

**Boulder City Council  
STUDY SESSION**

**January 31, 2012  
6-9 PM  
Boulder's Energy Future**

**City Council Chambers  
Municipal Building  
1777 Broadway**

Submit Written Comments to City Council  
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**MEMORANDUM**

**TO:** Mayor and Members of City Council

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**DATE:** January 31, 2012

**SUBJECT:** Study Session: Boulder’s Energy Future

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**I. PURPOSE**

The purpose of this study session is to discuss with council the proposed 2012 work plan for activities related to Boulder’s Energy Future, including next steps in the analysis of potential municipalization of Boulder’s electric distribution system; and planning for the next generation of Boulder’s climate action initiatives.

**II. EXECUTIVE SUMMARY**

In November 2011, City of Boulder voters narrowly approved two measures that supported taking the next steps in exploring the possibility of acquiring Xcel Energy’s (Xcel) distribution system and forming a city-owned electric utility. The decision to request voter consideration of these measures was driven by council’s desire to achieve a number of goals related to Boulder’s Energy Future; these goals include reduced greenhouse gas emissions, greater local control over energy-related investments, continued reliability of service, and long-term energy affordability.

The next steps in exploring municipalization include extensive engineering and legal work to determine how much it would cost to purchase the distribution system and operate a city-owned utility. The city believes it will take three to five years to complete this process, although there will be several “off-ramps” where a decision to continue with

the process or pursue other options will need to be made. This memo outlines key steps in the work effort that is anticipated for 2012.

Also during 2012, the city will be working to outline the next generation of climate action efforts in Boulder. The current Climate Action Plan is focused on steps to achieve the Kyoto Protocol goal, with funding for key activities provided by a tax on electricity use that was approved by voters in 2006. The CAP update process, described in this memo, will need to evaluate CAP activities in Boulder since adoption of the original plan; define a new goal or goals for local greenhouse gas reductions; and outline sector-specific activities to achieve the community's objectives. This memo provides an overview of results achieved in CAP activities during 2011, activities planned for 2012, and the proposed process for engaging the community and city organization in planning for CAP in 2013 and beyond.

Overlapping these two areas of focus—continued analysis of potential municipalization and defining Boulder's next steps in climate action—is a 2012 effort to develop an Energy Action Plan. The proposed plan will inform and guide both the municipalization analysis (defining the business model and priorities for a city-owned utility that seeks to provide “energy as a service” rather than “energy as a commodity”) and near-term actions related to energy efficiency and other “localization” priorities. It is anticipated that the plan will include actions that can be taken prior to and leading up to the operation of a municipal utility, as well as actions that could be carried forward in the event that a municipal utility proves to be infeasible or undesirable in the final analysis.

### **III. QUESTIONS FOR COUNCIL**

1. Does council have questions or feedback regarding the “integrated planning framework” defining the relationship between energy and climate action planning in Boulder?
2. Does council have questions or feedback regarding the anticipated work program and priority activities related to next steps in the exploration of municipalization, including initial steps toward development of an Energy Action Plan and the related community engagement plan?
3. Does council have questions or feedback regarding the approach to the Colorado Public Utilities Commission (PUC) dockets?
4. Does council have questions or feedback regarding the preliminary report on 2011 CAP activities; plans and priorities for 2012; and the proposed process for planning for CAP in 2013 and beyond, including the related community engagement plan?

## **IV. BACKGROUND**

### **A History of Boulder's Commitment to Climate Action**

In 2007, the City of Boulder adopted and began implementing a Climate Action Plan (CAP) to reduce local greenhouse gas emissions in response to the growing and well-documented impact of human activity on global climate change.

From the beginning, Boulder's CAP pursued an aggressive set of strategies and programs to reduce local emissions. These were re-tooled in 2009 based on lessons learned in the first two years of action, and in 2010, revised programs and new regulations were developed in collaboration with community partners. The outcome of those efforts included "SmartRegs;" new EnergySmart services for homes, apartments and businesses; and pilot programs to improve energy efficiency in commercial properties. These efforts have significantly increased the number of property owners investing in energy efficiency in Boulder, as detailed later in this memo.

The CAP re-tooling effort also highlighted the need to change the source of Boulder's electricity supply. Even with advances in energy efficiency and increased investment in rooftop solar throughout the city (giving Boulder the highest per-capita installed solar capacity of any community in the country), making significant progress toward the Kyoto goal has been difficult due to the high intensity of carbon in Boulder's electricity supply and an increasingly energy-intensive economy. At the same time, climate scientists have since determined that the Kyoto goal is not enough. Global emissions must be reduced even further if the most severe projected climate impacts are to be avoided.

The need to alter the generation mix of Boulder's electricity supply toward cleaner and more renewable energy sources, combined with other important community goals related to energy as adopted by council in March 2011 (**Attachment A**), has guided analysis and decision-making for Boulder's Energy Future over the past two years. That work effort led to a decision not to renew the previous franchise agreement with Xcel, as well as narrow approval by voters in November 2011 to take the necessary steps to determine the feasibility of a municipal power utility.

As the community begins 2012, the urgency of making significant reductions in greenhouse gas emissions has never been greater, nor has Boulder ever been as well positioned to achieve those reductions. Efforts in recent years have helped the city and community better understand its current energy supply and potential energy future; dramatically increased the effectiveness of local energy efficiency efforts; and moved the community forward in exploring how best to achieve its energy and climate action goals.

### **Energy + Climate Action Planning: An Integrated Framework**

Given the extent to which Boulder's local greenhouse gas emissions are related to the generation and use of electricity, climate action and energy planning in Boulder are inherently inseparable.

To illustrate the relationship between these efforts, and the manner in which an Energy Action Plan would inform and support both climate action and energy, a revised framework graphic will be presented to council at the Jan 31 study session. Key points from the graphic include:

- *Integrated sustainability.* All of Boulder’s climate and energy planning efforts seek to promote the comprehensive sustainability principles and policies of the Boulder Valley Comprehensive Plan (i.e., all of the proposed strategies and actions will carefully consider economic, social and environmental factors).
- *Defining a new climate action goal and confirming areas for action.* The proposed 2012 work program will engage the community and council in defining a new long-term goal for greenhouse gas reductions in Boulder, replacing the current Kyoto goal as the ultimate measure of success for local climate action efforts. This effort will also confirm and/or revise the current strategy areas for Boulder’s climate action efforts based on GHG emission sources, identifying long-term goals in each area to spur proportional and incremental action toward the long-term goal.
- *Establishing near-term targets and priorities by area.* While the long-term goals are aspirational and serve as the ultimate measure of success, the proposed climate action framework will also establish near-term priorities and targets to guide and measure annual progress toward the long-term goal. These near-term priorities and targets—linked to meaningful metrics and reporting standards—would be revisited and updated on an annual or semi-annual basis to ensure clear and steady progress toward the long-term greenhouse gas reduction goal.
- *Implementing policies and programs.* Greenhouse gas reductions are achieved as a result of a wide range of implementing actions, carried out by the city as well as by numerous community partners—including individual households and businesses. The city’s actions are guided by adopted master plans, codes and targeted programs across the full range of strategy areas. The proposed climate action framework would look to these specific plans and programs to guide relevant implementing actions—linked to investment and staffing commitments—rather than having those actions defined in a stand-alone “climate action plan.” Each of these plans and programs would help inform the establishment of near-term climate action targets and performance metrics to ensure they are achievable.
- *Energy Action Plan.* While the majority of Boulder’s greenhouse gas emissions are generated by energy-related activities, this is the one area where the city has no clear policy or implementation plan. Therefore, the 2012 work program will begin development of an Energy Action Plan that will both serve to guide energy-related policies and programs to achieve defined greenhouse gas reductions and inform the analysis and potential implementation of a municipal power utility. The proposed planning effort is further described on pages 30 to 35 of this memo.

## V. 2012 WORK PLAN OVERVIEW

A chart summarizing the proposed 2012 work plan is provided as **Attachment B**. It defines the key proposed work activities, by month, in each of four areas: Municipalization, Energy Action Plan, Climate Action Plan and Community Engagement.

A more simplified, graphic presentation of the 2012 work program, illustrating the sequence of and relationship between the major work tasks, is being prepared and will be presented to council as a handout at the Jan 31 study session.

### A. 2012 Work Program Goals

The goals that have informed planning for the 2012 work effort include:

#### *For municipalization efforts:*

- **Move forward in a timely manner** to initiate the actions necessary to determine the final cost and feasibility of acquiring the local distribution system and creating a municipal power utility, per the direction established by voters in November 2011.
- **Be responsible stewards** of the public funds devoted to the municipalization effort, ensuring a targeted and efficient work program that is also realistic and appropriately strategic.
- **Remain focused on the community's energy goals**, embracing the fact that this is not an effort to create a municipal utility to continue business-as-usual, but to achieve different outcomes in both the near and long term.
- **Provide an appropriate level of transparency**, recognizing that there will, by necessity, be parts of the process that must remain confidential.
- **Focus decision making on the City Council** in the near-term, perhaps creating a utility advisory board later in the process, while at the same time drawing upon local expertise and citizen input for development of the Energy Action Plan that will establish critical aspects of the potential utility's priorities and operational parameters.

#### *For climate action planning:*

- **Engage in a collaborative evaluation** of what has worked and what hasn't in our climate action initiatives to date. What have we learned about being effective in climate action? What can we build upon and how far could we realistically get by continuing and expanding upon current initiatives? How could we "ramp things up?"
- **Build consensus around "the next generation" of GHG reduction** for the post-Kyoto period, with the possibility of both a long-term aspirational goal and near-term targets that cause us to stretch but are grounded in realistic analysis and resource planning.
- **Embrace climate action as a community-wide initiative** in which the city plays a unique role. The plan can and should establish targets and tools to facilitate appropriate action by everyone in the community.
- **Think of the CAP as the direction-setting document** (the big picture, similar to the BVCP), with implementing actions living in individual master plans, etc. In other

words, all of our planning, policies and practices (including investments) should be informed by our GHG reduction goals.

- **Think holistically about climate action funding.** While the “CAP Tax” is the only existing city revenue source to support local energy efficiency efforts, it is only a small part of how carbon-reduction strategies in Boulder are funded.

***For the Energy Action Plan:***

- **Continue the community education process about energy**, helping people understand why we are undertaking these efforts; what it is (and isn't) about; and what it means to them as residents and businesses.
- **Provide a clear bridge and connection to the community's climate action goals** and the priority energy strategies defined in the action plan.
- **Define the business model and operating principles for a new utility** that delivers energy as a service (helping customers use less energy and in more cost-effective ways) instead of energy as a commodity (with incentives for selling more).
- **Move forward on energy planning (and action)** while the municipal utility feasibility analysis continues. The plan can and should define next steps in the city's energy efficiency efforts as well as additional investments that may achieve community energy goals either prior to creation of the municipal utility or in the event that a municipal utility is deemed infeasible.
- **Take “localization” to the next level of planning** to define and evaluate specific opportunities that could lead to greater energy independence, resiliency, reliability and long-term affordability while moving decisively toward a cleaner energy supply.
- **Take a holistic approach**, from behavior change, to efficiency investments and new demand-management technologies, to distributed generation and changes in external generation sources.
- **Operationalize the energy-focused strategy areas of the CAP**, including existing and expanded energy efficiency efforts and other near-term localization efforts that could be initiated prior to creation of a municipal utility.

***For community engagement:***

- **Draw on the expertise of the community**, creating meaningful ways for people to be involved in the energy and climate action planning processes.
- **Facilitate candid conversations** about where the city has had the most and least success in climate action efforts to-date and the potential trade-offs that may be involved in future climate action and energy strategies and investments.
- **Make the process as accessible and engaging** as possible, ensuring that information materials speak to multiple audiences (from experts to the unengaged).
- **Be cost effective** with outreach methods and commitments of staff time, exploring new engagement ideas that make efficient use of resources.
- **Connect with broader energy and climate policy initiatives and thinking**, recognizing that the effort we are undertaking is part of a larger effort that will shape the county's economic and environmental future. Seek to both inform the larger conversation and be informed by it.
- **Document and share the process and content of our work** in a way that can be helpful to others.

## **B. 2012 Work Program Budget**

The 2012 energy and climate action planning efforts described in this memo represent a significant undertaking. In particular, the legal and technical work necessary to determine the final costs for potential acquisition of the local distribution system and launch of a municipal utility represent a considerable investment. Recognizing this, city voters approved an increase to the Utility Occupation Tax in the amount of \$1.9 million a year.

Staff is in the process of defining the specific work tasks necessary for the next steps in the municipalization analysis process, as described below. The specific budgetary line items are still being discussed. However, it has been determined that the use of this tax revenue will be allocated to the following categories:

- Legal Services (Condemnation and FERC Counsel)
- Consulting Services related to possible municipalization and separation of Xcel Energy's system (Recruitment, Engineering and Appraisal Services)
- Executive Director of Energy Strategy and Electric Utility Development (Salary & Benefits)
- Purchased Services and Supplies (Office Space and Supplies)

Other staff resources assigned to this effort have been allocated within existing budgets and separate from the \$1.9 million Utility Occupation Tax revenue. This is in alignment with the overall priority of this effort and existing roles, responsibilities and funding.

The effort to continue to explore the possibility of acquiring Xcel's distribution system and form a municipal electric utility, as well as the work necessary to update the climate action plan and develop an energy action plan are significant city priorities and are supported by staff with overall job objectives that align with this work. Importantly, all expenses related to the CAP efforts described in this memorandum will be paid out of CAP resources, as will significant portions of the work necessary for development of the Energy Action Plan.

Lists of staff assigned to these efforts, their primary roles and related budget allocations (where currently available) are provided in **Attachments C and D**.

It is anticipated that if and when a municipal electric utility becomes operational, any future costs directly associated with that business function would be addressed through the electric utility cost model and covered by revenues brought in by the utility.

## **C. Next Steps Toward a Municipal Power Utility**

The first phase in exploring municipalization will be to review and strategically sequence the steps needed for acquisition of the local distribution system. To date, three major work items have been identified to begin in 2012. Those work items include employing an executive director to manage the municipalization project; undertaking analysis to inform potential acquisition of the local distribution system; and complying with the federal regulatory requirements for potential municipalization in relation to power generation and transmission.

To accomplish these work items, the city has hired an executive search firm to recruit an executive director of energy strategy and utility development. After requesting proposals from 17 firms and interviewing six, the city selected The Search Partnership to assist with this effort. Linda Paul, president of The Search Partnership, brings more than 15 years of recruitment experience in the energy and utility industry. On Jan. 17, Ms. Paul met with the public to further discuss her experience and expertise.

The city has also issued two requests for proposals (RFPs) for legal counsel: one RFP is for counsel related to the acquisition of the existing utility infrastructure, and the other RFP seeks counsel experienced in the issues that will arise as the city works with the Federal Energy Regulatory Commission (FERC).

### **1. Employment of an Executive Director**

The city intends to employ an Executive Director of Energy Strategy and Electric Utility Development in a two-year fixed term position (that may be extended, if necessary). The overall objective of this position is to provide vision, leadership and direction in the creation of a short- and long-term energy strategy that incorporates a 20- to 30-year planning horizon and considers new methods of energy management, along with the related cost effective investments necessary to achieve the community's energy and carbon reduction goals.

The position will lead efforts to: acquire the local electric distribution system and develop Boulder Light and Power as a new publicly owned utility; develop appropriate goals, objectives, policies and priorities; prepare action plans related to strategic initiatives; support the successful transition of safe and reliable electric system operations while ensuring competitive rates and superior customer service; and prepare an operations plan, budget, and capital financing plan.

The position will provide executive leadership in the development of a new business model that emphasizes “energy as a service,” instead of a commodity, to reduce greenhouse gas emissions, provide customer choice, and ensure high quality, reliable and affordable electricity and service. The resulting business plan should also contribute to broader efforts that position Boulder as a center for energy innovation and support the community’s economic vitality goals.

It is anticipated that the search process will provide a slate of candidates by mid-March with staff interviews and a public process in April. The intention is to have the successful candidate begin employment in June.

### **2. The Legal Teams: Acquisition Counsel and FERC Counsel**

There are components of the anticipated process that will require expertise in specific areas, including representation before the Federal Energy Regulatory Commission (FERC) and negotiation for acquisition and condemnation, if necessary. Outside counsel selected from the RFP responses will be required to coordinate with other outside

counsel, as well as City Attorney's Office staff. Engineer and appraisal expert witnesses will also be required to plan the scope of the acquisition and to testify in both proceedings.

a. Acquisition Team

After issuance of an RFP and staff review of the responses and interview, the city hired Duncan, Ostrander & Dingess, P.C., with Donald Ostrander as the lead counsel for acquisition. This law firm is seen as a leader in representing governmental entities and land owners in very complex eminent domain cases. The firm will be providing the city advice in its selection of FERC counsel.

The city will develop a full acquisition team and plan. As part of this work effort, analysis will need to be completed about what portions of the existing distribution system the city would require to operate a municipal utility and value those portions as well as any "damages to the remainder" of the system, if any, created by the severing of the existing system. The city will need to develop a plan for separation from the incumbent utility that addresses logical and economical strategies. Specific outcomes from this planning effort will include the development of a city annexation policy in relation to separation issues, a service area plan, an inventory of necessary real property and equipment assets, valuation of assets, coordination with federal regulatory processes and regulations, and a litigation strategy.

b. FERC Team

The FERC team will work through federal regulatory requirements associated with the creation of a municipal utility, including proceedings associated with the Federal Energy Regulatory Commission (FERC). The FERC issues will include compliance with the open access transmission tariff and stranded costs. Reliability is a critical issue and the FERC team will also address North American Electric Reliability Corporation (NERC) compliance issues.

The city has issued an RFP to solicit FERC legal counsel to work with the City Attorney's Office. The city is in the process of reviewing the RFP responses and anticipates interviews with finalists on Feb. 2 and 3, 2012. In the afternoon of Feb. 2, the city will provide finalists an opportunity to make presentations to the community. The presentations will be held in the Council Chambers, followed by a community "meet and greet" in the lobby of the Municipal Building. On Friday, Feb. 3, there be will interviews with a staff team. Over the following week, the staff will process data from the proposals, interviews and community input, select FERC counsel and negotiate typical details associated with outside counsel contracts.

c. Development of Plan and Determination of Costs

Once the FERC counsel is selected, the city team will work to determine the engineer(s) and appraiser(s) necessary for a complete team to develop a strategy for going forward with determining costs for various components of municipalization.

One of the early and important issues for the team will be the issue of whether municipalization will strand any generation assets of the incumbent utility or cause any damage to the portions of the system the incumbent utility will retain. If so, the issue of the value of the stranded assets and/or damages, and whether they are more appropriately compensated through FERC or condemnation proceedings, will need to be determined. Stranded asset and utility acquisition costs will be analyzed in the cost model to determine whether the city will take one of the “off-ramps” to municipalization that are anticipated in the recently voter approved charter amendments.

**3. Public Utilities Commission (PUC)**

As the city enters a new phase in its energy planning efforts, and the staff time and resources needed to successfully undertake these efforts, the city team has been reviewing its other commitments. Among these are the city’s ongoing intervention in Colorado Public Utility Commission (PUC) dockets. Staff would like council input on several questions related to these efforts, to help guide the city’s commitment of time and resources in the coming year.

The city intervenes quite regularly in PUC dockets that involve matters in which the city is interested. In the past two years, for example, staff has intervened in the 2009 electric rate case, several dockets related to SmartGridCity, demand-side management plans, renewable energy standard plans, the implementation of the Clean Air-Clean Jobs Act, the development of privacy rules related to smart meter data, and changes to the Windsource Program. The current dockets in which the city has intervened are shown in **Attachment E**.

a. Types of Dockets

The general categories of proceedings are:

1. **Resource planning/renewable energy:** includes electric resource plans, renewable energy standard compliance plans, the Clean Air-Clean Jobs Act, Solar\*Rewards, solar gardens, and hybrid REC margins;
2. **Smart Grid:** primarily pilots and cost recovery, but there is some overlap with demand-side management;
3. **Data access and privacy:** currently includes smart meter data privacy rules;
4. **Demand-side management:** includes demand-side management plans and quarterly roundtables, building codes, energy efficiency programs, dynamic pricing, loans; and
5. **Tariffs, rate design, bill design:** generally includes street lighting, the electric commodity adjustment, transmission and distribution charges, etc.

Periodically, investigatory dockets arise related to subjects like electric vehicles. PUC staff has indicated that there may be an investigatory docket related to smart meter data access in 2012, and there are ongoing investigatory dockets that are repositories for information on solar photovoltaic incentives. Staff monitors schedules for Commission Weekly Meetings and Commission Information Meetings to keep informed about PUC topics of interest.

b. Policy Documents that Provide Guidance in Developing City Positions

There is frequently a fairly short period of time in which to decide whether or not to intervene in a docket. City staff makes its decisions regarding whether to intervene in a particular docket, and the general position the city will take in that docket, based on council's approved policy positions, as reflected in its legislative agenda, the Climate Action Plan, the Boulder Valley Comprehensive Plan and other master plans and policy documents.

c. Levels of Participation

Participation at the PUC can vary widely. Some entities do not become parties in dockets, but simply watch the docket using the PUC's e-filing system. Others intervene and fully participate in the docket, meaning that they file written testimony, propound discovery, attend the hearings and conduct cross-examination, file written Statements of Position at the conclusion of the hearing and sometimes file appeals. Intermediate levels of participation typically include any combination of the elements described above.

For the past 2½ years, the city has intervened in dockets involving SmartGridCity (including a related data privacy docket) and other dockets related to resource conservation, renewable energy, and proposed changes to Xcel's electric tariff that would affect the city's ability to install more energy efficient street lighting or would potentially increase the city's liability for environmental issues. In 2010 and 2011, staff was heavily involved in the proceedings surrounding HB-1365, "Clean Air Clean Jobs." This included direct participation and testimony in the docket, but also strategy development with multiple coalition partners, such as Boulder County and the City and County of Denver.

Staff's participation varies depending upon the nature of the issues involved. Staff typically reviews the testimony and discovery requests and responses. Occasionally, staff issues discovery requests to other parties. If staff believes it has sufficient expertise in an area to provide testimony, which is then subject to cross-examination, staff provides written testimony. In nearly all cases, staff has conducted at least some amount of cross-examination. In the environmental tariff docket, significant cross-examination was conducted. Staff nearly always submits a Statement of Position at the conclusion of the hearing. That document is often as long as 30 pages and involves considerable work.

d. Staff Work Load

Intervention in PUC dockets requires a considerable level of effort and time commitment. The staff members who generally handle PUC dockets are Debra Kalish, senior assistant city attorney; Jonathan Koehn, regional sustainability coordinator; Kara Mertz, Local Environmental Action Division (LEAD) manager; and Kelly Crandall, sustainability specialist II from the Local Environmental Action Division.

The City Attorney's Office provides legal support for PUC dockets. Staff estimates that in each of the past two years, 500 attorney hours and 50 administrative hours have been devoted to the city's efforts at the PUC. Ms. Kalish handles not only PUC matters, but is also responsible for providing legal assistance for a wide variety of departments and issues in the city. In a reorganization of the City Attorney's Office, Ms. Kalish is scheduled to take over representation of the Community Planning and Sustainability Department to free up David Gehr from those duties as he assumes primary responsibility for directing the city's energy future efforts.

The regional sustainability coordinator and staff from the Local Environmental Action Division provide policy and technical support for PUC dockets. Staff estimates that in each of the past two years, the combined effort from these staff members for PUC-related activities was more than 650 hours per year. This includes work on dockets as well as participation in PUC hearings, roundtable meetings and conferences. All of these staff have significant responsibilities and work commitments in their respective areas, which will also be expanding in the coming year as the city undertakes the 2012 work program described in this memo.

e. PUC Questions and Staff Recommendations

i. *Should participation in PUC dockets be a priority for city staff?*

The energy future efforts are both important and time-consuming. All of the staff involved in PUC dockets are also involved in energy future work. Staff recommends that the city continue to be involved in those dockets that (1) have important consequences for the city's investigation of municipalization of the electric distribution system and (2) those that legally or financially affect the city. Other dockets may need to be assigned a lower priority.

ii. *If so, what level of participation is appropriate?*

In dockets with lower priority, the city may need to curtail its involvement. It could do this by following dockets, as opposed to intervening and being directly involved in the docket. In some cases, it may be possible to work with other parties who have intervened.

In dockets with high priority, staff recommends that staff be actively involved, offer written witness testimony when appropriate, conduct discovery, participate in the hearings, conduct cross-examination and file Statements of Position.

iii. *Which types of dockets are most important to council?*

Staff suggests that dockets that have direct implications for the investigation of municipalization have the highest priority. This would include resource planning dockets and dockets with legal implications for the city (such as the environmental tariff docket).

Medium priority dockets, staff suggests, would include solar gardens, solar rebates, data privacy and dockets related to SmartGridCity pilot projects.

Lower priority dockets might include demand-side management, rate design and new technologies such as electric vehicles.

iv. *Should staff continue to look to policy documents approved by council for guidance on the city's position in PUC dockets or would council prefer to be asked to pre-approve city positions in PUC dockets?*

Staff has typically looked to city policy documents to guide its position in PUC dockets. Some communities require their staff to present issues and settlement agreements to their city councils for guidance and approval. At times, this slows down staff's ability to make quick decisions in dockets that are sometimes fast moving.

Staff recommends that council continue to allow staff to make decisions based on clear guidance from council in policy directives. If, however, staff believes that an issue is one on which there is not clear direction or on which staff thinks City Council might prefer to offer additional guidance, they will bring that matter or settlement decision back to council for its direction.

#### **D. Boulder's Current Climate Action Plan**

In 2002, City Council adopted an aggressive goal for climate action in Boulder: to reduce local greenhouse gas (GHG) emissions to 7 percent below 1990 levels by 2012, a target set by the Kyoto Protocol. In 2006, the City of Boulder adopted a Climate Action Plan (CAP) to achieve that goal, defining specific program initiatives aimed at reducing local GHG emissions from various sources. In 2007, Boulder became the first community in the nation to tax itself to reduce GHG emissions. In the years since, the city has learned a great deal: not only about how challenging and complex this GHG reduction goal is, but also, and perhaps more importantly, about the values and commitment of the Boulder community.

In the past five years, despite continuous improvement in energy efficiency, the community's overall emissions have not always decreased proportionately. While there have been some years with reductions, there have also been years with increases. Other communities around the country are recognizing the challenge of the Kyoto Protocol goal: it set a 10-year target that may only be met through systemic change, which often takes longer than 10 years. This has led many communities to look at longer-term carbon reduction goals. Communities that have met the Kyoto Protocol goal typically face less carbon-intensive energy supplies than Boulder. In some areas, these communities have reached their targets because of the recent economic downturn, which has reduced

greenhouse gas emissions largely because there are fewer businesses and decreased production (and energy use) per business.

CAP efforts in Boulder have evolved since the original plan was developed, and become increasingly effective. Reflecting on the past five years, key lessons learned include:

- There is a strong community consensus in Boulder around clean energy and energy efficiency.
- There is considerable interest and has been substantive engagement from a broad spectrum of community leaders committed to helping design and carry out Boulder’s energy goals, representing a substantial resource for community action and a unique opportunity to partner in new and meaningful ways.
- The values and goals of economic vitality and environmental quality must be balanced in a pragmatic way—careful attention to the design of policies and programs such that both goal areas are advanced simultaneously can build community consensus but takes time and means that GHG goals may take longer to achieve.
- Carefully crafted regulations paired with initial economic incentives can spur action and investment beyond even what is required.
- The “energy advisor” service model significantly increases building efficiency retrofits and the use of rebates.
- It is critical to track, prioritize and refine programs based on their return on investment from both the taxpayers’ and private property owners’ perspectives.

These lessons further inform two key directions for climate action planning efforts in 2012:

- (1) Long-term aspirational goals should be paired with shorter-term, achievable goals and meaningful metrics, allowing the city to report results to the community in more immediate and tangible terms; and
- (2) Although there are six strategy areas in Boulder’s community guide to the CAP (*Reduce Use, Build Better, Ramp Up Renewables, Travel Wise, Waste Not and Grow Green*), the focus of the climate action programs and approximately 95 percent of the CAP tax budget has been on the three energy-related strategy areas (i.e., *Reduce Use, Ramp Up Renewables and Build Better*). The three non-energy strategy areas have been more about reporting out on measures taken and less about guiding policy and establishing concrete steps to operationalize GHG reductions in these areas. **Section C** of this memo outlines a future plan and framework to begin to address all of the strategy areas equally within the context of CAP for 2013 and beyond and identifies some additional strategy areas that should be considered to ensure a comprehensive approach to community climate action.

### **1. Program Results and GHG Inventory**

This section provides a summary of the results achieved to date in Boulder’s climate action efforts. First is an overview of the results achieved from 2007 to 2010, the last year

for which actual energy use data is available. The presentation of 2011 results, provided separately, is based on “deemed” GHG reductions based on energy efficiency improvements that were implemented. However, actual energy use data for 2011 has not yet been provided by Xcel. **(Attachment F)** includes an explanation of how GHG emissions are calculated, both to measure program-specific results and to calculate annual community-wide GHG emissions.

- a. What have we learned from the CAP programs and services to date?
  - i. *2007-2010 program results*

A full discussion of specific program results from 2007 through 2010 can be found at [www.bouldercolorado.gov/LEAD/ClimateAction](http://www.bouldercolorado.gov/LEAD/ClimateAction) in the Community Guide to Boulder’s Climate Action Plan and its related progress reports.

In general, from 2007 to 2009, the city’s energy-related CAP programs focused on providing residential energy audits, with fewer CAP tax resources dedicated to commercial energy efficiency programs. These programs demonstrated very low “conversion rates,” also known as “audit-to-action:” the percent of property owners acting on audit recommendations and installing energy efficiency (EE) measures like insulation, air sealing, bulb change-out, etc. Recognizing that a significant portion of buildings’ energy use comes from commercial buildings, the city began dedicating more CAP tax dollars to commercial energy efficiency starting in 2009.

In cooperation with six community-based CAP “tech teams,” the CAP was re-tooled in 2009, and a one-stop-shop service model was developed; and in 2010, these new services were piloted in collaboration with Boulder County and other community partners. During this same period, mandatory efficiency requirements were developed for rental housing units (where a “split incentive” created a barrier to implementation). These requirements were incorporated as part of a larger project called “SmartRegs” that focused on the rental licensing program and related codes. In 2011, SmartRegs went into effect within the City of Boulder, and EnergySmart services launched city- and countywide with the assistance of an American Recovery and Reinvestment Act (ARRA) grant. The combination of SmartRegs and EnergySmart services has dramatically increased the scale of energy efficiency activities in the city and provided valuable lessons that can be applied to other building types and areas of action.

- ii. *2007-2010 GHG emissions inventory*

As explained in **(Attachment G)**, the city conducts an annual inventory of GHG emissions and compares this year to year. In accordance with standard GHG reporting protocols, this emissions inventory is calculated separately from program-specific GHG reductions.

According to this annual GHG emissions inventory, Boulder’s total emissions have remained relatively stable since CAP programs began in 2007. While small reductions

were achieved in 2008 and 2009, the overall trend has been that emissions have remained steady since CAP programs began (they were 0.65 percent higher in absolute terms in 2010 compared to 2007, and slightly lower in per capita terms).

However, it is important to note that if pre-2007 trends had continued, Boulder's 2010 emissions could have been 4.5 percent higher. In other words, climate action efforts in Boulder helped avoid nearly 85,000 metric tons of CO<sub>2</sub> emissions in 2010. Boulder's efforts put us in a small group of American cities that have managed to stabilize or decrease emissions.

While we are not clear when – or whether – the city will receive 2011 electricity and natural gas usage data from Xcel to update the community-wide emissions inventory for 2011, documented program activities from 2011 (including numbers of properties served and the efficiency improvements that were installed) make it possible to estimate the GHG reductions achieved and to project potential reductions that might be possible in 2012.

*iii. 2011 program results*

The 2011 Climate Action Plan tax dollars spent and the results achieved are reflected in Table 1, as follows<sup>1</sup>:

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<sup>1</sup> The Residential program includes EnergySmart and SmartRegs results except where specified. The Commercial program includes EnergySmart and ClimateSmart Loan program results except where specified.

2011 Climate Action Plan tax activity area	CAP tax funds	Leveraged Funds			Estimated TOTAL annual GHG emissions avoided	Estimated TOTAL annual energy cost savings	NO. of units/businesses served	AVG. annual energy cost savings per unit/business	AVG. GHG emissions avoided per unit/business
		City EECBG allocated grant funds	County ARRA grant funds	Private investment					
Residential Energy EDUCATION	\$96K	\$-	\$23K	\$1.575 million	<b>2,051 mtCO<sub>2</sub>*</b>	<b>\$280K</b>	<b>2,759</b> (1,108 units completed upgrades)	<b>\$101</b>	<b>0.74 mtCO<sub>2</sub></b>
Residential Energy SERVICES	\$204K	\$9,450	\$1.448 million						
Residential Energy REBATES	\$56K	\$123K	\$406K						
Residential Energy PERSONNEL	\$163K	\$-	\$107K						
Business Energy EDUCATION	\$135K		\$320K	\$2.745 million	<b>5,487 mtCO<sub>2</sub>*</b>  (2,842 from Energy Smart; 2509 from <i>10 for Change</i> 136 from CS loans)	<b>\$371K</b> (\$339K from Energy Smart upgrades; 32K from quick assessments)	<b>973</b> (257 businesses completed upgrades)	<b>\$52</b> (quick installs)  <b>\$1,318</b> (upgrades)  *Actual savings depend on rate structure	<b>0.39 mtCO<sub>2</sub></b> (quick installs)  <b>10.5 mtCO<sub>2</sub></b> (upgrades)
Business Energy SERVICES	\$193K	\$53K	\$294K						
Business Energy REBATES	\$-	\$120K	\$443K						
Business Energy PERSONNEL	\$123K		\$272K						
Transportation (Eco-pass) CAP tax contribution	\$100K	\$252K	\$-		<b>12,078 mtCO<sub>2</sub></b>				
City Sustainability planning CAP contribution	\$26K	\$360K	\$-		<b>5,772 mtCO<sub>2</sub>*</b>				
Non-personnel administrative overhead	\$56K		\$-		n/a				
TOTAL estimated GHG emissions avoided through CAP-funded programs in 2011: <b>25,388 mtCO<sub>2</sub></b>									

**Table 1: 2011 CAP tax dollars spent and GHG emission reductions**

\* Programs shown in yellow represent investments that will lead to cumulative avoided GHGs over the life of the investment. The Eco Pass investment shown in this table will only result in a one-time avoided emissions for the year it is used. If this investment is made in subsequent years, the same 12,000 mtCO<sub>2</sub> will be saved (i.e., it will not be additive).

**Attachment G** includes a more complete matrix representing a summary of the GHG emissions that are deemed saved as a result of all of the community climate actions that were tracked in 2011. These community climate actions reflect not only those paid for by CAP tax dollars as shown above, but also avoided emissions that can be attributed to other programs, services and policies in place in 2011, including actions taken by other community partners throughout Boulder. Similar to Table 1, the programs highlighted in yellow in this attachment represent those that are cumulative over time. The other investments need to be made annually to maintain the level of avoided GHG emissions.

This matrix (**Attachment G**) shows that the community's combined actions prevented approximately **100,000 mtCO<sub>2</sub>** from being emitted into the atmosphere last year. While energy efficiency investments represent only a portion of this overall reduction in GHG emissions, it is important to note that those investments will continue to reduce emissions for the life of the investment, whereas other investments have only a one-year benefit (for example in the purchases of RECs or hydroelectric generation).

The current gap between what has been achieved and Boulder's Kyoto Protocol goal is approximately 520,000 mtCO<sub>2</sub>. This gap was calculated based on the 2010 GHG emissions inventory and can only be updated once the city receives actual electricity, natural gas, waste diversion and vehicle miles traveled for 2011.

*iv. 2011 GHG emissions inventory*

The estimated GHG emissions avoided as a result of 2011 programs and services equal about 20 percent of the reductions necessary to meet the Kyoto protocol goal. If continued progress in energy efficiency is achieved in 2012, and one-time investments are replicated at similar levels, the percentage progress toward the Kyoto goal will be even greater. However, as past experience has shown, significant climate action efforts by residents, businesses, the city, and community partners can be eclipsed by other factors. As explained in **Attachment F**, conservation in one area can be paired with increased consumption in other areas; the carbon intensity of Boulder's energy supply could increase; and significant weather shifts (such as an unusually hot summer) can shift overall consumption patterns beyond any "baseline" scenario. Sometimes these factors are difficult to parse out or understand given the current data to which the city has access as well as the basic complexity of factors that affect the overall emissions inventory.

b. Are there other ways to measure progress toward our goals?

For this reason, the community has begun to discuss whether there may be broader ways to measure progress toward shared GHG goals. Without eliminating GHG emissions as a guidepost, other metrics may provide the community and council with additional data points to determine whether particular programs and services are prudent investments.

For example, take a look at how the city currently measures the success of the EnergySmart services. In its first full year of implementation in the City of Boulder, the program has seen the following results:

<b>Participation:</b>	678 owner-occupied units. Of these:
	323 utilized the advisor-only service
	355 received a full energy audit
	426 completed an upgrade
	2,081 residential rental property units. Of these:
	461 were compliant with SmartRegs EE requirements at the initial inspection
	451 were brought into compliance due to the “quick installs”
	175 units that were initially non-compliant have made upgrades to reach compliance
	507 units made additional, voluntary upgrades not required by SmartRegs
	1,687 services were provided to 960 unique businesses
	713 businesses completed the “Discover” assessment, of which close to 50% received “quick installs”
	257 businesses received rebates for 267 completed upgrades, of which 92% were for lighting
<b>Audit-to-Action:</b>	Residential rental property units: 33%
	Residential owner-occupied units: 67%
	Commercial property owners: 43%
<b>Time to complete upgrades:</b>	Residential property owners: about 6 weeks
	Commercial property owners: about 3 months
<b>Referral source:</b>	56% of business participants were reached through door-to-door outreach
	21% of the residential participants were referred by the City of Boulder
	20% of the residential participants were referred by the EnergySmart advisors from Populus.
<b>Jobs Created:</b>	42 jobs were created in Boulder County in the most recent (4 <sup>th</sup> ) quarter of 2011 (Jobs are not tracked by city or cumulatively by year).
<b>Energy saved:</b>	Residential property owners: 907,156.68 kWh of electricity and 265,990.46 therms of natural gas
	Average annual savings per owner occupied home: 714 kWh and 226 therms (equivalent to \$219/year energy savings)
	Average annual savings per rental unit: 217 kWh and 72 therms (equivalent to \$63/year energy savings)
	Commercial property owners: 3,982,569 kWh of electricity and 6,469 therms of natural gas
	Average annual savings per business or property owner: 421 kWh for businesses receiving quick installs (a savings of \$52/year) and 14,930 kWh for businesses receiving upgrades (a savings of \$1,318/year). Actual savings depend on the customer’s particular electricity rate structure.
<b>Private investment:</b>	Residential EnergySmart and SmartRegs leveraged \$1,575,002 in private investment with 1,108 units completing upgrades. Commercial EnergySmart leveraged \$1,690,080 in private investment with 257 businesses completing upgrades.

### c. Other climate action results in the City of Boulder

Some additional climate actions are not yet quantified for 2011, but initial data points indicate:

1. Four percent of vehicles registered in Boulder in 2011 were hybrids (0.04 percent were electric).
2. By the end of 2011, 2.4 MW of solar photovoltaic systems were permitted and installed in Boulder. This represents an increase of close to 40 kW when compared to the end of 2010.
3. The city organization's energy performance contracts avoided 5,772 mtCO<sub>2</sub> by implementing energy efficiency measures in city facilities.
4. Over 12,000 mtCO<sub>2</sub> were avoided through GO Boulder's programs.

These and other metrics will be tracked and expanded in 2012, with quarterly reports to council and the community as new data becomes available.

## **2. Lessons Learned**

**Attachments H and I** present a broad overview of the residential and commercial energy strategies: their missions, goals and guiding principles. These appendices also include some key lessons learned during 2011, namely:

1. "Micro-loans" were not effective, as financing is not needed for relatively small investments.
2. The energy advisor service model is a key to successful installation of energy efficiency measures in buildings. This is especially true for commercial buildings and property owners with a large portfolio of commercial rental properties.
3. More work is needed to ensure that Boulder customers understand the connection between the EnergySmart services and their CAP tax investment. Many perceive it as a county program and do not understand the city's role in developing and funding the service.
4. Larger, limited-time rebates are a key to driving participation.
5. Regulatory requirements can drive building upgrades, even beyond the upgrades required for compliance.
6. Regulations play a critical role in cases where the incentive to upgrade buildings lies with a different party than the recipient of the benefit of those upgrades (i.e., in tenant leased spaces).
7. For businesses, door-to-door contact is a great way to communicate energy efficiency opportunities; but "quick installs" are not needed, since more than half of the businesses visited in Boulder had already installed low-cost energy efficiency measures (e.g., faucet aerators, compact florescent lights, and light-emitting diode (LED) exit signs).
8. Increased efforts are needed to effectively quantify and convey, to both the property owners and HVAC contractors, the benefits of HVAC tune-up services in small (<50,000 sq. ft.) commercial properties.
9. Although considerable staff time is required to advise commercial property owners on equipment change-outs, lighting and mechanical system upgrades provide the best bang-for-the-buck in terms of business energy savings and GHG reductions.

10. To help better manage and reduce electricity demand in the community, it may be worth creating incentives for businesses to “de-lamp” at the same time that they use Xcel’s rebates to shift to more efficient lighting products.

### 3. 2012 Strategy

As currently projected, it is likely that Boulder will be between 400,000 and 520,000 mtCO<sub>2</sub> short of the Kyoto Protocol goal at the end of 2012. This gap could be larger if there are factors uncovered in the 2011 emissions inventory that offset deemed savings.

- a. Is there any way to reach the Kyoto Protocol goal?
  - i. *REC purchase*

One option to reach the community’s Kyoto GHG emissions reduction goal would be to purchase Green-e certified renewable energy credits (RECs). This would require the purchase of 565,000 to 740,000 MWh in RECs from a variety of renewable resources nationwide at an estimated cost of ~\$1 per REC,<sup>2</sup> resulting in a cost to the city of \$565,000 to \$740,000. Other REC or carbon offset options could be more costly. WindSource RECs cost \$21.60 per MWh, for a total cost to the city of between \$12 million and \$16 million.<sup>3</sup> The Colorado Carbon Fund reports an average price per carbon offset of \$6.50, for a total cost of \$2,600,000 to \$3,400,000.<sup>4</sup>

Although the city could purchase RECs to achieve its Kyoto goal in 2012, any funds spent on REC purchases would not be invested in the community’s other energy and long-term climate action goals, including: contributing to the community’s economic health; ensuring that residents, businesses and institutions have access to increasingly clean and competitively priced energy; improving Boulder’s building stock; “shifting the norms” by increasing personal or organizational commitment to conservation; or creating jobs in the local economy. Beginning in 2013, the city would still have to reduce GHG emissions by the same amount as it did before purchasing the RECs. This is contrasted with investments in energy efficiency, where each dollar invested curtails the energy load for the lifespan of the investment.

If council would like the city to pursue purchase of RECs, staff will return to council with options for service, rebate or staff trade-offs to reallocate CAP funds toward REC purchases in 2012.

#### *ii. Continue to Invest in Energy Efficiency Services and Incentives*

As an alternative to REC purchase, the CAP tax can continue to be invested in energy conservation and efficiency, building on the successes achieved through 2011 and

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<sup>2</sup> NREL report p.33 (<http://apps3.eere.energy.gov/greenpower/pdfs/52925.pdf>). Prices would be higher for solar RECs from California or Arizona.

<sup>3</sup> Xcel Energy’s customers are currently limited to subscribing to WindSource at a maximum of 100% of their own consumption; thus, if the city chose to purchase WindSource to offset the community’s Kyoto Protocol gap, Xcel would need to shift the rules to specifically allow the city to purchase additional WindSource, beyond the city’s present consumption.

<sup>4</sup> The Colorado Carbon Fund does not have this many offsets currently in stock; however, they would be willing to put the City of Boulder in contact with other vendors to acquire this quantity of RECs.

redirecting resources away from less successful services. This is the approach recommended by staff in the 2012 work program, in addition to activities focused on establishing additional and updated regulatory requirements, in the form of updated building codes and a proposed “benchmark and disclosure” ordinance for existing commercial buildings.

While these plans and priorities for 2012 work better than RECs to make progress on a wider range of goals and achieve efficiency investments with lasting value, they will not achieve the community GHG emissions reduction goals by the end of 2012. Council feedback is therefore requested to inform and guide CAP tax investment strategies for the remainder of the year. Actual program and service results will be reported to council and the community on a quarterly basis.

Currently, a summary of the 2012 CAP tax budget allocation is as follows:

<b>2012 Climate Action Plan tax budget category</b>	<b>CAP Tax Funding</b>
Residential Energy Education	\$70,000
Residential Energy Services	\$190,000
Residential Energy Rebates	\$250,000
Residential Energy Personnel	\$163,000
Business Energy Education	\$65,000
Business Energy Services	\$161,000
Business Energy Rebates	\$375,000
Business Energy Personnel	\$165,000
Transportation CAP tax contribution	\$100,000
City Sustainability Planning CAP tax contribution	\$40,000
Non-personnel Administrative Overhead	\$56,000
CAP 2.0 and Energy Action planning	\$160,000
<b>TOTAL 2012 CAP tax</b>	<b>\$1,795,000</b>

*iii. Reduce Use – 2012 priorities*

**Attachment H** presents a broad overview of the proposed residential energy strategy, its mission, goals and guiding principles. Highlights of the 2012 residential “Reduce Use” strategy include:

- Continue EnergySmart services for homeowners and landlords, expanding its reach to an additional 4,000 properties
- Continue to leverage utility and EnergySmart rebates, supplementing existing rebates with \$150,000 of CAP tax funds for rental property owners and \$100,000 of CAP tax rebates for owner-occupied units
- Focus these CAP-funded rebates on the highest GHG emissions reductions (electricity-focused)
- Create and implement a robust outreach plan about available programs and resources that utilizes both traditional and non-traditional avenues for “getting the word out”
- Co-market with Elevations Credit Union for the new EnergySmart loans

**Attachment I** presents a broad overview of the proposed commercial energy strategy, its mission, goals and guiding principles. Highlights of the 2012 commercial “Reduce Use” strategy include:

- Ramp-up EnergySmart services for Boulder businesses and property owners by increasing the number of energy advisors
  - Reach 550 businesses and/or property owners with advising service
  - Cause upgrades in 50 percent of businesses receiving advising service
- Continue to leverage utility and EnergySmart rebates
  - Supplement Boulder County’s EnergySmart rebates with \$375,000 in CAP tax-funded rebates for Boulder businesses and property owners.
  - Customize additional rebates for large property owners to maximize the number of properties implementing energy efficiency improvements.
- Maximize exposure to services and rebates supported by the CAP tax
- Create market-based incentives for energy consultants and contractors that meet specific criteria and bring businesses and property owners into the EnergySmart service
- Co-market with Elevations Credit Union for the new EnergySmart loans
- Develop a commercial building rating system or use an existing tool, such as, Energy Star Portfolio Manager Rating System Program for business/property owner recognition; and fund initial voluntary benchmarking and disclosure efforts

*iv. Build Better*

In addition to the above-mentioned “Reduce Use” strategies, city staff is proposing to focus 2012 efforts on two work plan areas within the “Build Better” strategy area: code updates for new residential and commercial construction and remodels, based on the 2012 international energy conservation code; and an ordinance to require “benchmarking and disclosure” related to energy use in existing commercial buildings to ensure that property owners, tenants and service providers have accurate energy efficiency information on which to make potential decisions, and to inform potential next steps on commercial energy efficiency efforts. Both work plan areas are described below.

*v. Code updates*

Currently the city references the 2006 versions of the building codes published by the International Code Council (ICC). In an effort to make the adopted codes consistent with CAP goals, significant energy efficiency requirements were incorporated into the residential Green Building and Green Points program. These requirements mandate energy efficiency 30 to 75 percent greater than the base code. Amendments were also made to the International Energy Conservation Code (IECC) for energy efficiency 30 percent greater than the base code. Both of the codes only affect existing buildings when a permit is necessary for remodeling or adding on to the buildings.

The energy efficiency appendix created for the International Property Maintenance Code (IPMC) as part of the SmartRegs project marked the first time that the city created a code to address energy efficiency improvements to existing structures that are not otherwise being improved through the building permit process. Since the IPMC is concerned with

maintaining a property to meet minimum code requirements, it provided an effective framework for accommodating the energy efficiency appendix. With the appendix, the energy efficiency requirements are related to a document designed to establish and enforce the requirements contained within. Without a code framework, the energy efficiency appendix would have had to have further code development work to make the requirements enforceable. Generally, it is more efficient to amend nationally developed codes to meet the city's goals than to expend staff resources creating code frameworks that can be adopted by reference.

Since 2006 codes were adopted by the city, ICC has developed the "National Green Building Standard." As part of the code adoption process, this publication will be considered as an alternate compliance path for the sustainable construction provisions of the city's Green Building and Green Points (GBGP) program. The alternate compliance path is being proposed to transition from a locally developed code to one published nationally, while maintaining the energy efficiency requirements established in the last update of the GBGP program.

For both new and existing commercial construction, the International Green Construction Code (IGCC) will become available from ICC in April of 2012. The IGCC is described as an "overlay" code to the existing building and energy codes. The requirements in the IGCC result in about a 10 percent improvement in the thermal envelope requirements of new construction. In contrast to previously developed codes by ICC, this code is developed to encourage customization by each jurisdiction to attain the levels of energy efficiency and sustainability desired. As the process for creating energy efficiency and sustainable construction requirements for existing buildings continues, the IGCC may provide a code framework for the program in much the same way that the IPMC adoption provided a relevant code framework for including the SmartRegs energy efficiency requirements appendix for rental housing. However, since the final version of the IGCC will not be published until April and the goals for existing commercial construction are still in development, further analysis will be needed to determine if this code and the existing commercial building program goals are compatible.

The 2012 International Energy Conservation Code (IECC) benefits from a set of code changes that were referred to as the "30 Percent Solution" during the code update process. This set of code changes was designed to attain a 30 percent improvement in energy efficiency and was successfully passed and incorporated into the code. The 2012 IECC now requires energy efficiency levels similar to the city's current locally amended energy code. The 2012 codes for new construction and associated local amendments are scheduled for City Council consideration during the fourth quarter of 2012.

While there are many benefits to referencing a nationally published code, extensive review and amendments may be necessary to ensure that the adopted code meets the community's goals and does not conflict with the current Boulder Revised Code land use and zoning requirements. Areas that may require particular attention include sprinkler requirements for detached single family homes and ensuring that the "National Green

Building Standard” can work effectively as an alternate compliance path for the GBGP program.

*vi. Benchmarking and disclosure for existing commercial buildings*

Similar to SmartRegs for residential rental properties, there is a role for carefully crafted regulations paired with economic incentives for existing commercial properties; but any regulatory option must balance the community’s commitment to economic vitality with the community values around environmental stewardship. This is particularly true for existing commercial buildings in Boulder, as the competition is fierce for commercial leases, and neighboring communities’ commercial property markets significantly influence Boulder’s market.

The city has seen success in its Reduce Use strategy by customizing its energy advisor services and, beginning in 2012, packaging rebates for property owners with large portfolios of commercial buildings. This tailored focus helps distribute the improvements’ costs and benefits; and encourages inventory-wide energy efficiency upgrades. In 2011, CAP staff focused limited resources on a small number of property owners who each own large commercial building portfolios, leveraging both staff and advisor time and targeting rebates where they could have the most impact.

The proposed work effort to develop a potential benchmarking and disclosure ordinance will build upon the large property owner stakeholder process of 2011. It will also draw on key lessons learned through development and implementation of the SmartRegs energy efficiency requirements for residential rental properties.

1. Reliable information about the energy performance of existing buildings will be needed to craft an effective policy and address the concerns of affected parties. The 2012 commercial stakeholder process will need to evaluate how and what to collect with respect to energy performance data on Boulder’s existing commercial building stock while protecting property owners’ interests.<sup>5</sup>
2. Before any new requirement can be contemplated for existing commercial properties, an appropriate mechanism will need to be identified through which the city could manage and monitor compliance. Other communities that have adopted commercial energy efficiency codes have triggered compliance at the time of sale of the property, when a new lease is negotiated, or other similar property transaction. However, the City of Boulder does not currently have a role in commercial real estate transactions. Therefore, alternative approaches may need to be considered.
3. The public and affected stakeholders need to be involved from the beginning. During the SmartRegs process, it was critical to keep the residential rental property owners, as well as tenants, involved.

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<sup>5</sup> At this time, the city does not have reliable information on the commercial building stock in Boulder, beyond basic building type and square footage attainable from the County Assessor’s Office. Energy data is difficult to obtain from Xcel, and leased properties pose particular issues with obtaining energy usage data from the property owners or tenants.

2011 activities that have provided a foundation for the proposed 2012 work effort include a sustainability workshop with the Rocky Mountain Institute (RMI) and the Building Owners and Managers Association (BOMA) International to develop a guide for “Best Practices for Landlord/Tenant Relationships” that will provide resources for landlords and tenants to negotiate commercial property leases that favor energy efficiency.

Additionally, staff has been contributing to national conversations around energy conservation and efficiency in existing commercial buildings. Across the country, a few states and a few large cities have implemented “benchmarking and disclosure” policies for commercial properties. These include the cities of: Austin, Seattle, San Francisco, New York, and the District of Columbia; as well as the states of California and Washington. While these benchmarking and disclosure policies vary by building type and size; the manner in which information is disclosed; the rating system used for compliance; and additional elements that go beyond ratings and disclosure, they all share the common goals of: understanding their city or state’s existing commercial building stock; building a national database of building performance information and tools; and sharing that information as appropriate to elicit energy efficiency improvements. Staff recommends that benchmarking and disclosure should be the foundation of any regulatory options to address energy efficiency in existing commercial buildings. The data that would result from such a requirement could also inform subsequent demand-side management programs from the city, from a new municipal utility and/or from third party providers. The 2012 CAP tax budget includes \$15,000 for initial voluntary benchmarking efforts, and the work plan to develop regulatory options is included in **Attachment B**.

#### *vii. Innovation Strategy Area*

The 2012 CAP tax budget also includes \$100,000 to develop and support innovative commercial rebates and incentives that further the community’s goals. This “innovation fund” can be leveraged in conjunction with the city’s economic vitality efforts to help property owners improve commercial properties that need updating to achieve energy efficiency and remain competitive.

### **E. Climate Action Planning for 2013 and Beyond**

The current Climate Action Plan is structured as a roadmap to make continuous progress toward our community GHG reduction goal: seven percent below 1990 emission levels by the end of 2012. While the 2012 work plan and CAP tax budget maps out the path to the “end” of the goal period, it is important to acknowledge that the continued production of GHG emissions is creating a global crisis – and our community’s response must evolve.

#### **1. Realigning the Climate Action Framework**

The first step in looking to the future is to re-visit the current climate action framework. Some ideas for revising the framework include looking at the new CAP, or CAP in 2013 and beyond as a community-wide and organization-wide effort. It must contain both long-term, aspirational goals and shorter-term achievable targets to move the community in a common direction, with a shared sense of purpose and appropriate metrics to ensure

progress. It must provide guidance to master plans and action plans that outline individual contributions toward the goals and targets; and it must contain sufficient information, motivation, and assistance such that all individuals know their part in helping the community realize its vision.

Through this initial step, staff teams will be formed to lead the process for developing a revised framework. The Environmental Advisory Board (EAB) will play a critical role in the direction of this process, and other boards and commissions across the city will provide input and feedback along with experts from the community and key partner organizations. A key part of the process will be ad-hoc community working groups, similar to the previous “community tech teams,” to help define priorities and key strategies for the next generation of climate action activities. Refer to **Attachment K** for more detail on the engagement and communications strategy.

Through a process of engagement, analysis and target-setting, an overarching policy guidance document will be developed that establishes a new long-term goal for GHG reductions and defines specific goals, targets and metrics for ensuring measurable progress on an annual basis.

## **2. Strategy Areas and Integration with Departmental Master Plans**

An initial task in the process will be to review, evaluate and refine the six strategy areas from the initial CAP. Additional areas may be considered and added, such as water use and land use, to ensure a comprehensive approach to near- and long-term GHG reductions. The evaluation will also define the appropriate implementation mechanisms in each area, including relevant master plans, policies and programs across the city organization (e.g., Transportation, Zero Waste, Urban Forestry, etc.). Relevant staff will then engage a process to set initial targets and develop a plan for testing these targets in relation to the identified implementation mechanisms and available funding.

Targets will be tested through upcoming master plan update processes to weigh the benefits of GHG reductions against other priorities in each strategy area and refine the targets to ensure that longer-term goals are realistic. Non-energy related strategy areas, such as zero waste and transportation, will refer to their corresponding master plans. The ultimate aim is to position climate action as an integral part of the complete range of city activities that affect GHG emissions, and for every city staff member to see themselves as part of the citywide “CAP team.”

It is important to note that many of the strategy areas included in the current CAP are already working towards GHG emission reduction goals in their respective master plans, such as Transportation’s work to reduce vehicle miles traveled through the Transportation Master Plan. These current strategies are not always connected to GHG emissions reductions in the master plans. Additionally, some strategies that could impact GHG emissions are not currently included and perhaps could be, such as fuel-switching. The intention of the 2012 planning effort will be to connect current strategies with the city’s climate action goals, analyze new strategies that could further the goals, and integrate climate action into standard operating procedures throughout the city. There are

already funds and efforts, beyond the current CAP tax, supporting climate action work; this process will highlight these resources and how the entire city organization is supporting climate action goals.

### **3. Integration with the Energy Action Plan**

The energy-related areas of climate action overlap with much of the work being completed through strategic planning in the Energy Action Plan (see section below). Therefore, the energy strategy areas of climate action will be defined and developed as part of the work being done on an Energy Action Plan. Given the high percentage of GHG emissions that come from energy use in buildings, the fact that an “energy master plan” does not exist at this time, and the importance of the proposed energy plan in relation to the municipalization process, the work effort to develop the Energy Action Plan will be a major focus of the 2012 work program, and will likely extend into 2013.

Given the importance of the energy plan to the climate action plan, and the need to inform a council decision regarding potential extension of the current CAP tax by summer of 2012 (if council wishes to put this on the November 2012 ballot), the Energy Action Plan will be developed through a phased process. Phase 1 will focus specifically on demand side management programs (extending the current energy efficiency efforts funded by the CAP tax), as well as any other potential near-term “localization” efforts. This will help inform a recommendation on whether or not to continue, expand or shift the focus of the current CAP tax after it expires in April 2013. Since the CAP tax is currently a tax on energy and primarily funds energy-related activities in the community, this funding could serve as a bridge to the formation of a municipal utility. Phase 2 of the energy planning effort will focus on development of a complete business plan for the new municipal utility. While this effort will begin in 2012, it is unlikely to be completed until 2013 as additional information about the distribution system and other aspects of utility operations are better known.

## **F. Developing an Energy Action Plan**

Strategic energy planning is vital to Boulder’s future. The energy choices we make today will have consequences for years to come. There is a growing awareness that continued reliance on energy supplies from outside the local community – especially oil and gas – poses significant environmental, social and economic risks. Higher energy prices, clear environmental impacts and the uncertainty of supply are driving communities toward cleaner energy sources and local energy management and generation opportunities; but the understanding of how to implement these technologies and strategies is still evolving.

In a rapidly changing energy environment, a successful energy strategy must be diverse, flexible and agile, seeking to deliver integrated and replicable solutions. It is this long-term energy planning that will allow Boulder to create a stronger, healthier economy based on local self-reliance in energy.

This type of comprehensive energy planning must consider a range of technical options for developing and enhancing local energy generation (e.g., hydroelectric, solar, wind,

bio-gas, storage/backup and heat districts), as well as options for increasing the efficiency of energy use and management in the city.

As Boulder continues on the path toward determining whether or not to municipalize, it's important to continue the investment in demand-side strategies (e.g., energy efficiency and conservation) identified through the existing Climate Action Plan. It is clear that investments in energy efficiency and improved, "smarter" energy management must provide the foundation for any long-term energy planning.

Central to this discussion is understanding the available local energy resources (in terms of supply and demand side) and helping to define "how far and how fast" Boulder could implement those strategies while ensuring careful consideration of reliability, cost and overall impact to customers.

Three important questions underscore Boulder's ability to evaluate and implement these options:

1. *How far and how fast can Boulder realistically go toward achieving greater levels of energy independence and higher levels of renewable energy generation within the local and regional area given existing technical, financial and legal constraints?*
  2. *How can this long-term planning for our energy future stabilize the current energy cost trajectory?*
- and*
3. *How do these strategies contribute (or impact) Boulder's over-arching sustainability objectives?*

### **1. The Need for an Energy Action Plan**

To address the need for long-term planning and to help answer these questions, staff proposes the development of an Energy Action Plan (EAP). The proposed EAP is intended to outline pathways for the City of Boulder to transform its energy strategy along three overall themes, while maintaining competitive costs of service and grid reliability:

- ***Democratizing*** energy decision making, so customers and the local community have more direct control and involvement in decisions about their energy.
- ***Decentralizing*** energy generation and management, reducing reliance on external energy sources.
- ***Decarbonizing*** the energy supply, by using local renewable and clean fuel sources as much as possible.

The proposed EAP will articulate Boulder's energy goals in the near- and long-term, establish GHG reduction targets, and define implementation strategies and action

priorities. The EAP will provide a strategic framework, organized into “levels of authority<sup>6</sup>,” with alternative levels of funding and investment considered at each level.

The plan will identify the most effective strategies for reducing fossil fuel consumption and GHG emissions, as well as those that best mitigate impacts of energy price volatility and climate uncertainty. These strategies, if implemented, would help ensure that residents, businesses and institutions have access to reliable energy that is increasingly clean and remains competitively priced.

No single strategy will achieve Boulder’s ambitious energy and emissions reduction goals; instead, a wide range of options will have to be employed within defined timeframes and at appropriate levels of investment. Because it is likely that each strategy might impact different parts of the local energy system (e.g., some are focused on electrical power while others focus on heating/cooling systems; some work “behind the meter,” in people’s homes; some have interoperability and smart grid requirements; etc.), the implementation of the strategies must vary.

## **2. Development of the Energy Action Plan**

The plan will identify a range of technologies and options that could provide greater local control over the city’s energy generation, usage and management through changes to generation sources and aggressive demand-side strategies. Implementation of these plans is predicated on the city having the authority to implement them. Selected strategies will be organized into three phases or “strategy levels” (described below), that are defined by an increasing level of authority and increasing levels of investment, which correspond to an increasing ability to reduce emissions. In other words, some strategies, such as those already included in the CAP, are technologies that can be readily implemented; others can only be implemented with Xcel Energy’s agreement and cooperation; while others, such as retail wheeling of electricity, rate-making authority or wholesale power procurement, cannot be implemented without the authorities that are only available to the retail electric utility under current Colorado law. In other words, the plan must distinguish between “what’s possible” and “what’s doable.”

In recognition that the city will be hiring an executive director to oversee the energy planning effort, staff anticipates focusing much of the first two quarters on Strategy Level 1 (outlined below), as it directly relates to the current and future priorities of the Climate Action Plan (i.e., continuation and expansion of local energy efficiency and conservation initiatives). This work is anticipated as the focal point for Phase 1 of the energy planning effort, along with initial review of potential localization strategies and additional modeling work that will support both the energy planning and the municipalization work effort. Phase 2, which will focus on developing Strategy Levels 2 and 3, will begin in the second to third quarter of 2012 under the guidance of the new executive director.

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<sup>6</sup> “Level of Authority” refers to key authorities necessary to implement such as the ability to procure electricity or natural gas, control of billing and rate setting, operational control of the metering/distribution system, or financial investment oversight.

- a. Strategy Level I: Deliver Energy Efficiency to Every Building in Boulder; Maximize Rooftop Solar Installations; and Develop Informed Energy Consumers

This basic, but essential, level of strategy builds on, expands and extends Boulder’s success in delivering energy efficiency services and demand-reduction technologies in three existing areas of the Climate Action Plan (CAP): “Build Better,” “Reduce Use,” and “Ramp-Up Renewables.” The selection of strategies in these CAP areas will be determined by the process identified in the section on CAP in 2013 and beyond and **Attachment K**. However, since these areas deal directly with energy use, it is expected that the implementation will be defined and guided by the new EAP.

Examples of strategies that could be included in Level 1:

- o EnergySmart services for residential and commercial customers
- o Energy efficiency investments in city facilities
- o Continuation of the solar grant program and potential new incentives
- o Customer access to local and utility rebates
- o Customer access to federal tax credits
- o Customer access to local rebates and incentives
- o Option to purchase Renewable Energy Credits (RECS)

The aim of this Strategy Level should be to involve 100 percent of Boulder residents and businesses in reducing energy consumption, thus reducing carbon emissions, saving money over time, and minimizing reliance on external energy sources. As mentioned previously, the strategies in this level provide the foundation for Levels 2 and 3. They are the most cost effective and easiest strategies to implement. Analysis and planning at this strategy level will consider the necessary resources and investment to reach every home and business; to incentivize private investment; to establish appropriate regulations; and to ensure widespread education and support for action through robust community partnerships. It builds on past efforts and further engages stakeholders in identifying and creating opportunities to achieve maximum levels of efficiency and site-based generation that can reduce overall energy demand.

- b. Strategy Level II: Pursue Energy Localization and Innovation

Level 2 will define strategies and priorities for implementing sustainable, renewable, safe, low-cost, and secure energy sources in and close to Boulder. Strategies will be selected for their ability to transform Boulder's local energy use and management to a system that is more varied, decentralized and customer-focused, creating opportunities for innovation and competition in the process.

These strategies represent investments and actions that are not currently included in the city’s energy efficiency initiatives, as outlined below. These are activities that may be identified as high priorities for action in the period leading up to the creation of a

municipal utility, or for action in the event that a municipal utility is deemed, in the final analysis, to be infeasible or undesirable.

Implementation of Level 2 strategies is predicated on the city and its partners having the authority to implement them as well as the resources and business plan to ensure feasibility. These will vary based on the regulatory and operational context of each technology in relation to the distribution system and utility operations. Work on Level 2 strategies may include exploration of legislative and/or regulatory changes necessary to support full implementation of these technologies.

Examples of strategies could be included in Level 2:

- Local renewable energy options and technologies
- Zero energy districts
- Demand response technologies
- Greatly expanded energy efficiency programs
- Vehicle-to-grid technologies
- Storage technology and pilot projects
- Expanded on-site renewable generation
- Waste-to-energy technologies

The examples listed above are illustrative of the types of energy management strategies that may be technically and legally possible under current regulatory and statutory requirements. Nonetheless, most of them would require Xcel Energy partnership. To evaluate and prioritize the strategies considered in Level 2, each would need to be modeled and tested both qualitatively and quantitatively. A sensitivity analysis would support prioritization and encourage a focus on those that are the most effective.

Many potential strategies were included in the Energy Localization Report drafted by Local Power, Inc. The Energy Localization Report was commissioned to identify technologies that provide opportunities for renewable energy generation, heat, and/or energy efficiency within the Boulder region. Central to this discussion is estimating the available local energy resources, the potential for “localizing” power and heat supplies, and the general cost of this effort in relation to utility rates and customer bills. To inform the initial review and evaluation effort, staff recruited qualified individuals to assist in determining the next steps on the localization concept as it relates to the development of an energy strategy. During January 2012, these local experts participated in a peer review of the Energy Localization Report.

The objective of the peer review was to solicit detailed technical input to ensure that draft concepts are conceptually rigorous, scientifically robust and workable in practice. Individuals were selected based on their significant expertise and experience with traditional and non-traditional energy generation, distribution and/ or demand-side strategies. A list of the Peer Review Team and a summary of their comments and recommendations are included as **Attachment J**.

c. Strategy Level III: Implement a New Utility Dedicated to Boulder’s Energy Future Goals

The fundamental role of a new electric utility is to make certain that Boulder residents and businesses have access to reliable power that is increasingly clean and competitively priced. The community has also indicated that it wants as much of its energy as possible to be generated locally and wants more of a say in decision making about where its power comes from, its energy rates, and investments that are made with the revenues.

The ultimate aim of Level 3 for the short term is primarily focused on the technical, legal and financial pieces of forming a new electric utility. If the city chooses to municipalize, strategies from Levels 1 and 2 will be used to inform the business model for “energy as a service” rather than energy as a commodity, and a step-wise plan for transition from the current model to the new one. In essence, Level 3 will define the business model and operating principles of the new municipal utility. Strategies included in Level 3 will take advantage of the municipal utility’s authorities, guided by Boulder’s energy goals and its desire to create a new form of utility that is customer-focused, decentralized, increasingly clean, cost effective and responsive to community priorities in both the near and long terms.

Strategies in this level will be developed under a new utility framework, meaning they could be achieved as part of a local utility that does not have to work within the confines of Colorado Public Utilities Commission (PUC) defined limits. Many localization options can only be pursued by having the authorities that come with being the retail utility provider, including energy procurement, the control of billing and rate setting, the operational control of the metering/distribution system, and financial investment oversight. Additional strategies beyond those listed in Level 2 might include:

- Additional or increased rebates and incentives for DSM or renewables
- Power purchase agreements for utility scale renewables
- Wholesale power purchasing
- Feed-in-tariffs

The Energy Action Plan will be a roadmap to achieving Boulder’s community energy goals in both the near and long term. The goals will be determined by stakeholder input, so the plan is inherently local and must have stakeholder buy-in, leading to a greater likelihood of success over time. While the new executive director will play a vital role in developing the plan, the process will be designed to incorporate all parties, maximize solution-based thinking, and develop strategies that can be implemented successfully and cost effectively. The process for involving the community in the development of the Energy Action Plan is discussed in more detail in **Attachment K**.

## **G. Boulder County Climate Adaptation Plan**

The Climate Action Plan and Energy Action Plan will continue to focus on strategies that reduce and mitigate local GHG emissions. Unfortunately, climate change already affects and will continue to affect, a variety of resources managed by the City of Boulder, Boulder County, and other local municipalities. As an example, prolonged dry spells in

the past decade have contributed to major wildfires on public lands that have threatened lives, impacted public health, damaged county and city property and infrastructure, and caused accelerated hill slope erosion that has polluted streams and water supplies. Resource managers working at county departments and in other jurisdictions already face challenges posed by the variability of climate across Boulder County.

Climate change, however, could pose a host of new challenges and require managers to pay much greater attention to resource vulnerabilities. Potential impacts to the Boulder region include:

- more frequent droughts and flash floods,
- greater spread of vector-borne diseases,
- increased heat waves and wildfires,
- warmer springtime temperatures that would cause snowpack to melt earlier in the year, reducing the overall amount of water stored as snow runoff during the dry summer months,
- potential challenges in storing water for municipal supplies,
- reduced stream flows with subsequent impacts to water quality and ecological resources and subsequent impacts on recreation and tourism, and
- higher temperatures and fewer days with precipitation, with a likely increase in the frequency and severity of episodes of poor air quality associated human health impacts.

City staff has been working closely with Boulder County to develop a Climate Change Preparedness Plan. The plan is intended to help Boulder and the region better prepare for changing environmental conditions and outline opportunities for ongoing adaptation planning efforts. Currently the plan focuses on four key sectors: water supply, emergency management, public health, and agriculture/ natural resources.

The draft plan and its recommendations are currently undergoing public review by Boulder County. Comments will be accepted through Feb. 24, 2012, at which time the draft plan will be reviewed by the Environmental Advisory Board (EAB) before being scheduled with City Council for review and potential adoption later this year. A summary of the draft plan is included as **Attachment L**, and the full plan is available on the Climate Change Preparedness Plan page of the Boulder County website: [www.bouldercounty.org](http://www.bouldercounty.org).

## **H. 2012 Community Engagement and Communications Plan**

The work the city will conduct related to energy supply and climate issues in 2012 represents one of the organization's highest priorities. No matter what the outcome, decisions made will impact residents and businesses in significant ways. The city has a responsibility to inform the community about progress and provide meaningful opportunities to participate at critical points in the process. The communications and engagement team is committed to making this process as open, accessible and engaging as possible, while using resources effectively and efficiently, so that decisions related to municipalization, the creation of an energy strategy and climate action planning are as informed as possible. The detailed plan is included as **Attachment K**.

In addition to engaging and communicating with the Boulder community, one area of focus this year will be sharing information with other communities, particularly those that have similar sustainability values and goals as Boulder's. In 2012, the city is considering partnering with Applied Solutions, a non-profit based originally out of Sonoma County, Calif., that now has a regional office in Washington DC, for this purpose. This partnership would be based on a hosting agreement with no additional costs for services charged to the city.

Formed by elected officials in 2008, Applied Solutions was created to help local governments secure viable techniques to diversify their energy supplies in ways that save money, increase efficiency, and spur investment in the local economy. Boulder has been active participant since the network's inception, and Applied Solutions held its annual conference in Boulder in 2010. In the past year, staff began discussing opportunities to partner more closely to complement and support the City of Boulder's priorities for localization, most specifically its municipalization process. With nearly 100 US cities and counties as members, Applied Solutions hopes to document and communicate Boulder's story of energy development to local governments across the country. There is more information about this organization and how the city plans to incorporate its work into the communications plan in **Attachments K and M**.

## **VI. NEXT STEPS**

Following council's discussion and feedback at the Jan. 31 study session, staff will:

- Continue with the next steps in exploring the possibility of acquiring Xcel Energy's (Xcel) distribution system and forming a city-owned electric utility, including the employment process for an executive director and retention of appropriate legal counsel;
- Continue with staff efforts in the PUC process;
- Continue with the 2012 CAP work plan including planning efforts for CAP in 2013 and beyond;
- Begin Phase 1 toward development of an Energy Action Plan;
- Continue with implementation of the Community Engagement and Communications Plan;
- Solidify partnership plans with the Applied Solutions Network for documentation and dissemination of the planning processes; and
- Return to council with an update at the next Energy Roundtable meeting scheduled on March 13, 2012.

## **VII. ATTACHMENTS**

- A. Goals and Objectives
- B. 2012 Work Plan
- C. Staff Team and Roles
- D. CAP Project Budget
- E. Current PUC Dockets
- F. Program Results vs. Emission Inventory

- G. CAP 2011 Program Summary
- H. CAP Overview of Residential Strategy
- I. CAP Overview of Commercial Strategy
- J. Peer Review Team Summary
- K. Community Engagement and Communications Plan
- L. Summary of the Draft Boulder County Climate Change Preparedness Plan
- M. Partnership with Applied Solutions

## Boulder's Energy Future

### Purpose, Framework, Goals and Objectives

#### Purpose of the Energy Future Project

In 2011, the city will collect, analyze and present data related to its energy options to inform a potential decision by Council and the community regarding alternative paths for the city's energy future. The purpose of this effort is *to ensure that residents, businesses and institutions have access to reliable energy that is increasingly clean and remains competitively priced.*

#### Strategic Framework: Energy Localization

To guide this planning effort, and in response to initial input from residents and businesses regarding Boulder's energy future, the city is adopting an "**energy localization**" framework that is defined by three primary goals:

- **Democratize Energy Decision Making:** customers should have more direct control and involvement in decisions about their energy, including opportunities to invest in their long-term energy needs and to have a say in energy investments made on their behalf.
- **Decentralize Energy Generation and Management:** energy should be generated locally or within the region to the maximum extent feasible, reducing reliance on external fuel sources; customers should be able to manage and reduce their energy use as directly and effectively as possible; and energy service companies should be empowered to compete and innovate within a diverse and robust local energy economy.
- **Decarbonize the Energy Supply:** renewable and clean fuel sources should be maximized as much as possible, as quickly as possible, minimizing both short- and long-term environmental impacts and maximizing energy independence over time.

#### Goals and Objectives

The purpose statement and strategic framework provide the basis for defining and evaluating energy options based on the community's vision and values. The options that Boulder will consider include a new agreement with Xcel Energy (in the form of a new franchise or a new form of partnership) or formation of a municipal utility. There may also be hybrid options that emerge over the course of the planning process.

The following goals and objectives serve to "unpack" the purpose statement and localization strategy into discrete, tangible outcomes important to Boulder. These will serve as draft evaluative criteria as the project goes forward, to guide development of proposals and the ultimate evaluation of options. They will be refined as additional analysis is completed and discussions with Council and the community progress.

#### **Goal Area 1    Ensure a stable, safe and reliable energy supply**

##### *Objective 1a: System Management, Maintenance and Customer Care*

Provide experienced and professional management of the local utility grid, including ongoing investment in maintenance and system improvement, and a strong customer

service ethic in responding to emergencies, daily maintenance and long-term grid investment.

*Objective 1b: System Redundancy, Supply Quality and Load Management*

Achieve high resilience in the energy system through redundancy management<sup>1</sup>; create and maintain generation resources that provide a high quality electrical supply; and manage the peak load through effective demand-side programs to minimize necessary investment in new generation resources.

*Objective 1c: Fuel Source Stability*

Reduce reliance on external and/or unreliable fuel sources that may be subject to supply shortages, price volatility and/or unmanageable levels of intermittency; take into account potential fuel supply risks and disruptions; and provide suitable mechanisms to manage such risks.

*Objective 1d: System Reliability*

Model and ensure system reliability using industry standard criteria: Customer Average Interruption Duration Index (CAIDI), Customer Average Interruption Frequency Index (CAIFI), System Average Interruption Duration Index (SAIDI) and System Average Interruption Frequency Index (SAIFI).

**Goal Area 2    Ensure competitive rates, balancing short-term and long-term interests**

*Objective 2a: Rate Competitiveness*

Offer Boulder customers competitive pricing or customized pricing and services options; position Boulder ratepayers to benefit from competitive energy rates and greater choice of service options and suppliers.

*Objective 2b: Rate Transparency and Predictability*

Position Boulder residents and businesses to receive predictable energy prices; and provide a structure and process for continuous rate management to meet the changing needs of the community; ensure transparency and fairness in the charges that are included in energy rates and in the evaluation of fuel cost price risks.

*Objective 2c: Technology Investment and Managing Price Volatility*

Create renewable energy investment opportunities for Boulder residents and businesses, ensuring access to the associated benefits; reduce, to the extent possible, exposure to market-based price fluctuations and the potential impact of changes to current regulations and subsidies; and minimize the risk from potential future carbon costs and other environmental regulations on pollutants such as mercury, particulates, NOX, SOX, etc.

**Goal Area 3    Significantly reduce carbon emissions and pollutants to improve environmental quality**

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<sup>1</sup> Redundancy focuses on important system design issues, such as identifying and eliminating single points of failure and establishing good maintenance procedures to maintain high availability.

*Objective 3a: Reduction of Greenhouse Gas Emissions*

Consider all environmental and health costs of the associated fuel mix; maximize utilization of the least carbon intensive fuel sources; support local development of new, innovative “carbon-free” and pollution-reducing technologies; and provide the ability to accurately predict and set specific future targets for emission reductions based on demand-side efforts and fuel source mix along with the flexibility to continually decarbonize Boulder’s fuel mix over time.

*Objective 3b: Reduction of Toxic Pollutants*

Reduce other pollutants such as mercury, particulates and various nitrous and sulfurous emissions; and consider the full range of environmental and health risks and costs associated with the fuel mix.

**Goal Area 4 Provide Boulder energy customers with a greater say about their energy supply**

*Objective 4a: Democratizing Local Decision Making*

Allow Boulder residents and businesses to have greater control over their energy resources by influencing which power and heat generation facilities are built in the Boulder region as well as resource planning and procurement; involve local workers and businesses in local energy decision-making; and create opportunities for local input and decision making about rates, generation mix, efficiency and demand management efforts, distributed generation, and implementation of innovative technologies.

*Objective 4b: Democratizing Local Ownership*

Create new opportunities for local ownership in distributed energy generation through innovative program designs (clean energy clusters, zero energy districts, solar gardens, etc) and new forms of financing vehicles (general improvement districts, PPAs, third party models, innovative rate design, revenue bond financing, on-bill and PACE financing, etc).

**Goal Area 5 Promote local economic vitality**

*Objective 5a: Support for Local Business Innovation*

Maximize opportunities to partner with local companies to implement innovative energy saving and pollution-reduction technologies; reduce financial out-flows to purchase fuel and technology from external sources; and allow local businesses to become part of the local energy supply infrastructure.

*Objective 5b: Economic Competitiveness*

Stimulate Boulder’s economic competitiveness by ensuring stable and predictable energy rates; make Boulder an attractive location for clean energy businesses and start-ups; capitalize on the proximity of Boulder’s university and Federal research laboratories and other private sector and institutional partners; and provide incentives and benefits for clean energy clusters and innovative energy start-up companies.

**Goal Area 6 Promote social and environmental justice**

*Objective 6a: Energy Equity*

Provide programs and incentives for all populations to participate in efficiency programs and distributed generation through efforts such as Community Solar Gardens, on-bill financing and greater customer choice among energy products within the rate structure.

*Objective 6b: Impacts to Vulnerable Populations*

Shelter Boulder citizens from projected short and long-term rate increases through fuel supply choices and demand-side programs; provide additional resources for affordable housing and multi-family units; optimize local energy-related employment opportunities; and consider the full range of social impacts of energy generation, transmission and distribution, including jobs created or lost and health risks to energy workers.

*Objective 6c: Energy Literacy*

Help communicate the links between personal choices, community choices and environmental and economic impacts; provide assistance to understand energy conservation and efficiency measures and their impact on economic concerns; support neighborhood energy planning; and advance the community's "energy literacy," including an overall understanding of energy efficiency, renewable generation and workforce development.

BOULDER'S ENERGY FUTURE: 2012 WORK PLAN												
	Jan.	Feb.	March	April	May	July	Aug.	Sept.	Oct.	Nov.	Dec.	
<b>Municipalization</b>												
<b>Employment of Executive Director</b>												
Conduct Employment Process	Contract w/Search Firm	Recruitment	Interviews & Public Process			Employment Begins						
<b>Legal Process</b>												
Contract w/Condemnation Counsel	Interviews/Contract											
Contract w/FERC Counsel	RFP Process		Interviews/Contract									
Develop Negotiation & Litigation Strategy		Begin Process		Develop Strategy							OFF RAMP #1 (2013) →	
Public Utilities Commission Dockets	← Ongoing →											
<b>Technical Research and Analysis</b>												
Inventory Data Needs		Document Inventory	Prepare Data Plan	Access Data Needed								
Prepare Appraisal of System		RFP Process/Interviews/Contract					Appraisal and Separation Research and Analysis →					
Develop a Separation Plan		RFP Process/Interviews/Contract		Assess Facilities and Infrastructure Modification Requirements			Appraisal and Separation Research and Analysis →					
Analyze Annexation Issues & Options						Research and Analysis						
<b>Energy Action Plan</b>												
Develop Energy Action Plan	Plan Purpose, Outline & Goals Peer Review of Localization Report		Research, Analysis, Initial Targets, Preliminary Draft w/Strategy 1 & Strategy 2 (Near Term) Options			Revised Draft w/Strategy 1 & Strategy 2 (Near Term) First Reading (if Necessary)	Second & Third Readings (if necessary)	Research, Analysis on Strategy 2 (Long Term) and Utility Business Plan →				
Prepare Utility Model for Renewables		Assess Tools & Determine Scope	Evaluate Software, Select, Install		Download Data, Begin Modeling			Report Outcomes				
<b>Climate Action Plan</b>												
Implement 2012 Strategy	Update 2012 Strategy	Ongoing Implementation w/Quarterly Updates										
Commercial Energy Efficiency in Existing Buildings	Update & Next Steps	Disclosure Policy: Research, Analysis, Stakeholder Process				Draft Policy at Study Session	First Reading	Second Reading				
Building Code Update	Update & Next Steps	Research, Analysis, Stakeholder Process				Draft Recommendation at Study Session	Advisory Board Process		First Reading	Second Reading		
Create New Climate Action Plan Framework	CAP Update & Debrief, Next Steps	Form Staff Teams to Define & Address Strategy Areas	Set Initial Targets, Develop Framework & Schedule for Integrating GHG Targets with Master Plan Updates		Policy Guidance on CAP Strategy Areas & Targets	Refine Targets and Set Goals by Strategy Area Through Master Plan Updates					Coordinate with Timing of Master Plan Updates - Produce Document w/Goals & Strategies	
Prepare Briefing Paper on Legislative Options		Determine Consultant, Review Findings		Research and Analysis			Present at Study Session					
<b>Community Engagement &amp; Communications</b>												
<b>City Council</b>												
Public Meetings	Jan. 31 Study Session		March 13 and April 10 Energy Roundtables, April 24 Regular Meeting (Ballot Measures)			May 22 Study Session	July 24 Study Session		Oct. 2 Regular Meeting, Oct. 23 Study Session	First Regular Meeting		
<b>Community Engagement</b>												
Participation in Selection of FERC Attorneys & Executive Director		FERC Finalists Open House		Executive Director Public Process								
Business Community-specific Updates		Targeted Focus Groups w/More Plans to Follow										
Ad hoc Utility Modeling Group	Input on Software Modeling Options						Input on Modeling Results					
Environmental Advisory Board Meetings on CAP Planning	Updates and input on Climate Action Planning Efforts											
In-person Public Update Opportunities	Bi-Weekly Open Office Hours											
Education/In-person Opportunities for General Public			Speaker Series (likely to involve topics related to municipalization, local generation strategies and DSM/efficiency programs)			Public Forums on Draft EAP & CAP Strategy Areas & Targets	Possible CAP Survey	Public Forum on Results of Utility Model for Renewables; CAP Strategy Areas and Targets				
Other Boards and Commissions Engagement	Help Facilitate Check-ins on GHG Targets with Relevant Boards											

**ATTACHMENT B**  
 Boulder's Energy Future  
 Key Work Plan Items and Milestones Draft: 1/27/2012

	Jan.	Feb.	March	April	May	July	Aug.	Sept.	Oct.	Nov.	Dec.
<b>Communications Deliverables (Does not include ongoing products, such as press releases, media interviews, Channel 8 segments, etc.)</b>											
Improve and Maintain One-Stop Information Source	Organize Pre-election Content	Redesign Website	Regular Posts to Website and Social Media Sites, Pointing to Website								
Establish Identity for Future CAP			Logo and Branding								
Bring People Up to Speed on Process Post-election			So What Now Handout								
Utility Bill Messages			Message #1		Message #2		Message #3			Possible Message #4	
Community Guide 3.0			Prepare Content	Design Guide and Update Content	Publish and Distribute						
E-newsletter		Develop Template	Edition #1	Edition #2	Edition #3	Edition #4	Edition #5	Edition #6 and Evaluate Whether Editions into Fall are Appropriate			

## ATTACHMENT C

### Boulder's Energy Future 2012 Staff Team

#### **Executive Team:**

Provides overall vision, leadership and guidance on the work effort. Team members include:

- Jane Brautigam, City Manager
- Tom Carr, City Attorney
- Bob Eiche, Chief Financial Officer
- Vacant, Executive Director of Energy Strategy and Electric Utility Development
- David Driskell, Executive Director of Community Planning and Sustainability
- Maureen Rait, Executive Director of Public Works

#### **Project Coordination:**

- Mary Ann Weideman, Assistant City Manager: Coordinator for staff teams
- Heidi Joyce, Administrative Assistant: Provides administrative support to the teams

#### **Project Teams:**

##### Municipalization:

- David Gehr, Deputy City Attorney: Team Lead for FERC-related efforts
- Kathy Haddock, Senior Assistant City Attorney: Team Lead for Acquisition
- Deb Kalish, Senior Assistant City Attorney: Team member for public utility law
- Jonathan Koehn, Regional Sustainability Coordinator: Team Lead for Energy Strategy
- Sarah Huntley, Media Relations/Communications Coordinator: Manager of related community engagement and communications efforts

##### Energy Strategy:

- Jonathan Koehn, Regional Sustainability Coordinator: Team Lead for Energy Strategy
- Yael Gichon, Residential Sustainability Coordinator: Technical support
- Sarah Huntley, Media Relations/Communications Coordinator: Manager of related community engagement and communications efforts

##### Climate Action Planning:

Kara Mertz, Local Environmental Action Manager: Manage 2012 CAP efforts and CAP 2.0 strategy direction

- Yael Gichon, Residential Sustainability Coordinator: Team Lead for CAP 2013 and beyond
- Kelly Crandall, Sustainability Specialists: Smart Grid analyst and team support for city engagement at the Public Utilities Commission
- Elizabeth Vasatka, Business Sustainability Coordinator: Team member for commercial energy efficiency in existing buildings
- Kirk Moors, Acting Chief Building Official: Team member for building code updates
- Sarah Huntley, Media Relations/Communications Coordinator: Manager of related community engagement and communications efforts
- Andrew Barth, Communications Specialist: Coordinator of related communications efforts
- Ruth McHeyser, Engagement Consultant: Coordinator of related community engagement efforts

ATTACHMENT D  
 Project Budget  
 Draft: January 25, 2012

**CAP 2.0 & Energy Strategy**

<b>2012 SOURCES:</b>		
2011 Additional Revenue	\$	175,000
2012 Appropriated Budget	\$	160,000
Pre-2011 Fund Balance	\$	39,000
<b>Total 2012 Sources</b>	<b>\$</b>	<b>374,000</b>

<b>2012 USES (Projected):</b>		
<b>Personnel (PE)</b>		
Community Engagement Temp.	\$	70,400
Communications Backfill	\$	60,000
PE Subtotal	\$	130,400
<b>Non Personnel (NPE)</b>		
Legislative Options Briefing Paper	\$	10,000
Localization Report Peer Review	\$	3,000
Energy Strategy Analysis and Modeling	\$	100,000
Printing	\$	10,000
Survey	\$	18,000
Consulting	\$	50,000
Office Space	\$	16,000
Materials & Supplies	\$	36,000
NPE Subtotal	\$	243,000
<b>Total 2012 Uses</b>	<b>\$</b>	<b>373,400</b>

ATTACHMENT E

CAO MATTER NO.	DOCKET NO.	NAME	DATE OPENED	DESCRIPTION	COB LEVEL OF INVOLVEMENT	STATUS
FIRM 1270	10AL-908E	Environmental Matters	12/03/10	Xcel submitted a revised tariff section that deleted indemnification by government and residential customers, but retained provisions that duplicate or conflict with current federal and state worker protection and environmental laws	Boulder was actively involved and took a leading role with Denver and Westminster. Boulder offered testimony, conducted cross-examination and have drafted several legal briefs. On Jan. 17, Boulder joined with several other cities to submit an application for reconsideration, arguing against retaining any portion of the section as its need was not proven.	Waiting for a decision.
CMEN 1477	11A 631EG	ELECTRIC AND NATURAL GAS DSM PLAN FOR CALENDAR YEARS 2012 AND 2013	8/16/11	Xcel submitted a proposed plan for demand-side management programs, including residential, commercial, and low-income programs, as well as pilots related to home energy reports and electric vehicles.	Boulder submitted multiple comments on program improvements, some in coordination with Boulder County. We signed on to the settlement agreement after ensuring that Boulder's building codes will no longer be called out as "more stringent."	The settlement agreement was approved by the PUC ....
TRPE1547	11AL-768E	STREET LIGHTING SCHEDULES ESL/MSL	9/21/11	Xcel has proposed two new street lighting schedules. The first is a non-metered schedule that would permit munies to use any street lighting it wished with costs calculated on an estimated usage. The second is a metered rate, used primarily for new installations. Both allow the municipality to own and maintain its own lights.	In the 2009 electric rate case, Boulder asked the Commission to require Xcel to work with municipalities to develop an energy-only, non-metered street lighting rate. Over the course of more than a year, we met with Xcel and other municipalities to successfully negotiate the terms of the two rates for which Xcel seeks approval here.  Boulder has intervned in this docket to ensure that the City's interests are protected and that an energy-only street lighting schedule that will permit us to own, operate and maintain the street lights of our choosing is approved. Unlikely to file Answer Testimony, but may file Rebuttal Testimony. Will actively participate in any hearings and file a statement of position. May or may not conduct discovery, but will review discovery from others.	Only recently opened.
CM EN 1574	11A 833E	REVISIONS TO WINDSOURCE PROGRAM	10/13/11	Xcel proposed to allocate the Limon II wind resource to	This docket has only recently been opened. The City is watching it to ensure our interests and those of	Only recently opened.

CAO MATTER NO.	DOCKET NO.	NAME	DATE OPENED	DESCRIPTION	COB LEVEL OF INVOLVEMENT	STATUS
				a revised Windsource program which has two components: (1) a transition from rates based on incremental pricing to cost-competitive market rates for retail customers, and (2) a short-term commercial contract to purchase large blocks of wind-generated power.	Boulder residents and businesses are protected. May or may not file Answer Testimony or conduct discovery. Will likely participate in the hearing and/or settlement discussions. Will likely file a Statement of Position.	
CMEN 1548	11I-704EG	INVESTIGATION OF ISSUES RELATED TO ELECTRIC AND NATURAL GAS VEHICLES	8/24/11	The Commission opened a docket to collect comments on electric vehicles in areas like demand, reliability, penetration, and business models.	The Local Environmental Action Division and Facilities & Asset Management provided comments on EV policy and experience related to establishing public charging stations at city facilities.	Open
TRPE1582	11M-818EG	OCC PETITION FOR RULEMAKING ON BILLING ISSUES	10/07/11	Due to consumer complaints, the Office of Consumer Council has requested that the PUC revise its rules to require that bills actually be mailed on the mailing date, rather than some undefined later date. Giving consumers less than adequate time to pay the bill. It has also requested that no service charge be applied to bills paid electronically and that customers who receive ebills be given a discount.	Boulder petitioned to intervene in this case because we have had problems with bills being mailed in a timely fashion. Boulder did not provide comments.	Comments were provided by gas companies and electric companies. The OCC has provided reply comments. No decision yet from the Commission regarding whether it will open a rulemaking docket for this purpose.
CMEN 1590	11A-869E	ELECTRIC RESOURCE PLAN	10/31/11	This important docket will set Xcel's power generation/purchase arrangements for	Boulder has intervened in this docket to protect its interests in maximizing renewable energy sources and to prevent Xcel from overstating the amount of energy it will need during	Pre-hearing conference held Jan 18. Hearings will be held Aug 20

CAO MATTER NO.	DOCKET NO.	NAME	DATE OPENED	DESCRIPTION	COB LEVEL OF INVOLVEMENT	STATUS
				the Resource Acquisition Period (RAP). The RAP will likely be set at 6-10 years during Phase I of the hearings).	the RAP.  Boulder will follow the case closely, but no decision has been made yet regarding providing witnesses or conducting discovery. Boulder will participate in settlement discussions, review discovery responses, participate in the 2-week long hearing and likely draft a Statement of Position.	- 31.
	11A-1001E	SMARTGRIDCITY COST RECOVERY	12/14/11	Xcel is seeking recovery of its full costs (\$44.5MM) incurred in the SGC program in Boulder	Boulder has intervened in this docket. No decisions have been made yet with regard to its level of participation.	Boulder intervened on January 19. No dates for testimony or hearing have been set yet.
	12M-041E	DEVELOPING SCENARIOS FOR FUTURE ELECTRIC SERVICE	1/12/12	This interesting docket is intended to look forward to how electric service will be provided in the future and how Colorado can best position itself for that future.	Boulder may offer comments, provide documents, participate in meetings, etc.	Only recently opened.

ATTACHMENT F  
Program Results vs. Emission Inventory

The Boulder community is making progress toward the Kyoto Protocol goal, but local achievements underscore the magnitude of the challenge ahead. Even here in Boulder, where climate-friendly decisions, policies and programs continue to prevail, GHG emissions reduction efforts are not always reflected in our community-wide GHG inventory. It is important to understand how the community's emissions are calculated; how progress is measured toward our community greenhouse gas reduction goals; and to put emission trends in the context of what, as a community we and cannot control.

The city gathers and reports the results from a multitude of climate actions throughout the community to estimate the GHG emissions they avoid. These avoided emissions result from a multitude of actions: the school district making its buildings more energy efficient or local businesses pledging to reduce their companies' emissions; the city hydroelectric generation or Boulderites choosing to drive less and carpool more. These types of efforts are aggregated to determine the impact of climate actions in the Boulder community. Historically, this number has been "trued up" on an annual basis, by updating the community GHG emissions inventory, which includes GHG emissions from actual electricity and natural gas consumed in Boulder, estimated vehicle miles traveled within the Boulder Valley region, and tons of landfilled solid waste, the total of which is offset by renewable energy credit retirements by the city and others in the Boulder community.

Sometimes, the emissions inventory shows a smaller actual reduction in GHG emissions (measured in metric tons of CO<sub>2</sub> equivalent or mtCO<sub>2</sub>) than the sum total of all the mtCO<sub>2</sub> avoided as a result of the cumulative community actions. This means that greater efficiency or conservation in some areas is being offset by greater consumption in others; or the GHG impacts resulting from efficiency efforts are partially outweighed by a shift in the source of the energy supply that makes each kWh of electricity more carbon-intensive.

The table in **Attachment G** shows a list of active programs in 2011, broken into seven categories. Six of these categories parallel the [Community Guide to Boulder's Climate Action Plan](#) strategy areas:

1. Reduce Use
2. Build Better
3. Ramp Up Renewables
4. Travel Wise
5. Waste Not
6. Grow Green

The seventh category shows the emissions avoided by actions taken by the City of Boulder as an organization, reducing emissions associated with fleet use, waste generated and energy used in city facilities.

These community climate actions add up to the "Estimated Emissions Avoided in 2011" in **Attachment G**. The entry on the **Attachment G** table entitled, "Reduction needed in 2011 and 2012 to meet Kyoto: based on 2010 GHG emissions inventory" is the gap between the 2010 actual GHG emissions (from the inventory) and the goal of seven percent below 1990 emissions.

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**Program results versus GHG emissions inventory**

It should be noted that in a few cases, 2010 program result data has been used to estimate 2011 results or fill in gaps in data that has not yet been received for 2011. The public funding reflected in this table includes only taxpayer dollars (CAP tax and non-CAP tax, including staff) and federal ARRA funding. It does not represent every city funding source that might impact GHG emissions in the community.

## 2011 CAP Program Preliminary Summary

Active Programs in 2011	Estimated GHGs Avoided (mtCO <sub>2</sub> e)	CAP Tax Funding	Non-CAP City Funding	Federal Funding (City & Leveraged County)	Estimated Private Investment	CAP \$ per mtCO <sub>2</sub> e	Total City Funding per mtCO <sub>2</sub> e	Total City + Federal Funding per mtCO <sub>2</sub> e
<b>1. Reduce Use</b>								
Commercial EnergySmart	2,842	\$283,939	\$84,554	\$1,523,454	\$1,690,080	\$100	\$130	\$666
Residential EnergySmart (non-SmartRegs)	1,089	\$100,933	\$27,330	\$754,287	\$760,803	\$93	\$118	\$811
Residential EnergySmart (SmartRegs)	962	\$332,961	\$18,740	\$1,373,614	\$814,199	\$346	\$366	\$1,794
ClimateSmart Loan Program (Commercial)	136	\$0	\$0	\$203,119	\$1,054,616	***	***	\$1,493
10 for Change	2,509*	\$97,762	\$32,530	\$0	**	\$39	\$52	***
Public Utilities Commission (Demand)	**	\$21,023	\$12,500	\$0	**	**	**	***
Xcel Energy DSM Programs	8,107*	\$0	\$0	\$0	**	***	***	***
<b>Total Reduce Use</b>	<b>15,645</b>	<b>\$836,617</b>	<b>\$175,654</b>	<b>\$3,854,474</b>	<b>\$4,319,699</b>	<b>\$53</b>	<b>\$65</b>	<b>\$311</b>
Percent of 2011-2012 Goal Met	3.0%							
<b>2. Build Better</b>								
New/Remodel Commercial Building Energy Code	1,100*	\$0	\$21,622	\$0	**	***	\$20	***
New/Remodel Residential Building Energy Code	1,605	\$4,903	\$2,500	\$0	**	\$3	\$5	***
<b>Total Build Better</b>	<b>2,705</b>	<b>\$4,903</b>	<b>\$24,122</b>	<b>\$0</b>	<b>**</b>	<b>\$2</b>	<b>\$11</b>	<b>***</b>
Percent of 2011-2012 Goal Met	0.5%							
<b>3. Ramp Up Renewables</b>								
Solar Grant Program	80	\$9,516	\$59,494	\$0	**	\$119	\$863	***
Solar PV Installations (excluding Solar Grant Program)	2,383	\$0	\$3,122	\$0	**	***	\$1	***
Energy Localization	**	\$165,586	\$8,427	\$0	**	***	**	***
Public Utilities Commission (Supply)	**	\$12,090	\$6,250	\$0	**	***	**	***
Hydroelectric Generation	17,717	\$0	\$426,974	\$0	**	***	\$24	***
WindSource and Renewable Energy Credit Purchases	47,184*	\$0	\$0	\$0	**	***	***	***
<b>Total Ramp Up Renewables</b>	<b>67,364</b>	<b>\$187,192</b>	<b>\$504,267</b>	<b>\$0</b>	<b>**</b>	<b>\$3</b>	<b>\$10</b>	<b>***</b>
Percent of 2011-2012 Goal Met	12.9%							
<b>4. Travel Wise</b>								
Neighborhood Eco Pass Program (NECO)	3,006	\$31,000	\$230,000	\$0	**	\$10	\$87	***
Business Eco Pass Program (BECO)	8,698	\$10,000	\$125,000	\$0	**	\$1	\$16	***
Boulder B-Cycle	47	\$10,000	\$306,000	\$200,000	**	\$212	\$6,700	\$10,940
Driven to Drive Less Campaign	327	\$0	\$35,000	\$52,500	**	***	\$107	\$267
Additional GO Boulder Programs	**	\$20,000	\$0	\$0	**	***	**	***
<b>Total Travel Wise</b>	<b>12,079</b>	<b>\$71,000</b>	<b>\$696,000</b>	<b>\$252,500</b>	<b>**</b>	<b>\$6</b>	<b>\$63</b>	<b>\$84</b>
Percent of 2011-2012 Goal Met	2.3%							
<b>5. Waste Not</b>								
Zero Waste Programs and Services	2,980*	\$0	\$845,812	\$0	**	***	\$284	***
<b>Total Waste Not</b>	<b>2,980</b>	<b>\$0</b>	<b>\$845,812</b>	<b>\$0</b>	<b>**</b>	<b>***</b>	<b>\$284</b>	<b>***</b>
Percent of 2011-2012 Goal Met	0.6%							
<b>6. Grow Green</b>								
Urban Forestry (Tree Planting)	**	\$0	\$72,428	\$0	**	***	**	***
<b>Total Grow Green</b>	<b>**</b>	<b>\$0</b>	<b>\$72,428</b>	<b>\$0</b>	<b>**</b>	<b>***</b>	<b>**</b>	<b>***</b>
Percent of 2011-2012 Goal Met	***							
<b>7. City Organization</b>								
Energy Performance Contracts (EPCs)	5,772	\$0	\$0	\$360,000	**	***	\$0	\$62
Alternative Vehicle Fleet	244	\$0	\$20,000	\$0	**	***	\$82	***
City Organization Recycling and Composting	99	\$14,387	\$52,873	\$0	**	\$145	\$679	***
<b>Total City Organization</b>	<b>6,115</b>	<b>\$14,387</b>	<b>\$72,873</b>	<b>\$360,000</b>	<b>**</b>	<b>\$2</b>	<b>\$14</b>	<b>\$73</b>
Percent of 2011-2012 Goal Met	1.2%							
<b>Overall Program Impact in 2011</b>	<b>106,888</b>	<b>\$1,114,099</b>	<b>\$2,391,156</b>	<b>\$4,466,974</b>	<b>**</b>	<b>\$10</b>	<b>\$33</b>	<b>\$75</b>
<b>Reduction Needed in 2011-2012 to Meet Kyoto Based on 2010 Emissions Inventory (mtCO<sub>2</sub>e)</b>	<b>521,032</b>		Key:	* Data set incomplete; includes at least some 2010 data for purposes of estimation ** Not estimated *** Not applicable Where avoided GHGs are calculated, programs in yellow represent investments that will lead to cumulative avoided GHGs over their lifetime. Other programs represent investments that will only result in one-time avoided emissions in 2011.				

## Assumptions for 2011 CAP Program Preliminary Summary

2011 Programs	Avoided Greenhouse Gas and Funding Assumptions
All numbers are preliminary and may change prior to the annual CAP report. Avoided emissions from deemed energy savings are based on the non-baseload 2007 eGRID emissions factor for the Rocky Mountain region except where specified. Personnel estimates include primarily Local Environmental Action Division (LEAD) staff and GO Boulder staff, except where specified. Approximately 60% of CAP Tax funding is accounted for in this chart, and there are other city revenue sources that are not included.	
<b>1. Reduce Use</b>	
Commercial EnergySmart	Avoided GHGs are based on deemed savings in kWh and TH provided for calendar year 2011 by Boulder County Public Health staff. Federal funding includes leveraged Boulder County American Recovery and Reinvestment Act (ARRA) funds proportionate to the City of Boulder's participation in EnergySmart.
Residential EnergySmart (non-SmartRegs)	Avoided GHGs are based on deemed savings in kWh and TH provided for calendar year 2011 by Populus in a 1-6-12 SmartRegs report. Federal funding includes leveraged Boulder County ARRA funds proportionate to the City of Boulder's participation in EnergySmart.
Residential EnergySmart (SmartRegs)	Avoided GHGs are based on deemed savings in kWh and TH provided for calendar year 2011 by Populus in a 1-6-12 SmartRegs report.
10 for Change	Avoided GHGs are based on 2010 figures, as 2011 results have not yet been fully processed.
Public Utilities Commission (Demand)	Avoided emissions are not estimated. Personnel estimates do not include the City Attorney's Office.
Xcel Energy DSM Programs	Uses 2010 DSM data from Xcel Energy as 2011 data is not yet available. Emissions avoided by EnergySmart programs have been subtracted to avoid the risk of double-counting from parallel rebate programs.
<b>2. Build Better</b>	
New/Remodel Commercial Building Energy Code	Avoided GHGs are based on 2010 figures, as 2011 results have not yet been fully processed.
New/Remodel Residential Building Energy Code	Avoided GHGs are based on average energy consumption of Boulder houses within square footage groups that were developed as part of the Green Points program. Staff isolated the number of new permitted residential units within square footage groups in 2011. Personnel estimates do not include code officials.
<b>3. Ramp Up Renewables</b>	
Solar Grant Program	Avoided GHGs are based on annual kWh estimates from NREL's PV WATTS tool, with 2 grant awardees completing projects totaling 93.1 kW.
Solar PV Installations	Avoided GHGs are based on annual kWh estimates from NREL's PV WATTS tool with 2,395 kW permitted in 2011. GHGs avoided by the Solar Grant Program were subtracted from the total reported to avoid duplication.
Energy Localization	GHG emissions reductions are not calculated. Personnel estimates include only LEAD and funding for localization portfolio standard development.
Public Utilities Commission (Supply)	Avoided emissions are not estimated. Personnel estimates do not include the City Attorney's Office.
Hydroelectric Generation	Avoided GHGs are based on actual hydroelectric generation from January to December 2011. Xcel Energy retires renewable energy credits (RECs) amounting to one-half of the kWh generated on behalf of the Boulder community.
WindSource and Renewable Energy Credit Purchases	Avoided GHGs for WindSource are based on monthly CAP Tax reports of WindSource purchases in Boulder from January to November 2011 and December 2010. Renewable energy credit (REC) purchases from 2011 are not yet available so 2010 figures are repeated and avoided GHGs were calculated using the eGRID national average non-baseload emissions factor.
<b>4. Travel Wise</b>	
Neighborhood Eco Pass Program (NECO)	A GO Boulder survey of NECO participants indicated that each Eco Pass holder generates 2,030 lbs less carbon each year on average. There were 10,884 NECO Passes available in 2011. Only 30% of these passes are being counted toward emissions avoided because the survey indicated that 3 in 10 NECO Pass holders also have access to an Eco Pass through the University of Colorado or their work.
Business Eco Pass Program (BECO)	The BECO program added 20 businesses in 2011, with 31,494 employees eligible for Eco Passes. Avoided GHGs are calculated assuming a pickup rate of 30%, similar to the NECO program. The average Eco Pass holder generates 2,030 lbs less carbon each year on average.
Boulder B-Cycle	According to Boulder B-Cycle's First Season Operation Report (Jan. 2011), B-Cycle trips avoided approximately 104,000 lbs of carbon.
Driven to Drive Less Program	GO Boulder estimates that the Driven to Drive Less program avoided 722,000 lbs of carbon in 2011.
Additional GO Boulder Programs	GO Boulder uses CAP funding for programs including the Boulder Valley School District "Trip Tracker" program, Community Cycles Earn-a-Bike program, and Green Streets. Avoided GHGs are not currently calculated for those efforts.
<b>5. Waste Not</b>	
Zero Waste Programs and Services	Because 2011 haulers' reports are not yet available, avoided GHGs are based on staff's projection of landfilled solid waste for 2011 using a linear trend from 2007 to 2010. Non-CAP city funding is based on Trash Tax revenues for the first three quarters of 2011 with an estimate for Q4, minus a \$600,000 debt service for the purchase of 6400 Arapahoe, minus staff time expended in other programs.
<b>6. Grow Green</b>	
Urban Forestry	Avoided GHGs are not currently quantified. Funding figures are based on expenditures for the tree planting and Commercial Tree programs, although they do not include personnel estimates.
<b>7. City Organization</b>	
Energy Performance Contracts (EPCs)	The EPCs guarantee savings of approximately 5,772 mtCO <sub>2</sub> e annually for phases I and II. Because the energy and maintenance savings make up for the financing costs, no incremental city funding is included for the EPCs.
Alternative Vehicle Fleet	Thirty-two vehicles were replaced in 2011 (4 hybrid electric, 15 E85, and 13 biodiesel) and GHGs avoided were calculated based on an average 5,649 miles traveled per vehicle per year with an average MPG of 9.13, converted into gallons of fuel (gasoline and diesel) avoided. Funding figures are based on the estimated incremental cost of purchasing alternative fueled vs. conventional fleet vehicles, with no additional costs for biodiesel/E85 vehicles and an additional \$5,000 electric hybrids.
City Organization Recycling & Composting	The city organization recycled 95.4 tons and composted 59 tons in 2011, with a total diversion figure of 154 tons.

ATTACHMENT H  
**Broad Overview of 2012 Climate Action Plan  
Residential Energy Strategy**

**Mission:**

- To contribute to the community’s short- and long-term climate action goals and economic health.
- To make Boulder’s residential building stock more energy efficient. To guide public policy; and provide technical assistance, financial tools and education to residents, so they can conserve energy and reduce greenhouse gas emissions.
- To provide residents opportunities to engage with the city in policy development, operational decisions and energy innovation.

**Goals:**

For the city’s CAP tax funds to assist homeowners, residents and landlords to reduce energy use in their properties through increased energy efficiency and conservation.

- Continuously reduce energy use through convenient and verifiable energy efficiency programs and services.
- Encourage private investment in cost-effective measures to maintain and reduce energy loads, leveraging city CAP tax with other available funds.
- Promote energy conserving behavior through policies, education, services and economic assistance programs.
- Help communicate the links between personal choices, community choices and environmental and economic impacts to increase “energy literacy.”
- Support market transformation to “energy efficiency as a norm” and economic vitality through job creation.

**Guiding Principles:**

- Learn from past initiatives and build on what has worked.
- Work on long term goals and strategies; set near-term targets that are achievable.
- Collaborate with the residential stakeholder groups (e.g.: landlords, neighborhoods, social networks) on how to most effectively reduce energy use, and provide tools to increase awareness on how each group can implement energy efficiency improvements.
- Continue to engage and build on existing relationships with key community leaders who can assist in developing new and expanded initiatives.

## **Broad Overview of 2012 Climate Action Plan Residential Energy Strategy**

- Leverage organizations and partnerships to share in compatible messaging about reducing energy use and saving money.

### **Lessons Learned:**

This section outlines lessons learned from the past year of offering services to the community. These lessons help inform adjustments for the 2012 strategy.

- Financing – Microloans (\$500-\$3000) did not see much uptake through the service, perhaps financing small amounts is not a barrier.
- The Energy Advisor model is a key to high conversion rates (from audit to action) and is especially helpful to rental property owners. The conversion rate for owner-occupied properties is 67% and 33% for rental properties.
- There is still confusion over rebates and their sources.
- Double rebates were a huge driver of participation, but caused an artificial surge for the industry and possibly diminished energy advisor quality of service.
- Branding confusion still exists; customers are not clear in marketing materials that this is a government program. Branding around EnergySmart and SmartRegs in particular can be confusing.
- It is not always clear to the service participants and the general public what the city's role is or the city's taxpayer contribution to this service.
- SmartRegs is a huge driver of participation; many rental property owners, particularly in multi-family units, are compliant after quick installation of light bulbs and water saving devices.
- While the advisors have been very helpful to rental property owners, a barrier to participation is the time required to engage in the process by the property owner/manager.

### **2012 Strategies and objectives:**

To help achieve the residential sector goals and to build upon the 2011 lessons learned, the 2012 CAP tax strategy will focus on the following objectives:

- Continue EnergySmart services for homeowners and landlords
  - Reach an additional 850 owner occupied properties and 3,200 rental properties with the EnergySmart services.
  - Promote participation in full audit/advisor service, rather than advisor only service.

## **Broad Overview of 2012 Climate Action Plan Residential Energy Strategy**

- Cause upgrades in 40% (rental properties) and 70% (owner occupied properties) of these participants.
- Avoid 3,700 metric tons CO<sub>2</sub> (mtCO<sub>2</sub>e) of greenhouse gas emissions.
- Continue to leverage utility and EnergySmart rebates
  - Supplement Boulder County’s EnergySmart rebates and services with \$150,000 in CAP tax-funded rebates for rental property owners
  - Supplement Boulder County’s EnergySmart rebates with \$100,000 in CAP tax-funded rebates for owner-occupied properties.
- Focus additional City of Boulder CAP tax-funded rebates on the highest greenhouse gas emissions reductions.
- Create and implement a robust outreach plan that utilizes both traditional and non-traditional avenues for “getting the word out”
  - Highlight the source of funds in outreach
- Co-market with Elevations Credit Union for the new EnergySmart loans
- Continue research on best practices around the country/world

### **Metrics:**

#### *What we already measure:*

- Number of engagements – contacts and effective engagements – through outreach efforts (e.g.: Farmer’s market, green teams, in-school contest)
- Number of “views” on media and social media sites
- Number of tenants to complete steps in SmartRegs tenant program
- Leads to EnergySmart from tenant
- Leads to EnergySmart from city of Boulder efforts
- Number of participants in EnergySmart
- Neighborhood events
- Presentations, sponsorships, other outreach events

## **Broad Overview of 2012 Climate Action Plan Residential Energy Strategy**

- Rebates – CAP tax funded
- Trainings for Class G inspectors – number of participants
- Energy efficiency measures installed – direct installs and upgrades made by property owner
- Deemed savings, reduced energy load, greenhouse gas emissions reductions
- Would you tell a friend/neighbor? Reason for signing up? What could be improved?
- Conversion rates – audit to action, as well as time lapse between audit and action
- Private sector money invested, improved building stock
- Job creation

### *What we don't measure currently:*

- Number of “newcomers” – to measure behavior change in the reaching “non-choir”
- Retention rate – connection to other programs and sustainability initiatives, how much people learn from service and how much is retained
- Are people doing the most impactful measures (energy and GHG)?
- Are people doing the most they can?
- Level of “eco-literacy” (very qualitative)
- Community involvement, accountability, and feedback

## ATTACHMENT I

### Broad Overview of 2012 Climate Action Plan Commercial Energy Strategy

**Mission:**

To make Boulder's commercial building stock and businesses more energy efficient.

**Primary Goal:**

For the city's Climate Action Plan tax to assist property owners and businesses to reduce their energy use and increase the energy efficiency of the buildings' systems (lighting; heating, ventilation and air conditioning systems; plug loads).

**Guiding Principles:**

- Learn from past initiatives and build on what has worked
- Work on long term goals and strategies; set near-term targets that are achievable
- Collaborate with the commercial building industry stakeholders on how to most effectively reduce energy use, and provide tools to increase awareness on how each stakeholder group can implement energy efficiency improvements, both on their own and in collaboration with the city
- Continue to engage and build on existing relationships with key stakeholders that can assist with the development of new and expanded initiatives
- Leverage business organizations and partnerships to share in compatible messaging about reducing energy use and saving money

**Lessons Learned:**

This section outlines lessons learned from the past year of offering services to the community. These lessons help inform adjustments for the 2012 strategy.

- Quick assessments or the "Discover" EnergySmart service reached 712 Boulder businesses with only 344 sites implementing "low-hanging fruit" energy efficiency direct install measures. This is due to many businesses already adopting low cost energy efficiency measures.
- Door-to-Door Energy Advising with businesses and/or property owners is the most effective way to communicate energy efficiency opportunities and services.
- Excellence in customer service is a key element of the Energy Advising service that assists business decision makers and property owners to make energy efficiency improvements.
- Tailored or customized service provided to property owners with a large commercial building portfolio is also a key to making inventory wide energy efficiency improvements.

## **Broad Overview of 2012 Climate Action Plan Commercial Energy Strategy**

- Xcel bonus rebates for T-12 lighting retrofits paired with Energy Advising services have greatly facilitated an increased amount of replacement of inefficient T-12 lighting technology to more efficient T-8, T-5 or in some cases LED.
- Optimization heating and cooling equipment service (small building tune-up) was slow to get off the ground due to numerous factors; including, the lack of measurement and verification to prove energy savings, it being a new service in the market place and sub-contractors not successfully marketing the service (explaining the difference between “optimization” and preventative maintenance).
- The optimization subsidy of 50 percent service cost was too low. Utility partners and the EnergySmart team decided that paying 75 percent of the cost was necessary to prove its benefit to property owners and gain traction in the market place.
- Through our Energy Advising services, Advisors were limited in assisting small to medium size businesses that lease commercial space on implementing energy efficiency equipment due to the main barrier of the “split incentive.” This barrier needs to be addressed to understand whole building performance and to implement measures that reduce energy use in the commercial building sector.

### **Strategies and Tactics:**

The efforts to reduce energy use in commercial building are presented below; with Boulder’s interest in supporting the most cost effective solutions to reduce energy use, save businesses/property owners money, improve the commercial building stock, and build a database of energy information from commercial buildings in Boulder.

***With increased Energy Advising and additional CAP funds for more Boulder specific EnergySmart rebates, we’ve estimated that pairing these services and incentives will result in a reduction of 3,800 mtCO<sub>2</sub>***

- Ramp-up EnergySmart services for Boulder businesses and property owners by increasing the number of energy advisors.
  - Reach 550 businesses and/or property owners with advising service
  - Cause upgrades in 50 percent of businesses receiving advising service
    - Examine buildings’ equipment and operations to determine how the building consumes energy
    - Identify opportunities to reduce energy use and save businesses money
    - Continue to provide excellent customer service
- Continue to collect data and create case studies to prove energy savings from optimization services
- Continue to leverage utility and EnergySmart rebates

## **Broad Overview of 2012 Climate Action Plan Commercial Energy Strategy**

- Supplement Boulder County's EnergySmart rebates with \$300,000 in CAP tax-funded rebates for Boulder businesses and property owners.
- Customize additional rebates for large property owners to maximize the number of properties implementing energy efficiency improvement.
- Continue working with W.W. Reynolds, Tebo Development LLC and Bancroft properties to implement large-scale energy efficiency upgrades.
- Focus advising service on the switch out of T-12 lighting retrofits since Xcel's bonus rebates are extended through March 31; develop new rebate for de-lamping.
- Create market-based incentives for energy consultants and contractors that meet specific criteria and bring businesses and property owners into the EnergySmart service.
- Leverage the "pairing" of reducing energy in the building (equipment) and in the businesses' operations (behavior change).
  - Promote 10 for Change
    - Increase marketing, membership and education
- Increase EnergySmart marketing
  - Co-market EnergySmart services with Elevations Credit Union loan products
  - Leverage business partners as much as possible
    - Commercial Brokers of Boulder luncheons
    - Boulder Chamber Re-Energize your Business series
    - Boulder Economic Council
    - Boulder Independent Business Alliance
    - Economic Vitality /Business Services Workshops
  - Traditional marketing as well as innovative social mobilization
  - Use energy consultants and HVAC contractors to sell services
- Develop a commercial building rating system or use an existing tool, such as, Energy Star Portfolio Manager Rating System Program for business/property owner recognition
  - Set "rating" thresholds that will acknowledge businesses as leaders in the city's circle and a higher "rating" that gets you in a "mayor's circle" of acknowledgement.
  - Provide ESPM trainings for commercial building industry professionals.
  - Create incentives for property owners to rate their buildings
  - Develop programs for market based commercial energy coaches

### **Metrics of success:**

*What we already measure:*

- **Participation**
- **Advising to Action:** Percent of business customers contacted and served that invest in property upgrades
- **Timeliness:** Average time between Advising service and a property upgrade

## **Broad Overview of 2012 Climate Action Plan Commercial Energy Strategy**

- **Changing the norms:** measured by participation, number of new customers to the service, training contractors to facilitate market transformation, and separately measuring the effectiveness of various social mobilization strategies to drive community climate action.
- **Job creation**
- **Energy saved**
- **Private investment and energy cost savings**
- **Greenhouse gas (GHG) emissions reduced**

Over the past years, the community has recognized that many factors affect the community-wide GHG inventory, many of which are out of the control of the city, its residents and businesses. Therefore, moving forward, the city will report out to the community on a more broad set of metrics of success including:

- **Number of solar PV systems installed**
- **Number of buildings improved with:**
  - Energy efficient lighting
  - Optimized HVAC systems
  - Installation of high efficiency HVAC systems
- **Number of businesses' fleet vehicles shifted to low-emission vehicles**
- **Number of commercial buildings benchmarked through a selected rating tool**

### **Policy Development (*Build Better* strategy area):**

- Work with commercial property owners and other commercial building stakeholders to map out options for a combination of incentives and regulatory approaches that can address existing barriers to investment in energy efficiency and help build a baseline of information about Boulder's commercial building performance
  - Develop thorough information on the city's energy performance contracting building retrofit, measures, savings and costs.
  - Develop background documents of states and cities that have adopted and implemented such policies.
  - Coordinate development of ordinance options with other building code update time lines.
  - Bring options for ordinance development and incentives to council at a mid-year study session as part of the overall Energy Action Plan and *Build Better* CAP strategy development.

### **Innovation strategy areas:**

- Renewable energy technologies, such as photovoltaic (PV) solar panels can reduce utility bills while providing clean, sustainable energy.

**Broad Overview of 2012 Climate Action Plan  
Commercial Energy Strategy**

- Researching building management systems (BMS) to help optimize energy and operational efficiency, comfort and safety. BMSs controls and integrates key mechanical and electrical building systems such as HVAC, lighting, security, fire, and safety.
- Work closely with the city's Economic Vitality program to explore opportunities that will drive energy efficiency upgrades as tenants improve their leased space.

## ATTACHMENT J

### Peer review of Energy Localization Report

#### **Background**

The Energy Localization Report was commissioned to identify technologies that provide opportunities for renewable energy generation, heat, and/or energy efficiency within the Boulder region. Central to this discussion is estimating the available local energy resources, how far and how fast Boulder could localize its power and heat supply by deploying these resources, and the general cost of this effort in relation to utility rates and customer bills.

The report was intended to outline pathways for the City of Boulder to transform its energy supply, while maintaining competitive costs of service and grid reliability.

The ability for Boulder to maximize deployment of local energy resources, and implement the more innovative technologies and practices associated with a well-designed Smart Grid, will vary depending on the degree of control of (1) power procurement at the wholesale level, (2) billing, customer revenue and rate setting at the retail level, (3) metering and utility distribution infrastructure operations, (4) the authority necessary to finance electric utility investments.

To provide the basis for strategies to eventually include in the Energy Action Plan, staff recruited qualified individuals to assist in determining the next steps on the localization concept as it relates to the development of an energy strategy. During January 2012, these local experts participated in a peer review of the Energy Localization Report. The objective of the peer review was to solicit detailed technical input to ensure the draft concepts in the report are conceptually rigorous, scientifically robust and workable in practice.

#### **Peer Review Team**

Individuals were selected based on their significant expertise and experience with traditional and non-traditional energy generation, distribution and/ or energy demand-side strategies. The following individuals were recruited for the peer review:

#### Dave Corbus

Dave is the Lab Program Manager Electricity Systems at NREL. He is currently a test engineer working on wind turbine loads testing for the Small Wind Research Turbine (SWRT) project. The SWRT project will produce the first complete set of loads and furling measurements for a small wind turbine. Dave has been involved with other wind turbine testing; including certification loads measurements, and power performance, safety and function, and duration testing. Previously, he worked on system design and integration for small wind systems and hybrid power systems. This work included feasibility studies, system modeling, design, system integration, and installation of small wind pilot projects in international off-grid settings. To understand the performance of these systems, Dave helped develop monitoring systems to measure important system parameters and to characterize system performance. This extensive expertise in the design and deployment of off-grid small wind systems resulted in the development of various end-use applications for these systems. Prior to working at the NWTC, Dave worked in the Analytic Studies Division at NREL conducting technology evaluations of emerging battery and fuel cell technologies.

### Gwen Farnsworth

Ms. Farnsworth is Senior Energy Policy Advisor at Western Resource Advocates. She was most recently an associate research director at E Source in Boulder, Colorado, where her research focused on energy efficiency program design, marketing, implementation, and evaluation. She previously worked at Russian Petroleum Investor in Los Angeles as an editorial director and research manager, and was a research fellow at the RAND Corporation in California and a research intern at the International Institute for Applied Systems Analysis in Austria.

Ms. Farnsworth is active as a volunteer and community organizer promoting energy conservation in Boulder, and has served on Boulder city Climate Action Plan technical committees. She has a BA in Political Science and a BA in Russian Civilization from the University of California, Los Angeles; an Advanced Russian Language Program certificate from St. Petersburg State University in Russia; and a Masters of Philosophy from the RAND Graduate School in Santa Monica, California.

### Puneet Pasrich

Puneet is the program manager for the Renewable and Sustainable Energy Institute's electrical grid research and education program, named REgrid. He is also an adjunct faculty member in the Interdisciplinary Telecommunications Program's Digital Energy Program. Much of his research is under the auspices of the Renewable and Sustainable Energy Institute, RASEI, a joint institute between National Renewable Energy Lab and the University of Colorado.

Puneet has a strong background in engineering, R&D, and analytics. With a Master's degree in Electrical Engineering, 13 years of experience as a practicing engineer, and a long-term commitment to systems optimization, it is a natural fit to contribute to the further deployment of sustainable options. Puneet has developed and implemented energy management projects since 2003. He is well-suited to advancing Smart Grid applications as he has a background in communication networks, sensors, data logging, control systems, the electrical grid, and demand side management (DSM) programs. The confluence of this expertise and his multi-disciplinary background allow him to contribute to developing a path for substantial, renewable energy options in the marketplace. He was the lead editor & co-author of a Smart Grid overview and recommendations white paper to the Colorado Governor's Smart Grid taskforce.

### Ken Regelson

Ken is the owner of Five Star Consultants. Ken helps clients develop, analyze, and implement the products, policies, and programs needed to create a more sustainable energy future. Areas of expertise include utilities, net metering, inverters, municipalization, renewable energy, energy efficiency, and city and state policies and programs in renewable energy and energy efficiency. He has been very active in the passage, rulemaking, and implementation of Colorado's Amendment 37 - a renewable portfolio standard passed by the citizen's of Colorado in 2004.

Ken has intervened at the Colorado Public Utilities Commission several times on net metering and implementation of Amendment 37. Ken has worked at Bell Telephone Laboratories and Precision Visuals, Inc. Since 1989

### Sam Weaver

Sam is a co-founder of Cool Energy, Inc., a power conversion equipment company located in Boulder, CO. Sam holds a B.S. degree in engineering and applied science from the California Institute of Technology and is an inventor named on fourteen issued U.S. patents. In addition to renewable energy, he has experience in a range of markets including telecommunications, data storage, and aerospace.

Sam previously co-founded Colorado Photonics, a profitable small business providing telecom equipment distribution, and has led multiple engineering development efforts at startup companies during his career. Sam holds six U.S. patents and has authored numerous technical publications. Sam holds a B.S. in engineering and applied science from the California Institute of Technology, and is a member of the Board of Directors of the State of Colorado Clean Energy Development Authority.

### Ted Weaver

Ted is the President of First Tracks Consulting Services. He has almost 30 years of experience in the energy industry, including management positions with the consulting firm Barakat & Chamberlin, Inc. and the national energy service company PG&E Energy Services. Mr. Weaver founded First Tracks Consulting Service in 2000 to provide strategic consulting services to clients in the utility, energy service, and energy technology industries.

Mr. Weaver is a nationally recognized expert in the areas of integrated resource planning, energy efficiency, and sustainable energy regulation. Mr. Weaver has developed over a dozen integrated resource plans and energy efficiency plans for clients throughout North America, and has also helped clients procure resources for over 2,000 MW of generation supply and dozens of energy efficiency programs. He has testified over a dozen times before state public utility commissions, and taught training courses on integrated resource planning for the Electric Power Research Institute, the Canadian Electrical Association, and private clients.

### Warren Wendling, PE

Mr. Wendling has over 25 years of experience in utility regulation. Most recently he was Chief Engineer for the Public Utilities Commission of the State of Colorado, where he spanned the electric, gas and communications disciplines. Prior to working at the PUC, Mr. Wendling was Senior Engineer at Public Service of Colorado where his responsibilities included bulk power transmission system planning as well as distribution engineering. He is very familiar with all aspects of the transmission and interconnection process, and provides current knowledge of the many transmission initiatives that are in process in Colorado and surrounding states, where he has helped clients apply technology well as an independent consultant.

### **Evaluation process**

The evaluation team met on January 5 to discuss the details of the evaluation including evaluation criteria to apply to the review. The team agreed to move forward with an evaluation of the Localization Report utilizing the following criteria:

- Maintain or improve system reliability
- Ability to significantly reduce carbon emissions and pollutants

- Ensure competitive rates, balancing short-term and long-term interests
- Promote local economic vitality
- Limit impact to vulnerable customers (residential & commercial)
- Create ongoing opportunities for local innovation
- Replicable and transferable

Additional considerations reviewers used to evaluate the strategies include:

- Technically feasible- *does the technology currently exist, and it is readily available?*
- Financially feasible- *are the associated costs to implement the strategy realistic?*
- Time frame of strategy implementation- *Is the implementation of the strategy dependent on technology that does not currently exist, or will take several years to realize the full potential?*
- Technology risk/stability- *technical, legal, financial*
- Qualitative and quantitative analysis- *what additional quantitative details are needed?*

The team followed the following format for the review:

### Electricity

1. General overview and summary of the report- *How is it prepared? Does it represent a solid foundation of options? Did the authors "hit the mark" with regard to the goals outlined in the Executive Summary?*
2. Research Methodology- *Was the methodology rigorous and effective at obtaining the right information?*
3. Local Energy Resources- *(apply the evaluation criteria listed above to each of the following strategy areas):*
  - a. energy efficiency
  - b. plug-in electric vehicles
  - c. solar
  - d. wind
  - e. geothermal
  - f. waste derived biomass
  - g. small scale hydro
4. Energy as a service model - *Does the strategy or technology further this model?*
5. Authority- *Does Boulder have the authorizations necessary to implement strategies? Is the analysis accurate and complete? Will these authorities change over time? Should the city focus on obtaining these authorizations? (pp 40-41 & appendix A)*
6. Financing options- *Do financing options exist currently to further this technology?*
7. The Localization Portfolio Standard- *Is this a useful tool to perform detailed resource planning? Is there sufficient quantitative analysis to support the conclusions and recommendations of the LPS?*

## Natural Gas

1. General overview and summary of the report- *How is it prepared? Does it represent a solid foundation of options? Did the authors "hit the mark" with regard to the goals outlined in the Executive Summary?*
2. Research Methodology-*Was the methodology rigorous and effective at obtaining the right information?*
3. Local Energy Resources- *(apply the evaluation criteria listed above to each of the following strategy areas):*
  - a. DSM
  - b. gas service
  - c. solar thermal
  - d. district heat islands
  - e. biomethane
  - f. biomass combined heat/power
  - g. direct use geothermal
  - h. combined heat/power
4. The Localization Portfolio Standard- *Again, is this a useful tool to perform detailed resource planning? Is there sufficient quantitative analysis to support the conclusions and recommendations of the LPS?*

The team then met on January 18 to discuss the results of their evaluation of the Report. The following is a summary of the key findings:

## **Peer Review Summary**

Overall, the peer review team felt that most of qualitative information in the report seemed accurate. In many, but not all cases, technology and program descriptions were current and representative of realistic options found in and near Boulder. The team agreed that the main weaknesses in the report were it being titled as a Localization Portfolio Standard (LPS), which implies quantitative requirements. At no point were a clear set of numerical program/equipment deployment requirements proposed or considered, with a full analysis complement of costs and benefits.

Qualitatively, many options were described, as well as goals and objectives. A few distinctions were also made regarding programs that could be run under the status quo, and programs that would require a 'localized utility', really meaning a municipalized utility. On the whole the team felt this document is a useful read as a descriptive overview of the current energy potentials for Boulder, but it leaves a great deal of work still to be done on describing detailed program structures and cost/benefit analyses, especially on the generation side.

The review team also agreed on the importance of the City performing the next level of detailed utility modeling on renewables, continuing work that began last summer which will address what levels of renewables are possible both financially and technically under a municipal utility. The team had a lengthy discussion of the methodology and purpose, which has been included in the staff work program for the first half of 2012.

Finally, while not directly related to the Localization report review, the team discussed the importance of clarifying how and when the city would recommend utilizing an “off-ramp.”

### **Detailed Comments from Review Team on the Localization Report**

#### General comments

1. Not a real quantitative report...highly qualitative
2. We can use to separate out programs under IOU, and those that land in Energy Action plan
3. The real value will be in the gap analysis, which is next phase
4. There may be technology risk with some of the strategies listed
5. The report does not push high penetration of technologies in a realistic fashion
6. Great first round on analysis
7. Need to differentiate between technologies and programs
8. Need to optimize the right mix of strategies
9. There needs to be an economic component added to the report. For example, consider the real penetration of renewables, derived from additional modeling, then look at what is financially achievable.

#### Electricity Report

1. Behind the meter solar (rooftop solar) should be reflected as a demand side strategy
2. Hard to tell what was done on energy efficiency impacts. Seems that the load was forecast, then a 2% target was set. 2% is not un-attainable, but very high. A realistic estimate is ½ to 1 ½ %. A 2% target is not yet proven to be attainable. Xcel Energy is forecasting 1.2% through programs and regulation. If we maintain 2%, there needs to be a plan to ramp-up.
3. Lots of good work on efficiency and conservation, however it is a problem that they are lumped together. It does not allow a discreet analysis of the strategies.
4. Dispatchable technologies are under investigation. They can cause problems with regard to renewables integration and drive the need for more ancillary services.
5. One of the real problems with the Smart Grid relates to improperly grounded systems. It has become an issue for the service crews.
6. There is non modeling with regard to the penetration of electric vehicles impact on distribution system. Next step should look at saturation curve.
7. Map the solar potential...rooftop etc. This needs to be assessed more thoroughly
8. What types of incentive levels would be necessary? 120% load requirement should be discussed...right level? Rebates? Feed In Tariffs (FIT)?
9. What is a localization portfolio standard? How is it measured? Under the definition put forth on pg. 44, it would seem that natural gas would qualify relative to current grid electricity.
10. Hydro- can we run in a peaking fashion? Has the city explored changing the technique of water delivery? This optimization would be beneficial (5 to 20 MW at peak)
11. Pumped hydro - Rise and run too great, Perhaps storage, Don't write off battery storage just yet.
12. Biomethane and wind need to be considered regional strategies

13. Solid waste to power- very sensitive issue. Agricultural Biomass, 15 MW biomass gasification missed. Potential for 60,000 GWh/year vs. 45,000 GWh/year.
14. DSM and Energy Efficiency (EE) are wonderful, but were chosen for their relatively fast payback, also wonderful. It would seem that a quantification of costs and benefits of different DSM, conservation, efficiency and generation approaches would be most useful.
15. LPS is overblown, and it definitely implies quantifiable milestones. Localization Plan would be a better description of what the report contains.
16. Two of main four assumptions require utility power (smart meters, on-bill financing).
17. In electrical section, why are RECs suggested over other options?
18. Where does conclusion that 20% from DSM/EE come from? How much will implementation cost? What is the value of the smart meters relative to the status quo? How was a 12-year payback calculated? By what method will the private sector be incented to participate?
19. Were program incentives for solar paid by the City in the model, by Xcel, or by a combination? Were realistic and practical constraints of the Xcel incentives considered?
20. How will a smart grid help with EE/DSM? How was the positive impact of Demand Response (DR) modeled, economically as well as an enabler of additional RE?
21. Were practical considerations regarding Valmont integrated into the modeling (costs, natural gas operations, etc)?
22. Was Vehicle to Grid modeled, or simply mentioned?
23. Why was 30% LPS chosen? How is it defined and measured? Why 2/3 Energy Efficiency, 1/3 Renewable Energy? What is the cost impact to the consumer? How does this fit with the current and any proposed regulatory structure?
24. What were assumptions behind the model of Smart Buildings program that led to Total Resource Cost (TRC) of 1.6?
25. Under what program would 'the utility' mentioned in Smart Buildings proposal incur the 'infrastructure' costs in the proposal? Were existing limits on such programs researched and considered? Public Utilities Commission (PUC) interactions?
26. What support is there for the assertion that the proposed Smart Buildings approach will have more participation than 'traditional' DSM programs?
27. Are 'efficiency' and 'conservation' defined as separate tracked quantities, or are they used interchangeably?

28. How will individuals and business be made to participate in such programs?
29. How, specifically is demand dispatch different from traditional DR? Is it simply that it is also used outside of summer months, or is the technology different as well?
30. Good hydro power summary.
31. To try and balance wind with hydro could have some merit, but water operations will likely dictate quite a bit.
32. Pumped hydro definitely should be considered if practical and cost-effective.
33. Pumped hydro cost estimate did not include capacity, charge rate, or discharge rate which are necessary to understand economic and system benefits.
34. Several policy points in the solar section have changed since the document was written.
35. Summary of difference for solar development in a muni is correct and important.
36. Additionally, Boulder muni could begin a FIT program, which is more sustainable than net metering with rebates.
37. Municipal Solid Waste to power is controversial. Other biomass sources for electricity generation deserve serious consideration moving forward. The amount of agricultural biomass alone would power a 15MW biomass gasification electric generating facility.
38. Utility-scale battery storage is an emerging technology not to be dismissed out of hand.
39. Energy as a service section helpful.
40. Identification of heating targets as only appropriate ones is correct under current legal status.
41. Certain of the thermal programs identified in this report can be executed under a Boulder electric utility if so directed by Council.
42. Little integrated modeling of cost and benefits of various approaches – advice and analysis was more qualitative than quantitative.
43. How were current local generation, new renewables and EE modeled – just guess numbers? Current local generation looks high – I estimate at 60,000 GWh/year. What are they in specific? What are the emissions reductions and cost impacts?
44. Overall, left with a sense of ‘good idea grab bag’ that did little quantification or ranking of difficulty or effectiveness of programs mentioned.
45. 25% by 2020; The LPS is part of the solution

46. RECs should not be used
47. In CA, higher rates but constant bills over 40 years.
48. High reliance on Energy Efficiency
49. SmartRegs and building codes (eg. American Council for an Energy Efficient Economy agrees)
50. How to fix the landlord/tenant split incentive?
51. British Columbia has a proposal to fix the problem through its Green Landlords Project.
52. Automated building systems management, enables Time of Use pricing
53. Biofuels and waste incineration: Local air pollution (eg. PM10 and PM2.5 particulates). Potential of 5 MW.
54. Hydro-5 MW, annual average. Allow current PPAs with Xcel to lapse and move to a “month-to-month” sale of power
55. Ideas:
  - o 2 or 3 MW pumped storage plant could be sited at Barker Dam. The lower reservoir would need to be built/sited.
  - o A new 1 or 2 MW could be generated with in-pipe turbines
56. Geothermal
  - a. From the resource maps I have seen, this section seems be quite a stretch, especially the section about Eldorado Springs.
  - b. 75% of the cost for geothermal is the exploratory drilling since finding the resource is the hard part. I find it implausible a developer would agree to take “all the risk” (p. 38).
57. Energy as a Service...Good idea, in general.

### **Natural Gas Report**

1. Natural gas demand aggregation might reduce costs, but will have little impact on demand amount or emissions from heating sector.
2. Good information on heat-islands
3. The Solar Thermal Alliance will soon release a report quantifying target penetration levels and jobs/societal benefits. This should be a strong focus for Boulder moving ahead.
4. Solar thermal ideas in report are all good.
5. Challenge of heat density to pay for pipes necessary for heat islands
6. All of natural gas strategies can be done outside of utility

7. Combined Heat and Power (CHP) ideas in report should be fleshed out.
8. Biomass CHP can also be deployed on a smaller scale – currently being deployed at utility, industrial, and commercial scales.
9. Heat island is good idea if solar thermal is incentivized as a result.
10. How was biomass CHP, biogas, solar thermal and efficiency modeled on page 20 – just guess numbers? What are they in specific? What are the emissions reductions and cost impacts?
11. I found this section to be significantly weaker in content and ideas than the electric section.
12. As seen in the NG LPS chart on p. 3, most of the LPS are due to efficiency. As mentioned during the review meeting, combining both and taking a holistic viewpoint will serve the customers much better.
13. The solar thermal targets are small. This portion could be better developed and expanded upon.
14. Missing a section on the use of ground-source heat pumps. These could be used to trade off NG for electricity.

## ATTACHMENT K

### Communications and Engagement Plan

#### Objectives:

- Update the community about past, current and future work related to municipalization, the creation of an energy strategy and climate action planning so that people understand what's going on, as well as how and when they can participate; demonstrate and reinforce that the city is conducting appropriate and reliable analyses that are informed by public input and priorities.
- Make the process as accessible, engaging and replicable as possible while using resources prudently and effectively.
- Educate the community about energy and climate issues to convey the need to act and to expand community understanding about the importance of their role in committing to behavior change over time; help frame the discussion about what success would look like.
- Give a variety of people and audiences a voice about the parts of the conversation that matter most to them at times when their input would be most influential; promote and provide opportunities for feedback, check-ins and alternative ideas; draw on the expertise and innovation in our community; and seek common ground, particularly around the larger goals and near-term targets.
- Document the process and public feedback and share this information with the larger staff team, City Council and other interested government and community entities.
- Shape and promote the city's climate and energy messages; and tell the story behind all of the work the city and community are doing on these issues.
- Support the larger staff team and the process itself by providing collaboration, communications, analysis, messaging, counsel, memo support, council updates and related support as appropriate.

#### Key Stakeholders:

- Residential property owners and neighborhood groups
- Renters, including off-campus CU students
- Young people
- Business leaders and partners
- Businesses as bill payers
- Businesses that stand to benefit from municipalization/ local control
- Commercial property owners
- City leaders (City Council, EAB, other city boards who will have a role in implementing CAP)

- City employees
- Scientific/ federal labs/technical resources
- Advocacy groups
- Groups that are interested in playing a leadership role
- Other governmental agencies in Boulder (BVSD, CU, Boulder County, Boulder Housing partners)
- Energy industry
- Local and national media

### **Staffing Plan:**

The city has assembled a staff team to work on communications and engagement efforts related to this project. Media Relations/Communications Coordinator Sarah Huntley will oversee this team. Ruth McHeyser is assisting on engagement planning and implementation on a part-time basis. Andrew Barth will be the lead on communications planning and implementation. Outreach professionals from LEAD's team will provide expertise and support for both engagement and communications efforts.

### **Role of Consultants/Creative Experts in the Community:**

As occurred in 2011, the city anticipates utilizing the expertise and specialized knowledge of creative consultants for some portions of the communications and engagement work. While the budget is still being refined, the team is aware that the resources available for these purposes will be significantly less than last year. Strategic decision-making about how – and when – to use the limited funds available for outside consultation will be essential.

### **Anticipated Engagement Strategies and Techniques:**

The project work plan (**Attachment B**) summarizes and plots the timing of the engagement efforts anticipated so far. Additional items may be added based on community suggestions and the nature of the information the city has to share.

The staff team heard and understood council's feedback that for some of the work, mostly around municipalization, the community is looking for data and is unlikely to have new input to provide until more details are available. The team's revised plan reflects this, while also providing opportunities for interested individuals to become involved in some of the other areas, such as exploration of localization options and climate action planning, that could benefit from public participation.

Each of the planned outreach events has a specific purpose and will be designed to obtain feedback on specific issues. However, to use city resources – and the public's time – most effectively, we will be emphasizing the goals that are common to all of the areas of work and seeking to provide updates on any of the areas that are appropriate.

*Opportunities that are applicable to all areas of work (municipalization/creation of an energy strategy and climate action planning):*

**1. Targeted focus groups with business community and others with concerns about municipalization – early to mid-February**

The purpose of these focus group meetings is to seek and obtain feedback from those who are most concerned about the feasibility and value of creating a city-owned electric utility. We anticipate three focus group meetings with the business community and others who have expressed reservations. Staff will provide an update on the timeline and process for continued exploration of municipalization, energy strategy development and climate action planning and ask participants to provide feedback on:

- Their key issues of concern/interest in each of the areas of the workplan
- Their level of interest in participation, including details about how/when/and for what portions of work
- Opportunities for the city to use their existing networks to provide updates and seek broader input

**2. Bi-weekly office hours – starting in February**

This will be an opportunity for interested members of the public to “drop in” and hear updates from members of the staff team or provide input on specific areas of work underway. These meetings will be at a set time and place and open to all.

**3. Speaker series – March and April**

This will be a series of events featuring invited speakers with expertise on specific topics related to one or more of the areas of work. At each of the events, staff will provide an update on progress to date and highlight upcoming events and decisions. The topics and featured speakers are yet to be determined. We will be soliciting ideas from the Environmental Advisory Board (EAB) and the public in the next few weeks. Because of funding limitations, the city will need to identify speakers who are willing to participate without high fees and/or partner with other organizations to cover potential costs associated with this approach.

**4. Public forums – June and September**

Following the May 22 City Council Study Session, city staff anticipates holding one or more public forums to educate the public and solicit feedback on the work to date. This could be particularly important if council decides to consider any sort of ballot initiative related to continued funding for demand-side programs. A public forum is also anticipated in September to report on and discuss the results of the Utility Model for Renewables and the latest on CAP for 2013 and beyond.

*Opportunities specific to municipalization analysis:*

1. **Public participation and input in selection of FERC attorneys – Feb. 2; public input in selection of executive director – dates to be determined**

*Opportunities specific to localization/energy strategy development:*

1. **Peer review panel – already started**

These are individuals with technical expertise who have been tapped by staff to review localization research to date and chart out priorities for further exploration.

2. **Speaker Series – March and April**

As explained above, this will likely include topics relevant to the localization work from local, regional and national experts. This will provide staff with additional information to consider.

3. **Ad Hoc Utility Modeling Group – February and July/ August**

This will be a group of five to 10 local experts in utility resource planning and renewables modeling who will provide input on the Utility Model for Renewables. Specifically, in February, staff will seek their advice on the modeling software and the modeling options to pursue. In the July/ August timeframe, staff will seek input on best ways to report model outcomes.

4. **Public Forums – in June and September**

Staff will provide updates for and solicit feedback on:

**June:** the draft energy strategy options after City Council has provided comments or direction on the options; and

**September:** the outcomes of the Utility Model for Renewables.

*Opportunities specific to CAP planning for 2013 and beyond:*

In addition to the speaker series in March and April and public forums in June and September, there will be ongoing opportunities for engagement in the CAP planning process as follows.

The Environmental Advisory Board (EAB), with input from CAP “working teams,” will play a central role in working with staff to develop the draft Climate Action Plan 2.0. The working teams will consist of community members with expertise in specific strategy areas who will provide input to staff and EAB at specific points in the process. The

public will also have an opportunity to keep informed and provide input at EAB meetings.

Because the CAP will integrate with its corresponding departmental master plan for each proposed strategy area (e.g., travel, water), other relevant city boards (e.g., Transportation Advisory Board, Water Resources Advisory Board) will also be involved at key points in the development and implementation of the future CAP initiatives. Additionally, CAP goals and strategies will be discussed with the public as part of the respective departmental master plan update public processes.

The team is considering the possibility of a statistically valid telephone survey related to CAP and possible funding mechanisms for programs that do not have other sources of revenue other than the tax that will expire in March 2013. A determination about whether to use this approach will be made over the next few months.

### **Anticipated Communications Strategies and Techniques:**

- **Project Website**
  - **What:** Existing [www.BoulderEnergyFuture.com](http://www.BoulderEnergyFuture.com) project website will be expanded to include information about all of the work areas and will be frequently updated with new information. New ideas for gathering feedback, such as surveys, polls and message boards are also being explored for the project website.
  - **Who:** City staff would update and maintain existing site, but enhanced engagement applications may require development assistance by an outside firm.
  - **When:** Throughout the duration of the project.
  - **Where:** Hosted by the city's web servers unless a particular application is not currently accepted by the city's established web policy.
  - **Why:** Boulder residents and business owners are typically some of the most savvy and active users of the internet. This medium allows us to easily reach large numbers of people, both locally and nationally, and can be quickly updated with new information.
  - **Cost:** This service is part of normal staff time, but enhanced application development may have an associated cost that would require using budget funds.
  
- **Informational process flyer/handout**
  - **What:** A one-page flyer/handout that answers the question "So what now?" and briefly summarizes the work areas and points people to the project website for additional information. Will be created in English and Spanish. Handouts specific to each area of work could also be created if warranted.

- **Who:** Content and design could be created by city staff to minimize cost.
  - **When:** March
  - **Why:** A one-page handout with project summary is not as intimidating to read as the previous full community guides and will help people understand what is going on and how they can learn more.
  - **Where:** Will be available at all libraries, community centers, community meetings and events and will be available for pick-up at city offices. An electronic version will also be posted on the website.
  - **Cost:** In-house creation would be a normal function of staff's time, but there may be some printing costs incurred if large quantities are needed.
- **Utility Bill Messages and Inserts**
    - **What:** Utility bill messages are short paragraphs that can be added to the information box on the water utility bill itself. Inserts are documents separate from the Utility Bill itself that can be slipped into customers bills. Both inserts and messages would include information about whichever work area is most newsworthy and also direct people to the website for more information.
    - **Who:** Designed and created by city staff
    - **When:** We have reserved four months of inserts and messages for potential energy future use
    - **Why:** Approximately 27,000 water utility customers (including residential, commercial and industrial accounts) are reached by inserts and messages each month and they have been proven to be an effective information dissemination resource. Inserts, by policy, are created in Spanish and English, so underrepresented populations can be reached as well.
    - **Where:** Available in all utility bills, at the Utility Billing office and on the Utilities Division's "My Boulder Utility Bill (MyBuB)" website.
    - **Cost:** Printing costs would be the only item that may use budget funds
- **Community Guide 3.0**
    - **What:** Third installment of informational guide that was distributed to people in Boulder. The guide will contain information on all of the work areas (i.e., municipalization, energy strategy and climate action planning).
    - **Who:** Updated content will be created by city staff and a graphic designer will add it to the new version.
    - **When:** Version 3.0 will be created in the first half of 2012
    - **Why:** New version will contain all of new and updated information surrounding municipalization efforts, the energy strategy plan and climate

action planning in order to help people better understand the work undertaken by the city in 2012 and beyond.

- **Where:** Guides will be available at all libraries, community centers, community meetings and events and will be available for pick-up at city offices.
- **Cost:** Exact cost will be determined, but money will be used for design assistance and printing

- **E-newsletters**

- **What:** The city would like to create its own 1 to 2 page electronic newsletter to provide routine updates and other project information to interested parties. The newsletter could be tailored to fit current events surrounding any of the work areas that are appropriate.
- **Who:** The newsletter would be written and created by city staff.
- **When:** We would like to have the first newsletter ready by March with monthly editions after that.
- **Where:** The city would use existing email lists to disseminate the newsletter to interested parties. We would also provide the same information to other groups who maintain their own newsletters if they would like to publish the information as well. Each edition of the newsletter will remain available on the project website, so people can review past information.
- **Why:** Routine project updates in a consistent medium can be a good way for people to learn how to access information about the project and stay informed. The use of pre-established newsletters allows us to provide information where people are already looking.
- **Cost:** Internal creation and dissemination of newsletters would be part of normal staff time.

- **Creation of logo, some branding and identity for climate action in Boulder for 2013 and beyond**

- **What:** The team is anticipating as plans for future CAP initiatives are developed, it will be necessary to help create an identity for the effort.
- **Who:** Staff and branding consultants
- **When:** We have put this on the work plan for March because some of the work on this by then would be helpful for explaining the effort prior to the planning process; however, this may have to continue or evolve as more particulars are worked out
- **Cost:** TBD

- **News releases/advisories/photo ops and pitches to local, national and industry publications**
  - **What:** Informational pieces that are sent out to media in an attempt to garner coverage for a particular story, event, issue.
  - **Who:** Created and disseminated by city staff
  - **When:** As needed throughout the project. Releases are usually tailored to a specific subject, so they will be created and sent as needed for all three tracks of the project.
  - **Why:** This is a normal technique used to inform media about project events that allows for greater and farther information dissemination.
  - **Where:** Typically sent out via email to city’s media list, specialized media sources, and SPIRIT and also posted on the city’s “News” website and social media sites.
  - **Cost:** Part of normal staff work
  
- **Recurring guest columns in Daily Camera and BCBR and guest spots on local radio stations**
  - **What:** Recurring columns and spots in local media (frequency to be determined) that will highlight current events in all three tracks associated with Energy Future project, or could be focused to provide specific information on a particular track.
  - **Who:** City staff would write the articles and participate in the shows. Particular staff would be determined at the time as it would depend on the topic for each event.
  - **When:** Throughout the duration of the project.
  - **Where:** Boulder Daily Camera, BCBR, Boulder Weekly, KGNU, KUNC and any other media that may like to participate.
  - **Why:** Create a frequent source of information for people to follow the project. Use of external media helps spread information farther and faster.
  - **Cost:** Could be part of normal staff work.
  
- **City of Boulder and other community calendars, both Web-based and physical boards**
  - **What:** Logistical and detailed Information regarding events associated with all three tracks of the project would be posted on the city’s event calendar (website) and on other available calendars such as Daily Camera, Boulder County Business Report, local churches, community groups, and radio stations.
  - **Who:** City staff would update calendars as events are created, which can usually be done online and over the phone.
  - **When:** Throughout the duration of the project.

- **Where:** Boulder community calendars throughout the city.
  - **Why:** Many people routinely view the city's and other community calendars to keep up with community events, so they already have an established viewing audience that knows where to find information about community events.
  - **Cost:** This resource is typically free and would be part of normal staff work.
- **Channel 8**
    - **What:** The city's own Municipal Channel 8 and its shows like *A Boulder View*, *Inside Boulder* and *Inside Boulder News*. We would bring on experts from each of the three tracks, depending on newsworthiness, from both inside and outside the city to help keep people informed about current and future work. Would also make use of digital signage and "scrolling information," and may create short PSA announcements that can run any time. Plans are also in the works to create an Energy Future specific website on Channel 8 that has a timeline so people can follow along chronologically and view televised events they may have missed.
    - **Who:** Both city staff and area experts on topics relating to the three tracks of the Energy Future Project.
    - **When:** As needed throughout the project
    - **Where:** Boulder Municipal Channel 8 studio in the Main Library. Shows also run on Channel 8, their website, and can be posted on the city's YouTube and Vimeo channels.
    - **Why:** Channel 8's viewing population on the Internet is growing and more people are tuning in regularly to find information about the city's current events. It's also another medium that we can use to publicize events and correct misinformation. In addition, all meetings televised by Channel 8 are available for viewing on the Web at any time.
    - **Cost:** Would be a part of normal staff time
- **Social Media sites**
    - **What:** Enhancing our current presence on social medial sites like Facebook, Twitter, and YouTube.
    - **Who:** City Communication team would work with IT staff and Social Media Team to build a bigger online presence in order to reach the ever expanding population of people who use social media to receive their news.
    - **When:** Immediately and throughout the duration of the project. In order to build a social media following, information must be presented and

updated on a regular basis, so we are proposing posting information one to three times a week. Information posted will be associated with newsworthy project happenings and can be tailored to each of the three project tracks. Could also use the sites to post frequent “Energy Savings Tips” and promote existing CAP programs

- **Where:** Social media can be updated from any computer that is linked to the internet.
  - **Why:** The number of people using social media to learn about current events, both in their community and nationally/globally, is expanding exponentially. There are certain segments of the population that rely on social media to keep them up-to-date on events transpiring all around the world. Information posted on social media sites has the potential to travel well beyond the physical boundaries of Boulder.
  - **Cost:** There is typically no cost associated with posting information on social media sites and posts would be part of normal staff time.
- **Community events**
    - **What:** City of Boulder staffed information stations where people can stop by to learn more about all of the work areas. Handouts will also be available. Booths can also be focused to provide information on a specific track if warranted.
    - **Who:** City personnel will staff booths and tables at community events
    - **When:** Throughout the spring, summer and fall of 2012
    - **Where:** Community events like Farmer’s Markets, Boulder Creek Festival, art fairs, home and garden fairs, libraries, recreation centers, city-sponsored events like “Boulder Matters,” coffee shops, etc.
    - **Why:** This is an opportunity for the city to bring its messages and materials to the people instead of relying on them to attend meetings.
    - **Cost:** There may be some cost associated with registering for non-city sponsored events, but there typically is no cost to set up a table at a city-sponsored event.
- **City Council and community correspondence**
    - **What:** Monitor and assist in preparing staff responses, as appropriate, to correspondence related to this process. Council members, of course, are welcome to respond to any correspondence as they wish and feel is appropriate
    - **Who:** City staff
    - **When:** As needed throughout the duration of the project

- **Where:** Questions and comments will typically be responded to via email, but the response method may be changed depending on how the information was received.
- **Why:** It is imperative that the city responds to questions and comments from residents, businesses and the general public so that confusion is minimized and correct information is disseminated throughout the community.
- **Cost:** This is part of normal staff work

It is anticipated that the team will evaluate other options as time and budget allow and with careful consideration of the content and the best means for sharing specific types of information with the community.

### **Applied Solutions Partnership Opportunity:**

An important element of Boulder’s energy efforts will be exporting lessons learned to interested parties. Staff has been discussing the potential of forming a new partnership with Applied Solutions. The organization is a non-profit based originally out of Sonoma County, Calif., that now has a regional office in Washington DC.

Formed by elected officials in 2008, Applied Solutions was created to help local governments secure viable techniques to diversify their energy supplies in ways that save money, increase efficiency, and spur investment in the local economy. Applied Solutions held their annual conference in Boulder in 2010, after which, staff began discussing the opportunities to partner more closely to complement and support the City of Boulder priorities for localization most specifically its municipalization process. With nearly 100 US cities and counties as members, Applied Solutions hopes to document and communicate Boulder’s story of energy development to local governments across the country. More details on Applied Solutions can be found in **Attachment M**.

To facilitate this partnership, the city is considering a 1- to 2-year hosting arrangement for the Applied Solutions executive director. While the details have not been completed, it is expected that the city would provide a work station, allowing Applied Solutions to capture the process that Boulder is currently undergoing and share this experience broadly, highlighting Boulder’s progressive leadership and the localization focus of the city. There is no anticipation for the city to pay any fees beyond the hosting agreement for the services and consultation that Applied Solutions provides.

Hosting Applied Solutions will give the City of Boulder access to the “best practices” knowledge base developing at the local government level in renewable energy and efficiency. This could include simple direct install programs to financial mechanisms such as feed-in-tariffs to large entity formations such as Sustainable Energy Utilities. This would also encompass important financial analysis to vet options and inform the city's policy decisions based on investment levels and returns on the investment in efficiency, cost savings and emissions reductions.

Specific partnership benefits include:

- Develop a vehicle to help give local government's access to the process Boulder is leading through the Energy Future effort and municipalization.
- Opportunity to highlight the progressive leadership and "localization" focus of the City of Boulder.
- Conduit to national experts and technical tools to contribute to Boulder's priorities including municipalization.
- Applied Solutions will capture the process Boulder is carrying out right now on the energy work and share key findings and lessons across the country.
- Applied Solutions will provide connections to expertise as needed to help the City of Boulder analyze options

Staff will continue to discuss the hosting relationship with Applied Solutions staff, and provide more details to council as they become available.

**Conclusion:**

The team welcomes feedback and additional suggestions from City Council. Please feel free to contact Sarah Huntley at 303-441-3155 or [huntleys@bouldercolorado.gov](mailto:huntleys@bouldercolorado.gov) at any time.

## Boulder County Climate Change Preparedness Plan

Climate already affects a variety of resources managed by Boulder County, the City of Boulder, and other local municipalities. As an example, prolonged dry spells in the past decade have contributed to major wildfires on public lands that have threatened lives, impacted public health, damaged county and city property and infrastructure, and caused accelerated hill slope erosion that has polluted streams and water supplies. Resource managers working at county departments and throughout other jurisdictions already face challenges posed by the variability of climate across Boulder County.



Climate change, however, could pose a host of new challenges and require managers to pay much greater attention to resource vulnerabilities. Potential impacts could include:

- more frequent droughts and flash floods,
- greater spread of vector-borne diseases,
- increased heat waves and wildfires,
- warmer springtime temperatures that would cause snowpack to melt earlier in the year, reducing
  - the overall amount of water stored as snow,
  - runoff during the dry summer months,
- potential challenges in storing water for municipal supplies,
- reduced stream flows with subsequent impacts to
  - water quality and ecological resources and,
  - related benefits such as recreation and tourism,
- higher temperatures and fewer days with precipitation will likely increase the frequency and severity of,
  - episodes of poor air quality,
  - associated human health impacts.

**The objective of this plan is to assist county and city departments that manage climate-sensitive resources and assets to achieve their departmental objectives in the face of challenges posed by anticipated future changes in the climate of Boulder County.**

## Structure of the Plan

This plan focuses on four key sectors:

- water supply,
- emergency management,
- public health, and
- agriculture and natural resources.

This plan identifies the potential impacts of climate change, explores the implications of these changes in the context of resource management institutions, and outlines opportunities for adaptation planning efforts.



The plan has been designed so that each chapter can stand alone and provide those interested in a particular sector with information on that sector. If, for example, a resident or public health planner is primarily interested in the effects of climate change on public health issues, he or she need only read the public health chapter. This allows resource managers, their administrative leadership, and their advisory boards to extract the information most relevant to their decisions without having to read the entire plan.

It does mean that there is some duplication of information in the plan, especially between the impact discussions in the science chapter and the impact discussions in each of the four sector chapters. Despite this overlap it is recommended that users of specific chapters also read Chapter 2 of the plan, which provides a state-of-the-science overview of projected climate change along the Colorado Front Range and Boulder County in particular. Chapter 2 provides a useful context for all other chapters.

Chapters 3 through 6 contain policy-oriented assessments of opportunities to integrate climate change and adaptation planning into city and county decision-making processes, management approaches, and existing planning documents.

The overall county strategy for meeting the challenge of future climate change and implementing the plan is outlined in the final chapter.

## **Sector-specific policy recommendations**

The following recommendations come directly from each of the sector chapters. For a more detailed description of each of these recommendations, please refer to the identified chapter.

### **Water supply (see Chapter 3)**

- Create a climate adaptation learning network for water
- Provide a means to translate and communicate climate science
- Plan for a variety of different climates
- Ensure funding and support for “no-regrets” projects
- Provide a forum for community dialogue on water and climate
- Coordinate with Emergency Management officials
- Develop source water protection policies
- Prepare for the consequences of severe wildfires on water resources
- Continue public outreach on reliability criteria
- Prioritize Boulder County Parks and Open Space investments in water efficiency improvements.

### **Emergency management (see Chapter 4)**

- Continue to reduce vulnerability to hazards through implementation of mitigation recommendations within Multi-Hazard Mitigation Plans and master plans
- Incorporate climate change considerations in next update to the Multi-Hazard Mitigation Plans for the County and City of Boulder
- Incorporate “recovery mitigation” considerations in next update to the Multi-Hazard Mitigation Plans
- Continue recovery planning effort underway
- Continue to enhance flood detection network
- Continue Boulder’s Emergency Management efforts for process improvement and self-assessment
- Hire a full-time Community Wildfire Prevention Plan coordinator
- Adopt and implement the City of Boulder critical facilities and mobile populations ordinance
- Continue to enhance city and county floodplain management programs through participation in the National Floodplain Insurance Plan’s Community Rating System
- Evaluate the possibility of including higher regulatory standards for critical facilities protection in the county’s floodplain management ordinance
- Continue to prepare studies that will facilitate rapid recovery from floods and wildfires.

### **Public health (see Chapter 5)**

- Develop a comprehensive county recovery plan
- Advocate for consideration of public health impacts in other climate change-related decision-making arenas
- Enhance community public health partnerships
- Encourage viewing climate change in terms of specific challenges and impacts.

**Agriculture and natural resources (see Chapter 6)**

- Convene a multi-agency work group to coordinate resource management strategies across jurisdictional boundaries
- Promote and foster biodiversity and ecological resilience to reduce species vulnerability
- Expand and enhance monitoring networks for climate data
- Re-assess acquisition priorities
- Ask the climate question in system-wide management plans
- Prioritize information transfer on climate change issues.

**Cross-cutting policy recommendations and plan implementation (see Chapter 7)**

- Incorporate adaptation principles into comprehensive planning
- Assign a point person to coordinate adaptation activities
- Establish a permanent Climate Adaptation Planning Committee
- Regularly revisit the climate resilience plan
- Continue and expand public involvement
- Expand sectors included in plan update
- Expand communities included in plan update
- Expand community-wide education and outreach.

A draft of the plan and a survey link are available on the Climate Change Preparedness Plan page of the Boulder County website: [www.bouldercounty.org](http://www.bouldercounty.org) Click on the “Sustain” button and scroll to “Energy and Climate,” or go directly to [bit.ly/C2P2BoulderCounty](http://bit.ly/C2P2BoulderCounty)

Comments will be accepted through Feb. 24<sup>th</sup>, 2012.

Feedback will also be accepted at

P.O. Box 471, Boulder, Colorado, 80036

Attn: BOCC Climate Change Preparedness Plan

For additional information, email Sustainability Planner Lisa Friend at [lfriend@bouldercounty.org](mailto:lfriend@bouldercounty.org)



## **I. The Potential & Purpose**

State and local governments have tremendous potential to influence how and what kinds of energy are consumed throughout the country. Even small places can wield substantial effect on local energy markets through their purchasing power. Those willing to take a more proactive stance can use legislative and regulatory tools to increase local choice over energy sources and introduce alternatives like efficiency and renewables. Combined local government energy actions have the opportunity to lead a massive shift in America’s energy profile.

Founded by local elected officials in 2008, Applied Solutions was created to help local governments secure viable techniques to diversify their energy supplies in ways that save money, increase efficiency, and spur investment in the local economy. Applied Solutions provides expertise, technical tools and a peer network of local government technical staff to cities and counties committed to implementing local clean energy actions that ultimately lead to a shift in the national energy system that must happen to sustain a strong economy and environment.

## **II. Outcomes**

Our goal is to help local governments create concrete plans to initiate clean energy projects and bring renewable and energy efficiency resources to their local economies. We will work with elected leaders and staff to assess the economic and regulatory environments, create financial models, and identify strategies that fit local needs and take advantage of local conditions. As a result, we will help local governments launch projects that:

- Create jobs by investing in local clean energy projects;
- Save money through efficiency;
- Diversify local energy supplies with renewable energy sources;
- Increase sustainability and livability of communities;
- Enhance local control over energy supplies;
- Reduce emissions; and
- Increase reliability.

## **III. Activities and Support for Local Governments**

### **a. Technical**

1. Applied Solutions Technical Advisory Council: local government energy action clearinghouse managed by local government technical staff to share “what’s working on the ground”

## ATTACHMENT M

2. A series of Technical Manuals which detail processes for designing local energy action plans and individual clean local energy actions
  3. A core partnership with www.JobsoftheFuture.org collaborative effort to provide dynamic, online resource of replicable local clean energy actions
- b. Finance and Economics
1. Design of a financing strategy to support local clean energy actions
  2. Economic analysis of project design to determine and establish the implications for:
    - i. Local job creation
    - ii. Economic impacts on the broader community
    - iii. Retained earnings at the household and business level through energy and water savings
    - iv. Reduced strain on government resources due to decreased reliance on government services and increase in tax revenues
  3. Identify appropriate potential financing vehicles such as Sustainable Energy Utilities, public-private partnerships or similar strategies with the ability to deliver clean power and monetize efficiency savings to fund local clean energy development.

### IV. Our Team

#### Applied Solutions Board of Directors

Sonoma County Supervisor Valerie Brown= California  
Arlington County Commissioner Jay Fissette- Virginia  
City of Clarksburg Councilman Jim Hunt- West Virginia  
City of Asheville Mayor Terry Bellamy- North Carolina  
Boulder County Commissioner Ben Pearlman- Colorado  
Ray List, Energy Industry Expert  
Dr. Margaret Taylor, Lawrence Berkeley National Laboratory

#### Applied Solutions Local Government Technical Advisory Council Co-Chairs

Jonathan Koehn, City of Boulder, Colorado  
Amy Bolten, Sonoma County Water Agency, California

#### Applied Solutions Team

Michelle Wyman, Executive Director  
Amy Bolten, Deputy Director (sponsored by the Sonoma County Water Agency)  
Jim Barrett, Senior Advisor  
Colin Bishopp, Senior Advisor  
Rusty Klassen, Senior Advisor  
Beth Denitz, Senior Writer  
Kevin Morgan, Senior Program Associate  
Claire Anderson, Program Associate  
Lewis Gautieri, Accountant

## ATTACHMENT M

### Partners & Collaborators

National Association of State Energy Offices  
National League of Cities  
National Association of Counties  
Lawrence Berkeley National Laboratory  
Los Alamos National Laboratory  
National Renewable Energy Laboratory  
Urban Sustainability Directors' Network  
CLEAN Coalition  
Local Power  
American Council on Renewable Energy (ACORE)  
LEAN Energy  
Clean Economy Development Center

### Applied Solutions Members

Please refer to the Applied Solutions List of Members.