critical to success. Utilizing existing government mailings may be an advantageous strategy. Addressing tenant behaviors that affect energy efficiency such as use of programmable thermostats and CFL lights was agreed to be the second highest priority. Partnerships and effective communications will be critical to success on this effort as well. In both instances the City of Urbana was considered to be best positioned to develop partnerships to bring both of these activities to fruition.

DRAFT 6



An education in energy-efficient living

An Illinois college town makes the first step effortless, putting scores of homeowners on the cutting edge of energy conservation

TRUE OR FALSE?

The tougher the challenge, the harder it is to take the first step. After that, most tasks become a breeze.

As many of us can attest, this statement is spot on. And the City of Urbana, Illinois, recently confirmed it with a program designed to reduce greenhouse gases one resident at a time. With a big assist from Ameren Illinois, the City helped more than 800 homeowners get started on the road to energy-efficient living—and succeeded in reducing their collective carbon footprint by more than 14,000 metric tons.

The origins of innovation

This story begins in 2009, when the City of Urbana applied for and received \$72,000 in Energy Efficiency and Community Block Grant (EECBG) funding from the federal government.

A vibrant micro-urban community with an internationally diverse population and a keen awareness of social and global issues, Urbana is no novice when it comes to energy conservation. Home to the University of Illinois at Urbana-Champaign, this city of 41,000+ residents is a charter member of the Tree City USA program launched in 1976 by the National Arbor Day Foundation. It has had an uncompromising Sustainability Initiative in place since 2007. And, thanks to the enthusiasm and leadership of Mayor Laurel Lunt Prussing and the entire City Council, it is generally recognized as the state's trailblazer in this field.

"Sustainability is a relatively easy sell in this town," said Director of Public Works Bill Gray, a 30-year veteran of municipal government. "Our citizens are generally well-

educated and well-informed, particularly on environmental issues. Still, we weren't sure of the most efficient way to invest this limited grant money. So we contacted Ameren Illinois to explore the possibilities."

"At the time, we already had a robust residential energy-audit program underway in the area under our ActOnEnergy® banner," said Nick Lovier, Energy Efficiency Advisor for Ameren Illinois. "The City hoped that, with this experience, we'd be able to help them devise a plan to spend their money judiciously."

The result? An innovative partnership formed by the City,



Ameren Illinois, and its ActOnEnergy program implementer Conservation Services Group (CSG). Together, the team formed by this unusual alliance

customized a program for Urbana's homeowners—an unprecedented program designed to take full advantage of the EECBG funds.

ActOnEnergy.com



A ground-breaking solution

With each member bringing specialized knowledge, experience and resources to the challenge, the Urbana/ActOnEnergy team developed a hybrid “audit + retrofit” strategy—a strategy combining free residential energy audits with generous discounts on major envelope improvements.

It was a unique approach, according to Wade Morehead, Home Energy Performance Manager for ActOnEnergy.

“We decided to help homeowners take the first step towards conservation by including a number of free energy-saving measures in our audits,” he said. “The plan included, wherever possible, replacing conventional light bulbs with CFLs in high-usage areas, and installing high-efficiency showerheads and faucet aerators. We hoped that, by making this initial step painless, we’d motivate many of them to invest in more aggressive conservation measures.”

These measures typically involve top-to-bottom air/duct sealing along with attic and wall insulation, he said. “Air/duct sealing is usually the #1 energy-efficiency improvement a homeowner can make, with insulation upgrades coming in a close second.”

In both cases, Lovier added, the discounts were to be very attractive (see sidebar). And they were to be offered exclusively through ActOnEnergy’s existing Ally network, which is restricted to contractors who’ve undergone specialized training as well as a rigorous Business Performance Institute (BPI) certification.

“Unlike conventional insulation contractors, ActOnEnergy Allies are trained to handle the all-important sealing step, and to do all their work to meet BPI’s standards for quality, health and safety. They were the ideal solution for a program like this.”

An astounding response

To get word of the program out to residents, the Urbana/ActOnEnergy team used traditional tools:

- > Standard PR techniques, such as news releases and a kick-off press conference that was well-covered by local print and broadcast media
- > Direct mail, including a personal appeal from Mayor Prussing and an ActOnEnergy follow-up letter encouraging those undergoing audits to follow through with a retrofit
- > Online educational tools to spell out the details

The response, however, was anything but traditional. It was, in fact, dramatic.

Between September, 2010 and February, 2012, a total of 826 Urbana homeowners underwent audits, receiving not only reports detailing the improvements they’d benefit from, but also their free CFL bulbs, showerheads and faucet aerators.

Then, at least in part because of this effortless introduction to the world of energy conservation, 169 of those audited—more than 20%—proceeded to take advantage of the program’s lavish incentives for air/duct sealing and insulation improvements. And another 29 homeowners went straight to Ally contractors for both the audit and subsequent shell improvements.

High-impact results

In the final analysis, the program was even more successful than its creators had anticipated, said Morehead. “We touched 855 homes in all, exceeding our original goal by 16. And our audit-to-retrofit rate of over 20% makes Urbana our best return on our audit investment to date.”

5.7 HOME ENERGY PERFORMANCE PROGRAM CASE STUDY FROM AMEREN ILLINOIS

Its environmental impact is even more impressive, he said. “In just 17 months, from the first audit in September of 2010 through the last in February of 2012, this program saved 32,000 barrels of oil and 1.5 million gallons of gas, and reduced Urbana’s carbon footprint by 14,069 metric tons—almost 2,000 more than our original goal.” That’s the equivalent of planting 40,000 trees in the city, according to Gray – a task which would have taken many years to complete while costing literally millions of dollars.

“Our grant money was relatively modest,” Gray pointed out. “But we were able to realize a major gain from those dollars, and to make a significant dent in our city’s greenhouse-gas emissions.”

What’s more, the program has given a boost to the local economy, he said. “It’s encouraging to see Ally contractor signs popping up all over the city. Even though this particular grant of ours is gone, the ActOnEnergy incentives for envelope improvements are still in force, and people are still taking advantage of them.”

It pays to do the right thing

Customers are, of course, the primary beneficiaries of this program. For example, Morehead said that the average air/duct sealing and insulation retrofit will typically pay for itself in just three years in energy savings alone.

“And because they’ve used our Ally contractors to do the work,

they can rest assured that everything has been done according to the highest standards in the industry. For instance, our contractors are trained in complying with BPI’s Building Airflow Standard. They know precisely how to get a home as tight as possible without requiring costly mechanical ventilation.”

But that’s just the tip of the iceberg, Lovier said.

“Homeowners who’ve made these investments quickly notice an improvement in their indoor air quality,” he said. “Air sealing in particular minimizes the drafts that can pull allergens in from the outside and cause fluctuations in temperature. It also keeps the humidity in a home relatively stable. Together, these improvements add up to a more comfortable home year-round, and a more durable structure.”

Most customers say initially that they’re investing in these improvements to lower their energy bills, he said. “But ask them about it a year later, and they rarely mention the savings. Instead, they talk about how much more comfortable their homes are now.”

There’s an added advantage for those who eventually need to sell their homes in today’s challenging real-estate market.

“The homeowners who’ve taken advantage of this program receive the documentation they need to set their houses apart from the competition,” Lovier said. “It’s an equity improvement that can mean a major return on a relatively minor investment.”

WHO’S PICKING UP THE TAB?

The Urbana project was a team effort on the dollars-and-cents side of things, too.

For the free audit portion of the program, the City of Urbana contributed \$26,425 from the EECBG grant, while the rest was covered by the standard ActOnEnergy program incentives.

For the insulation and air/duct sealing retrofits, the City subsidized ActOnEnergy’s existing discounts with the remaining \$45,575 of its EECBG grant, plus an additional \$2,000 in municipal funds. The resulting incentives made these improvements almost irresistible for homeowners in a position to make the investment. They paid as little as 10% to 20% of the total cost of the job!

In both cases, ActOnEnergy’s contributions came from funds collected under the terms of the State of Illinois’ Ratepayer Rider, which has utilities charge customers a nominal sum each month to support energy-conservation efforts. Reducing energy demand prevents the environmental impact and high cost of constructing additional power plants.



Rave reviews

The bottom line, Morehead said, is that 5% of all Urbana households received an energy audit because of this program, and better than one in five of those audited took advantage of the sealing and insulation incentives.

With free audits and steep discounts on additional improvements, why didn't the entire town sign up?

"It's a tough time for our economy," Lovier said. "No matter how much they may want to conserve energy, people are justifiably cautious about dipping into their savings these days. And let's face it – we're competing with improvements like granite countertops. We're promoting something you can't see and won't begin appreciating for at least a few months. It's not necessarily an easy sale.

"That's why we consider this program a spectacular return on our investment. Everything came together for us—having such an engaged group of City officials and staff, such great contractors, and such terrific incentives in a day when every dollar counts. It was a unique experience for us, and we're looking forward to doing it again."

Gray said that the City of Urbana is delighted with the outcome. "Sometimes you have to build the momentum to create lasting behavioral change. This program has been so successful that we may well solicit additional local and state dollars to keep it going."

In the meantime, he advised other municipalities considering a similar effort to partner with a utility that has an existing energy-efficiency program.

"What made it so easy for us was the fact that Ameren Illinois already had its audit program underway in our community. They also had the infrastructure in place to support a more ambitious undertaking. When we came on board and were able to further incentivize their work with our EECBG grant, it really took off."

But there's another reason for the success of this program, Morehead insisted—one that may be most important of all from the standpoint of permanently modifying behavior.

"I have to give a large share of the credit to the unique design of our effort," he said, "especially to those simple 'first steps' that put so many homeowners on the road to low-carbon living."

Learn more at ActOnEnergy.com.



FOCUSED ENERGY. *For life.*

THINKING BIG



In truth, this program's ambitions go well beyond immediate environmental concerns, said Director of Public Works Bill Gray.

"We are naturally very concerned about our being good stewards of the land," he said. "At the same time, we want to help improve our citizens' quality of life. And that includes finding ways to keep their energy costs down, which in turn gives them more discretionary money to pour back into our local economy.

"If we can accomplish these goals by moving toward renewable energy sources, and doing it in an environmentally friendly way, everyone benefits."



DEPARTMENT OF PUBLIC WORKS

Environmental Sustainability Division

memorandum

TO: Urbana Sustainability Advisory Commission
FROM: Scott R. Tess, Environmental Sustainability Manager
DATE: February 4, 2014
SUBJECT: **Annotated Bibliography Addressing Functioning and Efficacy Renewable Energy Credits**

Bird, Lori and David Hurlbut, Pearl Donohoo, Karlynn Cory, and Claire Kreycik. "An Examination of the Regional Supply and Demand Balance for Renewable Electricity in the United States through 2015." National Renewable Energy Laboratory. NREL/TP-6A2-45041. June 2010.

This report discusses market expectations for RECs. The authors expect the market demand for RECs to continue to grow through 2015. The demand for renewable energy from renewable portfolio standards is expected to grow faster than the demand for RECs from voluntary markets.

Heeter, Jenny and Philip Armstrong, Lori Bird. "Market Brief: Status of the Voluntary Renewable Energy Certificate Market (2011 Data)." National Renewable Energy Laboratory. NREL/TP-6A20-56128. September 2012.

This report records a 90% increase in reported REC purchases, but attributes much of this growth to better reporting and tracking. EPA data shows an increase of 22% in REC purchases. EPA data is primarily corporate and government reporting. Green-e Certified RECs grew 21%.

The US Energy Information Agency summary of 20 programs that report REC purchases saw median growth of 1%.

Holt, Ed and Lori Bird. "Emerging Markets for Renewable Energy Certificates: Opportunities and Challenges." National Renewable Energy Laboratory. NREL/TP-620-37388. January 2005.

This report describes the basics of RECs including marketing, prices, and challenges facing the growth of REC markets. The report notes that "if unbundled RECs are sold to retail customers outside the region in which they are generated, RECs purchasers may not receive regional environmental benefits, although they will receive any global environmental benefits that may occur from reductions in greenhouse gases, for example."

5.8 RENEWABLE ENERGY CREDITS ANNOTATED BIBLIOGRAPHY

Johnson, Sean D., Moyer, Elisabeth J. "Feasibility of U.S. Renewable Portfolio Standards Under Cost Caps and Case Study for Illinois." Center for Robust Decision Making on Climate and Energy Policy. No. 12/07. April 2012.

This paper discusses the workings of renewable portfolio standards (RPS) in state statutes. RECs are described as a subsidy helping the renewable energy industry achieve RPS targets. The subsidy is described as "cost-capped REC sales + the PTC." PTC stands for the federal production tax credit. The paper goes on to state that the "decreasing REC prices do not reflect the subsidy needed for new builds, though, but instead the condition of oversupply in the REC market."

Pinkel, Dan and Weinrub, Al. "What the Heck is a REC?." Local Clean Energy Alliance. 2013. www.localcleanenergy.org.

This document describes how the environmental attributes of particular types of electricity production can be sold bundled with the actual electricity and unbundled and sold separately from the actual electricity on the voluntary REC market. RECs that are not used as compliance RECs to meet state renewable portfolio standards are traded at a market value on a voluntary REC market. The authors describe REC revenue as part of revenue stream for renewable energy producers including "long-term electricity purchase commitments based on competitive generating costs, income tax credits, government subsidies, [and] rebates." Regarding the efficacy of RECs to induce additional renewable energy installations, the authors state that "while there might be cases where the sale of unbundled RECs does play a decisive financing role, this cannot be determined simply from REC attributes. To be a factor in stimulating renewable generation capacity, voluntary RECs would need to be sold in a manner that provides predictable cash flow, for example through long-term REC purchase contracts (10 – 20 years)."

Stavins, Robert and Richard Schmalensee. Renewable energy standards: less effective, more costly, but politically preferred to cap-and-trade? 1/12/2011. Grist. <http://grist.org/article/2011-01-11-renewable-energy-standards-less-effective-more-costly-but-politi/>

This article highlights that cap and trade as well as a renewable portfolio standard are both market-based solutions, but cap and trade raises the cost of fossil fuel derived energy, a renewable portfolio standard raises the cost on all electricity.

Environmental Value of Purchasing RECs. U.S. E.P.A. 10/18/13

<http://www.epa.gov/greenpower/rec.htm#ftn1>.

EPA regards REC purchasing as a simple way for organizations and institutions to affect the United States' electricity generation mix at a national scale. These voluntary purchases send a demand signal and provide financial support to new projects that are

5.8 RENEWABLE ENERGY CREDITS ANNOTATED BIBLIOGRAPHY

competing with conventional technologies. Bringing new renewable electricity facilities online will help the electricity sector emit fewer tons of carbon dioxide emissions than it would have if these renewable energy sources had not been operating or built.

EPA works to ensure Partner environmental claims are supported and accurately communicated. EPA does not encourage organizations to claim that their REC purchases alone makes them “carbon neutral,” or that their REC purchase has reduced their direct carbon emissions to the atmosphere. However, organizations can claim that their REC purchases reduce the carbon emissions associated with their purchased electricity, which is often a key contributor to organizations’ carbon footprint. EPA guidance and corporate GHG accounting rules support these claims.

Green Power Markets. U.S. Department of Energy. 10/25/13. <
<http://apps3.eere.energy.gov/greenpower/markets/certificates.shtml?page=5>>

The US Department of Energy displays graphs detailing the falling price of RECs. The website distinguishes between compliance RECs and voluntary RECs. Compliance RECs are much more expensive because they usually must be regionally sourced. Voluntary RECs are cheaper because they can be nationally sourced.

“Renewable Energy Certificates, Carbon Offsets, and Carbon Claims.” Center for Resource Solutions. April 9, 2012. v. 1.1.

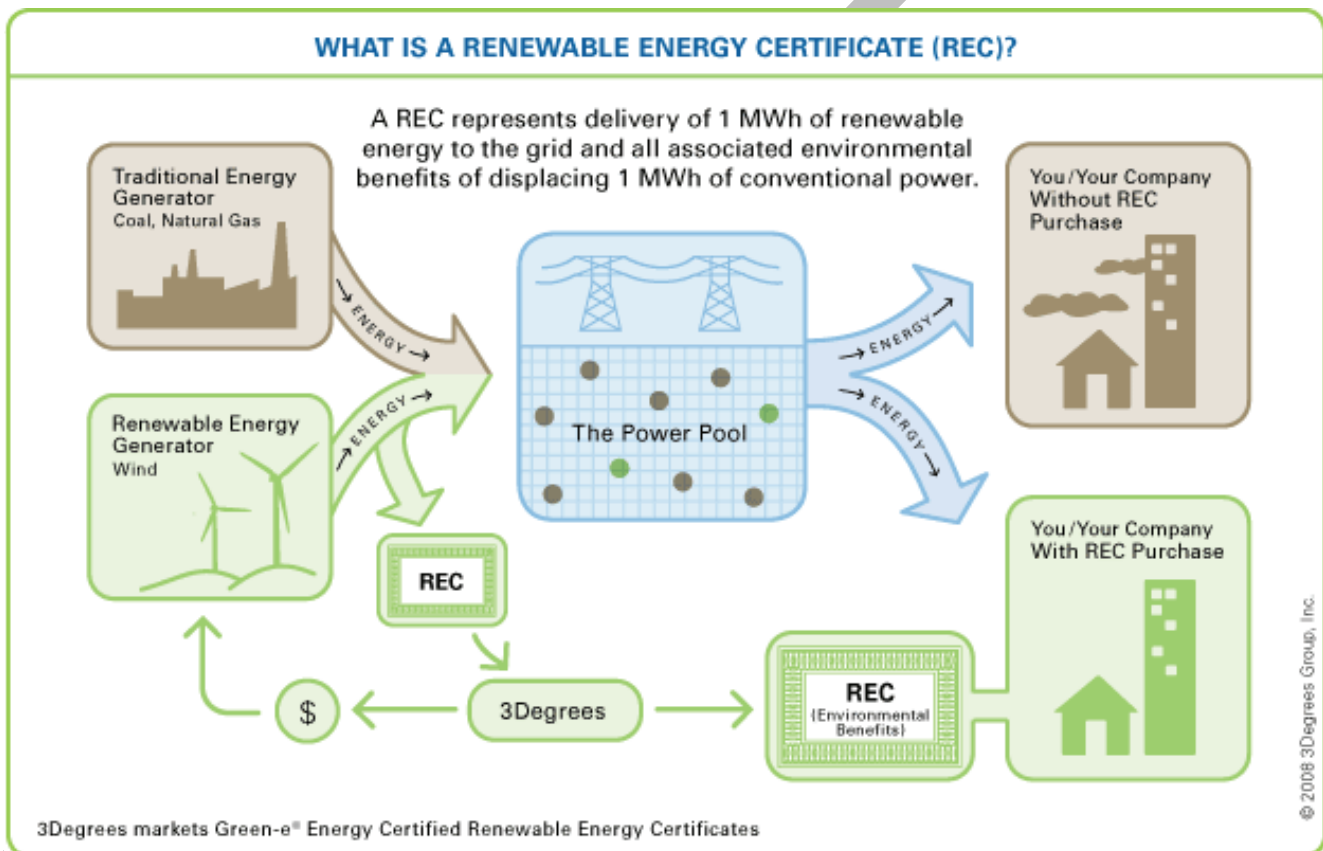
This publication is from the non-profit organization which developed and administers the Green-e certification program for voluntary RECs. This document explains the similarities and differences between RECs and offsets. RECs are defined as the “social and environmental non-power attributes associated with the generation of 1 MWh of renewable energy.” Carbon offsets are defined as “a quantity of GHG emissions reductions, measured in units (usually metric tons) of carbon dioxide–equivalent (CO₂e), that occur as a result of a discrete project. The emissions reductions from that project can be sold to enable the purchaser/owner to claim those GHG reductions as their own.” A REC allows the purchaser to “show the use of renewable energy” in electricity generation. RECs may not be used to address non-electricity related emissions. RECs relate to greenhouse gas inventories by allowing purchasers to “to show use of low or zero-emitting electricity.”

This publication describes the concept of additionality as ensuring “that the project can affect the level of emissions relative to the status quo.” Renewable energy facilities may be additional, but are not necessarily so. Carbon offsets, unlike RECs, need to demonstrate additionality.

5.8 RENEWABLE ENERGY CREDITS ANNOTATED BIBLIOGRAPHY

Renewable Energy Credits. July 2008. United States Environmental Protection Agency. 11/8/13.
< http://www.epa.gov/greenpower/documents/gpp_basics-recs.pdf>

This document gives a general description of what RECs are and how they work. The document describes how “RECs were created to help convey the attributes of electricity generated from renewable resources to buyers. Analogous to the utility delivering the physical electricity through wires, RECs serve as the means to deliver the environmental and non-power attributes of renewable electricity generation to buyers – separate from the physical electricity.”



DRAFT 6