Boulder City Council
STUDY SESSION

Tuesday, July 23
5-8 PM

Presentation of Independent Review of Electric Utility Modeling

Update on Boulder's Energy Future Municipalization Exploration Project

Followed by a
SPECIAL CITY COUNCIL MEETING
8 PM
or immediately upon the conclusion of the Study Session

Council Chambers
Municipal Building
1777 Broadway

Submit Written Comments to City Council
ATTN: Alisa Lewis, City Clerk
1777 Broadway, 2nd Floor
P.O. Box 791
Boulder, CO 80306
or Fax to 303-441-4478
or E-mail: council@bouldercolorado.gov

CITYOF BOULDER
STUDY SESSION

To: Members of City Council

From: Jane S. Brautigam, City Manager

Date: July 23, 2013

Subject: Findings by Third Party Independent Expert Reviewer of Modeling

PURPOSE:

The presentation of findings by the third party expert will provide information for the council so they may make a final determination whether the conditions of Charter section 178(a) have been met.

QUESTIONS FOR COUNCIL:

Does council have any questions for the third-party evaluator on their evaluation or findings?

BACKGROUND:

After the approval of Ordinance No. 7898 on April 16, 2013, the city manager began the process of setting standards for the selection and coordination of the work of a third-party independent expert to verify whether Charter section 178(a) requirements can be met. The city manager authorized the release of a request for proposal (RFP) on April 17, 2013, that established the selection process and assigned a project manager to administer the review. The RFP was advertised through the BidNet system, the Boulder Daily Camera, as well as the Energy Future website. From the six bids submitted, the city manager selected two finalists. The finalist's proposals were posted on the city's website, and both firms made presentations to the public on May 8, 2013. Comments from the public were solicited at this meeting as well as on the city's website between May 3 and May 10, 2013. The city manager selected PowerServices, Inc. after an interview of the two finalists and considering the comments of the public.

PowerServices, Inc. has extensive experience in engineering, financial, and management services for electric utilities, including municipal systems, cooperatives, investor-owned, industrial and

privately owned utilities. Gregory L. Booth, president, is the project lead and a registered professional engineer licensed in 22 states. He has served over 300 utility clients in 40 states throughout his career, represented clients before state commissions, been accepted as an expert before FERC and seven state commissions on rates and regulatory matters, and accepted as an expert in 12 state and federal courts on utility and engineering matters. The response to the RFP is at https://www-static.bouldercolorado.gov/docs/3rd_Party_Review_RFP-1-201306061317.pdf.

The contract with PowerServices, Inc. was awarded on May 20, 2013. Power Services, Inc. has met all the interim dates of the calendar that were included in the RFP. At the study session on July 23, 2013, PowerServices Inc. will deliver its findings and respond to questions from council.

Update on Boulder's Energy Future Municipalization Exploration Project

Boulder City Council
STUDY SESSION

Tuesday, July 23
6 to 8 p.m.
Council Chambers
Municipal Building
1777 Broadway

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MEMORANDUM

TO: Members of City Council

FROM: Jane S. Brautigam, City Manager
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DATE: July 23, 2013

SUBJECT: Study Session: Boulder's Energy Future Municipalization Exploration Project

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I. PURPOSE

This work session is intended to provide information that will guide City Council's decision on Aug. 6 about whether to approve, on second reading, a condemnation ordinance authorizing city staff to initiate negotiations with Xcel Energy (Xcel) for the acquisition of assets necessary to form a local electric utility. Because consideration of a first-reading condemnation ordinance requires the convening of a special City Council meeting, scheduled for July 24, information related to that is covered in a separate memo.

The purposes of this study session are to:

- Update council and receive feedback on the ongoing modeling and analysis with respect to the status quo and municipalization options, as presented Feb. 26 and April 16, 2013.

- Present and receive council feedback on a qualitative analysis. This analysis transcends the quantitative evaluation, which was conducted to determine if the city *could*, based on charter requirements, form a local electric utility. Looking at the options qualitatively is intended to help answer the question about whether the city *should* proceed with such an action.
- Receive feedback and any direction related to the third-party independent evaluation.
- Describe the process and ideas generated by the City/Xcel Task Force and receive council feedback on ideas proposed by Xcel.
- Receive feedback from council on the Governance Working Group's recommendations with respect to establishing an electric utility advisory board, including membership, skills and the role the board should play if a local electric utility is created.
- Provide updates on regulatory, legal and financial steps taken to date.
- Update council on public processes related to this issue.
- Define or refine next steps.

II. QUESTIONS FOR COUNCIL

1. Does council have sufficient information and confidence to move forward with acquisition of Xcel's electric system assets through negotiation and if that fails, through condemnation, and to make a decision about whether to pursue creation of a local electric utility?

2. Does council want staff to proceed with discussions about Xcel's proposal related to potential new products and services and if so, what additional information would council need to decide if this is worth pursuing instead of creating a local utility?

III. EXECUTIVE SUMMARY

This memo represents a diligent effort to understand and incorporate a variety of risks and benefits associated with creating a local electric utility. There is no doubt that both exist. The following are key takeaways from this phase of exploration:

- The new round of modeling shows that all goals related to cleaner, reliable and local energy can be met, even if some underlying costs are increased, as can the charter metric of offering comparable or better rates on Day 1. There are differences in probability, however, related to long-term cost savings between these results and earlier analyses.

- This outcome is not surprising. In this phase, the city's model was intentionally stress tested by incorporating higher levels of risk in the form of costs. This was done to address concerns that the initial analysis was overly optimistic and help identify the point at which a local electric utility would be unable to perform as well or better than Xcel. As expected, adding costs to the municipalization options

decreased the financial favorability of some of these, but the changes made fail to take into account opportunities to reduce a local utility's exposure.

- Many, if not all, of the risks can be mitigated as a utility is established and managed. Even the possible impact of stranded costs – one of the largest unknowns – could be eliminated by purchasing power from Xcel until previous investment obligations are met, although this could lead to a longer time to reach the community's goals.

- When examining the challenges and opportunities qualitatively, it is clear that a local electric utility would be better positioned than Xcel to adapt to rapidly changing industry and market conditions. A local utility would be able to respond with flexibility, timeliness and clarity about Boulder's specific needs and goals.

- Xcel, as a result of partnership discussions over the past few months, has proposed a series of products and services it believes could help Boulder – and other customers throughout its territory – achieve green energy goals. While the city recommends further consideration of this path and continued dialogue with Xcel, the proposal does not represent a partnership that would give Boulder more of a voice in investment decisions and would likely result in customers paying increased rates for the products and services the community chooses.

- Staff recommends moving forward on Aug. 6 with the next steps in pursuing a local electric utility. This includes approving an ordinance to initiate negotiations with Xcel and if necessary, condemnation litigation to acquire the required assets. It will be important, however, that the city's work in Phase 3 incorporate all that has been learned about the potential impacts of pushing risks – even to extremes – so they can be addressed proactively.

Remembering how we got here

At the Feb. 26 City Council Study Session, staff presented preliminary modeling and acquisition analyses related to six specific Energy Future options and discussed the goal of creating "The Electric Utility of the Future." This utility, whether owned by the city or formed through a new partnership with Xcel, would strive to be a leader in reducing the impact our community's electric use has on climate change and provide local energy services that meet the unique needs and values of Boulder customers—including customers' ability to maximize energy efficiency, develop customized energy solutions and pursue local and onsite renewable generation opportunities.

On April 16, City Council voted to move forward with Phase 2 of the Municipalization Exploration project. Since then, staff has been working intensely to refine the options and incorporate new information to address community feedback and better inform council's decision about whether to proceed with acquisition and associated litigation.

This work session marks another significant milestone in the Municipalization Exploration project. As staff has continued to evaluate the options, through research, community outreach and learning from other utilities, the vision of a utility of the future and the city's understanding of ways it could address risk are clearer than ever before.

Updates made to the municipal utility models
As stated previously, modeling results presented in February were based on the best information available at the time and illustrated how a city-owned utility would meet the charter test under varying conditions. Since then, updated cost assumptions have been incorporated into the models. In addition, the models have been stress-tested with additional risks to identify issues that could impact the city's ability to meet those charter tests. More in-depth analysis examined the likelihood of each of these risks and explored the actions a utility would take to mitigate them.

In general, the modeling results show that the metrics related to renewable energy, greenhouse gas emissions, debt service coverage and reliability can be met at levels comparable to those presented in February and April of this year. The charter requirement related to Day 1 rates can be met and costs can be kept comparable to Xcel's for years into the future. Actual ongoing costs and the ability to keep these comparable will depend upon the amount and terms of city-issued debt to cover stranded and acquisition costs. The city would need to proceed cautiously and potentially adjust how a local utility would operate, at least in its initial years, based on the outcomes of legal and regulatory proceedings that will define this overall debt. Nonetheless, with rates that are comparable to Xcel's over time, a local utility should be able to:

- Make investments in proactive grid management and undergrounding to increase reliability;
- More than double renewable energy;
- Include ongoing energy efficiency and local solar investments that meet or exceed what Boulder currently receives; and
- Establish a strong foundation for incorporating emerging technology to meet both our community's environmental and economic vitality goals.

The following chart presents options at four levels of stranded and acquisition cost ($150 million, $214 million, $277.5 million, and $405 million) as compared to the Xcel Baseline. In all options, carbon intensity and emissions were half those of Xcel and renewable resources were double Xcel's, increasing to more than 50 percent of the resource mix. Even with the additional risk and costs added to the assumptions, the low cost option at $150 million in stranded and acquisition costs have a high probability (nearly 80 percent) of savings over 20 years when compared to Xcel. Three options at $150 million in stranded and acquisition cost exceed a 50 percent likelihood of savings, and two options at $214 million in stranded and acquisition costs exceed a 50 percent likelihood of savings.

While the probability of long-term savings is lower than shown in February, it is important to note that the actual cost per kWh differential between options at various levels of stranded and acquisition costs is in the tenths of a cent. What this suggests is that there are opportunities to improve savings over time by managing costs or modifying resource procurement strategies.

The following tables summarize the updated modeling results and metrics.

$150 Million in Stranded and Acquisition Costs						
Data	Unit	Xcel Baseline	Low Cost	Low Cost (50% Wind)	No Coal	Local Generation
Revenue Required for Operations Over 20 Years (NPV)	$millions	$2,629	$2,489	$2,523	$2,693	$2,556
Revenue Required for Local Electric Utility Over 20 Years Compared to Xcel Energy (NPV)	$millions	n/a	$140	$106	-$64	$73
Cost Paid by Utility Customers, Averaged Across Rate Classes, in 2017 ("Day 1")	cents/kWh	11.24	9.05	9.45	10.17	9.64
Cost Paid by Utility Customers, Averaged Across Rate Classes, Over 20 Years	cents/kWh	15.25	14.43	14.63	15.62	14.82
Percent of Electricity Consumption Coming from Renewables in 2017	%	23.10%	43.60%	60.20%	55.40%	61.20%
Percent of Electricity Consumption Coming from Renewables in 2022	%	22.60%	45.10%	61.00%	55.10%	62.10%
Percent of Electricity Consumption Coming from Renewables in 2037	%	24.40%	56.30%	58.60%	55.30%	59.70%
Carbon Intensity of Electricity 2017	kg CO_2e/MWh	719.13	354.25	250.77	201.43	244.19
Carbon Intensity of Electricity 2022	kg CO_2e/MWh	685.26	365.55	260.47	203.83	252.71
Carbon Intensity of Electricity 2037	kg CO_2e/MWh	481.28	217.31	206.18	203.40	199.96
Total Carbon Emissions in 2017	mtCO_2e	1,136,443	559,814	396,285	318,322	385,890
Total Carbon Emissions in 2022	mtCO_2e	1,118,076	596,429	424,989	332,570	412,329
Total Carbon Emissions in 2037	mtCO_2e	846,919	382,408	362,822	357,933	351,869

Table 1

$214 Million in Stranded and Acquisition Costs						
Data	Unit	Xcel Baseline	Low Cost	Low Cost (50% Wind)	No Coal	Local Generation
Revenue Required for Operations Over 20 Years (NPV)	$millions	$2,629	$2,584	$2,618	$2,788	$2,651
Revenue Required for Local Electric Utility Over 20 Years Compared to Xcel Energy (NPV)	$millions	n/a	$45	$11	-$159	-$22
Cost Paid by Utility Customers, Averaged Across Rate Classes, in 2017 ("Day 1")	cents/kWh	11.24	9.06	9.45	10.17	9.64
Cost Paid by Utility Customers, Averaged Across Rate Classes, Over 20 Years	cents/kWh	15.25	14.98	15.18	16.17	15.37
Percent of Electricity Consumption Coming from Renewables in 2017	%	23.10%	43.60%	60.20%	55.40%	61.20%
Percent of Electricity Consumption Coming from Renewables in 2022	%	22.60%	45.10%	61.00%	55.10%	62.10%
Percent of Electricity Consumption Coming from Renewables in 2037	%	24.40%	56.30%	58.60%	55.30%	59.70%
Carbon Intensity of Electricity 2017	kg CO_2e/MWh	719.13	354.25	250.77	201.43	244.19
Carbon Intensity of Electricity 2022	kg CO_2e/MWh	685.26	365.55	260.47	203.83	252.71
Carbon Intensity of Electricity 2037	kg CO_2e/MWh	481.28	217.31	206.18	203.40	199.96
Total Carbon Emissions in 2017	mtCO_2e	1,136,443	559,814	396,285	318,322	385,890
Total Carbon Emissions in 2022	mtCO_2e	1,118,076	596,429	424,989	332,570	412,329
Total Carbon Emissions in 2037	mtCO_2e	846,919	382,408	362,822	357,933	351,869

Table 2

$277.5 Million in Stranded and Acquisition Costs						
Data	Unit	Xcel Baseline	Low Cost	Low Cost (50% Wind)	No Coal	Local Generation
Revenue Required for Operations Over 20 Years (NPV)	$millions	$2,629	$2,680	$2,714	$2,884	$2,747
Revenue Required for Local Electric Utility Over 20 Years Compared to Xcel Energy (NPV)	$millions	n/a	-$51	-$85	-$255	-$118
Cost Paid by Utility Customers, Averaged Across Rate Classes, 2017 ("Day 1")	cents/kWh	11.24	9.07	9.46	10.18	9.65
Cost Paid by Utility Customers, Averaged Across Rate Classes, Over 20 Years	cents/kWh	15.25	15.54	15.74	16.72	15.93
Percent of Electricity Consumption Coming from Renewables in 2017	%	23.10%	43.60%	60.20%	55.40%	61.20%
Percent of Electricity Consumption Coming from Renewables in 2022	%	22.60%	45.10%	61.00%	55.10%	62.10%
Percent of Electricity Consumption Coming from Renewables in 2037	%	24.40%	56.30%	58.60%	55.30%	59.70%
Carbon Intensity of Electricity 2017	kg CO_2e/MWh	719.13	354.25	250.77	201.43	244.19
Carbon Intensity of Electricity 2022	kg CO_2e/MWh	685.26	365.55	260.47	203.83	252.71
Carbon Intensity of Electricity 2037	kg CO_2e/MWh	481.28	217.31	206.18	203.40	199.96
Total Carbon Emissions in 2017	mtCO_2e	1,136,443	559,814	396,285	318,322	385,890
Total Carbon Emissions in 2022	mtCO_2e	1,118,076	596,429	424,989	332,570	412,329
Total Carbon Emissions in 2037	mtCO_2e	846,919	382,408	362,822	357,933	351,869

Table 3

$405 Million in Stranded and Acquisition Costs						
Data	Unit	Xcel Baseline	Low Cost	Low Cost (50% Wind)	No Coal	Local Generation
Revenue Required for Operations Over 20 Years (NPV)	$millions	$2,629	$2,875	$2,909	$3,078	$2,942
Revenue Required for Local Electric Utility Over 20 Years Compared to Xcel Energy (NPV)	$millions	n/a	-$245	-$279	-$449	-$312
Cost Paid by Utility Customers, Averaged Across Rate Classes, in 2017 ("Day 1")	cents/kWh	11.24	9.09	9.48	10.19	9.67
Cost Paid by Utility Customers, Averaged Across Rate Classes, Over 20 Years	cents/kWh	15.25	16.67	16.87	17.85	17.06
Percent of Electricity Consumption Coming from Renewables in 2017	%	23.10%	43.60%	60.20%	55.40%	61.20%
Percent of Electricity Consumption Coming from Renewables in 2022	%	22.60%	45.10%	61.00%	55.10%	62.10%
Percent of Electricity Consumption Coming from Renewables in 2037	%	24.40%	56.30%	58.60%	55.30%	59.70%
Carbon Intensity of Electricity in 2017	kg CO_2e/MWh	719.13	354.25	250.77	201.43	244.19
Carbon Intensity of Electricity in 2022	kg CO_2e/MWh	685.26	365.55	260.47	203.83	252.71
Carbon Intensity of Electricity in 2037	kg CO_2e/MWh	481.28	217.31	206.18	203.40	199.96
Total Carbon Emissions in 2017	mtCO_2e	1,136,443	559,814	396,285	318,322	385,890
Total Carbon Emissions in 2022	mtCO_2e	1,118,076	596,429	424,989	332,570	412,329
Total Carbon Emissions in 2037	mtCO_2e	846,919	382,408	362,822	357,933	351,869

Table 4

Another consideration to make when evaluating these findings is that the Xcel Baseline, used for comparison purposes to test the city's ability to meet its charter requirements, was not stress-tested for risks inherent in its resource mix or capital investment plan. It is impossible to do so at this time because there is insufficient data. The results of the comparison between the municipal utility model and the Xcel model should be viewed with this disparity in mind.

In response to feedback from the community and Xcel, the modeling teams delved deeper into some possible worst-case assumptions for the local electric utility, such as no carbon tax or fee; all production tax credits going away such that renewable resources are less cost competitive; and the potential for significant increases in natural gas prices. In addition, the team adjusted Xcel's Baseline to be even more conservative. Lastly, at the request of council, a more robust distributed generation resource was included in the mix to test its impact on costs and resources.

The working groups provided significant feedback about concerns they had as well as those raised by Xcel. They are primarily operational issues such as reliability, staffing and outsourcing, emergency response, transmission access, resource portfolio diversity and others. Staff has analyzed the risks with respect to a municipal utility and how those risks might be mitigated. These are discussed in detail in **Attachment A.**

The issue of multiple compounded risks generated significant debate within the working groups, with some saying that such a confluence is unlikely and that the results fail to take into account the emergence of new technology, which could have a profound impact on the potential success of a local electric utility that is flexible enough to incorporate it. By modeling all of these risks or potential factors at once, it's possible to see how many simultaneous risks a local electric utility could bear without "breaking the model." As was expected, some of the options appear less likely to meet the charter test when loaded with these multiple risk factors (even though others continue to perform well). It is important to consider, however, the low probability of all these risk factors occurring at the same time and not being addressed through various mitigation measures.

The Utility of the Future

The research conducted to date continues to demonstrate the potential for shifting to a new utility business model. In fact, this is a shift that is being discussed and pursued in communities and regions around the country and the world. Today's electric utilities face unprecedented challenges. On top of traditional goals of safety, efficiency and reliability, utilities must now address global environmental issues such as climate change, national security issues surrounding dependence on foreign energy and a growing desire by customers to have greater control over energy use decisions. As has been discussed in previous study sessions, meeting these challenges requires transformation of the traditional electric utility business model.

While delivering safe and reliable electricity will always form the bedrock of what the electric utility serving Boulder will do, the utility of the future must shift away from a command-and-control model of centralized generation and electricity sales and toward a model that is increasingly being referred to as "the energy Internet"—a complex and resilient system of distributed generation, customized solutions, empowered customers and energy-and-data flows. In essence, the utility of the future will treat electricity as a service rather than a commodity. Some of the key drivers behind this shift include:

- The imperative to reduce greenhouse gas (GHG) emissions upwards of 80 percent by 2050;
- Significant climate/clean energy policy momentum in a majority of US states, with likely near-term federal action that will further increase costs and complicate development of fossil-fuel based electricity generation;
- Continued decline in production costs for renewable energy technologies;
- Rapid innovation in energy technology;
- Growing support and uptake of regulatory policies to allow utilities to utilize large-scale energy efficiency as the lowest-cost energy resource;

- Implementation of technologies that offer utilities and their customers the information and tools to better manage electricity usage;
- Growing interest and activity in the development of plug-in electric vehicles (PEVs); and
- Increasing recognition of domestic natural gas as a resource that is less carbon intensive than other fossil fuels for large-scale electricity generation and complementary to renewable energy resources.

While each of these drivers will materially influence the entire electric power sector in the coming years, the city's analysis indicate that a new local utility—developed from the beginning with the aim of embodying a different business model—would be better positioned for long-term success than a large traditional utility that must significantly alter its current business model, culture and operations while also constrained by previous investments.

Specific examples that illustrate this potential are provided as part of the qualitative analysis in Section V.

City-Xcel Partnership Discussions
The city continues to receive questions about whether the community's goals could be achieved under some new agreement with Xcel. To identify opportunities, the city and Xcel convened a group of community leaders to explore a potential partnership and achieve Boulder's Energy goals. The membership had a diverse set of perspectives and priorities but worked together during frequent meetings from April until early July to develop some innovative possibilities. Xcel developed a set of recommendations or offerings, and presented the Task Force with a proposal that is discussed in Section VI.

Staff intended to model the proposal submitted by Xcel as a comparison to the Xcel status quo and municipalization alternatives. Unfortunately, there was neither sufficient time nor detail in the proposal for the city or Xcel to perform an adequate economic comparison and modeling exercise. This analysis could be performed later should council direct staff to continue discussions with Xcel based on the company's proposal.

Governance
The city staff committed to the business community and potential county customers that it would establish a governance working group to review the charter utility advisory board role, membership and skills. The working group was diverse representing all types of potential electric utility customers, including business and out-of-city residents. The key recommendations include a charter change to allow one representative to be from out-of-the-city but not necessarily part of the business community. The group also explored the role of the board in terms of recommendations related to rates and fees and defined the skill set that would be most helpful for this board. Section VII is a summary of the report.

Regulatory Updates
Lastly, this memo provides updates with respect to regulatory filings (which are still in process) and feedback about interest rates, which impact the cost of debt issues to finance municipalization.

Condemnation and Timing
As explained in previous memos, the city, Xcel and other Xcel ratepayers would benefit if the city could provide a clear indication about whether it intends to leave Xcel's system. The company has said in filings before the Public Utilities Commission that it will seek to secure new generation of electricity at the end of this year, in order to meet increasing demand. If Boulder customers are no longer drawing from this supply, these additional resources would not be necessary.

The community-funded exploration that has been conducted to date has yielded significant and extremely valuable information. The staff team believes the extensive modeling demonstrates the city's ability to meet the charter test and provides adequate information about risks to allow the community – and a potential utility – to address them.

It is important to note that while staff is asking for council to approve the condemnation ordinance on Aug. 6, the ordinance anticipates that the good-faith negotiation process required by Colorado law would not be completed before the end of the year. Accordingly, the condemnation ordinance does not authorize filing of a complaint until January 2014. This allows for additional time for continued discussions with Xcel and analysis, to the extent these would be fruitful.

Conclusion
None of the new modeling and subsequent results changes the key conclusion that a local electric utility is possible under the charter metrics. They do, however, underscore the importance of having clear plans to manage stranded and acquisition cost rulings and other potential risks if and before they occur. Staff believes this is both reasonable and achievable.

While researching specific examples of how utilities elsewhere are meeting key aspects of Boulder's Energy Future goals it became apparent how much the electric industry is changing. The ideas often discussed by city staff and community leaders in Boulder are becoming reality in various communities, although no single utility has done all the things envisioned here. So the question that remains is what option – creating a local electric utility or remaining with Xcel, either in the status quo or under a proposal it developed out of the partnership working group process – could achieve Boulder's energy goals the most quickly, effectively and affordably? Staff viewed these options against the goals and finer-level objectives identified by council. The results show that while many of the goals could be achieved by both a local utility or Xcel, there are key differences related to timing, Xcel's motivation to make necessary changes, where decision-making authority would rest (PUC vs. local governance), and the impact of state and federal regulations.

Based on 1) the ability of a local utility to meet the charter metrics; 2) the ways the city has identified to mitigate potential risks; and 3) the significant additional value the Boulder community could realize through a local electric utility, staff recommends council move forward with the next steps supporting municipalization. This includes consideration and approval of an ordinance authorizing the condemnation of Xcel's assets at an appropriate point if negotiation to acquire is not successful. At the same time, however, staff urges council and the community to understand that the additional modeling highlights the importance of understanding and responding to potential risks, especially in the unlikely event that several of these risks were to come to fruition at the same time. Phase 3 will include further analysis about how a local utility would be set up so that it is solidly positioned to address any possible worst-case scenarios.

In addition, because some of the final costs are not yet known and there remains a possibility that the city could impact change at a more regional level, staff supports continuing to work with Xcel to better understand its proposal. This should occur as a parallel path to municipalization, with the understanding that this dialogue would no longer be appropriate if condemnation proceedings become necessary.

IV. QUANTITATIVE ANALYSIS: MODELING PROCESSES

A. Summary of Modeling Results

This latest round of modeling is intended to highlight the risks associated with possible formation of a local electric utility and to model those risks in such a way as to determine the overall impact on the city's ability to meet its charter requirements.

The modeling has always been viewed as iterative, with each round allowing the city to refine its understanding of these risks. The city was able in this phase of modeling to modify assumptions relating to the Xcel Baseline, though this continues to be limited due to a lack of current information about what Xcel factors in to its resource and cost models, as well as a lack of accurate information about how Xcel might respond to changing conditions in the future. Notwithstanding this limitation, the city's model inputs and assumptions have been updated based on feedback from the working groups and on more current data provided by Xcel in its filings at the Colorado Public Utilities Commission (PUC).

The following table summarizes the charter metrics results.

Metric Related to Charter Requirements	Performance Under Revised Modeling
Rates not to exceed Xcel's at time of acquisition	• Met under some options that prioritize lower costs. • Subject to the level of stranded and acquisition costs, this could be done with or without capitalized interest. • Comparable rates possible for the entire 20 years in some options (low cost, local generation at $150M and $214M).
Debt service coverage ratio of 1.25	• Debt coverage of 1.25 is modeled as a requirement. • All other charter metrics could be met for some options even if the municipal utility received a credit rating lower than expected and/or carried a coverage ratio of 2.0.
Comparable reliability	• This has been built into the modeling through proactive operations and maintenance planning. • Aging distribution and transmission system components are replaced and updated. • Costs include undergrounding 40% of the overhead distribution lines during the initial 20 years and the entire system over 50 years. • Resource models include 15% extra resource purchases to ensure sufficient reserves.
Increased renewable energy compared to Xcel's at five and 20 years	• Using the resource plan that Xcel updated in April for its 2011 Electric Resource Plan, all of the local electric utility options nearly [or more than] double the renewable energy on Day 1 of the models.
Reduced greenhouse gas emissions compared to Xcel's at five and 20 years	• Using the resource plan that Xcel updated in April for its 2011 Electric Resource Plan, all of the local electric utility options cut total GHGs attributable to Boulder. • Similarly, the GHG intensity of the electricity Boulder would receive, is cut in half or lower on Day 1 of the models.

Table 5: Summary of Performance Against Specific Charter Requirements and Metrics

B. A Refresher: Why Model Risk? How is it Modeled?

The feasibility modeling is illustrative and is designed to identify large risks that can impact a local electric utility. It is not designed to lock Boulder into a particular resource package and it does not reflect the city's legal positions; instead, it shows potential costs, rather than rates customers would pay, and it offers examples about the types of services a local utility might offer. The modeling shows different decisions the local electric utility could make about resources and infrastructure investments depending on how the world might look in 2017 and over the subsequent 20 years. Therefore, while it provides guidance for identifying and mitigating risks, it does not commit to a particular path. These decisions would have to be made later, once actual conditions were known.

HOW RISK IS MODELED

The model includes wide ranges of costs for a small number of high-impact variables. The ranges were developed using publicly available information that is relevant to Colorado. Sometimes, multiple decisions factor into the prices that are modeled: for example, the median price for wind power in 2017 is based on feedback from the working groups that future state and federal subsidies will likely not be as large as the existing Production Tax Credit, but that the trend is toward decreasing costs as technology improves. Running the models many times under different price levels shows where changes in the future could have an impact on the ability of a local electric utility to meet the requirements of the City Charter.

WHAT WE'VE LEARNED ABOUT FUTURE RISK FOR A LOCAL ELECTRIC UTILITY

While the future is uncertain, there are several variables that could have a significant impact on whether a local electric utility could meet the charter requirements, and many other variables that would not have a significant impact. Stranded and acquisition costs are among the largest impacts, which is why the city is focusing on refining its valuation of Xcel's infrastructure and requesting that the Federal Energy Regulatory Commission (FERC) answer a threshold legal question related to stranded costs. As answers come in for these remaining questions, the city expects to be able to shrink the large range of debt that was modeled to provide a more accurate view of future options.

The prices for wind and natural gas also play an important role, as the resource portfolios modeled include significant amounts of both. Macroeconomic conditions and the utility's credit rating impact interest rates on both taxable and non-taxable debt—this effect increases when higher levels of stranded and acquisition costs are modeled. The electric utility's investments in operations and maintenance, which includes both maintaining the grid and providing customer service, further impact the overall cost-effectiveness of the enterprise. Finally, state and federal actions on environmental issues like carbon policy will have an impact. There are numerous other assumptions that come into play in the model—such as the level of funding for energy efficiency rebates or transmission costs—but none have as significant an impact as these other variables.

MODELING XCEL'S RISKS

The city's consultants developed a comprehensive "Baseline" for Xcel's future resource mix and costs, using publicly available information filed with the PUC and FERC. A few elements of this Baseline can be exposed to risk in similar ways to the local electric utility options. For example, Xcel's interest rates on debt and return on equity; the prices it would pay for new wind contracts; the prices it pays for natural gas; and the cost it would pay were a carbon price to be implemented can all be varied similarly to how they are varied on the local electric utility options. However, Xcel may not be fully incorporating some key risks in its publicly available resource planning or rate filings. For example, a variable with a significant impact on customers' bills—the price Xcel pays for coal, which makes up over 50 percent of its resource mix—is only projected into the future with one low price trajectory for long-term planning purposes. In contrast, the

city has looked at the local utility's major resources, wind and natural gas, with three price levels that have been developed to anticipate 80 percent of the possible prices the utility could see on the market.

As part of its annual Securities and Exchange Commission (SEC) 10-K filing, Xcel does address (at least at a high level) some risks to which it believes it could be exposed. Interestingly, if Boulder were to establish a local utility based on providing electricity as a service rather than a commodity (as discussed in the executive summary of this memo), the risks Xcel cites as its largest could actually represent opportunities for a Boulder utility. The following box spells these out more specifically.

Risks Identified by Xcel in its 2012 SEC Filing

- "Xcel Energy's industrial and large commercial customers have the ability to own or operate facilities to generate their own electricity" (p.42)
- "[D]istributed solar generation may become an economic competitive threat to our load growth in the future . . ." (p.49)
- "Unusually mild winters and summers could have an adverse effect on our financial condition, results of operations, or cash flows" (p.42)

Finally, Xcel notifies its stakeholders that part of its mitigation plan for some risks is to pass costs onto its customers. For example, in 2012, Xcel noted that:

> [I]t is not possible to determine when or to what extent additional facilities or modifications of existing or planned facilities will be required as a result of changes to environmental regulations, interpretations or enforcement policies or, what effect future laws or regulations may have upon Xcel Energy's operations . . . Although the impact of these policies on Xcel Energy will depend on the specifics of state and federal policies, legislation, and regulation, we believe that, based on prior state commission practice, we would recover the cost of these initiatives through rates" (p.42).

"CHANGING COURSE"

An area where the models have been subject to criticism is that no results have been shown that reflect Xcel "changing course" in the period of 2017 to 2037 based on different market or regulatory conditions. The most prominent example is related to any potential increase in the cost of carbon: and the idea that putting a price on carbon could lead Xcel to make different resource decisions. While the modeling could theoretically show this, Xcel has not provided sufficient information to the city about how it would react under scenarios like that. As a result, city modeling would be speculative at best. Moreover, Xcel has significant previous and long-term investments in coal-based load generation that could limit its ability to respond to changing conditions. The modeling results provide a variation without a carbon price to minimize the impact of this particular issue. This change was requested by members of the community and recognizes the political uncertainty surrounding this issue.

C. Options Analysis: What It Tells Us

The purpose of modeling options for the local electric utility is to help identify, evaluate and manage risks. Because resource costs are generally the highest single ongoing cost for utilities, the modeling sought to illustrate possible resource packages for which the local electric utility might contract. The financial and resource modeling analysis focuses on the "Low Cost" option, as this appears to strike the best balance of all of the community's energy goals, and then describes the trade-offs associated with the variations on that option.

Although a local electric utility would have to meet a series of metrics—including financial requirements related to rate parity that are in the City Charter—it has flexibility in what path it would take to get there. By varying the costliest operating parameters, the modeling tests the feasibility of prioritizing different resource mixes once stranded and acquisition costs become known. For example, if actual stranded and acquisition costs came in closer to the highest amount modeled, council could choose a least-cost resource mix ("Low Cost" option), and if they come in lower, council could look to eliminating coal ("No Coal" option). **Figure 1** illustrates how this might work.

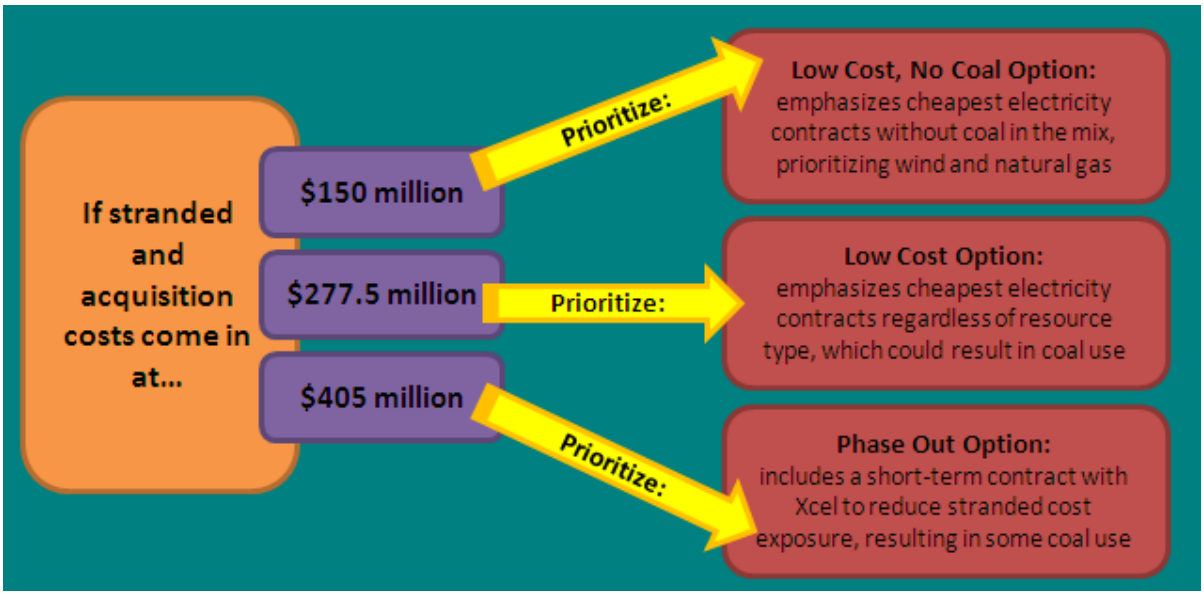

Figure 1: Example of Decision Tree Once Stranded and Acquisition Costs Are Known

The following table briefly summarizes the options that were modeled for this phase of the analysis. Given that the "Lowest GHGs" options were not cost effective in the first phase of modeling, this phase focused exclusively on variations to the "Low Cost" option. Additionally, the "Phase Out" option—which was designed to reduce risk by purchasing power from Xcel for a five-year period, mitigating any stranded cost obligation—was not re-modeled at this time because the city has been awaiting a decision from the FERC on its declaratory order. In addition, the phase out option would likely be a variation of the low cost model with a portion of the power supply being purchased from Xcel in the early years to mitigate stranded cost. As a result, this analysis focuses on the "Low Cost" option and then describes the trade-offs associated with potential variations on that option.

Name of Option	Description	Feb/Apr Modeling	July/Aug Modeling
Xcel Baseline	Forecasts Xcel's revenue requirements over 20 years based on publicly available filings at the PUC and allocates a proportion of them to Boulder for comparison to the local electric utility options.	√	√
Low Cost	A least-cost resource mix of renewable energy baseload (wind and hydroelectricity), natural gas for stability, and some purchases from the wholesale market, which includes coal. The July modeling requires the resource mix include at least 30% wind.	√	√
No Coal	Variation on the "Low Cost" option (and subsequently the "Low Cost (50% Wind)" option that blocks the utility from acquiring energy resources on the market that may include coal.	√	√
Lowest GHGs	Variation on the "No Coal" option which reduces GHGs to the maximum cost-effective extent.	√	
Reduce Use	Variation on "Lowest GHGs" option in which energy efficiency investment is more than doubled, reducing the need to purchase electricity.	√	
Low Cost (50% Wind)	Variation on the "Low Cost" option in which wind is modeled to meet or exceed 50% of annual energy needs.		√
Local Generation	Variation on the "Low Cost (50% Wind)" option in which $7 million annually is invested in local solar PV via a rebate, feed-in tariff, or other incentive.		√

Table 6: Description of Options Modeled in February as Modified for July

D. Updates & Refinements to the Modeling

The feasibility modeling related to the formation of a local electric utility is an iterative process. While the modeling that led up to the February and April council meetings represented the best available information at the time, more information has become available since then. Staff and consultants have refined the modeling to include, among other changes, Xcel's revised assumptions for its 2011 Electric Resource Plan and an expert review of the Xcel Baseline model. The focus of the most current model updates examined additional possibilities that could significantly impact the local utility modeling results and its comparison to the Xcel Baseline. The goal of this iterative process is to progressively increase the accuracy of the modeling and to highlight any areas where the local utility models might be vulnerable. The results identified which risks posed the greatest challenges to forming a local electric utility and options for mitigating them. The changes that have been made to the models are summarized in **Table 7** and described in more detail in **Attachment B**.

Type of Revision	Model Impacted by the Revision		Impact of the Revision
	Xcel Baseline	Local Utility	
Area 1: Xcel's 2011 Electric Resource Plan Update			
1. Adjusted natural gas prices based on updated "base" and standard deviation prices and transportation costs	√	√	Increase to "high" and decrease to "low" and "median" gas prices
2. Adjusted wind power purchase agreement prices, primarily based on assuming the "base" or median case should exclude subsidies (such as the PTC) but include a price reduction for technological advancement	√	√	Increased median or "base" wind prices, making wind less competitive in early years
3. Added carbon prices of $0 and $20 per metric ton for testing in addition to the three price trends	√	√	Although the carbon price was retained for the full analysis, these alternatives allowed for additional variations of the models to be tested
Area 2: Expert Review of Xcel Baseline			
1. Adjusted how Xcel's annual costs are allocated to Boulder for comparison based on Boulder's contribution to Xcel's revenues rather than to Xcel's load	√		Reduces the costs that are attributable to Boulder for comparison
2. Disaggregated Xcel's revenue requirement into its components to separately escalate expenses for generation, transmission, distribution, and general assets based on historic trends from FERC filings	√		Reduces slightly the overall trend in Xcel's cost increases
3. Adjusted tax calculation for Xcel's revenue requirements for taxes Xcel pays on equity returns	√		Increases magnitude of impact of macroeconomic changes
4. Distinguished existing contracts for wind power from potential future wind power, allowing the price of wind to vary only on the future wind power (as would be experienced by the local electric utility)	√		Reduces magnitude of impact of wind prices changes on Xcel
5. Adjusted Xcel's DSM costs based their new budgets and incentive cap proposed for 2015-2020	√		Significantly reduces Xcel's future DSM costs
Area 3: Engineering/Appraisal Work			
1. Increased capital replacement 5-year bonds to include more undergrounding and maintain 115 kV transmission loop		√	Increases capital replacement plan by approximately $28 million over 20 years
Area 4: Additional Revisions			
1. Revised options being modeled; specifically, a "Local Generation" option was modeled that increases the amount of solar PV incentives being offered		√	Illustrates other potential resource mixes for Boulder that could be prioritized depending on stranded and acquisition costs
2. Increased city DSM investments to $3 million annually, increased by inflation, to coincide with Xcel's assertion about Boulder's share of rebate amounts		√	Adds approximately $0.9 million per year, although load has not been decreased as would be expected from increased DSM
3. Increased level of solar PV incentives to $3.5 million per year under each option except the Local Generation option, which includes $7 million per year		√	Impact is less than the cost of the incentives due to avoided energy purchases from other resources

Table 7: Summary of Modeling Updates that Impact the Xcel Baseline and Municipalization Options

Attachment B includes a complete description of the areas that were revised. The following outlines key takeaways from each of the areas where revised assumptions were used.

Revisions, Area 1: Xcel's 2011 Electric Resource Plan (ERP) Assumptions Update
Updated assumptions for Xcel's long-term resource modeling were provided to the PUC on April 16 (**Attachment C**). These updates led to changes to the natural gas prices, wind prices, and carbon prices that were modeled and impact both the Xcel Baseline and the municipalization options.

While the changing gas prices provide some benefit to the local electric utility, as a larger proportion of its resource costs rely on natural gas, the change to the wind assumptions adds significant risk to the local electric utility options by increasing overall resource costs. Adding new carbon tax levels of $0 and $20 does not change the primary results based on the working groups' belief that some state or federal climate action is likely, but it does enable a more "apples to apples" testing with the baseline case Xcel presented in its ERP.

Revisions, Area 2: Xcel Baseline Expert Review (Fast Tracks Consulting Services, Inc.)
Staff contracted for an extensive expert review of the Xcel Baseline portion of the model, which forecasts Xcel's costs and energy mixes through 2037 and attributes a portion of those overall costs to Boulder. This review was conducted by Fast Tracks Consulting Services, Inc. Because Xcel has declined to provide information or data to the city, the analysis is based on publicly available documents filed at the PUC and FERC. This work is critical to ensure that the municipalization options are being compared accurately to what Xcel has reported. A description of the methodology for the Xcel Baseline forecast is available as **Attachment D.**

The overall impact of changes to the Xcel Baseline is approximately a 6 to 8 percent decrease in Xcel's revenue requirement, or about $200 million dollars in reduced cost to Xcel over 20 years.

At this time, the expert reviewer has concluded that the Xcel Baseline model is as accurate as is possible without Xcel's explicit cooperation in providing data, including its rate studies and detailed load information, both of which have been denied to date.

Revisions, Area 3: Engineering/Appraisal Updates
A detailed description of the equipment and property included in the proposed service area is contained in the July 24 City Council agenda memo on first reading and consideration of a motion to authorize the acquisition of property interests from Xcel.

The engineers designing the separation and interconnection plan for the proposed local utility made some relatively minor modifications to the service territory since the information that was released in February. This was done after the engineers were able to

field verify the equipment and investigate the portions of the system at the service area boundaries. This service area boundary adjustment added less than ten additional customers, since the vast majority of additional service territory is permanently protected from development through the city's Open Space and Mountain Parks Charter.

In addition to the service area boundary adjustment, the separation and interconnection plan now contains acquisition of the 115kV transmission loop that ties six of Boulder's substations to each other.

Incorporation of the 115 kV transmission loop and adjustment of the service area boundary does not change the $150 million acquisition cost estimate, but it does add approximately $28 million over 20 years in costs to maintain and update the transmission loop. This additional amount has been incorporated in this updated modeling.

Revisions, Area 4: Energy Efficiency Rebates and Investments

To address Xcel's assertion that the city model did not provide the same level of energy efficiency incentives, staff performed an analysis of Xcel's publically available information (see Section F Energy Efficiency Incentives for details). Expanding the funding for energy efficiency rebates increased the local utility's operations budget by approximately $825,000 per year. It is important to note that staff has not conducted any analysis about how the expected reduction in load stemming from these investments would affect expenditures for energy resources. It is reasonable to expect that these resource costs would go down. Checking this assumption and calculating how much these reductions would save a local utility could be captured in future modeling.

E. Results of Adjustments to Xcel Baseline Modeling

The Xcel Baseline modeling forecasts Xcel's costs and energy mixes through 2037 based on its own publicly available documents, attributing a portion of their overall costs to Boulder. As is shown in **Figure 2**, the model forecasts that Xcel's revenue requirement will increase at an average rate of approximately 4.6 percent per year over the 20 years modeled (this excludes a carbon price). Historic trends, derived from FERC and EIA data, indicate a nearly 6 percent per year average increase in revenues collected in the years 2004 through 2011, so the model is considered to be conservative. This overall revenue trend is used to compare the Baseline against the municipalization options.

The Xcel Baseline revenue requirement is varied in the probabilistic (risk based) model by changing the gas prices, prices of new wind Xcel acquires in future years, interest rates on debt and equity, and carbon prices, to the same degree that they are changed for the municipalization options. This is because these uncertainties are conditions that have an overall effect on both Xcel and a municipal utility. For example, if the local electric utility can no longer purchase federally incentivized wind power, it won't be available for Xcel or other utilities either.

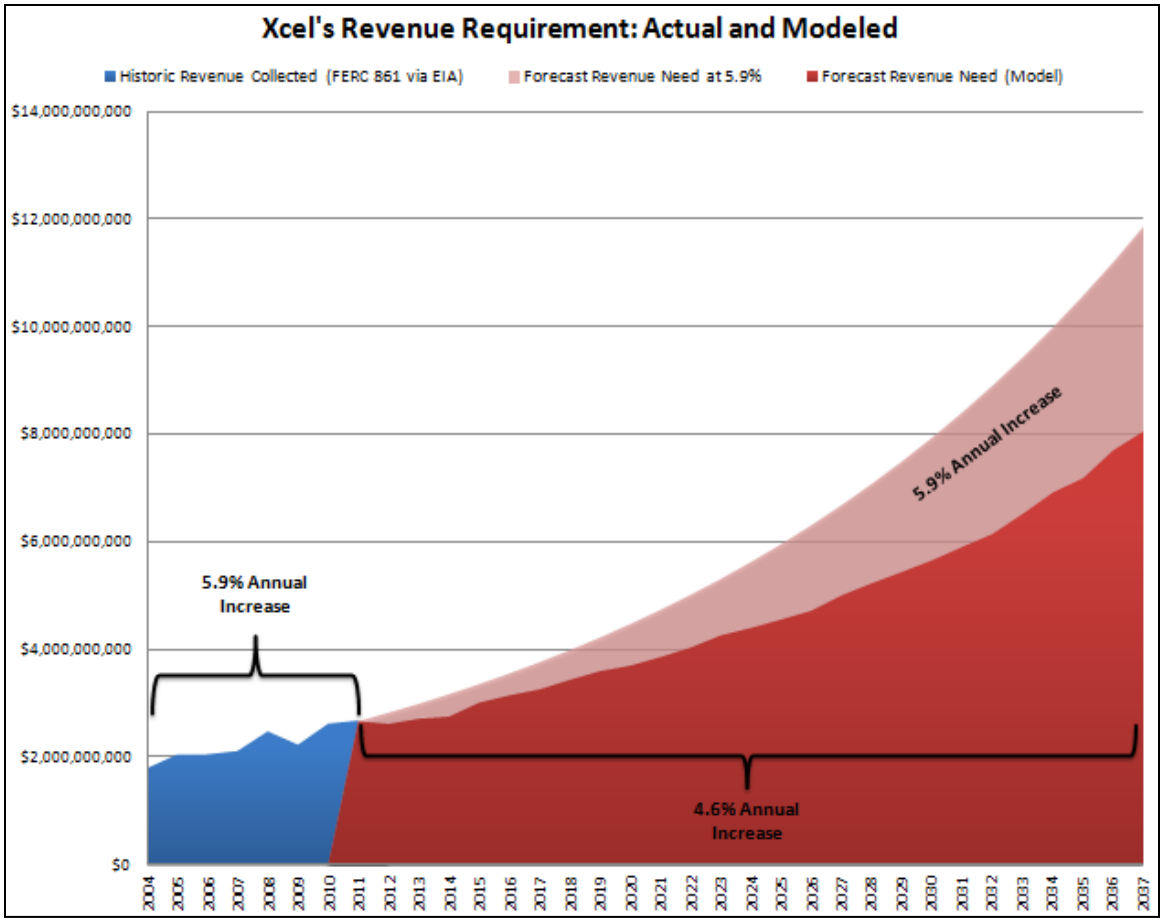

Figure 2: Actual Revenue Collected and Projected Revenue Need for Xcel's Colorado Service Territory

Additionally, as shown in **Figure 3**, Xcel's generic generation mix from now through 2037 shows a decrease in its fossil fuel proportion by only five percent. Xcel primarily transitions from a coal-based load to natural gas as their coal plants approach retirement. Although Xcel is acquiring wind, provided it is "least-cost," its modeling does not demonstrate a strategic plan to utilize this resource in higher amounts from what is currently used and transition from a fossil fuel-based system.

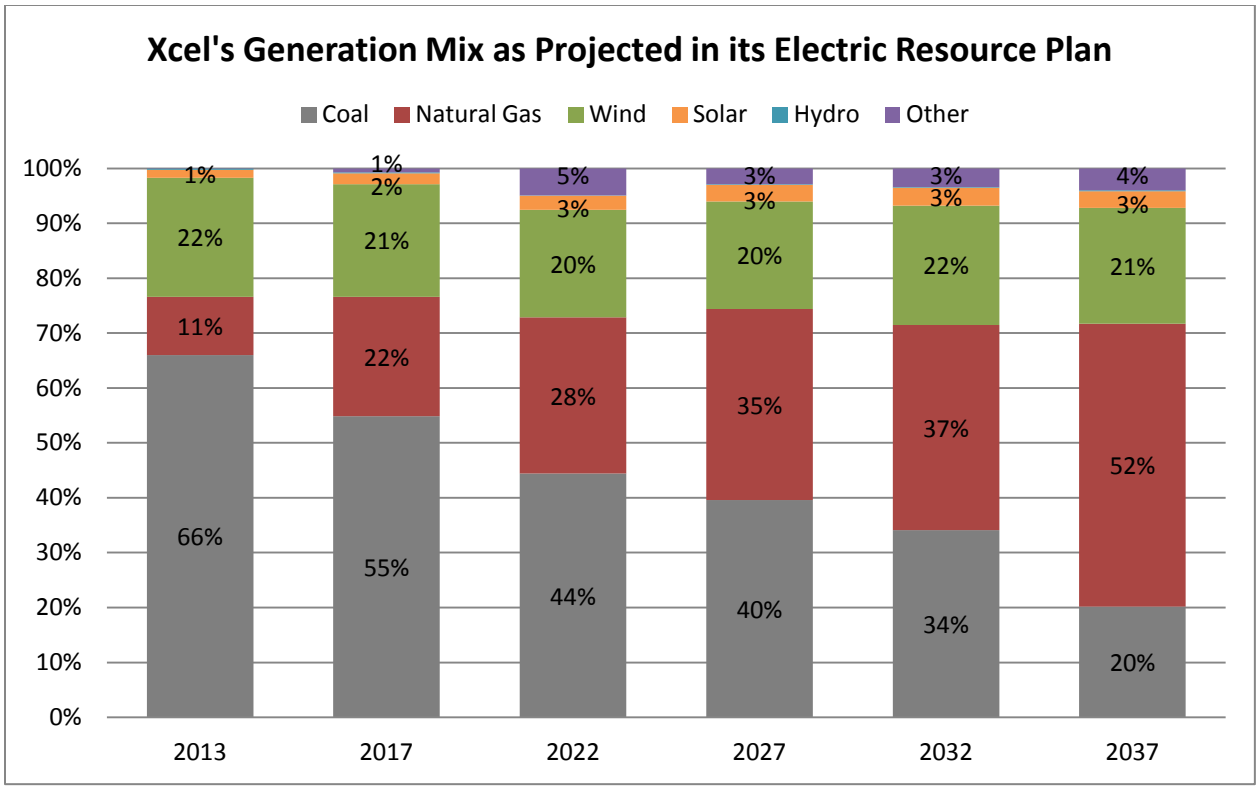

Figure 3: Xcel's Projected Generation Mix from 2013-2037

Table 8 shows how this revenue requirement forecast translates into a monthly bill impact for three rate classes based on the average electricity consumption Xcel reports when it updates its Electric Commodity Adjustment (ECA) each quarter.

Rate Class	Monthly Average kWh	Reported Monthly Bill (2013) [1]	Projected Monthly Bill (2017)	Projected Monthly Bill (2022)
Residential (Schedule R)	632	$75.67	$91.87	$111.68
Small Commercial (Schedule C)	1,123	$145.14	$176.21	$214.21
Industrial (Schedule PG)	492,079	$39,051.64	$47,410.25	$57,634.73

Table 8: Current and Forecast Monthly Bills for Select Customer Classes Under Xcel Energy

Additional aspects of the Xcel Baseline, such as carbon emissions and costs per kWh over time, are explored in the next section as part of the comparison to the local electric utility options.

[1] Exhibit 10, Notice of Revision of Electric Commodity Adjustment on Less Than Thirty-Days' Notice (dated June 17, 2013), Docket No. 13L-0692E.

F. Results from Modeling Municipalization Options

The models continue to demonstrate that a local utility can meet the charter metrics on Day 1. Because the latest round of modeling was designed to test risks and model a reasonable worst-case scenario, it was expected that the confidence interval for meeting the charter metrics would decrease. This did, in fact, occur.

A focus of the modeling has been to evaluate whether the local electric utility options were likely to lead to cost savings compared to staying with Xcel Energy over 20 years. The Low Cost option is likely to provide savings at lower levels of stranded and acquisition costs ($150 million and $214 million). However, changes to the Xcel Baseline and to the price of wind and natural gas contribute to an approximately 20 percent reduction in the confidence of that option (however, they still stand at 77 percent and 59 percent confidence, respectively).

As a reminder, the model has been designed to produce results that address the requirements in the City Charter. These charter requirements were translated into a series of metrics which, as applicable, have been programmed into the model. The metrics are in comparison to the Xcel Baseline. The metrics, which will be discussed further below, include:

1. Rates equal to or less than Xcel's at the time of acquisition;
2. Debt service coverage ratio of 1.25;
3. A plan to increase renewable energy and decrease emissions; and
4. Comparable reliability to that offered by Xcel.

RATES THAT DO NOT EXCEED XCEL'S AT THE TIME OF ACQUISITION

Metric status: Achieved The charter requirement to provide rates equal to or less than Xcel's at the time of acquisition—as measured in average cost to run the utility over kWh consumed—can be met even under higher levels of stranded and acquisition costs (see **Table 9** below).

Cost per kWh of Local Utility Options Compared to Xcel Energy Baseline						
Stranded & Acquisition	Period Measured	Xcel Baseline	Low Cost	Low Cost (50% Wind)	No Coal	Local Generation
$150 million	Day 1 (2017)	$0.112	$0.090	$0.094	$0.102	$0.096
	20-Year Average	$0.152	$0.144	$0.146	$0.156	$0.148
$214 million	Day 1 (2017)	$0.112	$0.091	$0.095	$0.102	$0.096
	20-Year Average	$0.152	$0.150	$0.152	$0.162	$0.154
$277.5 million	Day 1 (2017)	$0.112	$0.091	$0.095	$0.102	$0.097
	20-Year Average	$0.152	$0.155	$0.157	$0.167	$0.159
$405 million	Day 1 (2017)	$0.112	$0.091	$0.095	$0.102	$0.097
	20-Year Average	$0.152	$0.167	$0.169	$0.179	$0.171

Table 9: Cost per kWh for Local Electric Utility Options Compared to Xcel Baseline (green cells indicate performance better than that forecast for Xcel)

However, the data shows a more complicated story. The city's modeling since April has been focused on testing worse-case scenarios, thereby building in additional risks and costs. This creates a modeling structure in which the local electric utility bears all of the risks of a poor economy, a grid that could be in worse condition than Xcel has disclosed, lack of access to transmission, etc., while at the same time insulating the Xcel Baseline model from many of those circumstances. Moreover, as is noted above, Xcel's cost trajectory as modeled is lower than its historic revenue collection. This was done to give it the benefit of the doubt where its future investments were uncertain.

Resource price risks that have been added—primarily, an increase in median wind prices based on the assumption that federal subsidies would not continue at current levels over the period modeled—brought the prices of wind, natural gas, and the wholesale market (representing a mix of generation similar to that of Xcel's resource mix) closer together. The resulting increase in resource costs impacts the likelihood that overall costs could be kept comparable to those of Xcel's over the 20-year period being modeled. Although there were options presented in February and April for which there was a greater than 80 percent likelihood of 20-year cost savings under varying levels of stranded and acquisition costs, the options modeled for this memo have decreased likelihoods of cost savings. At $150 million to $214 million in combined stranded and acquisition costs, the "Low Cost" options—which still include $3.5 million in solar rebates and 30 to 50 percent wind energy—are between 50 and 80 percent likely to produce cost savings. Although the Local Generation option has a higher likelihood of success than the No Coal option, it does not perform as well as the Low Cost variations. Based on this, should council move forward, it would be prudent to prioritize a mix that does not entirely exclude coal power (although it could be cut in half from current levels) unless stranded and acquisition costs come in at the lower levels of what was modeled.

There is a further nuance to this data based on bill impact. Depending on the level of stranded and acquisition costs, the local electric utility could make significant strides in increasing renewable resources and reducing emissions compared to staying with Xcel for just pennies on a customer's monthly bill. For example, under the Local Generation option, a $7 million per year solar incentive program, proactive maintenance program, increased energy efficiency rebates and as much as 60 percent renewable energy could be incorporated for less than two-tenths of a penny per kWh. These costs—to essentially "gold plate" the system—go into the local utility options. This indicates that although the overall confidence in there being long-term cost savings has decreased in this recent round of modeling, there is a considerable amount of flexibility in the model such that cutting the local electric utility's total budget by $8 million to10 million per year (in debt, fuel costs, staffing, etc.) could significantly improve its performance even in worst cases.

Variations on the "Base" Models. Council and the public have requested a more in-depth analysis of the impact of changing certain assumptions in the models. The impact of removing a carbon price and removing capitalized interest are discussed below and depicted in subsequent **Figure 4**.

- Carbon price: The recent modeling analyzed the impact of high, median, and low carbon prices when applied to the resource mixes of the Xcel Baseline and the local electric utility. Removing carbon prices could have a 10 to15 percent impact on the likelihood of cost savings over 20 years for the local electric utility options. The Low Cost option continues to exceed 50 percent likelihood of savings at $150 million in stranded and acquisition costs.

- Capitalized interest: Capitalizing interest on debt for 18 months is a standard utility practice. If interest capitalization is removed from the taxable debt—the stranded and acquisition costs—it actually makes the overall cost of the debt cheaper over 20 years and improves, by a few percentage points, the likelihood of 20-year cost savings compared to the Xcel Baseline. Looking at cost per kWh in 2017 ("Day 1"), it appears that at $214 million in combined stranded and acquisition costs, the Low Cost option with 50 percent wind could continue to have a cheaper starting price than the Xcel Baseline (11.11 cents per kWh for Low Cost-50 percent wind vs. 11.24 cents per kWh for the Xcel Baseline). However this would make it difficult to develop a cash reserve, which staff believes is the more prudent approach.

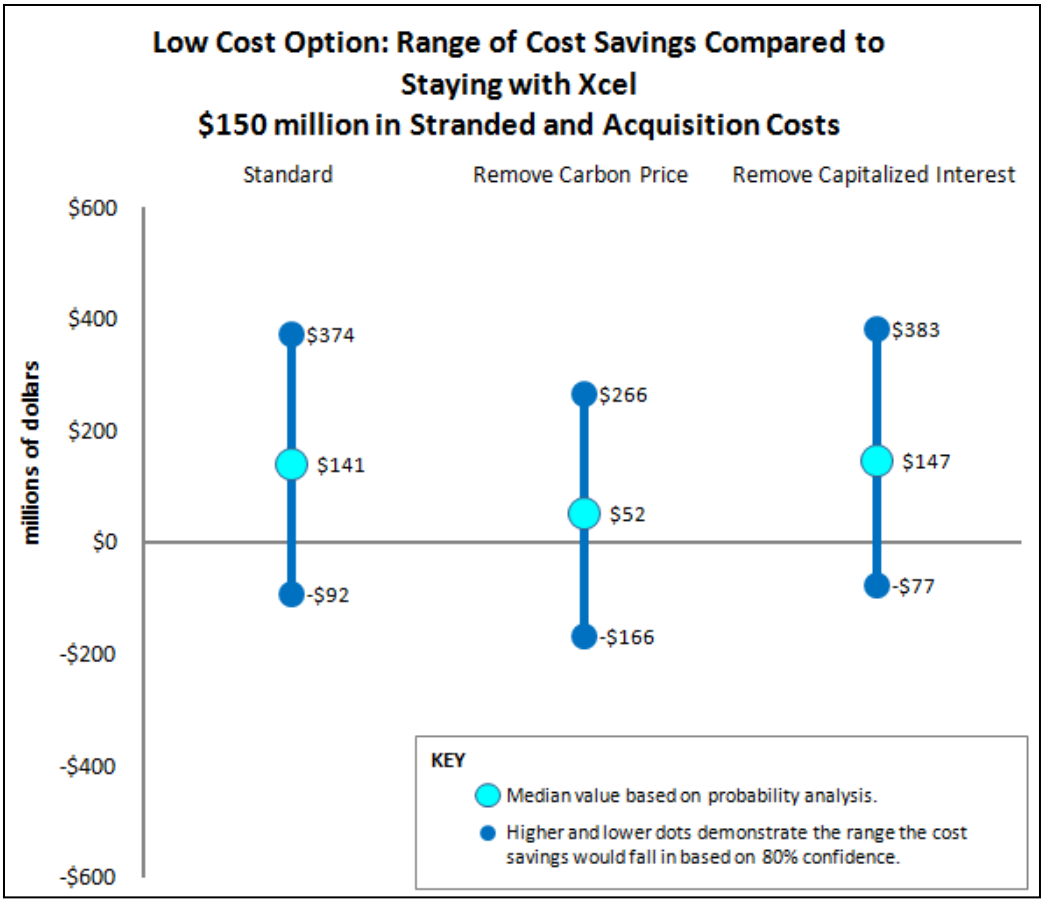

Figure 4: Cost Savings Compared to Staying with Xcel Under Modeling Variations (Low Cost Option, $150 million in Stranded and Acquisition Costs)

What is clear from this modeling is that there are several high impact costs that could impact the ability of the local electric utility to meet charter requirements and could force some balancing between renewable energy and costs. These high-impact costs include stranded costs, acquisition costs, wind prices, and natural gas prices, with carbon prices having a lesser impact.

The table below illustrates the impact of some of the key financial risks on the day one metric and whether the municipal utility can still maintain comparable rates.

Ability For local utility to meet "Day 1" metric in relation to key risks						
	Local Electric Utility Options @ $150M and $214M Stranded and Acquisition Levels					
Key Additional Financial Risks	Low Cost		Low Cost (50% Wind)		Local Generation	
	$150M	$214M	$150M	$214M	$150M	$214M
Carbon tax is not implemented (remove carbon tax range of $1.18 to $46.47/metric tons)	Yes	Yes	Yes	Yes	Yes	Yes
The wind Production Tax Credit (PTC) is not continued during the modeled period (Median wind price changes from $38/MWh to $50/MWh)	Yes	Yes	Yes	Yes	Yes	Yes
Interest is not capitalized and deferred for 18 months (defers $44.6M - $53.7M of debt payments in the first 18 months, depending on debt level)	Yes	Yes	Yes	Yes	Yes	Yes
Loss of out-of-city customers (approximately 3% of revenues)	Yes	Yes	Yes	Yes	Yes	Yes
Increasing DSM rebates and incentives to exceed Xcel's expenditures in Boulder (additional $0.9M/year for DSM rebates)	Yes	Yes	Yes	Yes	Yes	Yes

Table 10

DEBT SERVICE COVERAGE

Metric status: Achieved

Debt service coverage ratio (DSCR) is calculated by dividing the utility's net operating income (revenues minus operating expenses) by its annual debt service. This measures a utility's ability to cover the cost of its debt payments. Although the charter requires that the model be set at 1.25 coverage, the model has generally been programmed at 1.625, which is a level that the financial advisor acknowledged as consistent with the anticipated A- credit rating of the local electric utility. When modeling wide ranges of cost to show risks, a range of 1.25 to 2.00 is included.

INCREASED RENEWABLES, DECREASED EMISSIONS

Metric status: Achieved

This metric is measured in several ways: 1) based on the carbon intensity of electricity; 2) based on the total carbon emissions; and 3) based on the percentage of renewable energy, including local distributed generation (solar PV), hydroelectric power, and large power purchase agreements for wind. Carbon is measured as carbon dioxide equivalent to account for the additional higher global warming potential (GWP) of methane. The charter requirement is to show short-term (5-year) and long-term (20-year) plans to increase renewable energy and reduce emissions, compared to the Xcel Baseline. Xcel's

anticipated resource commitments are based on a forecast that the company provided in its 2011 ERP.

The following four figures are related to the increased renewables and decreased emissions metric. **Figure 5** (below) shows the resource portfolio mix for the low cost (30 percent wind) option. The 30 percent wind is a minimum constraint on the model, as demonstrated in the figure. The cost of wind was optimal in many cases to provide more wind energy than 30 percent on the system. In 2017, the system has 42 percent renewable energy, as compared with 23 percent for Xcel. In 2022, while the amount of coal on the system increases (due to the wholesale market being less expensive than natural gas at this point in time), the renewable energy percentage increases to 47 percent as compared with 23 percent for Xcel. In year 20, Xcel projects 24 percent renewable energy as compared with 51 percent for the local utility in this option.

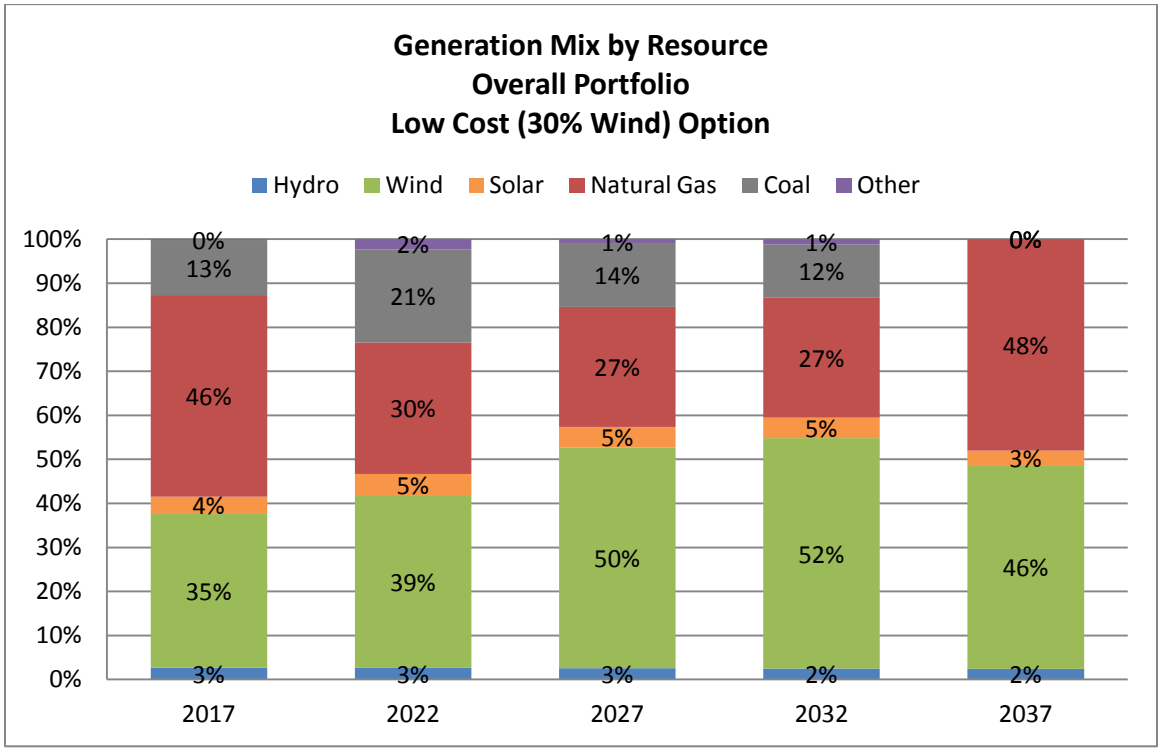

Figure 5: Breakdown of Renewable Energy vs. Fossil Fuel Power Generation for Low Cost Option

Figure 6 (below) shows the renewable resource mix by option compared with the Xcel Baseline. In the low cost 50 percent wind option and the local generation option, the percentage of renewable energy decreases slightly between 2032 and 2037. While the overall energy consumed increases each year, annual load growth, along with competing lower resource costs causes the slightly reduced percentage of renewables in year 2037. **Figure 6** clearly demonstrates the ability of a local utility to far exceed Xcel's renewable energy percentage in years five and 20.

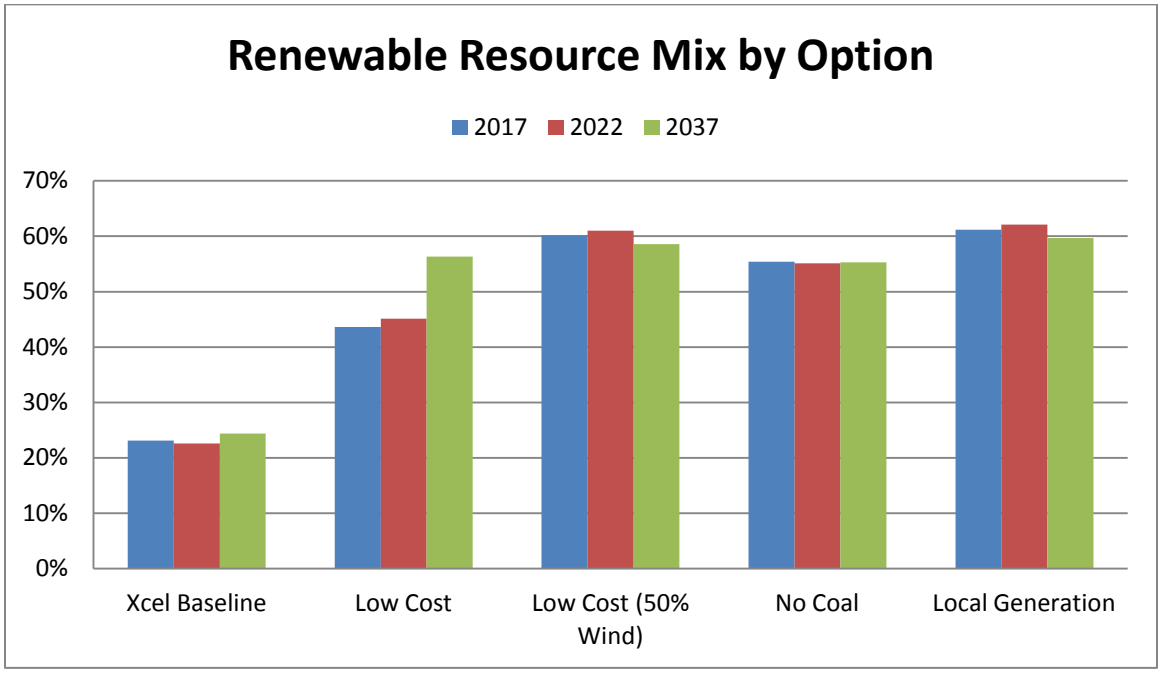

Figure 6: Generation Mix by Option

Figure 7 below shows the carbon intensity by option compared with the Xcel Baseline. In certain options, the carbon intensity increases in year five above year one. This is due to the increased wholesale market purchases (which have coal embedded in the mix) in year five due to the price of the wholesale market relative to natural gas. Even with slight fluctuations in carbon intensity, the figure shows the ability of the local utility to have much lower carbon intensity of its fuel supply than Xcel.

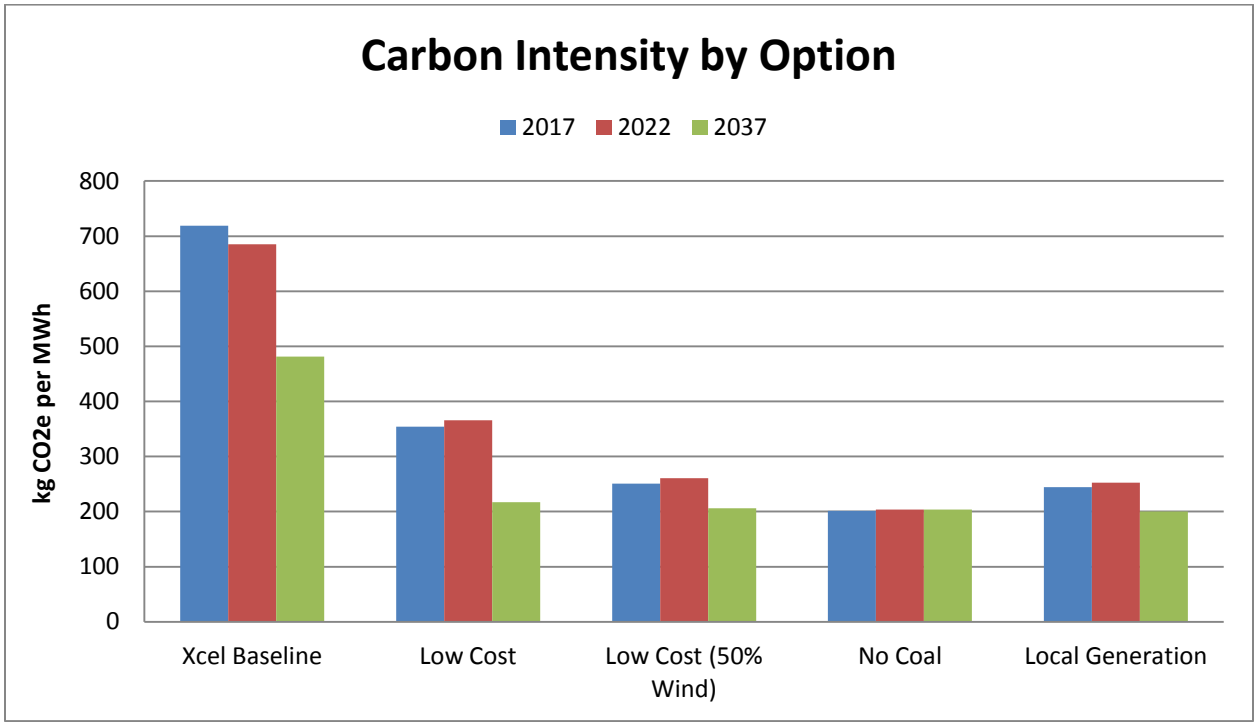

Figure 7: Carbon Intensity per MWh of Electricity by Option

The last figure in this series, **Figure 8** (below), shows the total carbon emissions by option compared to the Xcel Baseline. The increase in total carbon emissions in all options between years 2017 and years 2022 (except the no coal option) is due to wholesale market purchase prices during that span. The no coal option has a slight increase in emissions over time due to the fluctuation between wind and natural gas prices over time since these are the two main fuel sources in this option. The key takeaway is that the total carbon emissions of a local utility are far below Xcel's in all options. The local utility exceeds the carbon emissions metric in years five and 20.

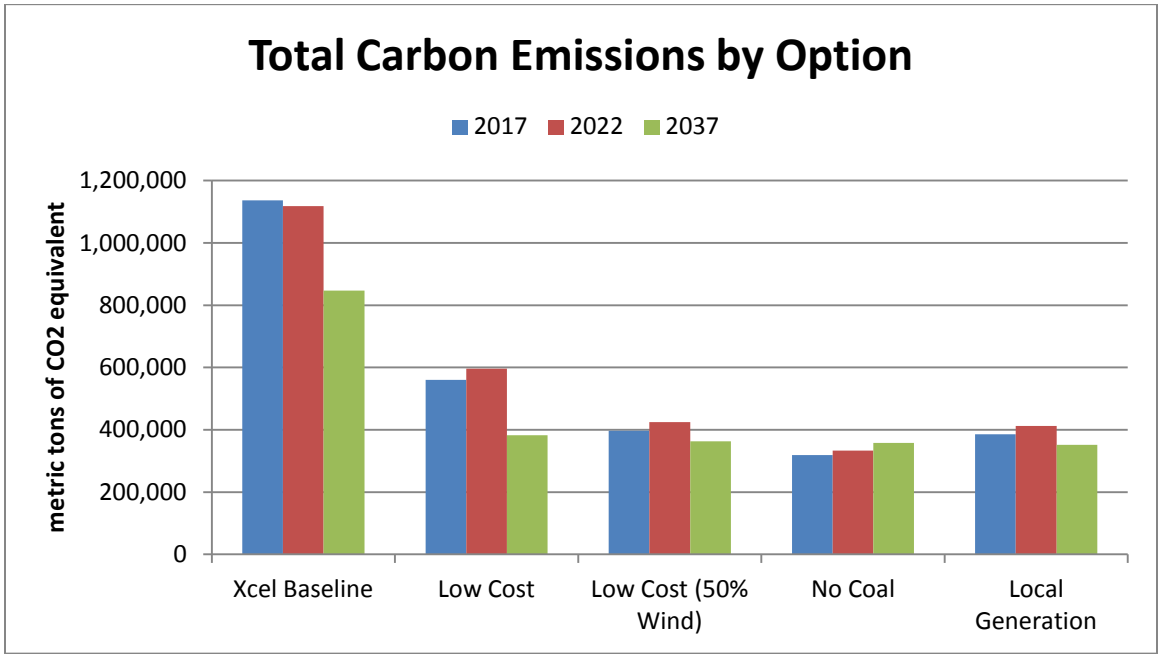

Figure 8: Total GHG Emissions by Option (metric tons of carbon dioxide equivalent)

Energy Efficiency Incentives. In the task force on partnership options report, Xcel estimated that Boulder customers are "5.2 percent of total DSM dollars spent on rebates and incentives," although the company did not provide any underlying data (such as whether this is electric-only rebates or if gas rebates are included). Looking at energy efficiency and "Savers' Switch" rebates, Xcel provided $32.6 million in electric rebates in Colorado in 2011[2] and provided $44.7 million in electric rebates in 2012.[3] This translates to between $1.7 million to $2.3 million in electric rebates to Boulder each year, with a comparable amount budgeted for 2013. The modeling has been adjusted so that the local electric utility options now include approximately $3 million in direct electric energy efficiency rebates and incentives that would be provided by a local electric utility each year.

[2] Table 6a, http://www.xcelenergy.com/staticfiles/xe/Regulatory/Regulatory%20PDFs/CO-DSM-2011-Annual-Status-Report.pdf.
[3] Table 7b, http://www.xcelenergy.com/staticfiles/xe/Regulatory/Regulatory%20PDFs/CO-DSM-2012-Annual-Status-Report.pdf.

Solar Incentives. All options modeled include $3.5 million each year for solar incentives, with a mix of large and small customer ownership. The Local Generation option doubles that investment to $7 million annually. The incentive price assumes that there is no Investment Tax Credit (ITC) for solar. This program could be implemented in the form of a standard rebate offer, a feed-in tariff, a low-interest financing program, or some other innovative construct, and it is designed to be illustrative rather than reflective of the local utility's exact plan for solar programs. Although Xcel has not clarified whether the 14 percent of the program it says Boulder comprises is based on participation or incentives, data from its RESA filings would indicate that changes to the Solar*Rewards program have it currently spending less than $4 million per year in Boulder going forward. This is in large part because Xcel has transitioned the Solar*Rewards programs to a performance-based incentive (PBI) that pays out over time rather than up-front, which had historically been the case during the period it said that Boulder received $7 million or more in rebates each year.

COMPARABLE RELIABILITY

Metric status: Achieved

The local electric utility budget includes funding to proactively maintain and improve the local distribution grid by replacing 50 to 86 percent of the transmission equipment; replacing 83 percent of the aging substation equipment; and undergrounding 50 percent of the overhead distribution lines during the 20-year modeling period. Comparing this to historical trends, while under franchise with the city, by law, Xcel dedicated one percent of its revenues to system undergrounding, which resulted in less than one percent of the system being relocated underground each year. Since the expiration of the franchise, no funds have been set aside from Boulder's electric revenues for this purpose. In other measures, the electric utility would be required to maintain comparable reliability to Xcel at the time of acquisition, as measured by:

- **Maintaining comparable electric equipment, facilities and services as those of Xcel at the time of acquisition, which will be designed to achieve the same System Average Interruption Duration Index (SAIDI) of 85 and a System Average Interruption Frequency Index (SAIFI) of .85, which is slightly better than the Xcel four year average for the Boulder region.** Based on the current condition of the grid, engineering consultants estimated costs associated with maintenance and the capital expenditures needed to meet or exceed this level of reliability. The vast majority of Boulder's distribution grid dates back to the 1970s. The modeling has estimated $1.5 million per year for capital replacement from cash margins and an average of $5.2 million per year to be funded from four tax-exempt bond issues. The city utility would be investing over $100 million over 20 years to pay for upgrades to the grid with a goal of improving local reliability and reducing maintenance needs.

- **Providing 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. This has been met by budgeting for an amount to cover the equivalent of 104 full-time employees, based on information gathered from regional municipal utilities, American Public Power Association benchmarking studies, and discussion with experts. The city recognizes that on Day 1 all staff needed to manage the local electric utility may not yet be hired; therefore, the models anticipate a transition period where the city would outsource certain operations while hiring experienced staff, establishing policies and procedures for operating the system, and developing training programs. This is a prudent approach that is based on preliminary conversations with potential service providers. The annual O&M budget also includes costs involved with meeting regulatory requirements and for entering into mutual aid agreements with other local utilities to provide emergency and other support. Financial modeling includes cash reserves that not only provide six months of working capital but also ensure adequate self insurance reserves to cover the cost of uninsured equipment in the event of an emergency.

- **Maintain an adequate reserve margin of 15 percent.** Using the HOMER resource modeling software, an additional 15 percent natural gas capacity has been purchased beyond what Boulder would need to meet its energy demand over the next 20 years. The financial model also includes annual dues for participating in organizations like the Rocky Mountain Reserve Group (RMRG), which pool their resources to ensure regional reliability.

- **Meet applicable compliance requirements established by the North American Electric Reliability Corporation (NERC).** This has been met by budgeting for regulatory compliance in the form of adequate estimated annual Operation and Maintenance expenditures, capital replacement and refurbishment, and regulatory engineering and legal team costs.

V. QUALITATIVE ANALYSIS: COMPARING PATHS TO BOULDER'S ENERGY FUTURE

Purpose of the Analysis

The next step toward potential municipalization is initiating the acquisition process, which, if good-faith negotiations with Xcel are not successful, will require litigation. Previously, staff presented modeling that concluded that municipalization is *feasible,* in that the charter requirements can be met. This conclusion is reaffirmed in the most recent round of modeling. However, prior to making a decision to move forward with litigation, council has indicated a desire to determine if municipalization is also *desirable*—in other words, whether it is the optimal path toward realizing the community's Energy Future and associated carbon reduction goals. The purpose of the qualitative analysis is to analyze whether the potential benefits associated with municipalization outweigh the risks associated with changing from the status quo. This analysis has been conducted incrementally over several years but was formalized with a public process in April, May and June of this year.

A touchstone to consider in determining added value is the desire to develop the "electric utility of the future," which can be described as:

- Flexible and customer service-oriented
- Adaptable to new information and new expectations without unsustainable investments in nonrenewable resources or inefficient regulatory practices
- Providing high reliability to reduce its customers' costs
- Providing increasingly clean power while offering customers enhanced opportunities to manage their energy and save money
- Agile and competitive, while promoting local innovation and engaging local industry and institutional leaders in partnerships that will further enhance its service
- Offering a new business model that provides energy as a service, rather than relying on increasing electricity sales and building more generation plants

The "utility of the future" concept is reflected in both the Energy Future goals adopted by City Council and in the voter-approved City Charter guiding principles, which are the basis of the Qualitative Analysis. The analysis was intended to evaluate the benefits and concerns associated with three possible future paths: staying with Xcel as the community's electric utility provider without any new partnership model or agreement; moving forward with a local electric utility; or, forming an innovative and goal-centered partnership with Xcel. Because the Xcel partnership discussions were not complete in time for inclusion in the Qualitative Analysis in **Attachment E**, a summary of the results of the partnership discussions, along with Xcel's proposal, is provided separately in Section VI of this memo.

Components of the Analysis

Qualitative Analysis work to date is provided in **Attachment E** and has two parts:

1) Assessment of Benefits and Concerns: A comparison of the extent to which two distinct paths--the status quo with Xcel or creation of a local electric utility--further the community's Energy Future goals[4], along with a comparison of the concerns associated with each of these paths; and,
2) Summary of "Utility of the Future" Practices: A compilation of Progressive Electric Utility Technologies and Practices that could advance the city's energy future goals, and an evaluation about the extent to which they might be utilized under the paths discussed above. This analysis describes each technology or practice; which of the city's goals it would address; where it has been implemented elsewhere; and, whether it is technically and legally possible under either the Status Quo with Xcel or a local electric utility.

[4] As expressed in the City Charter guiding principles (see Art. XIII, Sec. 178 of the City Charter) and the Boulder's Energy Future goals available at Goals.

Summary of Public Process and Input
The working groups formed to help develop the modeling options and vet assumptions and specific data inputs have also provided significant feedback on the Qualitative Analysis work. Council will recall that these working groups offer significant industry expertise and represent the major areas of finance, reliability, resources, decision analysis, governance, as well as communications and outreach. Staff provided early drafts of the qualitative analysis to various working groups to seek input on the overall structure, as well as a more detailed analysis of benefits and risks in each goal area. A meeting with all of the working groups together was held on June 27, along with a meeting with a community executive advisory group on July 15, to further vet the analysis and discuss preliminary conclusions. The groups' input helped shape the analysis in **Attachment E** and the key conclusions, described below.

Key Conclusions
Part One: Benefits and Concerns

Key Benefits under the Status Quo with Xcel

- The large scale of Xcel's assets, financial resources, industry knowledge and service area provides significant opportunities to manage multiple objectives based on economies of scale.
- Xcel serves customers in eight states, and if it chooses to make positive changes in its fuel supply and program offerings, it would impact a larger number of customers and have a greater environmental impact than a local utility.
- Xcel has an established organizational and management structure.
- Xcel is generally viewed as a reliable provider and has a record of responding quickly and effectively in emergencies.
- Xcel has been recognized as a leader among regulated investor-owned utilities in investing in wind energy.

Key Benefits under a Local Electric Utility: Boulder Light & Power

- Modeling indicates that a local electric utility could meet a significant portion of Boulder's energy needs with renewable energy sources and could dramatically reduce the Boulder community's coal dependency while maintaining the same (or better) costs and reliability as Xcel.
- A local electric utility can tailor its structure and business model to reflect local values and achieve community-specific goals. A Boulder utility would not have pre-existing investments in outdated enterprise software or fossil fuel base load generation, which would provide more flexibility to invest in innovative technologies and services.
- Municipal utilities have lower costs of capital. A local utility would have access to less expensive financing, through tax-exempt bonds, than is available to Xcel, and would not need to provide a return on investment to shareholders, as is required of Xcel.

- As a not-for-profit entity, a municipal utility would have the ability to re-invest any excess revenues locally; this could include, for example, reducing rates, increasing programs and services or increasing reliability.
- The city's economic vitality programs and strategies promote innovation, competitiveness and entrepreneurship. A local utility would be closely aligned with these programs and could integrate technology and become a laboratory for new projects, programs and services.
- Local customers have more direct access to decision-makers, which could help ensure that the utility's priorities and operations are community-focused and responsive.
- A local utility would have control over capital investment priorities, such as undergrounding electric lines, replacing aging equipment, micro-gridding, or investing in other innovative practices and technologies, as described in the Part Two Qualitative Analysis.

Key Concerns under the Status Quo: Xcel

- Current efforts to increase renewable energy in the supply are hampered by Xcel's current and planned investments in coal. While Xcel emphasizes its leadership in wind energy, it still invests heavily in coal—so much so, that Boulder customers use one of the most carbon-intensive energy supplies in the nation. Real change would mean decommissioning more coal plants than the company has planned and an end to building new ones.
- Xcel customers have little say or impact in long-term decisions that impact them.
- Due to its service territory, Xcel must operate in the regulatory regimes of eight different states, which can make it slow-moving and inefficient.
- As a for-profit corporation, Xcel must meet shareholders' desire to maximize profit.

Key Concerns under a Local Electric Utility: Boulder Light & Power

- The city has worked hard to accurately model the financial impacts associated with creating a local electric utility; however, an inability to test assumptions due to lack of data provided by Xcel means there could be variations in actual outcomes.
- Some costs, specifically those related to legal proceedings, are not yet known. The modeling utilized several possible outcomes.
- This would be the largest debt issue the city has ever made. It will require a significant undertaking to establish a new utility. The financing terms, which are currently unknown, would be set by bond rating agencies. However, the city has been advised that its assumptions related to bond rating and interest rates are reasonable.

- Members of the business community who do not live in the city are not eligible to vote or run for local office. Business customers are likely to account for 80 percent of the utility's billing and revenue, and some are concerned that local politics may influence the local electric utility in a manner that is counter to their interests.

Part Two: Utility of the Future

There are many proven progressive technologies and practices not currently being utilized locally that would help Boulder meet its energy future goals. As shown in the Part Two matrix in **Attachment E**, a local electric utility would encounter fewer barriers and likely achieve greater efficacy in implementing a majority of the options than the community would by maintaining the status quo with Xcel.

VI. CITY/XCEL ENERGY TASK FORCE

When City Council advised Xcel of its decision not to renew the city's franchise agreement in August 2010, it explained that non-renewal of the franchise did not mean that the city did not wish to partner with Xcel. In fact, council welcomed the opportunity to explore possible ways to engage with Xcel in a collaborative and community goals-driven partnership.

In the course of exploring municipalization and examining how other utilities around the country are structured, city staff has learned more about what such a partnership might look like and how a partnership could be structured. While the typical franchise agreement has been rejected by council, Xcel will undoubtedly continue to have a role to play in Boulder, whether municipalization occurs or not.

For example, should council decide to move forward with municipalization of the electric system, Xcel will still be the city's natural gas provider. Further, a city electric utility could, and likely would, contract with Xcel through a power purchase agreement to provide some level of wholesale energy. In other words, as interconnected utilities, Xcel and the city would continue to work together as they would with other utilities who share interconnection points and services. A local electric utility would also still receive both transmission and balancing services from Xcel. Finally, operation and maintenance functions could be contracted out to Xcel if it wished to bid on providing those services. There are quite a few combinations of services for which a local electric utility could work with Xcel.

Last December, city staff prepared a paper, titled, *Exploring Opportunities for Reaching Boulder's Energy Future Goals*, that outlined possible ways that Xcel could choose to partner with Boulder to meet the community's Energy Future goals. The options included many alternatives to municipalization. Most of these options would require PUC approval. Some would require changes to state law. All of them would require Xcel to work with the city to affect a change in the status quo of electric utility operations.

Early this year, the City of Boulder and Xcel agreed to convene a Task Force of knowledgeable community members to consider possible partnership options for achieving the city's energy goals, and develop new initiatives that Xcel might offer to the city and elsewhere on its utility system.

City staff's role in the Task Force was one of advisor. Staff offered its expertise in such diverse topics as resource mix, demand side management, finance, law and the city's energy future goals as those issues came up for the Task Force. Staff engaged with the Task Force with the hope that the group would develop the best possible partnership proposal that would meet the city's goals.

The role of the Task Force was to advise Xcel in developing a proposal that could be modeled using the same process as the local utility options. The Task Force members, who represent diverse backgrounds and perspectives, have been highly engaged in the task force discussions. The Task Force met on a bi-weekly basis beginning April 9, and concluded its discussions on July 15.

One of the major issues challenging the Task Force was finding ideas and solutions that met both the city's and Xcel's different emphases and goals. In the first meeting, city staff focused on partnership requirements as they were discussed in the December paper. In the city's view, those partnership principals would then determine how the city would meet its renewable energy, carbon reduction, and localization goals with its partner Xcel. Xcel, on the other hand, wanted to focus, with the help of Boulder, on the development of new products and services that would provide more customer and community options to increase renewables and reduce carbon throughout all its service area. Xcel maintained that negotiating comprehensive individual partnership agreements with each municipality where it provides service is not an effective, efficient, or possibly legal way to proceed. Xcel stated it would like to develop products and services that would provide not only individual customer choice, but would provide opportunities for entire communities to opt in.

Members of the Task Force developed a variety of partnership ideas, some which were primarily new forms of business relationships and others that included new products and services. As the various concepts were discussed by the group, it became clear that there are a number of restrictions that limit Xcel's ability to meet the Energy Future goals. For example, Xcel is required by Colorado law to treat all its retail customers equally, that is, Xcel cannot do for one retail customer what it does not do for all similar customers.

At one point, because of the Task Force's emphasis on partnership structure, Xcel delivered a letter to the Task Force suggesting there was not enough common ground to continue. Members of the Task Force encouraged Xcel to present its products and services idea to the group even though Xcel was clear that it was not interested in considering a different partnership structure with the city.

In response, Xcel opted to utilize the input it received from the Task Force and developed a proposal of its own. The Task Force Report, which includes Xcel's proposal, along with a list of the Task Force members and meeting summaries is included as **Attachment F**.

Next Steps

The Task Force proposed performing quantitative modeling to determine the emission reductions and associated costs of the Xcel partnership proposal relative to the city's municipalization study. Unfortunately, because Xcel's proposal was not presented until mid-June, there was not enough time for Xcel or the city to perform a rigorous economic comparison. In an effort to provide some level of cost comparison for the Task Force, the company attempted to use similar assumptions included in the city's study to identify the potential benefits of its proposal. While the attached Xcel proposal illustrates a high-level analysis of the potential emissions reductions, costs and overall impacts and benefits of a package of services and programs, it would take additional time for Xcel and Boulder to review and agree to all of the modeling assumptions necessary for a rigorous comparison of the cumulative savings from the proposed Xcel programs as compared to the municipalization options. If City Council chooses to consider Xcel's proposal, actual forecast modeling should be performed.

Ultimately, the Task Force recommended that the city continue its dialogue with Xcel in an effort to determine how far Xcel's efforts might go toward meeting the city's energy future goals. However, it took no position on whether the parties should continue with or avoid other actions outside of ongoing discussions. It encouraged Xcel and the city to continue this dialogue parallel to those actions.

VII. GOVERNANCE WORKING GROUP

In May of this year, a Governance Working Group was created to work with city staff to develop a recommendation for City Council on any necessary ordinance amendments or other suggestions about how the utility should be governed. The Working Group consisted of 15 members selected on the basis of their diverse backgrounds and perspectives**.** It met four times beginning on May 29 and ending on June 26. During this time the Working Group reviewed the system of governance already provided for by Boulder's Charter and the types of decisions that the City Council and the utility advisory board could be expected to face. The Working Group developed recommendations on the following topics:

1. Advisory board role in rates and rate structure
2. Advisory board composition related to county residents
3. Advisory board composition related to customer classification, and
4. Advisory board composition related to skills

These recommendations, along with the names and bios of the Governance Working Group members and minutes of each of their meetings, are described in a report included as **Attachment G**.

VIII. ACQUISITION PROCESS

On April 16, council authorized staff to proceed with due diligence regarding acquisition in order to be able to make a recommendation about whether the city should seek to acquire the electrical system serving the city. The due diligence resulted in changes to the recommended service area and a recommendation to proceed to acquire the electric system. The update on the changes to the recommended service area and the issues related to acquisition are covered separately in the agenda memo for the special meeting of July 24, 2013.

IX. REGULATORY ISSUES

Federal Energy Regulatory Commission (FERC)

In May, the city asked the FERC for a declaratory order on the city's possible stranded cost obligations to its current supplier, Xcel, should the city create a local electric utility. Specifically, the city asked FERC to confirm that Boulder would have no stranded cost obligations for the portion of its wholesale power it may continue to acquire from Xcel.

It is clear from previous FERC rulings that the city can avoid stranded costs if it purchases 100 percent of its power from Xcel. In *City of South Daytona*, 61 FERC ¶ 61,183, FERC ruled that South Daytona, Fla., should it form a local electric utility, would create no stranded costs to the extent that its existing supplier, Florida Power, continued to use its generation assets to serve South Daytona. The city's petition is requesting a declaration that the commission's ruling in *City of South Daytona* would apply, even if Boulder purchases less than 100 percent of its requirements from Xcel.

The city's position is that the South Daytona order should apply, on a proportional basis, to a partial requirements purchase from the existing supplier as well as the full requirements purchase that was the fact situation in that case. The city stated in its filing that to the extent that the retail-turned-wholesale customer purchases electricity from its former retail supplier, the assets necessary to generate that electricity are not stranded.

Xcel, the Colorado Public Utilities Commission (CPUC), the Edison Electric Institute (EEI), the Colorado Office of Consumer Counsel (OCC), and the American Public Power Association (APPA) filed motions to intervene in this docket. None of the parties objected to the basic principle that there should not be stranded costs associated with partial power purchase requirements contracts. Xcel, the CPUC, and EEI emphasized that there are a variety of factual issues that need to be addressed as part of such an arrangement. The OCC did not take a position on the matter. The APPA supported the city's petition.

The city filed its response to the interveners on June 28. The city requested expedited consideration of its petition and a decision by FERC by July 18, 2013, in order to allow

its thinking to inform the council's decision-making and to help the city effectively participate in Xcel's current electric resource planning process. As of the completion of this memo, FERC has not yet responded.

Public Utilities Commission (PUC)

Xcel filed a petition for declaratory orders at the PUC on May 9, asking it to find that:

1) municipal utilities that seek to serve customers located outside the city's boundaries must obtain a certificate of public convenience and necessity (CPCN) from the PUC;
2) Xcel has a CPCN to serve the Boulder County area in which the 5,800 meters are located;
3) under Colorado law there can only be one certificated utility per geographic area;
4) certificates cannot be taken away without due process of law, which requires a hearing before the PUC and substantial evidence that the existing certificated utility is unwilling or unable to serve the area; and
5) The need to construct replacement facilities as a result of actions taken by a challenging utility does not constitute an inability to serve.

The city has always anticipated that a hearing before the PUC would be required to adjust service territory boundaries once acquisition was complete and the final ownership of the assets was settled. As there is no requirement that such a hearing be held before condemnation is complete, the city objected to the petition on the ground that it was premature. The Commission has decided, however, that it would like to hear legal argument regarding these issues.

The parties to the proceeding will be Xcel, Boulder, the Office of Consumer Council (OCC) and PUC staff. Several rural electric cooperatives have been given permission to file an amicus curiae (friend of the court) brief. Answer testimony must be filed by Aug. 15. In its answer brief, the city will lay out the city's legal arguments in response to Xcel's petition. Parties will have an additional 15 days to reply to other parties that file testimony.

X. RATES USED FOR DEBT OR INTEREST RATES MODELED

Previously, city staff has modeled the debt related to acquisition and creation of a local electric utility at an interest rate of 6.5 percent for taxable bonds and 5.5 percent for tax-exempt bonds,assuming a rating of A- for the new local utility. Based on more in-depth discussions with PFM, the financial advisor retained by the city, and work PFM has done in the industry and with rating agencies, the staff team continues to believe the rates and bond rating modeled are reasonable. The following factors were identified as issues to continue to consider in the future:

- Higher target Debt Service Coverage
- Power supply and volatility of fuel costs and their impact on rates

- Condition of the system (better or worse than expected) and future capital requirements to upgrade the system
- Integration and transition of the system from Xcel to a local electric utility

As staff has modeled various scenarios using industry-based assumptions, most of these issues have been taken into account in the financial model. For example, based on the detailed analysis of the system, a capital improvement plan was developed to repair and replace equipment based on age and functionality. The integration and transition will be addressed more explicitly in the next phase of the project, should council choose to move forward. However, through outsourcing agreements and leveraging existing city resources such as accounting, billing, GIS and other systems, as well as having access to common facilities for fleet and inventory, the most significant risks can be mitigated.

The ability to increase debt service coverage is a function of actual debt issued and revenues net of operating expenses. Modifications to any of these key variables could improve debt service. The modeling currently reflects a minimum of 1.25 times(x) with a target of 1.63x, which is adequate for maintaining an investment grade rating, all other things being equal.

XI. PUBLIC INPUT

The decision about whether to create a local electric utility is a significant one that could result in change to electric service for residents and businesses in the city and limited parts of unincorporated Boulder County. While this move could offer substantial benefits, a decision to issue bonds for this purpose would represent one of the largest financial investments Boulder has ever made. Knowing this, the city has engaged in intensive communications and outreach efforts to ensure that the community is informed about the issues the goals, the options for achieving them and ways they can participate in the evaluation and decision making processes. One of the core tenets of a local utility would be to increase customer participation and engagement, and staff has worked to put this principle into practice in each part of this deliberative process.

After City Council approved moving forward with the municipalization exploration study on April 16, the communication team created a new plan that focused on the work that would take place between April 17 and August 2013 and the best ways to provide new and updated information to the community in digestible formats. The plan also addresses ways people could stay actively engaged and participate in the process while staff worked to refine the materials needed for City Council and the community to make an informed decision about how to move forward. The communication plan is included as **Attachment H.**

As part of this plan, the staff team continued to work closely with its working groups and the Executive Advisory Team. The working groups met collectively on June 27 to vet the revised assumptions and results of new modeling efforts, as well as provide feedback on the qualitative analysis materials. Members of the Executive Advisory Team (see

Attachment I) met on July 15 and also offered input on these specific areas of work, primarily from a commercial or large user perspective. Both sessions resulted in valuable information, which the staff team has incorporated into the materials and findings presented in this memo.

In terms of communicating with the broader public, much of the city's efforts during this period were focused on explaining the analysis conducted as of April 16 and the additional work that was underway. Because it's imperative that the Boulder community understand that it will be difficult to meet its climate goals without addressing where our energy comes from, staff also began reconnecting the municipalization study back to the city's overall climate commitment. Boulder's demand-side reduction programs and other services have done much to move the community in the right direction, but because of the carbon-intensity of the current electricity supply, they, by themselves, are not enough to significantly reduce greenhouse gas emissions.

Recent Methods of Communication and Engagement

In May, Xcel began hosting presentations with a paid consultant, Bob Bellamare, who talked about elements that he thought were either missing or incorrect in the city's findings and modeling. Since Mr. Bellamare's first presentation on May 22, the city team has been working to correct inaccuracies provided in the Xcel-sponsored presentations. To help do this, the city created a new website BoulderEnergyFacts.com and launched an advertising campaign to direct people to this source of information. Since the site's launch on Friday, June 7, the page has been viewed more than 1,500 times and has become the second most visited webpage on the BoulderEnergyFuture.com website. This website will be updated as needed throughout the duration of the project.

Through the associated advertising campaign that was launched both electronically and digitally in the Daily Camera, the city unveiled a new slogan that directly connects the current analysis with our community's goals, "Clean Reliable Low-cost Local Energy." A series of tag lines were also developed that could go with this, as appropriate, including "Talk about Powerful," Be informed," "Learn more about the city's analysis," "Help make it happen," and a simple link to the Energy Future URL. The electronic ads were emailed to 50,000 addresses inside five Boulder-specific zip codes. In addition, they were run for five days on the Camera's website and were hyperlinked directly to the BoulderEnergyFacts.com page. A print ad was featured in the Sunday, June 9, edition of the Daily Camera.

To make this approach more complete and useful, the city also redesigned the BoulderEnergyFuture.com home page and navigation tools to make the site user-friendly and to direct people to information that can explain the purpose and details of the modeling and refute misinformation. A new "About" page was created to share clear information about the municipalization exploration study. All existing pages were also migrated to the new web content management system so they remain available to the public during the city's transition to a new website system.

For a complete list of communications and outreach efforts since April 17, 2013, efforts, see **Attachment J.**
If City Council directs staff to continue to move forward, a new communication plan for the next phase of work will be developed.

XII. NEXT STEPS

A. July 24 City Council special meeting first reading ordinances including:
   1) An ordinance authorizing the acquisition of property interests owned by Xcel Energy, inc. D/B/A Public Service Company of Colorado by negotiation and purchase or through the power of eminent domain and setting forth related details.
   2) An ordinance submitting to the qualified electors of the City of Boulder at the general municipal coordinated election to be held on Tuesday, November 5, 2013, the question of adding a new Section 188 of the City Charter relating to the limitations on debt superseding any other measures to add Section 188 setting forth the ballot title; and specifying the form of the ballot and other election procedures and setting forth related details.

B. Aug. 6 City Council meeting: Second reading and consideration of an ordinance to authorize the acquisition of the electrical system serving Boulder residents under certain and specific circumstances.

C. Future Actions:
   Develop next phase (Phase 3) of the workplan, depending on the direction council takes with respect to municipalization.
   1) If council directs staff to move forward with municipalization -
      a. Explore establishing (in the short term) a Boulder Local Utility that consolidates existing and potential new city-sponsored services related to Demand Side Management and Distributed generation
      b. Explore specific resource options (issue RFPs, look at transmission access alternatives, distributed generation integration analysis)
      c. Issue a request for information from potential service providers for various outsourced services
      d. Work with regional municipal utilities to identify partnership and mutual aid opportunities
      e. Pursue legal and regulatory actions
         i. Complete appraisal reports
         ii. Commence good faith negotiations with Xcel
         iii. If negotiations are futile, file action in eminent domain
         iv. When acquisition price known, issue bonds
         v. Refine transition plan
         vi. Take regulatory actions necessary for operation of new utility
      f. Work with city departments to develop shared service arrangements and identify resources (facilities, IT systems, staff) that could be leveraged to support a city operated electric utility
      g. Develop short- and long-term staffing plans

h. Begin financing actions
i. Develop transition plan

2) If council directs staff to move forward and continue to evaluate a partnership with Xcel
    a. Perform all of the steps above and next steps recommended by the City/Xcel Task Force, until partnership talks result in firm commitments that support the energy future goals
3) If council directs staff to not move forward with municipalization
    a. Develop a plan to achieve as many of the energy future goals as possible without owning the utility assets
    b. Explore establishing a Boulder Local Utility that provides services related to Demand Side Management and Distributed generation
    c. Continue to work with Xcel to develop a relationship that could support the Energy Future goals
    d. Explore regulatory and legislative options to achieving the energy future goals

XIII. ATTACHMENTS

A Risk Identification and Mitigation for a Local Electric Utility
B Updates and Refinements to the Models Since February/April 2013
C PSCo Modeling Assumptions Update – 2011 ERP
D Xcel Baseline Analysis Methodology
E Qualitative Analysis: Benefit/Risk Assessment and "Utility of the Future" Practices
F City/Xcel Energy Task Force Report
G Governance Working Group Report and Membership List
H Communications Plan
I Executive Advisory Team
J Communication and Outreach Efforts Since April 17, 2013

ATTACHMENT A

Risk Identification and Mitigation for a Local Electric Utility

PURPOSE

The update to the city's modeling presented in this memo includes a focus on identifying and understanding potential risks. Based on feedback from the community and industry experts, this matrix lists the risks that have been of most concern and identifies potential mitigation strategies that are available to minimize exposure to each risk. The mitigation strategies are actions that can be taken to ensure a local utility has planned and budgeted appropriately to minimize exposure. The matrix ranks the level of "impact" of the risk, in financial terms or in terms of the utility's ability to achieve its goals as "high, medium, or low." As noted in the chart, each risk could either have an impact on *only* a local utility --as in the case of stranded and acquisition costs-- or it could impact *both* a local utility and Xcel Energy-- as in the case of fluctuations in natural gas prices.

= High

= Medium

= Low

Risk	Description of Risk	Impact	Mitigation Strategy
Legal or Regulatory Risks			
Stranded Generation Costs are unknown and could come in higher than the modeled scenarios	The potential that Stranded Costs a Boulder Municipal Utility would have to pay could be higher than the city could afford (as measured by ability to meet the Charter requirements related to cost). Stranded costs are the fixed costs for generation that would have been paid for through rates from Boulder customers if Xcel cannot sell the generated power to other customers.	0-$255 million	The municipalization options have been modeled conservatively using up to $255 million in stranded costs, which is the amount Xcel has stated the city could owe. However, if stranded costs come in even higher than this, and if a FERC ruling allows a partial or all-requirements power purchase contract to mitigate the stranded cost obligation of the city, a high stranded cost could be managed to a level that meets the rate comparability test. The details of any power purchase contract would be negotiated. Stranded cost is a completely manageable risk. If Boulder would choose to mitigate this risk by purchasing 100% of its power from Xcel for a period of time, it would take longer to achieve the energy future goals.
Acquisition Price for assets acquired from Xcel are more than anticipated	The amount to be paid to acquire the system is dependent on potential regulatory and legal interpretations of a judge and jury.	Unknown at this time	The primary risk is whether the final determination of value exceeds the fair market value of the property. The formal appraisal process should limit this risk by identifying the values determined by both the city and Xcel. The models have been run with padded costs. Any unanticipated costs would be evaluated with respect to debt capacity and funded over time. In addition, perhaps through a PUC process, the city would negotiate a transition period and process to allow adequate time to implement the most cost effective solution.
Carbon intense electric resources would not be assessed a tax or fee	The risk that there would be no penalty for generating electricity from high-carbon resources (coal and natural gas), putting renewable resources at a competitive disadvantage. This could occur if there is no federal or state action implementing carbon policy (taxes, cap and trade) and also no federal action to regulate carbon emissions from existing emissions sources.	At $20/ton in 2017, if Boulder stays with Xcel, Boulder's share of Xcel's carbon obligation would be approximately $26 million, slightly more than twice what the Low Cost local electric utility would pay.	*Start up* The impact in the first year could be mitigated from a cost perspective by taking more power from the market, which, as modeled would be the cheapest resource but a higher carbon intensity. *Long term* The local utility would continue to assess its resource mix to determine options such as – shaving peak or reducing use through energy efficiency to avoid the highest price increment of power. A strong focus on local or distributed resources would – over time reduce costs as the local utility would be buying less from the market and avoiding costly transmission fees.

Risk	Description of Risk	Impact	Mitigation Strategy
Legal or Regulatory Risks, *continued*			
Renewable incentives go away (PTC, ITC) , making renewable resources less competitive	The current production and investment tax credits that incent the development of wind and solar generation may not be renewed, making renewable resources less competitive.	The resource and financial models incorporated this risk	The municipalization options have been modeled such that the solar price excludes the ITC and the wind price only includes a subsidy comparable to the PTC on the "low" case. *Start up and long term* The expiration of PTCs and ITCs could result in higher costs for wind and solar generation; however, based on current trends and industry projections, it is anticipated that technological advancements will continue to make these resources more affordable. This risk has been incorporated into the July models such that within the range of wind costs the median price has been increased to reflect no incentives.
Resource Mix			
Transmission capacity is constrained	The available transmission capacity on Xcel's system is limited such that power could not be delivered to Boulder on Day 1 and during the subsequent years.	Not quantified	*Start up and long term* This is not a likely risk as Xcel, as a transmission owner and operator, is required to deliver power to any load connected to its system without discrimination. The fact that Xcel delivers power today to Boulder assumes there is capacity available to continue to serve Boulder's customers. Furthermore, Xcel received 6500 MW in wind bids in its 2011 Electric Resource Plan, the majority of which were determined to fall within Xcel's available transmission capacity.
Wind power availability	There will be no wind resources available because they are all under contract or transmission is constrained	The city resource portfolio would not be able to achieve its renewable and greenhouse gas reduction goals	*Start up and long term* Based on Xcel's recent RFP for wind, there are over close to 6500 MW of wind projects potentially ready to be developed. This exceeds any current need, therefore it is anticipated there will be enough new wind energy to serve Boulder. With respect to transmission constraints, when a wind generation project is being developed, a study of transmission availability is performed and if upgrades are needed to support the project, the transmission provider must let the developer know and plan for those upgrades. Projects will not be built if there is inadequate transmission. Based on Senate Bill 100, Xcel presents a biannual report for their plan on building transmission to wind areas. The risk is timing and how long it takes to upgrade the transmission system for new capacity. The impact to the city of Boulder would be a longer term plan to phase in wind, but only if there were severe wind constraints.
The Colorado PUC could rule that Boulder does not have the ability to serve customers outside city limits	If the PUC ruled this way, it would reduce the anticipated revenues for the city utility. However, it would also reduce the energy resources needed to be purchased.	The impact of losing the out of city customers is approximately a 2-3% loss in revenues per year.	*Start up and long term* The city is investigating ways where it may be possible to continue with creation of a municipal utility that would not depend on serving out of city customers.
Gas prices fluctuate and may spike during the period modeled.	Gas prices are currently low but could increase dramatically over the next few years raising the cost of both the city utility and Xcel's resource cost.	Since both utilities have gas in their portfolio, both will experience cost increases. In 2017, the muni options have 30-50% gas, compared to 22% forecasted for Xcel. By 2037, the local electric utility options remain constant; Xcel has ~52% gas in its portfolio	Staff has modeled a 6 month operating reserve to provide contingency funds for short term unexpected operating expenses, such as a spike in gas prices. *Start up* If there was a price spike at start up for gas based resources such that costs increased between 25% and 200%, the cost differential of the impact between the city and Xcel could range from a few hundred thousand to potentially $82 million, if the spike lasted for 1 year. The Financial modeling includes cash reserves that provide six months of working capital to cover unexpected short term expenses and could be used by the city for such an event. If this was a prolonged spike, rates have the potential of increasing without a switch to other less costly resources. *Long term* The city, as would Xcel, need to increase rates and reduce gas purchases to mitigate the impact. In addition, the city could buy insurance to protect against gas price spikes or hedge prices through forward contracts or other mechanisms.

Risk	Description of Risk	Impact	Mitigation Strategy
Resource Mix - continued			
Risk that a resource portfolio that is focused too much on one or two types of resources can subject customers to power loss or higher prices	The risk that the sources of electricity supply to the city of Boulder are not diversified both by type of resource and geographically such that the loss of any one resource would cause significant power loss to customers.	Not quantified, but can be ascertained, in part, by looking at the resource mix. The city will be looking at the single greatest source of power and its % of portfolio and replacement cost if there was a failure	*Start up* The resources modeled for 2017, the estimated start up year, are a mix of wind, natural gas, hydroelectric power, local solar, and market based purchases. Wind and gas are the largest components of the portfolio. While the portfolio is diverse in composition, it is also diverse in geographic location to avoid losses due to wind loss, transmission failure or localized weather events. Wind and gas provide the greatest modeled resource risk because of the possibility of price changes (gas price volatility and wind incentive continuation). For that reason the wind and gas resources are geographically dispersed. Furthermore, the modeling incorporates a 15% operating reserve, as backup. The City also anticipates participating in the Rocky Mountain Reserve Group to pool resources. This modeled mix does not insulate a locally owned utility from immediate price spikes, which could impact the cost to customers, and is addressed above. *Long Term* The resource portfolio will evolve over time to reduce its dependency on gas and increase localized resources such as co-generation, solar gardens, and other which will reduce its risk of loss caused by transmission system failures and constraints.
Asset Acquisition			
Interest rates increase	Interest rates could increase at a faster rate than anticipated resulting in higher financing costs. However, Xcel could be exposed to the same risk if macroeconomic factors contribute to the higher interest rates.	Interest rate risk has been modeled by using a wide range of rates that are intended to reflect 80% of the rates the city could experience based on anticipated credit rating.	Interest rate risk has been reflected in the model outcomes.
Acquired assets are in a worse condition than anticipated.	The electric system assets acquired from Xcel could have deteriorated to the point of needing to be replaced sooner than anticipated.	Not quantified, but capital replacement is anticipated within the 20 years modeled	*Start up* The engineers and appraisers have done extensive analysis and inspection of the system and believe they have a good understanding of its age and condition which has been incorporated into the model. If the system is in worse condition than modeled, costs would be mitigated in a reduced acquisition price. *Long term* Because the acquisition costs would be lower if the system is in worse condition than anticipated, there would be funds available for replacements. In addition the ongoing capital plan modeled the replacement of the acquired system over (30 or 40) years, with near term emphases on the oldest most vulnerable parts of the system, taking into account this risk. The proposed capital plan modeled and 25% range to account for potentially higher costs. The utility's modeled investment in system replacement = $146 million over 20 year period.
Operational Risks			
Operations and Maintenance (O&M) and Capital Costs are higher than anticipated.	The risk that O&M and capital replacement costs are higher than budgeted could result in higher costs to customers.	The O&M costs comprise only 13-15% of total utility costs and are a lesser risk than financing terms and resources. Xcel would be subject to some of these risks, to the extent they are based on market conditions.	O&M costs were extensively benchmarked against comparable public power entities based on per-customer and per-circuit mile expenditures. *Start up* Both O&M and capital costs were modeled with a range of +/- 25%. This provides a buffer in the event costs are higher. *Long term* If the cost increases are related to items such as materials, labor, vehicle fuel, etc., the impact to the city would be the same as Xcel. However, the city, as Xcel, would evaluate cost tradeoffs to minimize rate impacts.

Risk	Description of Risk	Impact	Mitigation Strategy
Operational Risks – *continued*			
Resources are not available for outsourcing or there is insufficient workforce to meet internal staffing needs	There is a risk that there will not be third-party distribution operations companies, or skilled people to operate the utility, at the time of start-up. This could impact reliability and the successful operation of the utility by the city.	Not quantified	*Start up* The city has identified various resources/companies that could provide operations and maintenance at the start up of the utility. These companies have experience and capacity to provide services. In addition, Xcel could provide balancing and other grid services as provided in their tariffed services. *Long term* The City would transition into operating and maintaining its system where it was cost effective and appropriate. Apprentice and training programs would be established with the outsourcing firms to transition staff and the skills to insure a capable workforce.
City uses utility to fund other city operations	Using excess revenues from the electric utility to fund other city departments and cause electric utility costs and rates to increase.	n/a	*Start up and long term* The city charter specifically limits general fund transfers to no more than 4%, the equivalent to a franchise fee previously paid by Xcel (3%) plus the payments in lieu of taxes that would otherwise be lost by creation of a municipal utility. This protects the utility from being a funding source for the city non-utility operations.
Flexibility in responding to risks and changes	The ability to respond to changing economic and industry trends to meet the customer needs such that costs and services are not in conflict with the community.	Not quantified	*Start up and long term* The need to be responsive to changes in the community and economy can be managed through local governance made up of businesses and residents served by the utility. By having local oversight, changes affecting Boulder can be addressed more immediately.
Ability to respond in emergencies	The concern that a smaller utility would not have the capability to respond to major emergencies and loss of power such that there are extended outages and problems for customers.	Not quantified	*Start up and long term* This is a common concern for all utilities which is why there are mutual aid agreements between utilities to provide people and resources to assist in times of major events. The situations exemplified by Hurricane Katrina and Sandy, illustrated not only the impacts to small local utilities but also to very large utilities, both investor owned and public power. In both of those events, utilities from across the country responded and brought materials, trucks and skilled workers to help restore power. This is a standard practice in the industry and is especially common among locally owned utilities – such as Longmont and Loveland.

Updates and Refinements to the Models Since February/April 2013

Revisions Area 1: Xcel's 2011 Electric Resource Plan (ERP) Assumptions Update

***TAKEAWAY**: While the changing gas prices provide some benefit to the local electric utility, as a larger proportion of its resource costs rely on natural gas, the change to the wind assumptions adds significant risk to the local electric utility options by increasing overall resource costs. Adding new carbon tax modeling options does not change the primary results based on the working groups' belief that some state or federal climate action is likely, but it does enable more "apples to apples" testing with the baseline case Xcel presented in its ERP.*

Updated assumptions for Xcel's long-term resource modeling were provided to the PUC on April 16. These updates led to changes to the natural gas prices, wind prices, and carbon prices that were modeled and impact both the Xcel Baseline options and the municipalization options. Key changes include:

- The natural gas prices were lowered on the low and median points of the range modeled; and raised on the upper end of the range to be consistent with Xcel's updated forecasts. The price range was also increased because Xcel's forecast presents one standard deviation around a "base" number while this modeling process uses 1.28 standard deviations. This provides a 10 percent to 90 percent confidence interval around the Xcel median value. Natural gas transportation costs were added as well, as gas power purchases could come from outside the Colorado Interstate Gas pipeline. The range of gas prices modeled over 20 years therefore changed from $3.36–9.71 in February to $2.06–11.21 for this memo.[1]

- The wind prices—which were based on Xcel's generic Production Tax Credit (PTC) and non-PTC prices—were lowered on the high end but raised on the median. The working groups generally agreed that it was unlikely that subsidies like the PTC would continue at current levels for the period modeled, but suggested that wind prices would likely decrease due to other reasons, such as technological advances or tax policy changes that allow renewable energy generation the same subsidies that oil and gas developers have access to, as has been discussed and considered by Congress. Overall, the median value for wind prices was increased overall by eliminating the PTC credit but then including a decrease consistent with findings by the National Renewable Energy Laboratory and the International Energy Agency on the anticipated reduction in levelized energy costs. Wind integration costs, coal cycling costs, and transmission costs were added to the "high" wind price to consider the worst-case "full costs" of wind. The median excluded these costs because the utility cost model already included the cost of the services if Boulder buys wind from independent power producers. The range modeled for 2017, in 2011 dollars, was $31/MWh (low), $50/MWh (median), and $67/MWh (high), including transmission costs in case the wind had to be transmitted across a non-Xcel balancing

[1] Resource prices are presented in 2011 dollars, required for HOMER resource modeling. The prices are then escalated using 2.5 percent inflation when they are included in the financial model.

authority. Xcel received wind bids in 2013 [in 2013 dollars] ranging from $34-72/MWh, including bid price, integration costs, and transmission, as part of its 2011 ERP.[2]

- In the Phase 1 ERP decision, the PUC decided that Xcel should not include a carbon price in its "base" case but should present the impact of a $20/ton carbon tax that begins in 2017 and escalates at inflation. The model was updated to enable comparisons at $0 and $20 carbon prices on both a local utility and Xcel. However, the three levels of carbon prices applied to both the local utility and Xcel were not changed in the primary modeling.

Importantly, because the model runs all combinations of high, median, and low prices on six key uncertainties—including wind and carbon prices—it includes scenarios that the working groups believed were highly unlikely. For example, it is highly unlikely that wind prices will not go down due to better technology at the same time as there is no action on carbon at the state or federal level.

Revisions Area 2: Xcel Baseline Expert Review (Fast Tracks Consulting)

TAKEAWAY*: The overall impact of changes to the Xcel Baseline is approximately a 6-8 percent decrease in Xcel's revenue requirement or about $200 million dollars over 20 years.*

Staff contracted for an extensive expert review of the Xcel Baseline portion of the model, which forecasts Xcel's costs and energy mixes through 2037 and attributes a portion of those overall costs to Boulder. This review was conducted by Fast Tracks Consulting. Because Xcel has declined to provide information or data to the city, the analysis is based on publicly available documents filed at the PUC and FERC. This work is critical to ensure that the municipalization options are being compared accurately to what Xcel has reported.

The changes that have been made to the Xcel Baseline between February and this memo resulted in a more detailed, accurate analysis of Boulder's revenue requirement as a part of Xcel's Colorado service territory. The primary changes made were:

- Adjusted the amount of Xcel's overall revenue requirement that is "attributed" to Boulder—it was based on a proportion of retail energy load (~ 5 percent) and it is now based on a proportion of retail energy sales (~ 4.5 percent). This accounts for the average price per kWh paid in Boulder being lower than the rest of the service territory due to the higher proportion of businesses in Boulder (80 percent in Boulder, versus 70 percent in the rest of the service territory). Commercial customers generally pay a lower rate for electricity than residential customers.

- Disaggregated Xcel's rate requirement into its components, creating separate rate base calculations, including all associated expenses, for generation, transmission, distribution, and general assets. Those rate base components are now being escalated based on historic growth trends in each asset category (derived from FERC Form 1 filings). The exception is generation assets, which are escalated based on Xcel's "baseline" ERP forecast.

[2] Docket No. 11A-869E, *2013 All-Source Solicitation 20-Day Report*, filed May 30, 2013, at p.6 (link). See also Xcel's *2013 PTC Wind Bid Evaluation Report (Public Version)*, filed June 11, 2013 (link).

- Allocated the generation assets portion of the operations and maintenance expenses from the ERP specific to the Colorado retail jurisdiction rather than the portion from the whole system, which includes wholesale sales. The Colorado retail jurisdiction allocation takes into consideration the specific monthly coincident peak factors (12CP) to Colorado.

- Adjusted the tax calculation for Xcel's revenue requirement to calculate taxes Xcel pays on equity returns.

- Xcel's ERP generation forecasts include the costs per MWh for wind contracts that have already been made and then forecast the costs per MWh for new wind contracts. While the February version varied the cost of all of Xcel's wind contracts, the July modeling only varies the costs of "new" wind as both Xcel and the municipal utility would be exposed to future risks such as reduced renewable energy subsidies.

- Xcel's "baseline" ERP modeling includes dramatically increasing DSM costs through 2050. This has been adjusted to more reasonable levels based on the DSM Strategic Issues docket filed in mid-June, in which Xcel lays out rough budgets that decrease slightly in 2015-2020 and a shareholder incentive cap that they propose increasing from $30 million to $50 million.

At this time, the expert reviewer has concluded that the Xcel Baseline model is as solid as is possible without Xcel's explicit cooperation in providing data, including its rate studies and detailed load information, both of which have been denied to date.

Revisions Area 3: Engineering/Appraisal Updates

***TAKEAWAY**: Incorporation of the 115 kV transmission loop and adjustment of the service area boundary does not change the $150 million acquisition cost estimate, but it does add approximately $28 million in debt issuances over 20 years in costs to improve and replace the transmission system over time.*

A detailed description of the equipment and property included in the proposed service area is contained in the July 24 City Council agenda memo on first reading and consideration of a motion to authorize the acquisition of property interests from Xcel.

The engineers designing the separation and interconnection plan for the proposed local utility made some relatively minor modifications to the service territory since the information that was released in February. This was done after the engineers were able to field verify the equipment and investigate the portions of the system at the service area boundaries. This service area boundary adjustment added less than ten additional customers, since the vast majority of additional service territory is permanently protected from development through the city's Open Space and Mountain Parks Charter.

In addition to the service area boundary adjustment, the separation and interconnection plan now contains acquisition of the 115kV transmission loop that ties six of Boulder's substations to each other.

Incorporation of the 115 kV transmission loop and adjustment of the service area boundary does not change the $150 million acquisition cost estimate, but it does add approximately $28 million over 20 years in costs to maintain and update the transmission loop. This additional amount has been incorporated in this updated modeling.

Revisions Area 4: Energy Efficiency Rebates and Investments

TAKEAWAY*: Expanding the funding for energy efficiency rebates increased the local utility's operations budget by approximately $825,000 million per year. However, this has not been translated into a reduction in load that would reduce the need to purchase additional energy resources. This could be captured in future modeling closer to formation of a local electric utility.*

The modeling has been adjusted so that the local electric utility options now include approximately $3 million in rebates each year, which would seem to exceed what Xcel provides for electric rebates, as is discussed on p. 32 of the memo. The modeling does not currently capture what energy resource purchases could be avoided by this increase in local efficiency.

Colorado PUC E-Filings System

Public Service Company of Colorado

Modeling Assumptions Update
2011 Electric Resource Plan

(CPUC Docket No. 11A-869E)

April 16, 2013

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Introduction

As part of its 2011 Colorado Electric Resource Plan ("2011 ERP") filing, Public Service Company of Colorado ("PSCo," "Public Service" or the "Company") provided a list of modeling assumptions in Attachment 2.8-1 of Volume II of the 2011 ERP. The Attachment included either specific values for the assumptions or, in some cases, the methodologies to be used to develop the values.

In its Phase 1 Decisions the Commission either approved the assumptions and methodologies published in Attachment 2.8-1 or modified them as explicitly provided for in those Decisions. The Commission directed the Company to file the updated assumptions that will be utilized in the Phase 2 bid evaluation. In Commission Decision No. C13-0328, the Commission agreed with the Company's proposal to file its updated modeling assumptions by April 16, 2013. Updated values, developed consistent with the 2011 ERP and the Commission's Decisions are presented below.

1. Capital Structure and Discount Rate

Table 1 – Capital Structure

Public Service of Colorado			2012 Electric Docket No. 11AL-947E Decision No. C12-0494	
Component	Capital Structure	Allowed Return	Before Tax WACC	After Tax WACC
L-T Debt	44.00%	5.63%	2.48%	1.54%
Common Equity	56.00%	10.00%	5.60%	5.60%
Total	**100%**		**8.08%**	**7.14%**
Income Tax rate	38.01%			

2. Gas Price Forecasts

The annual average base gas price as well as both high and low sensitivities are presented in Appendix 1.

3. Gas Transportation Costs

A balancing fee of $0.0574 per MMBtu will be added to all generation resources not directly connected to the Colorado Interstate Gas High Plains Pipeline system. Appendix 2 contains the gas transportation costs that will be applied in the Phase 2 bid evaluation.

4. Gas Demand Charges

PSCo will take advantage of existing gas supply contracts to supply firm gas to eligible bids. In these cases no demand charges will be assigned in the evaluation of such bids. In some cases however, due to a bids location,

additional cost will be included in the evaluation of that bid to represent the cost of acquiring incremental firm gas capacity.

5. Market Prices

Annual average values for the three markets are listed in Appendix 1.

6. Gas Price Volatility Mitigation ("GPVM") Adder

The Company is using the average cost of an "at the money" NYMEX call option covering the 5 year period starting in March of 2013 (coincident with the gas price forecast vintage) as the proxy for a GPVM Adder. The Phase 2 bid evaluation will use $0.6475/MMbtu.

7. Coal Price Forecasts

A simple average of the coal price forecasts to be used for the Phase 2 bid evaluation is presented in Appendix 1. This average coal price forecast is comprised of forecasts for both Powder River Basin sub-bituminous coal and Colorado bituminous coal.

8. Reserve Margin (no change)

9. Surplus Capacity Credit (no change)

10. Seasonal Capacity Purchases (no change)

11. CO_2 Price Forecasts

Bid portfolio development will be based on a $0/ton CO_2 proxy price. In Decision No, C13-0094, the Commission ordered that a CO_2 sensitivity be presented based on a CO_2 proxy price of $20/ton starting in 2017 and escalating at inflation. The Commission also encouraged PSCo to run a CO_2 sensitivity case that demonstrates a significant difference in carbon emissions based on the economic dispatch of resources as influenced by carbon pricing. CO_2 proxy pricing for that run will be determined as part of the modeling process.

12. Construction Escalation Rate

A single rate of 2.28% will be applied throughout the entire planning period.

13. Inflation Rates

- Variable O&M inflation rate - 25% labor inflation and 75% non-labor inflation – 1.68%
- Fixed O&M inflation rate - 100% labor inflation and 0% non-labor inflation – 2.85%
- General inflation – 40% labor inflation and 60% non-labor inflation – 1.88%

14. Demand Side Management Forecasts

Through the entire planning period the DSM forecast used in the modeling will be the goals approved in 10A-554EG (CPUC Decision No. C11-0442). These goals are embedded in the load forecast.

15. Transmission Delivery Costs (no change)

16. Interconnection Costs (no change)

17. Effective Load Carrying Capability ("ELCC") Capacity Credit for Wind Resources (no change)

18. Effective Load Carrying Capability ("ELCC") Capacity Credit for Utility Scale Solar PV Resources

Table 2 provides a summary of the results of the most recent ELCC study.

Table 2 – Solar ELCC (% of DC NameplateCapacity)

Solar Zone	Technology	Average
Northern Front Range	Fixed PV	31%
	Tracking PV	41%
Southern Front Range	Fixed PV	32%
	Tracking PV	40%
San Luis Valley	Fixed PV	27%
	Tracking PV	47%
Western Slope	Fixed PV*	30%
	Tracking PV	46%

* For the Western Slope, the Company did not have generation meter data for fixed systems or solar resource data with which to calculate an ELCC. The 30% value shown is the simple average of the other regions' fixed system results.

19. Resource Acquisition Period (no change)

20. Planning Period (no change)

21. SO_2 Effluent Costs and Allocations (no change)

22. NO_x Effluent Costs and Allocations (no change)

23. Mercury Effluent Costs and Allocations (no change)

24. Spinning Reserve Requirement

The spinning reserve requirement has been updated to 421 MW consistent with the newest value from RMRG.

25. Emergency Energy Costs (no change)

26. Dump Energy / Wind Curtailment Costs
Payment for lost production tax credits will be accounted for by pricing dump energy at the grossed-up PTC price with inflation (PTC/(1-tax rate)) through 2023 (10 years after the expected latest in-service date of a PTC eligible project on 12/31/2014).

27. Wind Integration Costs
Appendix 1 shows the wind integration costs that would be assigned to a 100MW bid.

28. Wind Induced Coal Plant Cycling Costs
The revised cycling costs to be used for the Phase 2 bid evaluation are presented in Appendix 1.

29. Solar Integration Costs
Appendix 1 shows the solar integration costs that will be assigned.

30. Owned Unit Modeled Operating Characteristics and Costs (no change)

31. Thermal PPA Operating Characteristics and Costs (no change)

32. Renewable Energy PPA Operating Characteristics and Costs
Integration and cycling costs will be updated as addressed elsewhere in this document. The Company has also updated the generation profiles and expected capacity factors of existing renewable PPAs based on the inclusion of additional historical operating data collected since the filing of the Phase 1 modeling.

Load Forecast
The Company will be using the latest load forecast for Phase 2 bid evaluation. The forecast, completed during the first quarter of 2013, is presented in Appendix 1. This forecast was also used to develop the need forecast included in the RFP released March 15th 2013. Table 3 presents the needs projected by the load forecast.

Table 3 – Need Forecast

	2013	2014	2015	2016	2017	2018
Need (MW)	0	0	0	0	9	256

Appendix 1 - Updated Assumptions for Phase 2 Bid Evaluation

	CIG Gas Price Forecast ($/mmBtu)			Market Prices ($/MWh)		Coal Price ($/mmBtu)
	Low	Base	High	On-Peak	Off-Peak	Base
2011	$2.23	$3.77	$6.37	$36.68	$22.06	$1.84
2012	$1.54	$2.60	$4.39	$28.77	$19.70	$1.98
2013	$2.17	$3.69	$6.29	$35.88	$25.89	$1.95
2014	$2.32	$3.96	$6.77	$38.48	$27.79	$2.02
2015	$2.39	$4.09	$6.99	$40.65	$29.94	$2.07
2016	$2.47	$4.22	$7.21	$43.33	$31.62	$2.11
2017	$2.60	$4.45	$7.61	$45.79	$34.19	$2.20
2018	$2.80	$4.79	$8.18	$49.09	$38.71	$2.25
2019	$3.02	$5.16	$8.82	$51.98	$41.28	$2.30
2020	$3.21	$5.49	$9.39	$53.38	$42.53	$2.33
2021	$3.37	$5.76	$9.85	$54.27	$43.28	$2.38
2022	$3.52	$6.02	$10.29	$55.92	$44.81	$2.42
2023	$3.77	$6.44	$11.01	$58.00	$46.53	$2.47
2024	$3.89	$6.66	$11.39	$59.25	$48.15	$2.52
2025	$4.03	$6.89	$11.78	$61.12	$49.67	$2.57
2026	$4.15	$7.10	$12.14	$62.29	$50.84	$2.62
2027	$4.25	$7.26	$12.42	$63.36	$51.85	$2.67
2028	$4.34	$7.42	$12.69	$64.30	$52.84	$2.72
2029	$4.47	$7.65	$13.08	$66.29	$54.76	$2.77
2030	$4.58	$7.84	$13.40	$67.84	$56.19	$2.82
2031	$4.67	$7.98	$13.65	$68.97	$57.16	$2.87
2032	$4.77	$8.16	$13.95	$70.10	$58.36	$2.92
2033	$4.89	$8.36	$14.29	$71.29	$59.48	$2.97
2034	$5.00	$8.55	$14.62	$72.72	$60.65	$3.02
2035	$5.12	$8.76	$14.97	$74.14	$61.95	$3.07
2036	$5.22	$8.93	$15.27	$75.56	$63.14	$3.12
2037	$5.32	$9.10	$15.57	$77.00	$64.36	$3.17
2038	$5.43	$9.28	$15.87	$78.47	$65.59	$3.22
2039	$5.54	$9.46	$16.18	$79.97	$66.85	$3.28
2040	$5.64	$9.65	$16.50	$81.50	$68.14	$3.33
2041	$5.75	$9.84	$16.82	$83.06	$69.44	$3.39
2042	$5.87	$10.03	$17.15	$84.64	$70.78	$3.44
2043	$5.98	$10.23	$17.49	$86.26	$72.14	$3.50
2044	$6.10	$10.43	$17.83	$87.91	$73.52	$3.56
2045	$6.22	$10.63	$18.18	$89.59	$74.93	$3.61
2046	$6.34	$10.84	$18.53	$91.30	$76.37	$3.67
2047	$6.46	$11.05	$18.89	$93.05	$77.84	$3.73
2048	$6.59	$11.27	$19.26	$94.82	$79.33	$3.80
2049	$6.72	$11.49	$19.64	$96.64	$80.85	$3.86
2050	$6.85	$11.71	$20.02	$98.48	$82.41	$3.92

Appendix 1 - Updated Assumptions for Phase 2 Bid Evaluation - Continued

	Wind Integration Cost ($/MWh)	Coal Cycling ($/MWh)	Solar Integration ($/MWh)		Load Forecast	
	Addtl. 100MW	Incremental Wind	Incremental Solar		Peak (MW)	Energy (GWh)
2011	$3.47	$0.00	0.00		6,628	34,781
2012	$2.23	$0.00	0.00		6,428	32,832
2013	$3.38	$0.91	0.00		6,510	32,822
2014	$3.67	$0.91	0.00		6,546	32,817
2015	$3.80	$0.98	0.05		6,608	33,421
2016	$3.94	$1.01	0.17		6,678	33,514
2017	$4.19	$1.08	0.39		6,752	33,728
2018	$4.55	$1.10	0.69		6,821	33,917
2019	$4.94	$1.09	1.03		6,878	34,078
2020	$5.29	$1.15	1.33		6,909	34,257
2021	$5.58	$1.09	1.57		6,944	34,356
2022	$5.85	$1.18	1.81		6,980	34,515
2023	$6.30	$1.19	2.19		7,005	34,686
2024	$6.53	$1.24	2.39		7,026	34,961
2025	$6.77	$1.18	2.60		7,060	35,107
2026	$7.00	$1.18	2.79		7,098	35,353
2027	$7.17	$1.18	2.94		7,149	35,655
2028	$7.34	$1.18	3.08		7,203	36,075
2029	$7.58	$1.18	3.29		7,272	36,363
2030	$7.78	$1.18	3.46		7,348	36,777
2031	$7.93	$1.18	3.59		7,427	37,160
2032	$8.12	$1.18	3.75		7,506	37,595
2033	$8.33	$1.18	3.93		7,609	37,938
2034	$8.53	$1.18	4.11		7,719	38,359
2035	$8.75	$1.18	4.29		7,832	38,794
2036	$8.93	$1.18	4.45		7,939	38,832
2037	$9.12	$1.18	4.61		8,063	39,859
2038	$9.31	$1.18	4.77		8,186	40,382
2039	$9.50	$1.18	4.94		8,306	40,960
2040	$9.70	$1.18	5.10		8,421	41,535
2041	$9.90	$1.18	5.27		8,539	42,052
2042	$10.10	$1.18	5.45		8,665	42,598
2043	$10.31	$1.18	5.63		8,749	43,138
2044	$10.52	$1.18	5.81		8,829	43,721
2045	$10.74	$1.18	5.99		8,907	44,315
2046	$10.96	$1.18	6.18		8,981	44,954
2047	$11.18	$1.18	6.37		9,033	45,598
2048	$11.41	$1.18	6.57		9,082	46,290
2049	$11.64	$1.18	6.77		9,126	46,970
2050	$11.88	$1.18	6.97		9,167	47,660

Appendix 2 - Gas Transportation Adders

Generation	Location	Pipeline Connection Transport Cost for RFP Evaluation	Cost Components as of April 1, 2013 *
CIG core gas delivery area	Connected to the CIG High Plains pipeline or other CIG pipeline in the core gas delivery core area	CIG Firm commodity charges and FL&U and PSCo balancing charges. The balancing charges will not be used if the generation is connected to the CIG High Plains pipeline system	(CIG Mainline Firm Commodity Charges = $0.017/MMBtu, and CIG Mainline Fuel Charges = 0.74% of MMBtu throughput), and PSCo Balancing Charge = $0.0574 per MMBtu, - or - (CIG High Plains Firm Commodity Charges = $0.0002/MMBtu, and CIG High Plains Fuel Charges = 0.1% of MMBtu throughput),
Denver Metro area or in Northern Colorado	Connected to PSCo Gas LDC or other Gas LDC	CIG Firm commodity charges and FL&U, plus the full rate gas distribution IT commodity rate and FL&U, as well as the PSCO balancing charges.	PSCo LDC IT Commodity Charge = $0.5116, and PSCo LDC Fuel Charge = 1.55% of MMBtu used, and PSCo Balancing Charge = $0.0574 per MMBtu, and - and - (CIG Mainline Firm Commodity Charges = $0.017/MMBtu, and CIG Mainline Fuel Charges = 0.74% of MMBtu used), - or - (CIG High Plains Firm Commodity Charges = $0.0002/MMBtu, and CIG High Plains Fuel Charges = 0.1% of MMBtu used)
Other Areas	Connected to CIG pipeline not in the core gas core delivery area.	If the CIG can provide IT transportation April through October and on Cold but not extremely cold days in the winter, then the charges will be full rate CIG IT commodity and FL&U	CIG Mainline IT Commodity Charges = $0.3342/MMBtu, and CIG Mainline Fuel Charges = 0.74% of MMBtu used
Denver Metro area or in Northern Colorado and Other Areas	Connected to the CIG pipeline not in the core gas delivery area where the IT services are limited in availability. Or to the PSCo or other gas LDC in an area with limited IT service.	If the CIG pipeline or the gas LDC cannot provide IT transportation April through October and on Cold but not extremely cold days in the winter, then we will work with CIG and / or the Gas LDC to determine what needs to be done to firm up the gas transport. This may require that the delta between the firm demand rate to provide service to a plant that meets these criteria	Bid Specific, dependent on the project location

		versus the demand rate associated with providing firm deliveries to a plant in the core area be added to the cost of the gas transport.	

* For the "CIG core gas delivery area" and "Denver Metro area or in Northern Colorado", use of CIG Mainline or High Plains rates is bid specific dependent on the project location/interconnections.

Xcel Baseline Analysis Methodology

To calculate the costs and benefits that might occur through the creation of a municipal utility, the city first created an "Xcel Baseline" analysis for comparison. The Xcel Baseline projects costs Boulder customers will pay to Xcel if the city continues to rely on Xcel Energy as its electric utility provider. Costs for various municipal utility scenarios are then compared to this baseline to calculate the savings or additional costs that are expected from municipalization.

The Xcel Baseline relies as much as possible on forecasts made by Xcel itself in proceedings before the Colorado Public Utilities Commission (CPUC), as well as additional financial and operations data filed by Xcel with the CPUC and the Federal Energy Regulatory Commission (FERC). However, because the city does not have access to all of Xcel's financial and planning data, additional assumptions and calculations were used to build up the baseline.

Overall Approach

Figure 1 provides an overview of the Baseline Analysis, which includes two main steps and a number of substeps. In Step 1, the analysis forecasts the total revenue that Xcel will receive from all of its Colorado retail customers (Xcel's "revenue requirement"). The approach uses methods similar to those used to calculate the revenue requirements that determine electric rates set by the CPUC. In Step 2, the analysis determines the share of Colorado revenue requirement that will be paid by Boulder customers.

Step 1 involves first forecasting the asset investments needed to build the electrical system. These are tracked at original cost ("gross assets"), and also net of accumulated depreciation ("net assets"). From these asset balances, asset-related revenue requirements, including depreciation, cost of capital, and taxes, are calculated. Depreciation expenses grow along with gross assets. (Depreciation on an individual investment is typically calculated as its original investment divided by its useful life.) The other requirements grow with net assets: Xcel earns its cost of capital (including debt interest and equity earnings) as a percentage of its net assets and Xcel pays income taxes as a percentage of its equity earnings. Finally, the analysis adds expenses required to maintain and operate the electric system.

In Step 2, the analysis allocates a share of Xcel's Colorado revenue requirement to Boulder customers. Boulder-specific local taxes are then added to calculate the final Boulder revenue requirement.

The analysis begins with financial data for 2012, and forecasts costs out through the 2017-37 study period for the municipalization analysis. The following sections provide more detail on the approach and assumptions used to derive the Xcel Baseline results.

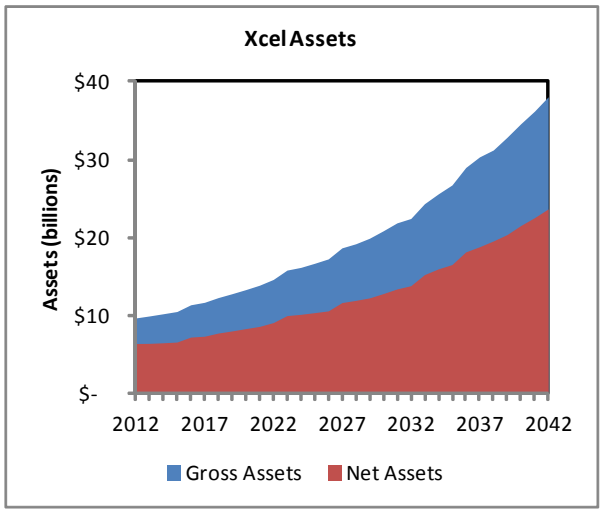
Step 1: Forecast Xcel Total Revenue Requirement

Step 1a: Forecast Xcel Assets

Xcel's investments include generation, transmission, and distribution assets that make up the electrical system, as well as the general assets that support the system (such as office buildings). In addition, because Xcel operates a combination utility in Colorado (including natural gas and steam utilities), Xcel's balance sheet also include some "common" assets that are allocated across the three utilities.

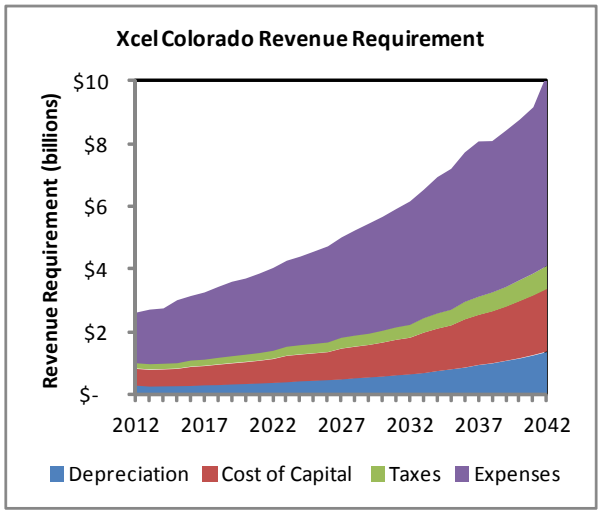
Figure 1
Xcel Baseline Analysis Approach

Step 1a: Forecast Xcel assets



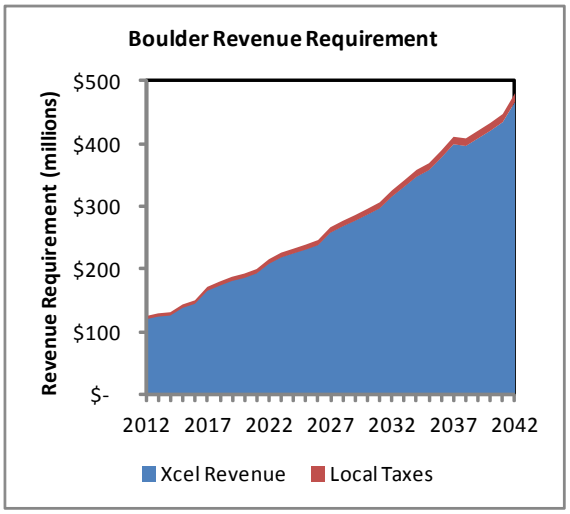
Step 1b: Forecast asset-related revenue requirements
- Depreciation grows with gross assets
- Cost of capital and taxes grow with net assets

Step 1c: Add expenses



Step 2a: Allocate Colorado revenues to Boulder

Step 2b: Add local taxes



Since these assets are paid for over time, they do not show up directly as annual revenue requirements. Instead, the additional calculations shown in Step 1b use these asset balances as inputs to calculating "asset-related" revenue requirements.

Generation Assets: Asset balances were forecast for each individual plant currently on or planned for Xcel's Colorado system. Starting balances were calculated from information provided in Xcel's 2012 Annual Report to FERC and matched to levels approved for Xcel in 2012 for its latest General Rate Case (GRC). Future balances were developed from the forecast of additions and retirements that Xcel included in its 2011 Electric Resource Plan (ERP). Annual and accumulated depreciation were calculated using asset lives consistent with the GRC and ERP. Net assets were then calculated as the difference between gross assets and accumulated depreciation.

Transmission Assets: Asset balances were forecast for the total transmission system. Starting balances were set consistent with the amounts approved in Xcel's GRC. Gross assets and net assets were assumed to grow at rates tied to demand growth and inflation. While Xcel's transmission assets have grown much faster than this in recent years, it is unclear that this trend will continue for the entire analysis period. Instead, the more conservative assumptions—which, for consistency, were also used in forecasting transmission costs for municipalization scenarios—were applied.

Distribution Assets: Asset balances were forecast for the total distribution system. Starting balances were set consistent with amounts approved in Xcel's GRC. Gross assets were assumed to grow at levels consistent with historic growth over the 2002-12 period. Depreciation was calculated using distribution depreciation rates consistent with historic levels. Net assets were calculated as the difference between gross assets and accumulated depreciation.

General and Common Assets: Balances were forecast separately for general and common assets, but a similar approach was used for each asset class. Starting balances were set consistent with levels approved in the GRC. Net and gross assets were assumed to grow at historic levels. Depreciation was calculated using depreciation rates consistent with historic levels.

Step 1b: Forecast Asset-Related Revenue Requirements

Asset-related revenue requirements provide annual reimbursement to Xcel for its system investments, including return of its initial investment (in the form of depreciation), return on investment (in the form of debt interest and equity returns), and income taxes on those equity earnings.

Depreciation: Depreciation is typically calculated using a "straight line" approach, which involves dividing the initial investment by its expected useful life. For example, for a power plant with a useful life of 50 years, Xcel books annual depreciation expenses of 2 percent (1/50) of the initial (or gross) investment. Approaches used to calculate depreciation for each asset class were described in Step 1a.

Cost of capital: Xcel's cost of capital represents the financing costs it pays to investors. Xcel's financing costs include a mix of debt interest (which are paid on the bonds, loans, and similar debt instruments used to fund a share of Xcel's investments) and equity earnings (which are the profits earned by Xcel's shareholders, who also fund a share of its investments).

Cost of capital is calculated as the product of net assets and weighted average cost of capital, which takes into account the capitalization shares and returns paid for each capital source. Table 1 shows the assumptions used in the baseline analysis, which are consistent with those authorized in the GRC.

Table 1
Xcel Cost of Capital

	Share of Total Capital	Interest/ Rate of Return
Debt	44%	5.63%
Equity	56%	10.00%
Weighted Average	**100%**	**8.08%**

Income taxes: The rates Xcel charges to customers also reimburse it for income taxes that it pays on equity earnings. Income taxes are calculated as the product of Xcel's equity earnings and the effective tax rates it pays for federal and state income taxes. The effective rates takes into account various tax incentives available to Xcel, such as accelerated depreciation and investment tax credits.

Because taxes added to Xcel's revenue requirement increase its net income (which is then subject to income taxes), Xcel's revenue requirement is first "grossed up" to ensure that Xcel's authorized rate of return on equity is maintained. Effective tax rates used in the analysis are consistent with levels authorized in the GRC.

Step 1c: Add Expenses

Expenses reimburse Xcel for fuel, purchased power, maintenance and other costs it incurs to operate the electric system. The following approaches were used to forecast expenses:

Generation: Generation expenses include the operation and maintenance (O&M) and fuel costs Xcel incurs to operate its own plants, as well as purchased power costs paid to independent generators. Generation expenses were forecast directly from the projections Xcel included in its ERP.

Demand-Side Management (DSM): DSM expenses cover the costs Xcel incurs for the energy efficiency and demand-response programs it uses to help customer save energy and lower system requirements. DSM expenses through 2020 were forecast from projections Xcel provided in the recent "DSM Strategic Issues" docket at the CPUC , and then assumed to increase at inflation after 2020. To these core DSM budgets, additional costs were added to represent bonuses awarded to Xcel's shareholders for meeting DSM performance targets.

Transmission: Transmission expenses include the O&M costs Xcel incurs to operate its transmission system, which were forecast to increase at inflation plus demand growth. Similar to the approach discussed for transmission assets, while recent O&M expenses have grown faster than this, an approach consistent with the transmission forecast for the muni alternative was used.

Distribution: Distribution expenses include the O&M costs Xcel incurs to operate its distribution system. Distribution expenses were calculated as a percentage of gross distribution asset balances, consistent with historic trends.

Customer and General: Customer expenses cover customer service, sales, and related functions. These costs were forecast to grow at levels consistent with historic trends.

Step 2: Forecast Xcel Total Revenue Requirement

Step 2a: Allocate Colorado Revenues to Boulder

Historically, Boulder customers account for just under 5% of Xcel's Colorado retail sales and around 4.5% of its retail revenue. Revenues represent a lower share because average rates in Boulder are only around 91% of Xcel's statewide average. While Boulder customers pay the same tariffs charged to other customers, a higher percentage of Boulder sales go to businesses, and businesses pay lower rates, on average, than residential customers.

Xcel's Colorado revenue requirements were assigned to Boulder using annual allocation factors that take into account the share of Xcel sales going to Boulder (the sales ratio), as well as difference between Boulder and statewide average rates (the rate ratio). Since the municipalization scenarios assume that some customers outside Boulder city limits will be included in the new utility, sales to these customers were included in the sales ratio. The rate ratio was also adjusted annually to reflect changes in the mix of residential and business sales.

Step 2b: Add Local Taxes

As a final step, local taxes were added in for two separate taxes: an occupation tax calculated as 3 percent of Xcel's electric revenue, and a carbon action plan tax calculated, per kilowatt-hour of sales, at 0.003 cents for industrial sales, 0.009 cents for commercial sales and 0.049 cents for residential sales.

Boulder Energy Future QUALITATIVE ANALYSIS Part One: Benefits and Concerns of Each Path

Objective	The Status Quo: Xcel Energy	A Local Electric Utility: Boulder Light & Power	Partnership
GENERAL (RELATED TO ALL GOALS)			
Applies to All Goals and Objectives	SUPPORTS THE GOALS: • Xcel Energy has an established organizational and management structure. • The large scale of Xcel's assets, financial resources and service area provides opportunities to manage multiple objectives based on economies of scale. • Xcel is a financially strong and highly profitable company. It has consistently increased earnings per share for nine consecutive years and anticipates earnings of $1.85 – $1.95 billion in 2013. • The Colorado Public Utilities Commission (PUC) provides oversight of Xcel's rates and services based on the desires of the State of Colorado which in many cases are aligned with the Boulder community. • The Electricity Section of the PUC serves the public interest by balancing the needs of customers and utility service providers. Their mission is to achieve a regulatory environment that provides safe, reliable, and quality services to electric utility customers on just and reasonable terms. CONCERNS: • Xcel Energy is a large utility provider, with a diverse customer base (8 states and 4 subsidiaries) and local opinion does not significantly influence the management and delivery of its services. Whatever is done for one community must be done for all other communities that are served. Desires of local customers and businesses may not be supported by other Colorado area customers, limiting opportunities for managing the desires and specific objectives of our community. • As a for-profit corporation, Xcel must meet shareholders desire to maximize profit. To protect customers, the Colorado PUC has been granted oversight of the charges and rates levied by Xcel; however, the PUC process requires substantial time and ability to navigate the complex regulatory structure. Local voters have little input on the make-up of the Commissioners of the Colorado PUC, who are appointed by the governor for 4-year terms and approved by the state Senate.	SUPPORTS THE GOALS: • A Local Electric Utility would have fewer "sunk" costs (i.e. investments in pre-existing systems), allowing for greater choice in purchase of generation, billing systems, etc. • Municipal utilities have lower costs of capital. A local utility would have access to less expensive financing, through tax-exempt bonds, than is available to Xcel, and would not need to provide a return on investment to shareholders. • As a not-for-profit entity, a municipal utility would have the ability to re-invest any excess revenues locally; this could include, for example, reducing rates, increasing programs and services or increasing reliability. • Boulder voters approved an amendment to the City Charter that allows the city to form a municipal electric utility only if it can meet strict financial requirements that deliver our community clean, reliable, low-cost, local energy. The city has since performed an analysis (modeling described in more detail in each section below) that demonstrates that it would be feasible under certain conditions to create a local electric utility that meet the conditions prescribed in the City Charter. • The American Public Power Association (APPA) is an important support organization for the nation's more than 2,000 community-owned electric utilities. Collectively, these utilities serve more than 47 million customers in the U.S. APPA was created to advance the public policy interests of its members and their consumers, and provide member services to ensure adequate, reliable electricity at a reasonable price with the proper protection of the environment. • A Boulder Light & Power Utility would have more flexibility to balance innovation risk with efficiency gains and ensure that the results of innovative investment are shared with local customers. • Local customers have more direct access to decision-makers—local elected and appointed officials-- who have the ability to make decisions based on local priorities. CONCERNS: • The city has worked hard to accurately model the financial impacts associated with creating a local electric utility; however, an inability to test assumptions based on data provided by Xcel means there could be some variations in actual outcomes. • New organizational and management structure would need to be established (though existing City management and administrative systems would be leveraged and applied to the local electric utility). • This would be the largest debt issue the city has ever made. It will require a significant undertaking to establish a new utility. The financing terms, which are currently unknown, would be set by bond rating agencies. • Members of the business community who do not live in the city are not eligible to vote or run for local office. Business customers are likely to account for 80 percent of the utility's billing and revenue and some are concerned that local politics may influence the local electric utility in a manner that is counter to their interests.	**Information not available at time of this writing.** **See section VI of July 23 study session memo.**
ENVIRONMENTAL STEWARDSHIP & CLEAN ENERGY Goal: Significantly reduce carbon emissions and pollutants			
1. Consider and Mitigate Full range of Environmental Impacts: **Decarbonize the Energy Supply** • Consider all environmental and health costs of the associated fuel mix. • Maximize	SUPPORTS THE GOAL: • Xcel's current portfolio in Colorado consists of approximately 58% coal, 23% natural gas, 16% wind (including renewable energy credits). The remaining resources come from a combination of solar, hydroelectric and biomass. Xcel has proposed to acquire approximately 550 MW of wind capacity as part of its 2011 Electric Resource Plan. • Under the Clean Air, Clean Jobs Act (CACJA), Xcel was required to develop a plan that retires or converts 900 MW of coal generation. This includes retirement of Arapahoe 3 & 4, Cameo 1 & 2 and Valmont 5. Pollution controls will be added to other units. Xcel has reduced NO_x, SO_x, mercury, and particulate emissions each year since 2005. Under the CACJA, Xcel was also required to develop a plan that would reduce NO_x emissions by 70% by 2017, pursuant to Colorado's obligations under the Clean Air Act. • Xcel indicates that it has achieved a 20% reduction in carbon dioxide emissions (relative to a 2005 baseline) and is on track to achieve a 30% carbon emission reduction by 2020.	SUPPORTS THE GOAL: • The city's modeling indicates that a local electric utility could meet a significant portion of Boulder's energy needs with renewable energy sources and dramatically reduce the community's coal dependency while maintaining the same (or better) costs and reliability as Xcel. • Even with slight fluctuations in carbon intensity over time, the modeling shows that the local utility would have much lower carbon intensity of its fuel supply than Xcel. • To achieve the levels of greenhouse gas emission and carbon reductions needed to meet the city's Climate Commitment, a utility will need to provide both aggressive demand-side management (DSM) programs and a provide significantly less carbon- intensive energy supply than we have currently. A local utility could cut local emissions more quickly than an Investor-owned utility by prioritizing demand-side efforts paired with a cleaner energy portfolio as shown in the city's modeling. • In order to meet the city's Climate Commitment, a municipal utility could make choices to move away from carbon based energy supply, limiting the exposure to any potential future carbon tax regulations.	**Information not available at time of this writing.**

Boulder Energy Future QUALITATIVE ANALYSIS Part One: Benefits and Concerns of Each Path

Objective	The Status Quo: Xcel Energy	A Local Electric Utility: Boulder Light & Power	Partnership
utilization of the least carbon-intensive fuel sources. • Support local testing of new, innovative "carbon-free" and pollution-reducing technologies. • Provide the ability to accurately predict and set specific future targets for emission reductions based on demand-side efforts and fuel sources along with the flexibility to continually decarbonize Boulder's fuel mix over time. **Reduce Pollutants** • Reduce other pollutants such as mercury, particulates and various nitrous and sulfurous emissions. • Consider the full range of environmental and health risks and costs associated with the fuel mix. **Reduce Dependency on Fossil Fuels**	• Xcel serves customers in eight states and if it chooses to make positive changes in its fuel supply or program offerings, it would impact a larger number of customers and have a greater environmental impact than would a local utility. • Xcel has been recognized as a leader among regulated investor-owned utilities in investing in wind energy. CONCERNS: • Current efforts to increase renewables are hampered by Xcel's continued investments in coal. While Xcel emphasizes its leadership in wind energy, it still invests heavily in coal. So much so, that Boulder customers use one of the most carbon-intensive energy supplies in the nation. Real change would mean decommissioning more coal plants than the company has planned, and an end to building new ones or refurbishing or repowering existing ones. • Currently, Colorado has 13 coal plants which emit 47,200,000 tons of C02 emissions per year, ranking Colorado 23rd among power-related carbon emissions for all US states. Of these 13 coal plants, Xcel Energy operates 7. By 2020, Colorado greenhouse gas emissions are project to reach 71% above 1990 levels. • Xcel has substantial investments in base load coal generation units that make high renewable energy percentages impractical. • Due to Xcel's reliance on coal, its CO2 emission factor of 1.93 lb/kWh is relatively high compared to the U.S. average of1.34 lb/kWh. In fact, Colorado has the highest carbon intensity among the 4 states in Xcel's service territory and EPA's eGRID carbon intensity places the Rocky Mountain region ("RMPA") at the highest in the nation. • While Xcel plans to decommission the Valmont coal plant by 2017, the Hayden and Pawnee coal plants are being considered for pollution controls which would keep the coal plants on-line until 2036 and 2041 respectively and would cost close to $380 million. • Xcel produces "Toxic Release Inventory" reports for the EPA, showing that pounds of toxic substances, such as barium and mercury, increased in 2010 as compared to 2009 (the last reported years). • Currently, energy users pay market prices that reflect the direct costs of production, transportation and storage of the energy they use. However, energy prices typically do not account for environmental costs (e.g. human health and welfare impacts caused by air and water pollution, solid waste, climate change, loss of biodiversity and ecological changes from shifts in land use and nutrient cycles) and therefore do not reflect the full cost of energy production and consumption. • Xcel has indicated that compliance with the CACJA will result in over $1 billion in costs and roughly a 2%-3% rate increase per year over 10 years. • In its 2011 Electric Resource Plan, the PUC approved Xcel testing a $20/ton carbon tax in 2017 for sensitivity, but has not required that Xcel propose alternative resource options based on that possibility. • While Xcel suggests it is on track to achieve a 30% CO_2 reduction by 2020, Xcel's CO_2 emissions have not significantly decreased since 2009. • Under current regulations there is not a cost for carbon emissions factored into energy generation, providing no incentive for Xcel to move away from carbon based fuels.	• The modeling assumes an increased level of funding in comparison with Xcel for DSM and solar incentives and rebates. • The city has significant experience in developing and managing innovative energy efficiency and DSM programs targeted to the needs of the Boulder community, such as EnergySmart. In May, 2012 the Rocky Mountain Institute (RMI) performed an independent analysis of all Boulder DSM programs funded through the Climate Action Plan Tax and found that Boulder "has attained impressive energy savings and emission reductions, and is well positioned to achieve future emissions reduction targets. RMI also found that the city "has generated significant carbon savings at reasonable cost." • A local utility can continue to tailor its programs to address local issues and needs. As an example, Boulder is currently partnering with Pecan Street Research Institute to collect real-time energy usage data from homes and businesses in Boulder to test and validate which new efficiency programs and technologies work and which do not. This consumer focused research will allow the city to enhance its demand-side efforts to be most effective. • A local utility would have control over capital investment priorities, such as undergrounding electric lines, replacing aging equipment, micro-gridding, or investing in other innovative practices and technologies, as described in the Part 2 Qualitative Analysis. • By focusing on clean energy generation sources, a local utility's portfolio will result in reduced pollutants such as nitrogen oxides, sulfur oxides, mercury and particulates. Additionally, the utility's portfolio can prioritize water consumption in fuel extraction and generation. CONCERNS: • The City's resource mix will require some fossil fuel use over the short-term. This could result in additional costs should a carbon fee be enacted. However, given that the city's portfolio (as modeled) relies less on coal based generation than Xcel, it is anticipated the local utility would be impacted less than Xcel. Modeling showed that the Charter metrics could be met under a range of future carbon costs, or even without a carbon tax. • There may be future limitations or constraints on existing transmission. These constraints could potentially increase the cost of transmitting clean energy sources such as wind, or may constrain the sites that are suitable for generation resources. • Charter requirements state the utility will strive to maintain rate parity with the investor owned utility (IOU). There are a number of lifecycle costs that will be considered by the local utility that are not accounted for by Xcel. These include costs associated with everything from water use, how warmer climate trends will impact agriculture, to the damage rising sea water will cause, to the cost of installing charging stations for electric cars. If these externalities are incorporated into the local utility rates, it may be harder to maintain rate parity. • Wholesale Power purchase structures and pricing are critical to a local utility's success. Care must be taken to align PPA terms and conditions to Boulder's local demand-side efforts and local generation such that they do not conflict or add cost.	
2. Energy Investments Built on Grid Modernization and Innovation • Promote current and future energy investments built on the Smart Grid	SUPPORTS THE GOAL: • In 2008, Xcel announced that Boulder would become the nation's first "fully integrated" SmartGridCity, putting it ahead of the curve on grid modernization. (see Section 1 of Part 2 Analysis) • Xcel participates in the Electric Power Research Institute Green Circuits project to quantify and reduce distribution circuit losses. (see Section 1 of Part 2 Analysis) • Xcel is implementing a decentralized "grid modernization" plan that includes testing distribution voltage optimization. (see Section 1 of Part 2 Analysis) • Xcel supported Colorado HB 12-1258, a bipartisan bill authorizing the sale of electricity for electric vehicle charging without requiring approval from the PUC. (see Section 1 of Part 2 Analysis)	SUPPORTS THE GOAL: • The local utility will have fewer regulatory restrictions than Xcel in creating leading-edge programs in reliability, energy efficiency, renewable energy, related economic development and customer service (see Section 2 of Part 2 Analysis). • Locally controlled public utilities have the freedom to design programs and services that directly match the needs of the geographic and demographic area served. • The business model of a municipal utility would focus on meeting Boulder's Energy Future goals, which include having a cleaner energy supply; the ability to develop innovative energy efficiency and demand-side management programs that enhance customers' control; a structure that supports economic vitality through	N/A

Boulder Energy Future QUALITATIVE ANALYSIS Part One: Benefits and Concerns of Each Path			
Objective	**The Status Quo: Xcel Energy**	**A Local Electric Utility: Boulder Light & Power**	**Partnership**
infrastructure in order to provide options to customers that further reduce emissions. • Encourage new and innovative ways to maximize investment in local distributed generation and considers new opportunities for energy storage, on-site generation and electric vehicle integration.	• Xcel is piloting a small "Community Energy Planning" program to offer Colorado local government's strategic support in developing demand-side management programs. (see Section 2 of Part 2 Analysis) CONCERNS: • While Xcel's SmartGridCity™ Project was effective in providing benefits to the utility itself, components related to customer benefits and new technologies (e.g. vehicle-to-grid, large-scale distributed generation) have not been fully implemented. • Even when authorized by customers, Xcel has not consistently provided meaningful access to energy usage data. As an example, local governments, including Boulder County and Denver, have filed multiple petitions at the PUC to ask Xcel to provide them with meaningful and consistent access to the energy usage data that participants in the EnergySmart and Denver Energy Challenge programs have authorized them to receive. This data is needed to fulfill DOE grant requirements related to program verification.	low costs and high reliability, and the creation of a high-tech test bed; and the opportunity to work with energy consumers to meet their diverse needs. • A local utility would have consistent access to usage data that would enhance demand-side programs and services by providing real-time data on the effectiveness of existing efforts. The local utility would work with customers to balance data privacy with effective services, tailored programs and innovation. This is particularly important to commercial and industrial sector customers. CONCERNS: • The nature of innovation is that some programs will not be cost-effective.	
ENERGY LOCALIZATION/ LOCAL ECONOMIC VITALITY Goal: Provide energy customers with a greater say about their energy supply and promote local economic vitality			
3. Provide Customers with a Strong Voice in Utility Decisions	SUPPORTS THE GOAL: • Xcel is a regulated monopoly requiring oversight of rates and resources by the Public Utilities Commission. Parties are able to intervene in PUC proceedings related to rates, customer services, resources and programs. • Xcel offers a number of renewable energy programs or energy saving offers. Customers can choose to pay extra for programs such as Windsource, Energy Audits or the Saver's Switch® program. CONCERNS: • Certain customer choice programs such as Community Choice aggregation are not legal in Colorado. • Xcel is required to obtain approvals or authority from the PUC before implementing new programs or offerings, but it frequently is not required to invite stakeholders to participate in program design.	SUPPORTS THE GOAL: • A local utility would not be regulated at the state level in the same way as investor-owned utilities, but would be subject to local oversight and local elected officials who can more directly ensure the utility is held to a high standard of service. • A local utility has the freedom to design programs and services that directly match the geographical and demographical needs of the area served. • The Charter requires the implementation of a local electric utility governing board which would have the ability to engage residents and business in decisions related to different resource mixes, crafting more innovative and locally-centered services, and providing new infrastructure opportunities in response to community priorities. • Under Colorado law, a municipal utility is governed locally and is independent from many of the state regulatory constraints that bind investor owned utilities like Xcel. Municipal utilities are typically held to a higher standard by the community and local oversight board. • A local utility could offer innovative rate structures tied to customer interests. These could be time of use rates, tiered rate structures or on-bill financing for energy efficiency and renewable (see Qualitative Analysis Part 2). CONCERNS: • The design and representation on the local governing board may be difficult in terms of designing to meet all local interests.	**Information not available at time of this writing.** **See section VI of July 23 study session memo.**
4. Innovative Ownership and Financing/ Local Investment • Create new opportunities for local ownership in distributed energy generation through innovative program designs. • Create new financing vehicles.	SUPPORTS THE GOAL: • Xcel's Solar*Rewards incentive program has contributed to the installation of approximately 160 MW of solar in its Colorado service territory as of 2012. Xcel administers the Renewable Energy Standard Adjustment fund, which comes from ratepayers in Colorado. This fund has allowed Boulder residents and businesses to install close to 13 MW in Boulder. • Xcel offers a "Renewable Energy Trust" grant program for nonprofits seeking to install PV systems; this can be paired with Solar*Rewards incentives. • Xcel supported the Solar Gardens legislation which allows virtual net metering for solar benefits to customers that cannot have solar at their own premise. CONCERNS: • Xcel was criticized by the Colorado PUC for failing to lay out a strategic vision for implementing the "test bed" concept of SmartGridCity in Boulder. • Xcel's decision to reduce Solar*Rewards incentives was criticized by the Colorado Solar Energy Industries Association as eliminating 600 jobs in early 2011. Boulder-based Namaste Solar laid off 12 out of 77 employees. • Most innovative options would have to be behind the meter. Currently, programs cannot combine	SUPPORTS THE GOAL: • Local investment in efficiency and on-site generation is a cornerstone of the local utility business model. The City's most recent modeling assumed funding for local rebates and incentives in excess of Xcel's current funding levels. • Local utility customers could take advantage of the city's access to low interest financing for energy efficiency upgrades or distributed generation. • A local utility could design a comprehensive business model around the ongoing customer programs offered by EnergySmart by offering on-bill financing for energy efficiency and distributed generation. (see Qualitative Analysis Part 2). CONCERNS: • The up-front costs of improving energy efficiency and increasing renewable energy generation can be a barrier for many homeowners, building owners, and businesses.	N/A

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Objective	**The Status Quo: Xcel Energy**	**A Local Electric Utility: Boulder Light & Power**	**Partnership**
	customers to be served from one meter, which does not allow for technologies such as microgrids, islanding, peer-to-peer sharing of energy etc.		
5. Economic Vitality • Support Local Business Innovation • Encourage Economic Competitiveness	SUPPORTS THE GOAL: • Xcel contracts with the National Center for Atmospheric Research (NCAR) in Boulder to make its 15-minute wind forecasts more granular. • Xcel is a founding member of the Solar Technology Acceleration Center (SolarTAC), which tests solar technologies and storage in Aurora, CO. Proprietary research and commercialization are managed by MRIGlobal. • In 2012, Xcel contributed >$100,000 to Boulder-area nonprofits through its Foundation Grants. • Xcel has contributed >$180,000 to Boulder-area nonprofits for the installation of solar PV from 2003-2012. • Xcel has indicated that it employs approximately 200 employees in the Boulder Region.	SUPPORTS THE GOAL: • The city's economic vitality programs and strategies promote innovation, competitiveness, and entrepreneurship. A local utility would be closely aligned with these current program goals. • A local utility can partner with local companies to implement innovative energy generation, storage, conservation and pollution-reduction technologies. • Boulder is the home to a number of innovative clean energy companies that could test and model their technologies locally. • A local utility can partner with local organizations such as the Chamber of Commerce, Boulder Economic Council and Boulder Greentech to maximize investment in local businesses; 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. • A local utility will stimulate Boulder's economic competitiveness by prioritizing stable and predictable energy rates and making Boulder an attractive location for clean energy businesses and start-ups. • A local utility is expected to 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. • A municipal utility would create over 100 municipal jobs and the city provides competitive compensation including a pension plan. Many more additional jobs would be created and sustained through the local energy industry technology companies supporting the local generation goals. (see Section 7 of Part 2 of the Qualitative Analysis). Typically city employees are active in the community in social and non-profit organizations, contributing time and resources to Boulder based organizations. • Money spent on bills and services, along with salaries and other overhead, would stay in the community.	
FISCAL RESPONSIBILITY GOAL: Operate the utility in a fiscally responsible manner, mindful that every expenditure will be reflected in customers' rates and will affect household budgets and business profitability			
6. Fiscal Responsibility • Position Boulder residents and businesses to receive predictable energy prices. • Provide a structure and process for continuous rate management to meet the changing needs of the community.	SUPPORTS THE GOAL: • According to state law, charges by a public utility must be "just and reasonable." C.R.S. 40-3-101. • The PUC has four key responsibilities: providing "safe, reliable power, at reasonable rates, while affording the utility the opportunity to earn a fair rate of return" (12M-041E & NARUC report). • As of 2012, Xcel's average rates in Colorado have been below, but are approaching, the national average. • Xcel's Colorado subsidiary has some A-rated debt. • In 2012, Xcel spent between 50-60% of its demand-side management costs on direct rebates and incentives to participants (p.16). • Xcel provides customer impact studies as part of certain rate filings, like Electric Commodity Adjustment (ECA) rider changes, which are filed quarterly with the PUC. CONCERNS: • Xcel CEO Benjamin Fowke received $11 million in compensation in 2012. He was the sixth highest paid utility CEO in 2012. Review by PUC staff determined that Xcel attempted to pass onto ratepayers the costs of private jet commuting for two executives; the PUC disallowed this. • In 2012, the Colorado Association of Municipal Utilities found that bills for customers of municipal utilities and rural electric associations were lower on average by customer class compared to rates charged by Colorado's investor-owned utilities (Xcel and Black Hills). *The New York Times* used EIA data to show that government-run utilities generally charge lower rates than privately owned utilities. • In its most recent rate case, Xcel was authorized a return on equity of 10% and a debt-to-equity ratio of 56%/44%, yielding a weighted rate of return of 8.06% (paragraph 52) for 2012-2014. Utilities and their shareholders earn this return to finance their rate base (capital investments). This	SUPPORTS THE GOAL: • The city has a proven track record of fiscal responsibility with its water utilities, including a AAA bond rating. • The city can issue tax-exempt debt after the initial acquisition of the system for on-going upgrades and improvements, which provides access to less expensive financing than is available to Xcel. Council would provide vision, approve rates and capital expenses, while the electric utility board would guide strategies, risk policies, handles management decisions and advises council. The specific governance structure is still to be determined, but its structure will provide checks and balances for fiscal responsibility through a relationship between the advisory board and council. • A municipal utility would be freer to invest in innovative technologies such as distributed generation because it does not need to provide a return on investment to shareholders. Rather, decisions could be made that are both fiscally responsible and meet community goals. Any net income is returned to the local utility for ongoing local investments. CONCERNS: • As a new utility, the bond rating is uncertain, initially estimated to be A-. • There are factors that will be determined through legal processes that add risk to the financial analyses. The city's modeling used various levels of acquisition and stranded costs to test the level of costs where the city could either meet or not meet the charter rate parity requirement. However, the actual acquisition and stranded costs are unknown. • The city will incur legal costs associated with the determination of the actual acquisition and stranded costs (the city budget includes $1.9 million annually for five years to cover these costs).	**Information not available at time of this writing.** **See section VI in July 23 study session memo.**

Boulder Energy Future QUALITATIVE ANALYSIS Part One: Benefits and Concerns of Each Path			
Objective	**The Status Quo: Xcel Energy**	**A Local Electric Utility: Boulder Light & Power**	**Partnership**
	guaranteed return can lead to overinvestment in infrastructure ("the Averch-Johnson effect"). • Lack of accountability: Xcel attempted to recover its losses from its ratepayers for research and development of SmartGridCity, which many believe has not been successful to date. Xcel attempted to pass through approximately $44 million to Colorado ratepayers, of which $28 million was authorized by the PUC. • The current regulated monopoly context does not offer a free market to ratepayers. The regulated business model is guided by return on investment with guaranteed profits to shareholders. • Ratepayer electrical payments are going out of the state and region in the form of monopoly profits and taxes.		
7. Transparency in Rate Design • Allow for full transparency in all charges included in energy rates. • Provide the ability to fully evaluate fuel cost price risks.	SUPPORTS THE GOAL: • Xcel is required to file changes in rates with the PUC in the form of advice letters and tariff sheets that generally can be found online. CONCERNS: • According to Xcel's 2012 year-end earnings report, Colorado remains the largest contributor to its per-share earnings, despite having less than half the customers of its Minnesota subsidiary. • Xcel's bills have been criticized as not understandable. Xcel's FAQ "Understand Bills" directs customers to the most current Colorado tariff filing, a 300-page document including around 30 different rates, but not how they are calculated. • Xcel bills customers using an "Electric Commodity Adjustment" rider that is "automatic" and "passed along to customers on a dollar-per-dollar basis." • Xcel is allowed to keep a "negative balance" in its Renewable Energy Standard Adjustment (RESA) account, meaning that it earns interest when it has paid more in incentives for renewable resources than it has taken in from the 2% charge on customers' bills. • Although Xcel files all changes to rates with the PUC in the form of advice letters, they do not consistently provide the "baseline" number from which the increase or decrease is being made. • Xcel is a vertically integrated utility, owning transmission, distribution, generation and retail meters. This makes it very difficult to understand how each component impacts rates and audit them independently. • In regulated electricity markets, fuel price risk often ends up being borne primarily by the rate payers rather than by the utility companies. Fuel price increases are passed through the electric commodities adjustment (ECA), an automatic utility bill rider.	SUPPORTS THE GOAL: • The city is committed to transparency in operations and city decisions related to rates, as demonstrated by the current water utility and council decision-making processes. • Decisions on rates will be made in forums that are accessible to customers – public utility advisory board meetings and city council meetings held in Boulder, not in Denver or Minneapolis. • Rate designs with specific price signals may be offered without PUC approval CONCERNS: • Electric rate design is complicated and considerable effort will need to be placed on communication and explanation of rates and energy literacy in general.	N/A
8. Protection from Future Pollution Costs (Minimize the risk to ratepayers from future carbon costs and legislation along with other environmental regulations such as mercury and particulate controls): **See Objectives in #12**			
RATEPAYER EQUITY GOAL: Create a fair and equitable distribution among all users of the costs of the safe and efficient delivery of electric power to customers			
9. Equitable Rates • Promote ratepayer equity in all aspects of the operations. • Design rates to create a fair and equitable distribution among all users of the costs, replacement, maintenance, expansion, operations of facilities, energy, and energy	SUPPORTS THE GOAL: • Xcel provides exemptions from tiered summer rates for customers with certain medical conditions. • Xcel partners with state agencies to provide low-income energy assistance and weatherization programs. In 2012, they contributed over $12 million to those programs around the state. CONCERNS/ RISKS: • Based on the share of revenues generated from each rate class as a proportion of the total revenues, city analysis determined there may be cross-subsidization between rate classes • Xcel has established a program to trade Renewable Energy Credits (RECs), largely to California; it initially proposed that it retain 30-40% of the profits with 60-70% going to customers—as compensation for engaging in high-risk trading—but the PUC adopted a closer to 80/20 customer/Xcel split, with the customers' share of the profits going to pay down the negative RESA balance. In 2010, the amount of the profit was over $30 million. • Xcel has forecasted its estimated capital expenditure programs for the years 2013 through 2017. Over the next five years Xcel Energy is expecting to spend close to $3.5 billion on electric	SUPPORTS THE GOAL: • The specific ratemaking methodology has not yet been determined for a municipal utility; however, the model results indicate that a municipal utility could have rates equal to or lower than Xcel (by comparing the overall cost of service, or revenue requirements, of a municipal utility to those of Xcel's). Therefore, the opportunity exists to develop rates that are comparable to Xcel on day 1, with potential savings over 20-years. • Inherent in the structure of a municipal utility, which is governed locally, is the assumption that rate structures can be adjusted in response to local community needs and at a faster pace than rate cases regulated through the PUC. The city is in a better position to respond to its customers' unique needs and continues to explore governance models that will give customers a strong voice in decisions. CONCERNS: • The utility will need to develop innovative rate structures that balance the goal of reducing consumption and energy costs with generating sufficient revenue for operations and services provided. • Rate design methodology and cost allocation structures are unique to individual utilities. Derivation of specific rates for Xcel is complex and all the data needed to complete this analysis is not available to the city.	N/A

Boulder Energy Future QUALITATIVE ANALYSIS Part One: Benefits and Concerns of Each Path			
Objective	**The Status Quo: Xcel Energy**	**A Local Electric Utility: Boulder Light & Power**	**Partnership**
conservation programs. • Consider the effects of programs, policies, and rates in the development of programs for low-income customers.	generation, transmission and distribution. This includes $793 million for projects associated with Colorado "Clean Air-Clean Jobs" Act. • Coal costs at Xcel's newest and largest Colorado coal plant, Comanche 3, are currently increasing by more than 10 percent per year. • Xcel CEO Ben Fowke announced in Minnesota that declines in energy sales and aging infrastructure will lead to increasing rates. • Coal prices have increased significantly over the past 10 years, which suggests that Boulder customers are vulnerable to future price increases given Xcel's strong investments in coal.	Additionally, rate increases and cost adjustments for Xcel versus a municipal utility would happen on different timing schedules. These factors could pose challenges in making equal comparisons over the short and long term.	
10. Access to Programs and Services for All Customers 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 choice of rate structure.	SUPPORTS THE GOAL: • In 2011, Boulder residents and businesses purchased over 38,000 MWh from the Windsource program, or 18% of the more than 212,000 MWh Xcel sold to Colorado customers that year. At $2.16 per 100 kWh, that comes to an $821,000 investment in wind renewable energy credits (RECs). • Xcel provides solar rebates to customers (More than 2,600 took advantage of solar rewards and will receive over time, $75.8 million in rebates for their roof-top solar installations) • Se of online billing increased by 45% in 2011 saving time, money and paper. • In 2012, 6 MW of community solar gardens (Community Solar*Rewards) were locked in almost immediately, allowing renewable access to renters and other customers who are unable to self-install solar PV. CONCERNS: • Customer financing is often a barrier to implementing energy efficiency or renewable energy programs. Xcel does not offer on-bill financing, a mechanism where the utility finances the improvement and the energy savings on the utility bill are used to repay the loan (see Qualitative Analysis Part 2 for more details). Financing provides greater access to programs and services. • Ratepayers have limited, if any, say in what programs are offered, incentive levels for specific programs and services, and resulting rate impacts or designs. • Many innovative programs and services require access to the distribution system. As owner of the system, Xcel does not provide this access to others. This limits the ability of local communities to retrofit and/or upgrade the system to access certain programs and services. An example is allowing customers with multiple locations (like the University of Colorado) to produce energy on one site and net their use and generation through a contract (see pg. 15 of Exploring Opportunities for Reaching Boulder's Energy Future Goals for more details). • A regulated utility must provide more generalized services that are designed from a top down view of its entire service area. Typically, what the investor-owned utility offers to one set of customers it must offer to all, making customization difficult. • On-line bills are difficult to access. Many features in the on-line billing service are not fully functional such as downloading trends in energy usage.	SUPPORTS THE GOAL: • The financial model assumes sufficient funding to replace Xcel's existing level of rebate and incentive programs. Further innovations could be considered for priority compared to other objectives of the local utility • Local control over programs, rates, incentives and services would allow a municipal utility to be responsive to the goals and needs of the community. • Local ownership of the distribution system allows a local utility to test new smart grid technology, microgrids, increased distributed generation, and demand response (See Qualitative Analysis Part 2 for details). CONCERNS: • Transferring Xcel's smart grid and solar/DSM rebate programs over to a municipal run utility has not been determined. There are concerns about the technology associated with smart grid, such as the smart meters being outdated and ineffective. And, although the city is committed to ensuring that individuals and businesses who are investing in solar will not be harmed if they later become customers of a Boulder utility, specific solar contract information between customers and Xcel has not been made available for the city to analyze.	N/A
11. Minimize rate increases by managing the full range of costs and environmental impacts: See objectives in # 12.			
12. Increase Awareness and Understanding of Energy Related Issues • Improve community input and energy literacy. • Provide assistance to understand energy conservation	SUPPORTS THE GOAL: • Xcel's performance, related to customer satisfaction and outages, has improved significantly since 2006 when it was ranked last nationally among large utilities in a J.D. Power & Associates survey. • Xcel posts a Corporate Social Responsibility annual report for stakeholders and ratepayers to understand economic, environmental, and social performance. • Xcel offers educational resources, including lesson plans for the classroom, interactive energy games, renewable energy definitions, an explanation of their electric and gas operations as well as guided tours. • Xcel has an A+ rating with the Better Business Bureau and 60 complaints filed within 3 years. • Xcel has an ongoing pilot in which Denver-area customers receive Opower bills, which provide greater context on how their energy consumption compares to that of their neighbors.	SUPPORTS THE GOAL: • The model includes proportionate funding for customer accounts and services staff to meet Xcel's current levels of DSM rebates with the addition of the Climate Action Plan tax to fund additional programs and services. All funding for education and awareness of programs and services would be tailored specifically to the Boulder community. • Because the local electric utility would not be constrained to Xcel's existing billing software, it would have the ability to provide customers with billing information in transparent and meaningful ways, based on emerging best practices. The city already does this with its water utilities. • The city has a strong history of educating residents, providing community outreach, and leveraging resources city-wide to create effective engagement with the community. • A local utility would incorporate the city's Climate Commitment strategies that continue to reduce local	N/A

Boulder Energy Future QUALITATIVE ANALYSIS Part One: Benefits and Concerns of Each Path			
Objective	**The Status Quo: Xcel Energy**	**A Local Electric Utility: Boulder Light & Power**	**Partnership**
and efficiency measures and their impact on economic concerns. • Support neighborhood energy planning, and an overall understanding of energy efficiency, renewable generation and workforce development.	CONCERNS: • Xcel's bills and regulatory filings are not designed to be transparent to non-expert customers. • Explaining how renewable energy investments interface with long-term investments in carbon based fuels can be complex and sometimes misleading as to the overall net impact.	emissions. An independent assessment of the City's demand side management (DSM) programs that have been funded through the City's Climate Action Plan Tax found that "Boulder has attained impressive energy savings and emission reductions, and is well positioned to achieve future emissions reduction targets." Further, RMI found that Boulder has "generated significant carbon savings at reasonable cost." (See report prepared by Rocky Mountain Institute for more details). • Among other innovative DSM programs, Boulder is currently partnering with Pecan Street Research Institute to collect real-time energy usage data from homes and businesses in Boulder to test and validate what new efficiency programs and technology works and what doesn't. This consumer focused research will allow the city to enhance its demand-side efforts to be most effective. CONCERNS: • Understanding energy usage, efficiency program impacts, and personal choices around energy can be complex and difficult to communicate. • It can be difficult to measure the impact of marketing and outreach on program participation. There is a need for constantly evolving approaches and techniques to customer engagement.	
RELIABLE ENERGY GOAL: Ensure a stable, safe and reliable energy supply			

13. Ensure Reliable Electric Power
• Use industry standard criteria to track, predict and model system reliability.
• Ensure strict compliance with the North American Electric Reliability Corporation (NERC), the federal agency charged with enforcing reliability standards for utilities.
	SUPPORTS THE GOAL:
	• Current reliability performance is in the top half of United States power providers based on standard industry criteria.
	  ○ System Average Interruption Duration Index (SAIDI): 85
	  ✓ Reliability Warning Threshold (RWT) – 101.3
	  ✓ 5-year average (2008-2012) – 88.64
	  ○ System Average Interruption Frequency Index (SAIFI): 0.85
	  ✓ 5-year average (2008-2012) – 0.89
	• No deficiencies are known to exist in Xcel's compliance with the North American Electric Reliability Corporation (NERC) regulations. Xcel is an established NERC Transmission Service Provider and is subject to NERC and Western Electricity Coordinating Council (WECC) standards and enforcement. It adheres to NERC & WECC reliability criteria, as well as internal company criteria for planning studies.
	• Xcel Energy has deployed an Outage Management System (OMS) and a Reliability Management Program (RMP) for the Boulder area that is required by the Colorado PUC and internal company criteria.
	
	CONCERNS:
	• Smartgrid was never fully deployed which limited the opportunities for outage management.
	• Current reliability performance is not as good as Colorado Front Range municipal power providers such as Ft. Collins and Longmont.
	• The transmission system is constrained which limits Boulder's access to wind generation in Wyoming and certain areas of Colorado.
	• In the event of a transmission grid failure, there is not adequate local generation to meet the city's electrical load demands. Examples of transmission grid failure include the Northeast United States in August 2003 and the Southwest United States in September 2011.
		SUPPORTS THE GOAL:
		• City Council established and voters approved reliability metrics that meet or exceed current Xcel reliability performance, including system average interruption duration & frequency indices (SAIDI and SAIFI) and compliance with the North American Electric Reliability Corporation (NERC) regulations.
		  ○ System Average Interruption Duration Index (SAIDI): 85
		  ○ System Average Interruption Frequency Index (SAIFI): 0.85
		• Costs have been incorporated in the financial model to ensure that reliability metrics are met. This includes cost for 1) separating from the Xcel system, 2) start-up of the utility, 3) capital replacement, 4) energy resources, and 5) the human, organizational and financial resources that would be needed for ongoing administration, operation, maintenance, monitoring, control, dispatch, project management, customer service and response.
		• Compliance with the American Public Power Association (APPA) Reliable Public Power Provider (RP3) program is anticipated and incorporated in the modeling assumptions. Program elements affecting reliability include 1) reliability indices collection, 2) reliability indices use, 3) mutual aid and NIMS, 4) disaster plan, and 5) standards, security and compliance.
		• An outage management system (OMS) and Reliability Management Program will be established and executed.
		• Financial modeling incorporates millions of dollars of funding to secure improved reliability through the undergrounding of distribution circuits and replacement of aging equipment and infrastructure.
		• The city would become a NERC Load Serving Entity and a Distribution Service Provider subject to NERC and WECC (Western Electricity Coordinating Council) standards and enforcement.
		
		CONCERNS:
		• The transmission system is constrained which limits Boulder's access to wind generation in Wyoming and certain areas of Colorado.
		• In the event of a transmission grid failure, there is currently not adequate local generation to meet the city's electrical load demands. Examples of transmission grid failure include the Northeast United States in August 2003 and the Southwest United States in September 2011.
			Information not available at time of this writing.
			
			See section VI in July 23 study session memo.

14. Provide Experienced and Professional Utility Management, including:
• Ongoing investment
	SUPPORTS THE GOAL:
	• Xcel has deployed a Quality of Service (QOS) plan and is required to monitor and report parameters according to Colorado PUC regulations including:
	  1. Customer Complaints (see concerns/risks noted in 2012 report listed below)
	  2. Telephone Response (no concerns/risks noted in 2012 report)
	  3. Reliability Warning Threshold (RWT) (no concerns/risks noted in 2012 report)
	  4. Electric Continuity Threshold (ECT) (see concerns/risks noted in 2012 report listed below)
		SUPPORTS THE GOAL:
		• Costs have been incorporated in the financial model sufficient to insure experienced and professional utility management.
		• Compliance with the APPA Reliable Public Power Provider (RP3) program is anticipated and incorporated in the modeling assumptions. Program elements affecting this objective include safety, work force development and system improvement.
		• A quality of service (QOS) plan will be established and executed.
			N/A

Boulder Energy Future QUALITATIVE ANALYSIS Part One: Benefits and Concerns of Each Path			
Objective	**The Status Quo: Xcel Energy**	**A Local Electric Utility: Boulder Light & Power**	**Partnership**
in maintenance and system improvement • A strong customer-service ethic in responding to emergencies • Daily maintenance and long-term grid investment.	5. Electric Restoration Threshold (ERT) (no concerns/risks noted in 2012 report) CONCERNS: • Grid intelligence, particularly on the customer side, was never fully deployed as anticipated as part of Smartgrid, which limited the opportunities for customer service and information. • Customer complaints for 2012 were 0.31% compared with a 2007-2012 benchmark of 0.08% • The Electric Continuity Threshold (ECT) was violated 1,042 times in the Boulder Region during 2012, requiring Xcel Energy to provide bill credits of over $52,000. • Xcel is not attending to code violations including minimum clearance of over head power lines above public streets. • There is evidence Xcel Energy is deferring electrical distribution system maintenance and capital replacement based on the age and condition of these assets (Attachment F-1 starting on p 95 of the February 23 Boulder City Council packet discusses existing system maintenance). • Uncertainty associated with new technologies, cost recovery and risk aversion on the part of Xcel may discourage innovative grid investment. • Xcel's legacy data communications and information management systems may complicate the implementation of grid investments.	• Existing City management and administrative systems including Supervisory Control and Data Acquisition, Geographic Information System, human resources, finance, information technology, utility billing, record management, asset management, constituent relationship management and emergency management will be leveraged and applied to the local electric utility. • Financial modeling incorporates millions of dollars of funding for long-term grid investment through the undergrounding of distribution circuits and replacement of aging equipment and infrastructure according to best asset management and replacement practices. • A smaller local utility can be more agile and nimble than a large entity, and can capitalize on local expertise and synergies with other public utilities (locally and nation-wide). • "Rate Payers" would become clients / utility owners. • According to the Charter requirements, businesses would have a strong representation in the Utility Board. • An aggressive capital replacement program totaling over $81 million over 20 years for distribution system components has been included in the city's modeling of a local electric utility to overcome the perceived deficits in age and condition of existing assets. CONCERNS: • The current model relies heavily on three resources: gas, PV Solar and wind. In the long run, it will be desirable to have a geographically diverse resource portfolio.	
15. Effective System Redundancy & Load Management • Create redundant generation resources to ensure a stable energy supply. • Create generation resources that provide high-quality electrical supply. • Manage the peak load to minimize necessary investment in new generation resources.	SUPPORTS THE GOAL: • Xcel Energy is required to file resource plans with the Colorado PUC and provide reliability for its generation system by maintaining an adequate supply of electric generation according to Western Electricity Council (WECC) and the Rocky Mountain Reserve Group (RMRG) requirements. • The large scale of Xcel's generation resources and service area provides significant opportunities to manage this objective. • Xcel Energy is subject to Senate Bill 100 which requires Utilities to continually evaluate and, if necessary, improve electric transmission facilities to meet the state's existing and future energy needs. It essentially seeks to expand Colorado's electric transmission system and promote the use of renewable resources. Xcel Energy is required to provide open access transmission service on a comparable and nondiscriminatory basis to the transmission service they provide themselves at rates approved by the FERC. CONCERNS: • Grid intelligence, particularly on the customer side, was never fully deployed which limited the opportunities for peak load demand response and demand side management. • Traditional volumetric charges for electricity allowed by the Colorado PUC gives Xcel the incentive to increase sales and discourage energy conservation and distributed generation because they reduce sales.	SUPPORTS THE GOAL: • Costs have been incorporated in the financial model for purchase of energy resources to meet this objective. This includes the cost of firmed power purchase agreements that would secure access to high quality and redundant generation and transmission facilities and a reserve margin of 15% to compensate for uncertainty surrounding future load forecast changes and resource contingencies such as generation or transmission-forced outages. • A municipal utility would not have pre-existing investments in generating resources, which would allow it to use generation resources based on the most current technology, pricing and other factors required to meet this objective. • A local utility can build in protection from fuel supply disruptions by developing a diverse portfolio of multiple short- and long-term power purchase agreements coupled with local generation resources. As one fuel source becomes cost-prohibitive due to availability or transmission availability, the utility could more quickly shift to another available resource. CONCERNS: • Colorado's transmission system is not sufficiently built out to serve areas that can produce large blocks of renewable power. Unless adequate transmission is available, new utility scale renewable energy projects are less likely. These constraints may impact the associated costs and/or the location of available generation resources. There are efforts underway to expand Colorado's transmission capacity. In 2007, Senate Bill 100 established requirements for utilities to continually evaluate and, if necessary, improve electric transmission facilities to meet the state's existing and future energy needs. It essentially seeks to expand Colorado's electric transmission system and promote the use of renewable resources. See http://www.sb100transmission.com/	N/A
16. Limit Fuel Supply Risks and Disruptions • Reduce reliance on fossil fuel sources that may be subject to supply shortages and price volatility – and in the case of renewable—	SUPPORTS THE GOAL: • Xcel has indicated that 24% of its portfolio will come from renewable energy by 2020, which diversifies the company's portfolio. As its generation resources become more diverse, the company is better prepared to manage risks associated with one particular fuel source. • The company incorporates a Price Volatility Mitigation Adder ("PVM Adder") in evaluating bids submitted in the 2011 Electric Resource Plan to account for the volatile nature of natural gas prices as compared to the fixed pricing typically associated with other resource options such as wind or solar. CONCERNS: • Xcel has not projected more renewables in its portfolio beyond the minimum required by law.	SUPPORTS THE GOAL: • Costs have been incorporated in the financial model for development of energy resources to meet this objective. Modeling has shown that more than 50% of the power can be generated by renewable resources and meet all of the other Charter metrics under certain levels of stranded and acquisition costs. • Limited existing generating resources and associated "sunk" costs from pre-existing investments allows a municipal utility to develop a portfolio based on the most current technology and cost-effective pricing. • The modeling assumed that the local utility would use multiple strategic power purchase agreements coupled with local generation. This diversification of the fuel mix will help manage potential risk associated with specific fuel resources.	N/A

Boulder Energy Future QUALITATIVE ANALYSIS Part One: Benefits and Concerns of Each Path			
Objective	**The Status Quo: Xcel Energy**	**A Local Electric Utility: Boulder Light & Power**	**Partnership**
intermittency. • Take into account potential fuel supply risks and disruptions and provides suitable mechanisms to manage such risks.	(Colorado's renewable energy standard is 30% by 2020; however, the company is allowed to take advantage of an "in-state multiplier," –i.e., for every kilowatt-hour of electricity provided by an in-state renewable resource, it counts as one and one quarter toward the renewable mandate—Xcel is allowed to provide the lower amount of 24% by 2020). • Xcel does not currently plan to retire any Colorado coal plants (after the 2017 Clean Air Clean Jobs retirement/conversion of Cherokee and Valmont) until the 2030s and the largest coal plants won't be retired until 2041 (Pawnee in Brush) and 2069 (Comanche 3 in Pueblo). Xcel is currently spending over $300 million on old coal plants so that they can stay on line for another 2-3 decades. This is on top of the over $1 billion spent on the new Comanche 3 coal plant project in Pueblo (to serve the Boulder-Denver area) with the intention of operating it until 2069. • Xcel's significant investments in coal-based generation resources constrains opportunities for it to invest in other cleaner generation resources. • When over-generation prompts curtailment, Xcel is automatically compensated by rate-payers. There is no motivation to seek cost-saving solutions.	CONCERNS: • Limitations of transmission capacity at the time of energy procurement and the costs of using the existing transmission system may constrain the location of specific generation resources.	

EXPLANATORY NOTES: Text in blue (example) indicates link in online version. Guiding principles from the City Charter are referenced by Article XIII. The Energy Future Goals are referenced by goal number and objective.

Boulder Energy Future Qualitative Analysis Part Two: Electric Utilities and Progressive Practices

This paper and appendix present an overview of progressive technologies and practices that align with Boulder's Energy Future goals. This second component of the Qualitative Analysis provides a menu of techniques that could be employed by either Xcel Energy, a local electric utility or through a partnership to advance the city's goal of providing the "electric utility of the future."

The technologies and practices are listed in the following categories:

1. Grid Modernization
2. Demand-Side Strategies
3. Customer Choice
4. Rate/ Financing Structure
5. Local Generation
6. Utility Business Model

These categories are defined below, followed by some sample technologies and practices—what they are, how and where they've been used, known results, and links to more information. The attached matrix includes a longer list of technologies and practices in each category, indicating which of Boulder's Energy Future goals each could address, where it has been implemented; and the extent to which it is technically and legally possible under either the Status Quo with Xcel Energy or a Municipal Utility.

Category 1: Grid Modernization

The current electric grid uses many technologies that date back to the time of Thomas Edison, requiring the electricity industry to seek new ways in which power can be generated, delivered and used in ways that minimize environmental impacts, enhance markets, improve reliability and service, reduce costs and improve efficiency.

Utilities are beginning to modernize the electric grid through the gradual development of a future electricity system that will be cost effective, seamless from generation to end-use and capable of meeting all clean energy demands and capacity requirements. Key characteristics include: (1) significant scale-up of clean energy that is sensitive to impacts on consumer costs and economic prosperity; (2) opportunities for consumer participation and choice, from electric vehicles and energy efficiency to producing and selling electricity and services; (3) holistically designed solutions, including AC-DC transmission and distribution technologies, a mix of centralized and decentralized control, energy storage and microgrids; (4) two-way flows of energy and information; and (5) reliability, security against cyber and physical threats and resiliency to disruptions and outages.

<u>Example Technology: Microgrids</u>

Microgrids are essentially miniature versions of the electric grid, or the "macrogrid, with the addition of localized generation and energy storage. A microgrid draws upon a host of on-site generation sources, otherwise known as Distributed Energy Resources (DER), and links to the grid at common points. While a microgrid can operate seamlessly with the larger grid, its most

compelling feature is the ability to separate or isolate itself-- known as “islanding”-- from the macrogrid system.

Through the use of on-site generation and integration of renewable energy resources, microgrids are an innovative and strategic approach to energy management, bolstering energy reliability, stability, and sustainability.

Sample utilities utilizing this technology:

American Electric Power, Sacramento Municipal Utility District, San Diego Gas & Electric
http://www.fiercesmartgrid.com/story/pike-research-sees-aep-smud-and-sdge-microgrid-trendsetters/2011-05-24
UC San Diego
http://www.energy.ca.gov/research/notices/2010-10-25_symposium/presentations/4%20Microgrids%20for%20Distributed%20Renewables.pdf

Category 2: Demand-Side Strategies

Demand-side management is used to describe the actions of a utility, beyond the customer's meter, with the objective of altering the end-use of electricity – whether it be to increase demand, decrease it, shift it between high and low peak periods, or manage it when there are intermittent load demands – in the overall interests of reducing utility costs. In other words, DSM is the implementation of those measures that help the customers to use electricity more efficiently and in doing so reduce the utility costs. DSM can be achieved through:

- improving the efficiency of various end uses through better housekeeping, correcting energy leakages, system conversion losses, etc;
- developing and promoting energy efficient technologies; and
- demand management through adopting soft options like higher prices during peak hours, concessional rates during off-peak hours, seasonal tariffs, interruptible tariffs, etc.

DSM, in a wider definition, also includes options such as renewable energy systems, combined heat and power systems, independent power purchase, etc., that utilities can use to meet customer’s demand at the lowest possible cost.

Example Practice: Sustainable Energy Utility (SEU)

Whereas a traditional utility provides access to electricity, a SEU, working in parallel with the electric utility, provides access, information, and support for efficiency and sustainability measures. The revenues of traditional utilities are typically tied to their sales of energy, and therefore have little internal incentive to promote efficiency. Giving the responsibility to promote energy efficiency to an independent, but closely related, SEU (sometimes also called Energy Efficiency Utilities) can alleviate this conflict of interest.

Sample utilities employing this practice:

The SEU in Vermont is funded by an efficiency surcharge on electric bills, and revenues from emissions allowance trading and efficiency savings sales on capacity markets.[1] In the SEU's first seven years of operation, it helped 60 percent of the state's electric customers which led to a statewide electric load growth of -1.8 percent.[2]

Efficiency Vermont
[1] http://www.efficiencyvermont.com/about_us/information_reports/how_we_work.aspx
[2] http://spectrum.ieee.org/green-tech/conservation/the-rise-of-the-energy-efficiency-utility
Delaware http://www.energizedelaware.org/
DC http://www.dcseu.com/
Oregon http://energytrust.org/
Wisconsin http://www.focusonenergy.com/

Example Practice: Demand Response Programs

Demand response programs encourage customers to reduce consumption during peak periods (such as the warmest part of a summer day) in favor of off-peak consumption. The net effect is not so much a reduction in total consumption (as with efficiency), but a leveling of the demand profile. This is of benefit to the utility because power plants and transmission systems must all be designed to meet peak demand. Preventing growth in the peak demand, or even reducing the magnitude of the peaks, can forestall the need to build more power plants and expand transmission systems – both of which require significant capital investment that is ultimately passed on ratepayers.

Once a smart meter is installed, demand response programs (such as time of use pricing) may be implemented on a voluntary basis – not everyone need participate. Initial reviews indicate that developing a fair time-based rate structure can be challenging, but not insurmountable.

Demand response challenges http://www.emeter.com/smart-grid-watch/2012/time-of-use-electricity-prices-why-do-so-few-customers-have-them/
PG&E – time of use pricing http://www.pge.com/mybusiness/energysavingsrebates/timevaryingpricing/timeofusepricing/
SDG&E – peak time rebates http://www.sdge.com/save-money/reduce-your-use/reduce-your-use-rewards
Open Demand Response Standard http://en.wikipedia.org/wiki/Open_Automated_Demand_Response

Category 3: Customer Choice

Customer (or community) choice in energy is typically adopted into law and allows cities and counties to aggregate the buying power of individual customers within a defined jurisdiction in order to secure alternative energy supply contracts. Under these programs, electricity distribution providers often still operate and maintain the infrastructure to deliver the electricity and coordinate billing: these costs constitute the "distribution charge" on a customer's bill. The third-

party suppliers arrange for the supply of electricity, and it is this "commodity" or "energy" part of the bill where customers can potentially gain savings.

Today, retail customer choice in electricity is no longer an experiment. In 16 states and the District of Columbia, jurisdictions that account for over 40 percent of all electricity consumption in the continental United States, customer electricity choice is well established and widely accepted.

Example Technology: Community Choice Aggregation

Two communities that have implemented community choice aggregation are Oak Park, IL and Sonoma County, CA. They both have formed local groups that seek to fulfill their community's electric power needs by purchasing power on the open markets. Under this system, renewable sources are expected to meet between 33 and 100 percent of their energy needs while saving customers up to 25 percent on their energy bills. Programs such as these are only possible if the regulatory environment allows.

Sample Communities where CCA is allowed and practiced:

Sonoma
http://www.scwa.ca.gov/scp-faqs/
Oak Park
http://www.oak-park.us/aggregation/
PG&E strong opposed community choice aggregation in California
http://ballotpedia.org/wiki/index.php/California_Proposition_16,_Supermajority_Vote_Required_to_Create_a_Community_Choice_Aggregator_%28June_2010%29

Category 4: Rate/ Financing Structure

There are a number of creative financing structures and electric rate designs that can play an important role in reducing local greenhouse gas emissions, promoting energy efficiency improvements in buildings, making the shift to renewable sources of energy more affordable, and reducing energy costs for residents and businesses. Financing vehicles such as general improvement districts, Power Purchase Agreements (PPAs), third-party models, on-bill and PACE financing, etc. create new opportunities for local ownership in distributed energy generation through innovative program designs (clean energy clusters, zero energy districts, solar gardens, etc.).

Example Practice: Innovate Rate Structures

There is great variety and room for much innovation in the way electric rates and their associated bills are structured. These are just a few of the more interesting approaches.

Inverted Block Rate Structure

When electricity rates are structured using an inverted block system, the more kilowatt-hours you use, the more you pay on a per kilowatt-hour basis. This is similar to the current federal income

tax structure. The benefit of this system is that it encourages conservation among those who consume the most. For those with large bills, making just moderate efficiency improvements can result in significant savings. Some care needs to be taken to ensure all customers are treated fairly across different income brackets and user types (residential, commercial, and industrial), but this can be achieved, for example, using multiple, parallel rate profiles.

Sample Communities with these practices:

Iowa http://www.iowapolicyproject.org/2009docs/090617-EnergyRates-xs.pdf
Seattle – comparison
http://www.seattle.gov/citylightreviewpanel/documents/SAIC%20SCL%20Review%20Panel%20Presentation%20October%2025%202012.pdf

Comparative Billing

Comparative billing allows customers to compare their energy use to other users to see where they stack up against averages in their community, region or nationwide. Such bills often include other useful or interesting statistics about how their energy use has changed over time or with respect to weather events. The data of neighbors are presented anonymously, in aggregate, to ensure privacy. With the use of smart meters, such data could be presented online on or mobile devices in nearly real time.

Being presented with energy consumption comparisons in this way helps customers better understand their energy use, and the comparative rankings can invoke a sense of competition in implementing efficiency and conservation practices.

Sample Communities utilizing this practice

Glendale, CA
http://www.glendalewaterandpower.com/save_money/residential/home_energy_reports.aspx
Opower http://opower.com/
NYT http://www.nytimes.com/2009/01/31/science/earth/31compete.html?_r=0

Prepaid Bills

With prepaid billing, customers pay for their energy use prior to using it (similar to prepaid cellphone plans). When their prepaid account balance runs low. customers are notified that they need to add more funds – which can usually be accomplished through a variety of means (online, by phone, in kiosks, etc). One of the benefits of this type of system is that it encourages customers to closely monitor their energy use and therefore promote conservation and efficiency. Watching a fixed balance run down, rather than a bill run up is often a stronger motivator – analogous to paying with cash rather than with a credit card. Some customers have found this makes budgeting easier. Special care must be given to properly protect customers with low- or fixed-incomes or who have medical conditions or children, but policies can be implemented to address these concerns.

Sample communities utilizing this approach:

Salt River Project http://www.srpnet.com/payment/mpower/default.aspx
AARP http://www.aarp.org/politics-society/advocacy/info-12-2011/prepay-for-electricity-az.html
Media – Popularity increasing http://www.greentechmedia.com/articles/read/Prepaid-Electricity-Plans-Gain-Momentum

Category 5: Local Generation

The electricity grid faces significant problems resulting from fundamental design principles that limit its ability to handle the key energy challenges of the 21st century. An innovative electric system allows for the integration of generation from decentralized or 'localized" options. Such a system is controlled by intelligent power switches (IPS), and can consist of loads, energy sources and energy storage. The desired result of the proposed architecture is to produce a grid network designed for distributed renewable energy, prevalent energy storage and stable autonomous systems.

Example Technology: Solar Gardens
Solar gardens are one example of local generation that has already been implemented, to some degree, in the Boulder community and could be greatly expanded. Solar gardens, like community vegetable gardens, allow a group of users to pool their resources for construction and maintenance and then be credited the benefits in proportion to the amount they invested. This has all of the distributed-energy benefits of installing solar panels on rooftops with added advantages from economies of scale related to maintenance costs, infrastructure and siting away from trees and other buildings that could block the sun. In addition, clean-energy ownership and credits derived from solar gardens are available to renters, apartment dwellers and others who don't have access to a roof suitable for installation of a solar array.

Sample communities utilizing this technology:

Boulder's community garden
http://bouldercolorado.gov/index.php?option=com_content&view=article&id=18007:april-26-2013-city-celebrates-opening-of-first-community-solar-garden-since-legislative-approval-reiterates-its-commitment-to-solar-technology-and-incentives&catid=858:2013-news-releases&Itemid=5747
Bright Tucson Community Solar
https://www.tep.com/renewable/home/bright/

Example Technology: Distributed Generation

Distributed generation allows electricity to be generated closer to the load rather than in large, centrally located power plants. While this can reduce some of the savings and efficiencies that come with economies of scale in large power plants, distributed generation has benefits of its own. For example, having multiple generation sources improves redundancy, creating possibilities for microgrid configurations. And locating those sources closer to the electric loads reduces transmission costs.
Utilities can implement distributed generation programs in various ways. Some choose to own the distributed resources while others encourage customer ownership through mechanisms like

rebates, feed-in-tariffs, and net-metering while still others adopt a hybrid approach, such as leasing solar panels to customers.

Samples of communities utilizing this practice:

Gainesville, FL http://grist.org/solar-power/2012-01-06-gainesville-florida-becomes-a-world-leader-in-solar/
Concord Light – PV Rebates http://www1.eere.energy.gov/office_eere/pdfs/aceti_concordlight.pdf
Austin – Residential Solar Program http://www1.eere.energy.gov/office_eere/pdfs/libby_austinenergy.pdf
California – Self Generation Incentive Program http://www.cpuc.ca.gov/PUC/energy/DistGen/sgip/
SolarCity http://www.dailyfinance.com/2013/06/05/solarcity-launches-zero-down-solar-financing-for-h/

Category 6: An Updated Utility Business Model

Today's electric utilities face unprecedented challenges. On top of the traditional goals of safety, efficiency and reliability, the modern utility must address global environmental issues such as climate change, national security issues surrounding the dependence on foreign energy, and a growing desire by customers to have greater control over their energy use decisions to lower costs and decrease their environmental footprint.

Meeting customers' demands to turn these challenges into opportunities requires transformation of the traditional electric utility business model. Delivering safe and reliable electricity will always form the bedrock of what utilities do, but the modern utility must expand its vision and adapt to changing circumstances and adopt a new business model that doesn't rely on electricity sales to drive profits.

Example Technology: Research Partnerships

Utilities may leverage local and national research laboratories and private corporations to test innovative technologies. These research projects and pilot demonstrations often involve multiple organizations and sources of funding – including federal grants.

Sample communities:

Pacific Northwest Smart Grid Demonstration http://www.pnwsmartgrid.org/
Xcel – NCAR research partnership http://www.denverpost.com/business/ci_23194076/xcel-benefits-from-ncar-solar-wind-forecasting
RASEI http://rasei.colorado.edu/about-us
S. Carolina wind project partnership http://www.clemson.edu/media-relations/archive/newsroom/articles/2007/may/Wind_power.php5

ATTACHMENT E

Boulder Energy Future Qualitative Analysis: Part 2

Technologies and Practices for Achieving Boulder's Energy Future Goals

- **Promotes goal or objective**
- **Technically and legally possible under current regulatory and statutory requirements**
- **Technically and legally possible under current regulatory and statutory requirements, but requires Xcel Energy partnership**
- **May require regulatory approval in addition to Xcel Energy partnership**
- **Not technically or legally possible under current regulatory and statutory requirements**

	Technology or Practice *see References Section at bottom for notes and links to examples	Description	Energy Future Goals						Authority	
			Stable, safe, reliable energy supply	Competitive rates (short / long term)	Reduce carbon emissions, improve environmental quality	Greater customer say about energy supply	Promote local economic vitality	Promote social and environmental justice	Status Quo	Local Electric Utility
Section 1: Grid Modernization										
1	Deployment of local microgrids	*Subsections of the grid which can operate independently for periods of time*	■	■	■	■	■	■	⚠	✓
2	Prioritizing critical loads in system design	*Higher reliability for critical loads using microgrids, smart load shedding, storage, etc*	■			■	■	■	🤝	✓
3	Aggresive undergrounding of electric lines	*Burying electric cables to increase reliability*	■				■		🤝	✓
4	Enhanced voltage optimization	*Fine-tuning the end-of-line voltage to improve efficiency for industrial customers*	■	■	■		■		🤝	✓
5	Wireless internet utilizing AMI	*Using extra bandwidth or channels on smart meters to provide a public wifi network*					■	■	⚠	✓
Section 2: Demand-Side Strategies										
6	Demand-response technologies	*Changes in customer use triggered by price or environmental triggers*	■	■	■	■	■	■	🤝	✓
7	Development of programs and services to shed load	*Dynamically removing specific loads to reduce peak demand*	■	■	■		■		⚠	✓
8	Energy savings performance contracts	*Contractor's pay dependent on success in saving energy*	■	■	■		■	■	🤝	✓
9	Zero Energy districts	*A physical region with zero net energy consumption*	■	■	■	■	■	■	🤝	✓
10	Customer access to In-home energy use tools and dashboards	*Physical or virtual displays showing customer's real-time or aggregate energy use*			■	■			✓	✓
11	Progressive energy conservation and efficiency programs	*Programs promoting or incentivizing conservation and efficiency*	■	■	■		■	■	✓	✓
Section 3: Customer Choice										
12	Community Choice Aggregation	*Residents enter power purchase agreements directly as a group. Not currently available in CO.*	■	■	■	■			✗	✗
13	Customer information services and programs	*Centrally sponsored energy literacy and education programs*			■	■	■	■	🤝	✓
Section 4: Rate/ Financing Structure										
14	Innovative rate structures	*Time-of-use, tiered, demand, budget billing, etc*	■	■	■		■	■	⚠	✓
15	Local energy financing	*Financing for local ownership of efficiency upgrades and distributed generation*		■	■	■		■	⚠	✓
Section 5: Local Generation										
16	Net metering in excess of 120%	*Customers are not limited in on-site energy production*	■	■	■	■	■	■	⚠	✓
17	Unbundled rates and service applications	*Segregation of individual electricity bill components*				■	■	■	⚠	✓
18	Feed-In-tariffs (FIT)	*Mandated rates at which customers may sell power back to the grid*	■	■	■	■	■		⚠	✓
19	Wheeling power from city-owned resources	*Access to remotely located power from remotely owned generation such as hydro*	■	■	■	■			✓	✓
20	Pumped storage	*Storing off peak, cheap energy in a pumped hyrdo reservoir system*	■	■	■		■	■	🤝	✓
21	In–line micro hydroelectric generation	*In-line generation incorporated into existing water delivery system*	■	■	■		■	■	🤝	✓
22	Utility–scale energy storage	*Large scale storage utilized to reduce peak loads*	■	■	■	■	■		🤝	✓

ATTACHMENT E

Boulder Energy Future Qualitative Analysis: Part 2

Technologies and Practices for Achieving Boulder's Energy Future Goals

- **Technically and legally possible under current regulatory and statutory requirements**
- **Technically and legally possible under current regulatory and statutory requirements, but requires Xcel Energy partnership**
- **May require regulatory approval in addition to Xcel Energy partnership**
- **Not technically or legally possible under current regulatory and statutory requirements**

	Technology or Practice *see References Section at bottom for notes and links to examples	Description	Energy Future Goals						Authority	
			Stable, safe, reliable energy supply	Competitive rates (short / long term)	Reduce carbon emissions, improve environmental quality	Greater customer say about energy supply	Promote local economic vitality	Promote social and environmental justice	Status Quo	Local Electric Utility
23	Biogas/biomass generation facilities	*Utilizing municipal or agricultural waste to produce energy*							⚠	✓
24	Widespread deployment of electric vehicles and Vehicle-to-Grid technology	*Charging and discharging electric vehicles for energy storage and grid stability*							⚠	✓
25	Ownership options in utility-scale renewable power projects	*Fully owning or purchasing portions of large wind or solar power installations*							⚠	✓
26	Customized rebates and incentives based on local needs	*Incentivizing local DSM and generation options*							⚠	✓
27	Expand solar gardens beyond existing restrictions	*Enhanced access to solar gardens beyond existing limits*							⚠	✓
Section 6: Utility Business Model										
28	Sustainability performance metrics	*Mechanism for measuring progress toward goals and standardizing verified results*							🤝	✓
29	Social Impact Bond / Pay for Success Bonds	*Bond for which the rate of return depends on the success of the social impact*							⚠	✓
30	Renewable Energy Credits (RECs)	*Buying and selling renewable credits to meet portfolio standards*							✓	✓
31	Advanced Integrated Resource Planning (AIRP)	*Planning for fuel and resource needs with an eye toward conservation as a resource*							⚠	✓
32	Utility model that prioritizes energy use reductions	*An entity charged with meeting efficiency or sustainability goals rather than making profit*							🤝	✓
33	Secure funding for pilot programs	*Federal funding available for some types of energy projects*							✓	✓
34	Comparative Bills / Peer Ranking	*Showing customers where their energy consumption ranks against their peers*							🤝	✓
35	Consideration of full life-cycle costs	*Adopting a long-term view of life-cycle costs and benefits*							⚠	✓
36	Research Partnerships	*Leveraging local and/or national research labs to explore innovative practices*							✓	✓

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8	http://en.wikipedia.org/wiki/Energy_Savings_Performance_Contract http://www.ctenergyinfo.com/111003%20Final%20CT%20ESPC%20Best%20Practices-1.pdf
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Boulder Energy Future Qualitative Analysis: Part 2

Technologies and Practices for Achieving Boulder's Energy Future Goals

Technically and legally possible under current regulatory and statutory requirements

Technically and legally possible under current regulatory and statutory requirements, but requires Xcel Energy partnership

May require regulatory approval in addition to Xcel Energy partnership

Not technically or legally possible under current regulatory and statutory requirements

Technology or Practice	Description	Energy Future Goals						Authority	
*see References Section at bottom for notes and links to examples		Stable, safe, reliable energy supply	Competitive rates (short / long term)	Reduce carbon emissions, improve environmental quality	Greater customer say about energy supply	Promote local economic vitality	Promote social and environmental justice	Status Quo	Local Electric Utility
15	https://www.gru.com/TabID/3660/Default.aspx http://www.realenergywriters.com/ee-blog/2011/12/15/on-bill-financing-why-isn%E2%80%99t-everybody-doing-it/ http://aceee.org/research-report/e118 http://energy.ky.gov/Programs/SEE%20KY/March%202012%20Meeting/Residential/ACEEE_On-Bill%20FInancing%20Review_Dec%202011.pdf http://switchboard.nrdc.org/blogs/phenderson/new_on-bill_financing_paper_ou.html http://www.cityofdenton.com/departments-services/departments-a-f/denton-municipal-electric/customer-programs/p-l-u-s-one								
16	http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=CA02R&re=1&ee=1								
17	http://blog.rmi.org/blog_06_12_2013_retail_electricity_prices_its_time_to_unbundle_the_package								
18	http://grist.org/solar-power/2012-01-06-gainesville-florida-becomes-a-world-leader-in-solar/ http://dsireusa.org/incentives/incentive.cfm?Incentive_Code=FL77F&re=1&ee=1								
19	[would allow the city to utilize it's owned hydro power rather than selling to Xcel at wholesale and purchasing back at retail]								
20	http://www.sbireports.com/about/release.asp?id=2942								
21	http://americancityandcounty.com/water/public-water-system-hydropower-201105								
22	http://www.bloomberg.com/news/2013-05-23/pg-e-operating-second-energy-storage-system-with-ngk-batteries.html								
23	http://www.ameresco.com/news/first-mover-wastewater-utilities-convert-human-biogas-natural-gas								
24	http://www.glendalewaterandpower.com/utility_modernization/electric_vehicle_rebate.aspx								
25	http://www.awea.org/newsroom/pressreleases/utilitiesflocktowind.cfm http://www.governorswindenergycoalition.org/?p=990								
26	http://www.bloomberg.com/news/2013-03-24/nrg-skirts-utilities-taking-solar-panels-to-u-s-rooftop.html http://en.wikipedia.org/wiki/SolarCity http://www1.eere.energy.gov/office_eere/pdfs/aceti_concordlight.pdf http://www1.eere.energy.gov/office_eere/pdfs/libby_austinenergy.pdf http://www.icleiusa.org/action-center/learn-from-others/bringing-down-the-cost-of-solar-through-community-shared-solar-programs http://www.cpuc.ca.gov/PUC/energy/DistGen/sgip/ http://www.dailyfinance.com/2013/06/05/solarcity-launches-zero-down-solar-financing-for-h/								
27	https://www.tep.com/renewable/home/bright/								
28	http://en.wikipedia.org/wiki/Global_Reporting_Initiative http://www.xcelenergy.com/staticfiles/xe/Corporate/CRR2011/gri-index/about.html http://www.smartgridnews.com/artman/publish/Business_Policy_Regulation/The-good-and-the-bad-about-the-Illinois-smart-grid-performance-metrics-5786.html#.UbYrZ_nVB5s								
29	http://en.wikipedia.org/wiki/Social_impact_bond http://www.economist.com/blogs/blighty/2013/05/prisoner-rehabilitation?fsrc=scn/tw_ec/the_peterborough_principles								
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34	https://social.opower.com/welcome http://www.glendalewaterandpower.com/save_money/residential/home_energy_reports.aspx http://www.nytimes.com/2009/01/31/science/earth/31compete.html?_r=0								
35	http://www1.eere.energy.gov/femp/pdfs/lcc_guide_05.pdf http://www.synapse-energy.com/Downloads/SynapseReport.2013-06.RAP.Best-Practices-in-IRP.13-038.pdf								
36	http://www.pnwsmartgrid.org/ http://www.denverpost.com/business/ci_23194076/xcel-benefits-from-ncar-solar-wind-forecasting http://rasei.colorado.edu/about-us http://www.clemson.edu/media-relations/archive/newsroom/articles/2007/may/Wind_power.php5								

REPORT OF THE CITY OF BOULDER & XCEL ENERGY COMMUNITY TASKFORCE
July 16, 2013

EXECUTIVE SUMMARY

The Taskforce explored a variety of potential opportunities for the City of Boulder (City) and Public Service Company of Colorado (Xcel Energy) to collaborate. Some of the approaches discussed were deemed unworkable by Xcel Energy. Ultimately, a number of options were acceptable to Xcel Energy and supported by the Task Force as worthy of further exploration.

Xcel Energy presented the potential for system wide carbon dioxide emissions reductions through 2043 under a range of assumptions, which could reduce Xcel Energy CO2 emissions in Colorado by 70 percent by 2043 compared against 2005 levels; and Xcel Energy argued that the high rate of past and current participation by Boulder customers in Xcel Energy's current voluntary programs for energy efficiency and renewable energy likely results in a further reduction in Boulder's actual carbon footprint.

Xcel Energy is willing to explore with Boulder an initial set of 8 possible products to reduce energy demand, increase use of renewable energy and distributed generation, reduce use of coal for generation electricity, modify retail rates, and reduce carbon emissions. With the exception of programs tied to the SmartGrid, these would be developed to be available to other municipalities and, where applicable, individual customers. Many of the Xcel Energy programs would be subject to approval by the Colorado Public Utilities Commission. Several of these concepts listed below were first raised by the City in its December 2012 white paper.

The following products are discussed in detail in Appendix D, including initial cost estimates.

1. Conducting research using the SmartGrid installed in Boulder to test the impacts of distributed generation on local distribution systems (and other related research and development using the SmartGridCity infrastructure.)
2. Expanding energy efficiency and demand response programs, with the City contributing funds to augment Xcel Energy funds to create additional energy efficiency (EE) and demand response (DR) opportunities.
3. Expanding local distributed generation in Boulder by having the City offer incentives in addition to the incentives offered by Xcel Energy to attract more participation.
4. Forming with the City an energy efficiency/distributed generation incubator to encourage local Boulder businesses and investments in new technologies.
5. Unbundling Xcel Energy electric rates to provide better price signals to encourage further adoption of energy efficiency, demand response and distributed generation.
6. Offering a "Green City Rate" that would allow participating communities to help design rates that encourage energy efficiency.
7. Providing an environmental re-dispatch option where customers and/or communities could pay the incremental cost of Xcel Energy burning gas instead of coal to generate electricity, cutting in half the carbon emissions for the megawatt hours produced.
8. Providing a mechanism for communities to cause more wind and/or solar resources to be added to the Xcel Energy system and dedicated to the participating community.

Xcel Energy is committed to exploring and developing these alternatives and product offerings not only on an individual customer basis, but also for the first time on a community-wide basis to meet local needs.

The Taskforce also discussed a number of comprehensive business partnership models, which were not acceptable to Xcel Energy, with the possible exception of #3. The following models are described in detail in Appendix C:

1. "Xcel Boulder Muni Version" – the City would form a municipal utility but then contract with Xcel Energy to provide generation, transmission and distribution services under City direction.
2. "Xcel Boulder Investor Owned Utility" – Xcel Energy would form a separate subsidiary to provide electric utility services to Boulder, under PUC jurisdiction.
3. City of Boulder Supplemental Utility – the City would form a municipal utility to develop energy efficiency, demand reduction programs, and renewable energy, but not to supply electricity.
4. Community Choice Aggregation – the City would have the opportunity to aggregate all City load and acquire power supply for the aggregated load. Xcel Energy would deliver the power.
5. Phased Community Choice Aggregation – the City would aggregate load and provide additional products and services.
6. Aggregated Community Coal Plant Retirement – communities would agree to pay the cost of retiring a coal plant and replacing coal generation with clean energy. The retirement cost would be securitized with state issued revenue bonds, with the debt being paid by participating communities.

The Task force recommends that the City of Boulder and Xcel Energy engage in direct discussion and negotiation to further develop the Xcel Energy proposals. However, the task force is taking no position on whether the parties should continue with or avoid other actions outside of ongoing discussions, but encourages Xcel Energy and the City to pursue talks in parallel to those actions.

INTRODUCTION

Early this year, the City and Xcel Energy agreed to convene a Taskforce of knowledgeable community members to consider possible partnership options for achieving the City's energy goals, and develop new initiatives that Xcel Energy might offer to the City and elsewhere on its utility system.

In April, 2013, twelve community members were invited to explore, develop and review possibilities that may contribute to the formation of just such a partnership between the City and Xcel Energy. [See Appendix A for a listing of the Taskforce members.] The Taskforce was facilitated and held its first meeting on April 9, 2013. The weekly meetings were well attended and discussions were free-flowing and candid, with strong engagement by all participants.

The Taskforce was given three months to accomplish its task. While we believe additional time would have enabled us to further develop the ideas and provide more details, the essential components representing our work are contained in our report.

The Taskforce expressed on a number of occasions the importance and value of the City and Xcel Energy maintaining ongoing conversation for the exploration of opportunities and capitalizing on community based expertise through the use of a formalized process encouraging ongoing communication and collaboration.

CONTEXT

As a beginning point, the Taskforce referenced the City's white paper, entitled *Exploring Opportunities for Reaching Boulder's Energy Future Goals.* The white paper set forth ideas that had been developed by City staff as to possible ways the City might be able to partner with Xcel Energy to achieve the community's energy goals. The white paper set forth the following "core principles" for a new partnership with Xcel Energy, summarized as:

1. The partnership must recognize the importance of both energy demand and supply.
2. The partnership model must fit within the framework of state statutes and regulations.
3. Customers must have opportunities to make choices about their energy consumption.
4. A partnership should provide real choice in energy services and allow customers to control how much and the type of electricity they purchase, helping Boulder achieve goals through a partnership of incentives, rates, and data sharing.
5. The partnership should represent a creative, new business arrangement.

Additionally, the Taskforce referenced Xcel Energy's Guiding Principles, which were explained as:

1. All Xcel Energy customers should be afforded choices about their energy service, including choices that provide incentives for demand reduction and energy efficiency and choices that differentiate the sources of generation providing their electricity.
2. The prices for each of these products and services should be based upon the costs of providing the product or service including a reasonable margin to the provider of the product or service, and not result in cross subsidization between participants and non-participants. Many pricing options may require some certainty of a long-term relationship between the City and Xcel Energy.
3. New products and services should be designed so that they can be easily understood by the consuming public, and so that they can be easily administered by Xcel Energy.
4. All Xcel Energy service offerings in Colorado require approval by the Colorado Public Utilities Commission, so they must be designed in a manner that complies with Colorado statutes and regulations.
5. Product and service offerings should be designed in such a way so they can be replicated for other customers and communities. Offering services differentiation would constitute a new utility service model, one that is likely to provide more efficiency, better reliability, and more real environmental improvement than the formation of one or more municipal utilities.

One of the major issues challenging the Taskforce was finding ideas and solutions, which met both the City's and Xcel Energy's different emphases and goals. The City wanted to focus first on how to structure a partnership with Xcel Energy. In the City's view, the partnership agreement would then determine how the City would meet its renewable energy, carbon reduction, and localization goals with its partner Xcel Energy. Xcel Energy, on the other hand, wanted to focus, with the help of Boulder, on the development of new products and services that would provide more customer and community options to increase renewables and reduce carbon throughout all its service area. Xcel Energy maintained that negotiating comprehensive individual partnership agreements with each municipality where it provides service is not an effective, efficient, or possibly legal way to proceed. Xcel stated it would like to develop products and services that would provide not only individual customer choice, but would provide opportunities for entire communities to opt in.

The Taskforce felt a "working" or "collaborative" partnership between the City and Xcel Energy could be integral to what needs to be achieved depending on content, and the Taskforce agreed to move on to Xcel Energy's proposal.

The differences between the City and Xcel Energy's focus is primarily on the potential value of localization and the democratization of the governance structure of the electricity supply. Xcel Energy does not believe that the Taskforce is the appropriate forum to discuss the democratization of the governance structure of the utility industry.

However, it is apparent to the Taskforce that the City and Xcel Energy would each like to continue to benefit from the creative ideas of Boulder residents, businesses, and similar stakeholders, and to incorporate these ideas into resource planning and the development of new products and services. The City of Boulder would like to continue working with the Taskforce community members, as well as other community members, to develop and vet potential ideas. Xcel Energy indicated that it plans to work with community members representing all of its service area.

In general, Taskforce members believe that there is opportunity for the City and Xcel Energy to work together to introduce new creative concepts and to achieve the City's goals. The Taskforce recommends that the City and Xcel Energy continue to meet to discuss these matters.

TASKFORCE WORK PROCESS

Shortly after convening for the first meeting of the Taskforce, the group began delineating subjects for discussion. Broadly speaking, the subject areas fit into two major categories: (1) partnership structures between the City and Xcel Energy, and (2) products and services that could be provided by Xcel Energy, both for Boulder and others within Xcel Energy's service area, thus increasing the geographical scale of both greenhouse gas reductions and renewable energy integration. The specific areas for discussion that were initially identified were:

1. Energy Mix and Energy Resources (products and services)
2. Additional Renewable Energy (products and services)
3. End Use Programs (products and services)
4. Distribution Solutions (products and services)
5. Business model (partnership structure)
6. Partnership (partnership structure)
7. Pricing and Cost (partnership structure, as well as product and services)

Opening presentations by Xcel Energy focused on the first four subject areas, and several members of the Taskforce proposed ideas, which addressed either primarily the partnership structures, or a combination of the partnership structures and the products and services. While Xcel Energy representatives expressed a strong preference to focus on products and services, the Taskforce did detail and discuss several alternative partnership structures. However, Xcel Energy representatives expressed the company's wish to keep the current statewide PUC regulatory structure of the relationship and to offer enhanced products and services to the Boulder community.

At one point, differences in approaches led to a letter being delivered by Xcel Energy to the Taskforce, suggesting that there was not enough common ground to continue if the Taskforce continued to focus on developing a business partnership structure. In response, the Taskforce provided strong feedback encouraging Xcel Energy to further develop its product and service concepts and return to the group for

more feedback. (For a copy of the letter, see Appendix E.) After delivering a draft update on June 17 for discussion, a final version of an Xcel Energy proposal framework outlining the best options from the company's perspective was delivered to the Taskforce and is included in Appendix D. This framework document stands on its own and proposes options for ongoing relationships between Xcel Energy and the City focused on individual program areas such as Demand Side Management, Distributed Generation, decreased dispatch of electricity generated from coal fired power plants, additional renewables, and retail pricing; but does not specifically discuss formal comprehensive business partnership structures which could themselves allow local initiatives that achieve many of the same goals.

CONCEPTS DISCUSSED

Partnership Principles

While Xcel Energy clearly stated that it does not support the formation of individual "business partnerships" that share risk and reward with each municipality in which it provides electric service, Xcel Energy is proposing a relationship with the City where the City is advisory in nature, with the purpose of helping develop a programmatic oriented, or service/delivery oriented approach that may meet the City's goals and allows for the scalability of these programs to Xcel Energy's broader service area.

The Taskforce did discuss principles upon which such a new collaborative working partnership between Xcel Energy and the City could be achieved. Consequently, early in the Taskforce discussions, the group developed a set of goals that might ideally describe a collaborative working partnership between the City and Xcel Energy. These objectives addressed five major focus areas: (1) partnership process; (2) customers and choice; (3) innovation and growth; (4) climate and flexibility, and (5) regulatory compliance and time frame. [See Appendix B for a full listing.]

1. The Taskforce agreed that a major focus of any partnership process is collaboration, transparency, and access -- through a model that could potentially be replicated by other communities. Xcel Energy suggested this could be achieved through regular City-Xcel Energy meetings with the expressed objective of jointly developing a plan to achieve the City's energy goals and collaborating on new ideas or modifying existing programs.
2. The second set of goals identified by the Taskforce surrounds customers and choice. This would focus on the provision of electricity "services" that allows for equity and flexibility in service offerings and promotes customer choice. The central components of customer choice include: (1) demand response and efficiency; (2) designating sources of generation or the customer as a generation provider; and (3) pricing.
3. The third goal involves innovation and growth and the development of utility infrastructure that supports community participation in ideas and shared technology.
4. The fourth area of focus is climate and flexibility, whereby a plan to decarbonize and make sustainable the City's energy supply achieving eventual carbon "neutrality." Product and service offerings that change with needs over time are an important part of this objective, as are nimble responses to changes in market conditions such as fuel and financing costs. Partnership structures that are localized and different from the status quo could also enable the local flexibility to adapt to changing community needs and goals.
5. Finally, the Taskforce also identified regulatory compliance and time frames as an important aspect of any partnership. This objective focuses primarily on service pricing, terms, and conditions that ensure reasonable returns and comply with current statutes and regulations.

Such service options would best be framed through flexible time frames, but may also require some certainty that Xcel Energy and the City will have a longer-term relationship.

Partnership Structures

The Taskforce members discussed several forms of partnership structures that could potentially be explored by the City and Xcel Energy. As discussed earlier, Xcel Energy informed the Taskforce on June 10th that the company was not willing to enter into any of these discussed structures with the possible exception of #3. The details of the structures discussed are set forth in Appendix C. Specific partnership structures discussed included the following:

1. "Xcel Boulder Muni Version" – the City would form a municipal utility but then contract with Xcel Energy to provide generation, transmission and distribution services under City direction.
2. "Xcel Boulder Investor Owned Utility" – Xcel Energy would form a separate subsidiary to provide electric utility services to Boulder, under PUC jurisdiction.
3. City of Boulder Supplemental Utility – the City would form a municipal utility to develop energy efficiency, demand reduction programs, and renewable energy, but not to supply electricity.
4. Community Choice Aggregation – the City would have the opportunity to aggregate all City load and acquire power supply for the aggregated load. Xcel Energy would deliver the power.
5. Phased Community Choice Aggregation – the City could aggregate load and provide additional products and services.
6. Aggregated Community Coal Plant Retirement – communities would agree to pay the cost of retiring a coal plant and replacing coal generation with clean energy. The retirement cost would be securitized with state issued revenue bonds, with the extra cost to the system being paid by participating communities.
7. Boulder-Xcel Energy Service Agreement – the City and Xcel Energy would enter into a service agreement to meet Boulder objectives of more DSM, expanded distributed generation, more renewable energy, and other City program objectives.

Several concepts proposed by Taskforce members would have required a fundamental change in the laws governing utilities in the State of Colorado and/or a fundamental change in the financial underpinnings of utility investment; these ideas were reviewed and ultimately rejected by Xcel Energy. Of the range of options discussed, #1 above which represents an innovative buyer-seller arrangement for the procurement and provision of energy services, progressed the furthest in the Taskforce discussions. The electricity industry will continue to be required to transform in response to energy efficiency legislative mandates pressure to change based on community-centric "greening" objectives such as those proposed by the City. This transformation will likely affect traditional buyer-seller relationships involving electricity. Indeed, the Taskforce discussions reveal that this trend is likely to promote more innovative and flexible approaches to meeting the differentiated demand for energy, while achieving the objectives of regulated utilities.

Carefully crafted buyer-seller relationships are common in other industries where consumers have varying preferences and characteristics. In such situations, the ability of a seller and buyer to strike a contract that is specifically tailored to meet those demands is integral to the success of both parties in a transaction. Thus, while the Xcel Energy proposal discussed in the next section is the more traditional of the City-Xcel Energy relationship possibilities, the group did identify specific avenues – such as special products and services -- through which a buyer-seller relationship could be tailored to meet the needs of the City.

XCEL ENERGY PROPOSAL

Xcel Energy presented the Task Force with a proposal that is set forth in Appendix D. This proposal outlines:

1. The potential that Xcel Energy's current efforts may reduce carbon dioxide emissions through 2043 under a range of reasonable assumptions, which could further reduce Xcel Energy's average CO2 emissions in Colorado associated with the average system electric supply by 70 percent by 2043 compared against 2005 levels;
2. The high rate of past and current participation by Boulder customers in Xcel Energy's current voluntary programs for energy efficiency and renewable energy, resulting in a further reduction in Boulder's actual carbon footprint; and
3. The specific product and service concepts that Xcel Energy is willing to further explore with Boulder, with the expectation that if these concepts are attractive to Boulder and can achieve regulatory approval, these concepts can be used by other municipalities and customers at some additional cost. Several of these concepts were first raised by the City in its December 2012 white paper for consideration. Specific concepts include:
    a. Conducting research using the SmartGrid installed in Boulder to test the impacts of distributed generation on local distribution systems (and other related research and development using the SmartGridCity infrastructure.)
    b. Expanding energy efficiency and demand response programs, with the City contributing funds to augment Xcel Energy funds to create additional EE and DR opportunities.
    c. Expanding local distributed generation in Boulder by having the City offer incentives in addition to the incentives offered by Xcel Energy to attract more participation.
    d. Forming with the City an energy efficiency/distributed generation incubator to encourage local Boulder businesses and investments in new technologies.
    e. Unbundling Xcel Energy electric rates to provide better price signals to encourage further adoption of energy efficiency, demand response and distributed generation.
    f. Offering a "Green City Rate" that would allow participating communities to help design rates that encourage energy efficiency.
    g. Providing an environmental re-dispatch option where customers and/or communities could pay the incremental cost of Xcel Energy burning gas instead of coal to generate electricity, cutting in half the carbon emissions for the megawatt hours produced.
    h. Providing a mechanism for communities to cause more renewable energy resources to be added to the Xcel Energy system and dedicated to the participating community.

Consistent with the continuing evolution of customer choice issues and the desire of entire communities to participate in possible new programs and services regarding their electric energy usage and supply, Xcel Energy indicated it is committed to exploring and developing these alternatives and product offerings not only on an individual customer basis, but also on a community-wide basis, assuming appropriate community approvals can be obtained. Xcel Energy states that it is in the position to work with Boulder to develop these enhanced products and services not only for the City of Boulder, but also for communities throughout Xcel Energy's service area. Xcel Energy believes this approach has the potential to achieve larger amounts of carbon emission reductions and greater levels of renewable energy than if Xcel Energy focused only on the Boulder market. For Boulder-specific initiatives, Xcel Energy suggests additional ideas with respect to using the SmartGrid as a testing laboratory to facilitate distributed generation development.

The Taskforce proposed performing quantitative modeling to determine the emission reductions and associated costs of the Xcel Energy partnership proposal relative to the City's Municipalization study.

Unfortunately, there was not ample time for Xcel Energy or the City to perform a rigorous economic comparison as requested. In an effort to provide some level of cost comparison for the Taskforce, the Company attempted to use similar assumptions included in the City's study to identify the potential benefits of its proposal. While the attached Xcel Energy proposal illustrates a high-level analysis of the potential emissions reductions, costs and overall impacts and benefits of a package of services and programs, it will take additional time for Xcel Energy and Boulder to review and agree to all of the modeling assumptions necessary for a rigorous comparison of the cumulative savings from the proposed Xcel Energy programs as compared to the municipalization options. If City Council chooses to consider Xcel Energy's proposal, actual forecast modeling should be performed.

For a complete description of Xcel Energy's proposal, please see Appendix D.

WHERE DO WE GO FROM HERE?

1. <u>Continue Discussions with Xcel Energy</u>

Over the past three months, the Taskforce has dedicated substantial time in analyzing potential partnership opportunities between Boulder and Xcel Energy. However, Xcel Energy's proposal includes a number of concepts that require additional development. The Taskforce encourages the Boulder City Council to engage in continued discussions with Xcel Energy, regardless of what path it decides to take.

Xcel Energy has laid out eight concepts for new products and services, discussed above, which it would like to explore further with Boulder. These eight concepts, if implemented in Xcel Energy's full service territory, might have a significant impact on carbon emissions in the state. Xcel Energy has also advised the Taskforce that it intends to continue discussions regarding these and other products and services that it can offer to all communities within its service territory. These discussions would include representatives of these communities, including Boulder.

2. <u>Explore Forming the Boulder Local Energy Utility</u>

The City's December 6, 2012 white paper similarly laid out many ideas worth exploring. Among them was the idea of forming a Boulder Local Energy Utility (BLEU), in which the City's demand side management and distributed generation efforts would be concentrated. The Taskforce discussed the creation of this "non-retail" utility and the advantages it could bring to the community, regardless of whether City Council decides to form a retail electric utility in the future. In addition to the advantages discussed in the white paper, Taskforce members suggested that with a dedicated revenue stream, such as the Climate Action Plan tax, or a fee added to utility bills, bonding for distributed generation and demand side management programs could be possible.

3. <u>Continue the Taskforce as an Advisory Working Group to the City</u>

Because the Taskforce has issued its final report and Xcel Energy will be expanding its future outreach to the other communities it serves, Xcel Energy no longer plans to meet with this Taskforce. Xcel Energy is open to including Taskforce members in a broader stakeholder group that would work on developing these concepts for their entire service territory. Xcel Energy has also expressed a desire that any future discussions regarding the ongoing relationship with the City be held directly between Boulder and Xcel Energy.

During the final meeting of the Taskforce, Boulder city staff suggested the possibility of asking the non-Xcel Energy members of the Taskforce to act as a working advisory group to the City. The reconstituted working group, which could include members of this Taskforce and other interested community members, could use its knowledge and experience to provide feedback to the City as the City further explores collaborative opportunities with Xcel Energy.

APPENDIX A – Taskforce Members

Sanders (Skip) Arnold has been the Executive Director of Energy Outreach Colorado, one of the largest organizations of its kind in the country and the only non-profit in Colorado that raises funds for energy assistance since 2003. Prior to joining Energy Outreach, Skip enjoyed a 25-year career at Xcel Energy (and its predecessor companies New Century Energies and Public Service of Colorado). His positions included vice president of Customer Care, and vice president and controller for the Retail Business Unit. Skip serves on the board of directors of the National Fuel Funds Network, and the National Low-Income Energy Consortium, both based in Washington D.C.; he also is a board member of Colorado Energy Forum and is a member of the governor-appointed Colorado Commission on Low-income Energy Assistance. A native Coloradan, Skip is a graduate of the University of Colorado, where he received a bachelor's degree in business and an MBA.

Tom Asprey is a retired electrical engineer, with 27 years of experience at Hewlett Packard and Intel designing hardware and software computer systems, including electronic instrument systems and integrated circuits, as well as developing and extensively using modeling software tools. Tom is currently an independent researcher and has spent considerable time investigating clean, sustainable energy. Tom holds a B.S. in Electrical Engineering from New Mexico State University.

Eric Blank is a co-founder and co-owner of Community Energy, a renewable energy development company focused primarily on projects in the eastern United States. Prior to that, Eric was an Executive Vice President leading US wind development for Iberdrola Renewables, the largest owner / operator of wind facilities in the world. Over the past ten years, Eric has led the development to construction of over 500 MW of operating wind and solar facilities, representing a total capital investment of over $1 billion. From 1991-2001, Eric was the director of the Energy Project of the Land and Water Fund of the Rockies (now Western Resource Advocates), a regional non-profit clean energy advocacy group that has helped shape energy policy in the Intermountain West. Eric has been involved with energy policy since 1982, and has published and presented widely on energy issues. He has a J.D. from Yale Law School and a M.Sc. in Economics from the London School of Economics.

Ann Livingston is the Principal of LivingstonSEAS, a consulting firm focused on sustainability and energy advising services. She also recently served as the Director of Market Development for Snugg Home, where she was responsible for working closely with municipal and government energy efficiency offices and utility Demand Side Management programs to explore business relationships for Snugg Home as a software provider. Before joining Snugg Home, Ann was the Sustainability Coordinator for Boulder County, where she led efforts to develop and implement the ClimateSmart Loan Program. She also played a key role in developing the Sustainable Energy Plan, the county's Zero Waste Plan, Commercial Green Building Energy Codes, enhanced Residential Energy Action Program, the BetterBuildings grant programs, and the comprehensive ClimateSmart Education and Outreach program. Ann has a BA in English from the University of Florida, as well as a J.D. and interdisciplinary Graduate certificate in Environmental Policy from the University of Colorado.

Pete Lorenzen, IBM Vice President, Global SO Transition/Transformation & Quality Assurance, IBM Colorado Senior State Executive & IBM Boulder Senior Location Executive. Pete began his career with IBM in 1982. As part of IBM's outsourcing organization from 2007 through June 2008, Pete managed a 6,000-person organization based in Bangalore, India, providing remote IT services to approximately 175 customers across Asia Pacific (AP); Europe, the Middle East and Africa (EMEA); and the Americas. In 2012, Pete began serving as an active member of the University of Colorado Leeds School of Business advisory board.

Sean Maher is the Executive Director of Downtown Boulder. Sean has been active in Boulder's business community since 1989. Most recently, he served as Director of the Boulder Economic Council where he co-founded the Boulder Innovation Center and launched Boulder's first business incentive program. Prior to the BEC, Sean headed the Small Business Development Center at the Chamber of Commerce. Before joining the Chamber, Sean brought the first Ben & Jerry's franchise stores to Colorado and founded a multi-unit retail business featuring gourmet foods made in the Rocky Mountains. He was also a partner in Terra Communications, a marketing

communications firm serving national clients. Prior to his entrepreneurial ventures, Sean worked as a marketing consultant with Sterling-Rice Group. He holds a Master of Business Administration degree from the University of Colorado and a marketing degree from the University of Montana.

Matt McMullen is Director of Facilities Management & Sustainability at the University Corporation for Atmospheric Research (UCAR). Matt has over twenty-five years of experience in the design and construction fields. Prior to joining UCAR, Matt owned and operated an architectural design/build firm of 15 employees specializing in sustainable residential, retail and commercial architecture in the western region of the United States and Hawaii. Matt received a B.ENVDA in Environmental Design and an M.ARCHA in Architecture from the University of Colorado and an M.S. – Real Estate & Construction Management from the University of Denver. Matt is a licensed architect in Colorado, California and Texas and holds AIA, LEED-AP, BD+C and NCARB professional designations. He is also a licensed real estate broker associate in the state of Colorado. On a community level, Matt has served and is currently serving on several City Council-appointed boards, commissions and task forces, including his current appointments as the Civic Use Pad Task Force IV.

Diana Moss is Vice President and Director of the American Antitrust Institute (AAI). An economist, Dr. Moss has managed projects for AAI involving antitrust and regulation. Her industry expertise includes electricity, petroleum, agriculture, airlines, telecommunications, healthcare, and sports. Before joining AAI in 2001, Dr. Moss was a senior staff economist at the FERC where she coordinated competition analysis for electricity merger cases. From 1989 to 1994, she consulted in private practice in the areas of regulation and antitrust at the National Economic Research Associates and Putnam Hayes and Bartlett. Dr. Moss has spoken widely on various topics on antitrust and regulation, testified before Congress, and appeared before state and federal regulatory commissions. She has published articles in a number of economic and legal academic journals, including: American Economic Review, Journal of Industrial Organization, the Energy Law Journal, and the Antitrust Bulletin. She is editor of Network Access, Regulation and Antitrust (2005). Dr. Moss is Adjunct Faculty in the Department of Economics and Interdisciplinary Telecommunications Program at the University of Colorado at Boulder. She holds a M.A. degree from the University of Denver and a Ph.D. from the Colorado School of Mines.

John Nielsen is Energy Program Director for Western Resource Advocates, a non-profit environmental law and policy organization with offices in the West. WRA has developed strategic programs focusing in three areas, water, energy and lands, each of which addresses curtailing climate change. John has worked at WRA as an economist and policy advisor since 1995, and has been the Energy Program Director since 2000. He is a leader in the western environmental community on the relationship between energy policy and air quality, and has served as an expert witness in regulatory proceedings around the region involving utility resource planning, electric industry restructuring, renewable energy, energy conservation, and green marketing. John holds a B.A. in mathematics and economics from the University of Colorado at Boulder and M.A. and M. Philosophy degrees in economics from Yale University.

John Tayer is the President and CEO of the Boulder Chamber of Commerce. John served over a decade at Corden Pharma Colorado (formerly Roche Colorado Corporation) in various executive public affairs and community relations positions and is a former member of the Chamber's Board of Directors, as well as a former Board Chair. Prior to Corden, John worked directly for the city manager of Boulder as its Director of Policy Development and Intergovernmental Affair Coordinator. John began his career in Washington as a Congressional Aide to U.S. Senator Brock Adams. John holds a Bachelor of Arts in Political Science from the University of Michigan and a J.D. from the University of Colorado School of Law. John recently resigned his position as a Director of the Regional Transportation District, representing the Boulder area.

Will Toor is the director of the transportation program for the Southwest Energy Efficiency Project (SWEEP). Prior to joining SWEEP, Will served as a Boulder County Commissioner from 2004 to 2012, where he spearheaded the effort to create and adopt a countywide Sustainable Energy Plan, the BuildSmart green building code, the EnergySmart program, and the ClimateSmart Loan Program. Before being elected County Commissioner, Will served as Mayor of Boulder from 1998-2004. He played a strong role in the development of the Boulder's community transit network, EcoPass unlimited access transit pass programs, and policies for denser, mixed-use urban infill development as an alternative to sprawl. Will represented both the City of Boulder and Boulder County

on the Denver Regional Council of Governments (DRCOG) from 1998-2012, and served as chair in 2005. In his role at DRCOG, he successfully advocated for significant shifts in funding towards transit and bicycle/pedestrian infrastructure and led DRCOG in adopting sustainability principles including goals for reducing greenhouse gas emissions and vehicle miles travelled in the long range regional land use and transportation plans. He received his Ph.D. in physics from the University of Chicago in 1992, where he studied theoretical condensed matter physics.

Sam Weaver is President, CEO and a co-founder of Cool Energy, Inc., a power conversion equipment company located in Boulder, CO. Cool Energy is committed to sustainable practices, and is a certified B corporation. The main applications of Cool Energy's products are waste heat recovery and biomass power, and the scale of the equipment is intended for on-site and remote power generation. Sam also sits on the Board of Directors of Proton Power, Inc, a biomass power and fuels company. He is a member of the City of Boulder Planning Board and serves on the Board of Clean Energy Action. Sam is actively involved in the Colorado technology and business communities, having previously co-founded one other Colorado-based company. Prior to his time as an entrepreneur and involvement in start-up businesses, Sam was employed for ten years as a professional researcher in the electrical engineering department at CU-Boulder. Sam has previously served his community as a volunteer fire chief, holds a B.S. from the California Institute of Technology, and is an inventor named on seventeen issued U.S. patents.

Xcel Energy was represented on the Task Force by: Kurt Haeger, Managing Director of Resource Planning for Xcel Energy; Lee Gabler, Director of DSM and Renewable Operations for Xcel Energy; and Paula Connelly, Managing Attorney for Colorado Regulation for Xcel Energy.

City of Boulder Representatives on the Task Force were: Heather Bailey, Executive Director of Energy Strategy and Electric Utility Development; Jonathan Koehn, Regional Sustainability Coordinator; and Debra Kalish, Senior Assistant City Attorney.

Steve Charbonneau and **Julie Strubel** from Find Solutions facilitated the Taskforce.

APPENDIX B – Boulder – Xcel Energy Partnership Key Points

A long-term partnership between the City of Boulder and Xcel Energy that permits the city to meet its clean energy goals and Xcel Energy to cover its costs and achieve a reasonable rate of return, should include the following key points:

1. A change in the fuel mix that greens Boulder's energy supply, with a plan to achieve climate neutrality.
2. Providing electricity as a service.
    a. Develop and provide customers choices relating to their energy consumption, including:
        i. Choices that provide incentives for demand reduction and energy efficiency;
        ii. Choice that differentiate the sources of generation providing their electricity;
        iii. Choices offered on either an individual customer basis, community-wide basis, or both.
    b. Continue to evolve product and service offerings over time as energy options and needs change over time.
    c. Work with our communities to develop new product and service offerings.
    d. Design services that include encouragement and methods to achieve reductions in electricity usage.
3. Joint decision making regarding; fuel, DSM, rate structure; and infrastructure planning.
4. The building of a utility infrastructure that supports innovation and economic growth, yet leverages new configurations and tolls to insure the highest level of reliability to meet customer needs.
5. Access to information in order to continually assess/improve DSM programs/facilitate collaboration with Xcel Energy.
6. Encouragement for innovation through forums and community participation in ideas and shared technology. Xcel Energy strives to maintain a long-term relationship with our customers and we expect to receive continuing input from our customers on what products and services they would like to obtain from Xcel Energy.
7. Flexibility/nimbleness in responding to market conditions.
8. An ongoing, collaborative process, with regular meetings between the City and Xcel Energy, to:
    a. Plan for achieving Boulder's energy future goals
    b. Review and critique how the partnership is working and ways to improve the partnership;
    c. Collaborate on new ideas or modify existing programs; and
    d. Develop long term resource and service plans.
9. A plan for enforcement and conflict resolution.
10. Replicability of some or all of the partnership points by other communities.
11. Develop services and products that can be offered to all customers under similar terms and conditions.
12. If Xcel Energy service offerings require approval by the Colorado Public Utilities Commission, they must be designed in a manner that complies with Colorado statutes and regulations. Partnership structures that would not require approval by the PUC are possible.
13. Prices, terms and conditions for each of these services should be based upon the cost of providing the service, including a reasonable margin to the provider of the service. The bases of many pricing options may require some certainty of a long-term relationship between Xcel Energy and its customers.
14. Plan for un-winding. (If the partnership fails, the default would be the city's acquisition of the Xcel Energy infrastructure with predetermined values for acquisition and stranded costs.)

APPENDIX C – Partnership Structures

- Xcel Energy-Boulder (muni version): This option is essentially what is spelled out in the "Options" memo from City Staff to Council from December 6, 2012. It is fundamentally a cooperative agreement between the City and Xcel Energy in which a Buyer/Seller relationship is formed between a Boulder municipal utility and Xcel Energy. The City municipal utility would enter into a long-term service agreement with Xcel Energy to provide wholesale power, transmission services, and distribution services. Because this would involve a municipal utility, no PUC involvement would be necessary. This is a buyer/seller relationship after municipalization.

- Xcel Energy-Boulder (investor-owned-utility version): Under this concept, Xcel Energy would create a wholly-owned subsidiary company which would be used to serve the City of Boulder, defined geographically in the way that makes the most operational sense. This separately-regulated investor-owned-utility would serve Boulder with an electricity mix that could be sourced entirely or partially from Xcel Energy generation and transmission resources. The operation of the subsidiary would be regulated by the PUC separately from Xcel Energy Colorado system. The primary advantage of this approach is to enable Xcel Energy and Boulder to serve the specific values and generation requirements of City of Boulder residents and businesses without a municipalization process. This is basically a buyer-seller relationship.

- City of Boulder Supplemental Utility: This concept is also described in the City of Boulder "Options" memo of December 6, 2012. It describes a municipal utility that does not own or operate any of the electric system, but functions as an enabler of demand side reduction programs and as a promoter of renewable energy sources. More detail can be found in the memo, as well as discussions of challenges to this approach.

- Community Choice Aggregation: Some members suggested a focus on a Colorado Community Choice Aggregation approach. This concept is modeled after several laws that have been passed at the state level (e.g., California, Ohio) that empower aggregation of electric customers to make wholesale power purchase agreements. The discussions on this subject seemed to have consensus that it is a very interesting concept, but that the details of implementation would be critical, and that changes in state law would certainly be required.

- Phased Community Choice Aggregation (PCCA): Under this approach Xcel Energy would continue to own and operate the distribution system and would remain Boulder's retail electricity provider, but the City would have the ability to contract directly with any resource supplier of its choosing to acquire new generating resources at wholesale. Xcel Energy would agree to integrate these new resources into its system at cost and would ensure that there are no cross-subsidies in either direction between the City and other Xcel Energy customers. To avoid stranded cost issues Boulder's new resource acquisition would be staged to occur at the same time the Xcel Energy system needs new resources. Xcel Energy and the City would use an unbundled wholesale pricing structure that relies on separate generation, transmission and distribution prices to determine the value of the new City resources to the Xcel Energy system. This pricing structure would be based on the Federal Energy Regulatory jurisdiction cost-based rates that Xcel Energy offers its wholesale customers.

  Xcel Energy and the City would also agree to work together to move the retail rate-setting process for commercial and residential customers out from underneath the current state-wide

Colorado Public Utilities Commission process. In consultation with Xcel Energy, the City would have the ability to set retail rates and design local clean energy programs based on its own objectives. To support Boulder's efforts to promote clean energy, energy efficiency and low-income programs, the City would have rights to a customer revenue stream, perhaps through a line item on the Xcel Energy bill. Finally, Boulder would commit to an annual greenhouse gas reduction requirement to achieve carbon neutrality in a manner consistent with the City's objectives and timelines, and Boulder and Xcel Energy would partner to develop a system of greenhouse gas reduction credits that would allow Boulder to accurately track and account for the greenhouse gas emissions associated with Boulder's electricity use. This option would require PUC approval.

- Aggregated Community Coal Plant Retirement: This concept would allow communities to pool their power needs into the equivalent of an existing coal plant to voluntarily pay the cost of the un-depreciated value remaining for early retirement of the plant. Financing this would use tax-free, state-issued, revenue bonds to return Xcel Energy's equity in the plant and pay off any debt at low cost. The communities would make the payments on the state bonds and also pay the cost of clean energy replacements that supply their replacement power, if they approve the incremental cost of the retirement and replacement. This concept could be workable either within an investor-owned-utility business partnership, or potentially within a municipal utility framework in which Boulder is sourcing power from Xcel Energy.

- Boulder – Xcel Energy Service Agreement: This concept encompasses an agreement between Boulder and Xcel Energy for 5 years (or other reasonable duration). Key points to the agreement would include specific, negotiated commitments by both community and Xcel Energy that expand the traditional customer/vendor relationship to reflect a partnership dynamic. These commitments could include items like:
  - Co-funding and/or co-marketing of DSM or renewables programs—some of these programs may be put in place so that additional technologies can be supported by rebates (e.g., where they do not meet the TRC requirements when only Xcel Energy funds are used)
  - Expanded distributed generation agreements
  - Renewable energy requirements
  - Community choice on supply (e.g., similar to community-wide Windsource option)
  - Pilot programs to advance community and/or utility goals
  - Finance programs (e.g., on-bill repayment for loans sourced form community or other funds)
  - Sharing of data
  - Coalition based efforts to pursue regulatory, legislative, or other policy changes
  - Stakeholder and community engagement to create an ongoing dialogue between the utility and stakeholders (e.g., the DSM roundtables)

The negotiated agreement would have to include consequences for not meeting commitments as well as an exit strategy (prior to agreement termination) based on agreed upon events/actions. This model would be part of a larger "Green Communities" or "Partner Communities" program that all Xcel Energy communities can opt into.

APPENDIX D – XCEL ENERGY PROPOSAL

BOULDER OPTIONS TASK FORCE
XCEL ENERGY REPORT

Xcel Energy greatly values the relationship we have had with Boulder and our customers who live in the City. Over the past ten to twenty years, Boulder has become a model city, striving to reduce its overall energy usage, increase the use of renewable energy, and reduce its carbon footprint. Boulder has demonstrated how effective a community can be when it joins together to achieve a desired outcome. Similar to Boulder, Xcel Energy is committed to being an environmental leader, striving to make meaningful carbon emission reductions for the entire state of Colorado. Xcel Energy also understands that certain communities or customers may want to move at a faster pace than the rest of the state or the rest of our customers. As a result, Xcel Energy plans to explore and develop alternatives and product offerings that can provide a greater level of customer input and choice regarding their electric energy usage and supply in an effort to promote a more environmentally friendly electric service for all of Colorado. Over the past ten years we have demonstrated our environmental leadership by building one of the most extensive and cost effective renewable energy portfolios including approximately 2,200 MW of wind and 215 MW of solar, by developing plans to retire or convert over 1,000 MW of coal generation, and by developing leading DG solar and DSM programs. We have achieved a 20% reduction in carbon dioxide emissions (relative to a 2005 baseline) and are on track to achieve a 30% carbon emission reduction by 2020.

1. CARBON REDUCTIONS ON THE XCEL ENERGY SYSTEM IN COLORADO

1.A. System/Portfolio Changes

The vast majority of environmental achievements have come through system-wide or portfolio changes, the impacts of which benefit and are allocated across all of our customers. Examples include the retirement of Arapahoe 3&4 and Cameo 1&2, Clean Air Clean Jobs Act project retirements and conversions (at Cherokee and Valmont Stations) and emission controls, utility scale solar acquisitions (Section 123 and 124), 2,178 MW of wind generation, wind forecasting improvements, etc. These environmental achievements have not occurred by accident. Working with our customers, Xcel Energy has been able to help reshape the state's energy demand curve and the state's energy portfolio mix. Boulder has been a key player in working to make our DSM programs one of the most successful in the nation, in helping achieve legislation that allowed us to retire over 900 MW of coal generation, and in developing one of the nation's largest renewable energy portfolios in a very cost conscious manner.

A very important part of Boulder's future environmental impact from electricity consumption is the change that will occur in Xcel Energy's emissions and use of renewable energy in its system. Xcel Energy cannot, today, guarantee the amount of wind and solar energy that will be added to its system from the current (2011) ERP, let alone, the 2015 and 2019 ERPs and others beyond that. We also cannot predict with any certainty future environmental regulations, federal and state policy on carbon and renewable energy resources in order to give Boulder a more certain prediction of the long-term future. However, Boulder can look to Xcel Energy's track record of embracing new energy technologies, balancing the energy portfolio and demonstrating environmental leadership while keeping rates consistently below the national average. As a result, while the 2011 ERP did not specifically lay out a plan for acquiring more renewable energy, Boulder should understand that Xcel Energy is committed to growing its renewable energy portfolio in a cost effective manner.

To address Boulder's desire for even greater carbon emission reductions and for greater customer choice, Xcel Energy, along with the City, assembled a Task Force of various environmental and business citizens/leaders from the City to discuss and provide feedback to the Company on issues and options regarding the City's goals. The Boulder Options Task Force was comprised of twelve citizens from various backgrounds, and three members each from the City and the Company. This group was tasked with reviewing Boulder's energy and carbon emission reduction goals and objectives, and synthesizing those desires into a discussion regarding the development of various options and concepts that Xcel Energy could possibly offer to the City. The Task Force met for approximately 3 months, demonstrating a great deal of knowledge about the electric energy industry.

At the request of the Task Force, Xcel Energy reviewed its CO_2 emission projections presented in the 2011 Electric Resource Plan (2011 ERP), with a particular focus on total emissions over the next 30 years. While there are a number of uncertainties over such an extended planning horizon, Xcel Energy agreed to present a range of possible modeled outcomes for system CO_2 emission levels based on a range of reasonable assumptions for the period 2017 through 2043. The results are presented in Chart 1A. The results are based on the latest resource plan and assume the retirement of the Company's coal-fueled plants on their book retirement dates. The following alternative cases are presented to identify plausible carbon reduction scenarios, with the understanding that assumptions used in these cases may change over time and that the ultimate decisions on key resource planning issues will be made through the state regulatory process:

- Base case of the 2011 ERP (Base ERP) (black line)
- An updated ERP forecast, inclusion of the proposed acquisition of 548 MW of wind for 2015 (it is noted that the Colorado PUC has only approved so far the inclusion of 200 MW of wind in the current acquisition process and that the remaining 348 MW of wind is still under consideration and dependent on PPA negotiations, project development and due diligence and further evaluation in comparison to other resources bid to the Xcel Energy), and a revised assumption for continuing benefits of DSM programs forecasted to be implemented before 2027 (Base ERP plus wind) (red line)
- A plausible scenario where Xcel Energy continues to add renewable resources to the "Base ERP plus wind" scenario, albeit at a much slower pace than what we have accomplished over the last ten years (Base ERP plus additional renewable energy) (green line)

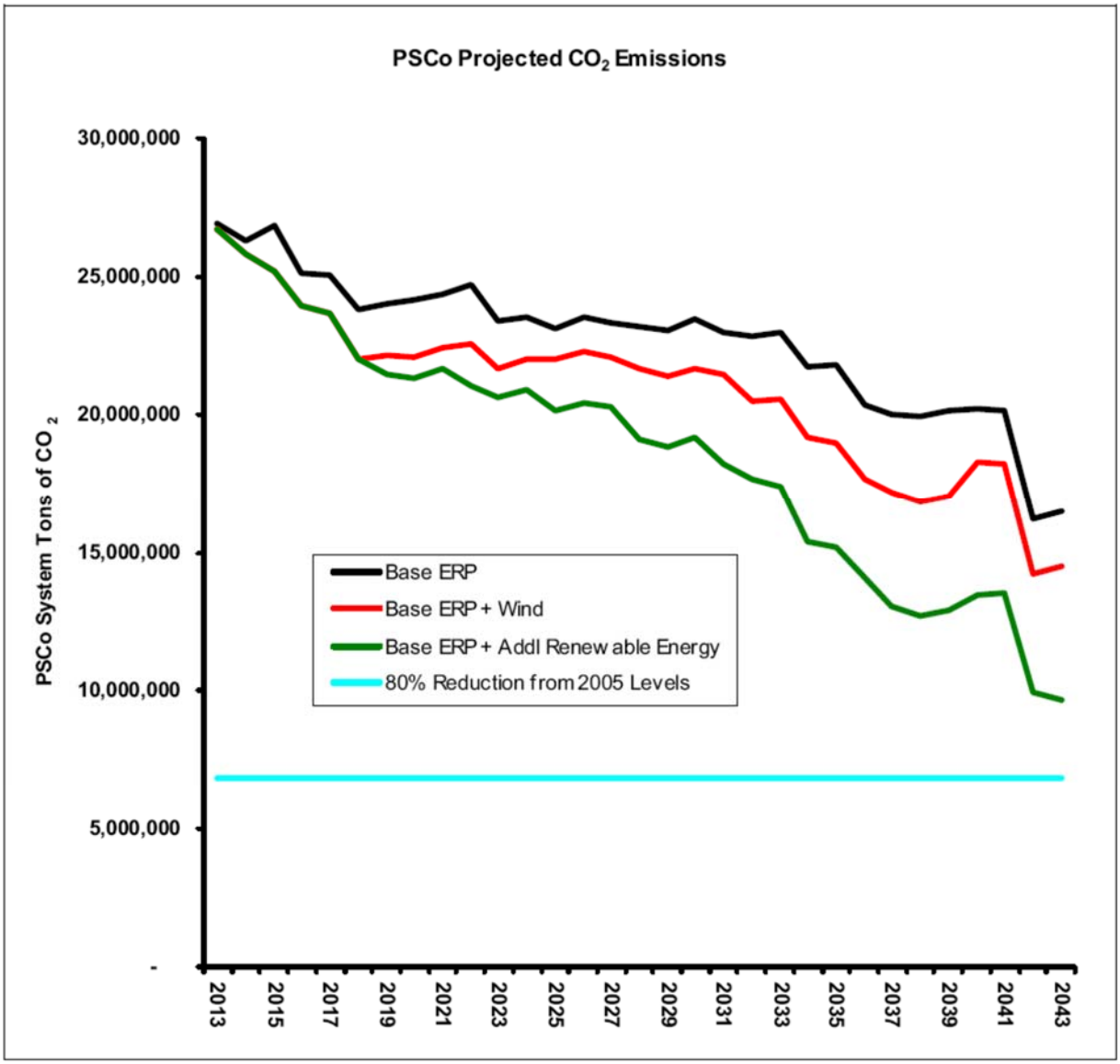
A common reference point or baseline for measuring possible or expected CO_2 emission reductions (or increases) is the actual emissions level for calendar year 2005. Xcel Energy's actual CO_2 emissions for 2005 were approximately 34 million tons (short tons). Boulder has stated that a meaningful target for overall CO_2 emission reduction is 80 percent by 2050, measured from 2005 (blue line). For Xcel Energy meeting the City's goal from the entire system would equate to a target emission level of approximately 7 million tons of CO_2 emissions and a total reduction of nearly 27 million tons.

The information presented in Chart 1A demonstrates that Xcel Energy is forecasting a reduction of CO_2 emissions of 35 percent from 2005 levels by 2020. Also, based on the modeling data presented in Chart 1A, one potential scenario (Base ERP plus wind) would result in Xcel Energy achieving an overall emission reduction of nearly 19 million tons by 2043, a reduction of 55 percent, or equivalent to an emission level of approximately 15 million tons.

The decisions to achieve these resources would not be based solely on attempting to meet a carbon objective but rather the relative economics of the various resources available to the Company. Factors

such as whether there is EPA action with respect to carbon and traditional pollutants would factor into these decisions.

Chart 1A: Projected CO_2 emission reductions under alternative scenarios



Additional review of the assumptions we used in the 2011 ERP highlighted the fact that we assumed new renewable resources were added only to meet minimum compliance with Colorado's Renewable Energy Standard (RES). As a result, the 2011 ERP may have presented an extremely conservative case regarding new renewable energy resources for Xcel Energy. We explained in the ERP plan that our strategy was to add more renewable energy when it was cost effective for the system. While we were not in a position to predict exactly when more renewable energy could be added as a cost-effective resource, we certainly believed that we would have the opportunity to continue to expand our renewable portfolio over time. As a result, the data presented in the ERP described a scenario where the Company's renewable energy portfolio remained constant for the next 30 years.

Given the changes in the cost of wind and solar that may continue, we believe that is reasonable for Boulder to consider that system carbon emissions for Xcel Energy would continue to decline as the Company acquires additional cost-effective renewable resources, above and beyond those required for minimum RES compliance over time. If the Task Force assumes that Xcel Energy adds additional renewable resources at a pace that is three times slower than what has been added over the last ten years, by just acquiring approximately 100 MW of additional wind and 100 MW of solar resources every other year over the period from 2019 to 2043, Xcel Energy would be able to reduce **CO_2** emissions by another five million tons by 2043. With only moderate increases in renewable energy, Xcel Energy could potentially be on a course to reduce **CO_2** emissions by nearly 70 percent by 2043.

When analyzing the cost impacts of these scenarios, the primary drivers of these rates include the cost of the wind and/or solar, the cost of carbon, and the cost of natural gas. For comparison purposes the Task Force requested that Xcel Energy compare the three alternatives using the assumptions included in Boulder's median case. Using Boulder's information and assumptions for carbon costs and wind energy costs, we find that the most aggressive carbon reduction scenario (ERP plus Additional Renewable Energy) results in a slight reduction in cost in comparison to the Company's 2011 ERP scenario. The difference in cost appears to be a savings of approximately 1 to 2 percent of rates (lower rates) when compared against the 2011 ERP scenario. This very simplified comparison approach is only intended to show directionally how the rates compare under the various scenarios present to the Task Force and the information used by Boulder in their study.

The Task Force is not charged with evaluating the City's Municipalization Study; however, in order to understand how the Xcel Energy proposals compare with the City's assumed benefits of forming a municipal utility, the Task Force agreed that Xcel Energy should use the same carbon and resource cost assumptions assumed in the City's median case when analyzing the cost projections of these two additional renewable energy scenarios. In addition, while Xcel Energy made it clear to the Task Force that Xcel Energy did *not* agree with the carbon and resource cost assumptions that the City used in its Municipalization Study and that a more rigorous economic analysis should be completed, the Company agreed with the Task Force's request. The City assumes in its median case in the City's Municipalization Study that carbon regulation will result in a cost (either carbon tax or cap-and-trade cost) for all kWh beginning in 2017 and that wind resources will still have available the benefits of the current federal Production Tax Credit. Using these City assumptions, Xcel Energy's analyses show that by adding renewables (both the 548 MW wind case and the additional renewables case) electric rates would be reduced when compared with the information in the City's Municipalization Study.

Although Xcel Energy has not focused a great deal of time attempting to predict its actions over the latter half of the planning horizon, acquiring additional renewable resources to replace approximately 1,400 MW of possible coal-fueled plant retirements, and at a pace that is nearly three times slower than our current pace of renewable acquisitions, suggests that this future scenario is plausible. This additional renewable scenario could result in Xcel Energy achieving even greater **CO_2** emission reductions than reductions achieved under Boulder's municipalization scenarios.

1.B. <u>Customer and Community Choice Driven Alternatives</u>

We also understand that some customers, and even some communities like Boulder, want even greater overall carbon emission reductions and want to help shape the next steps that we take in this long-term journey of maintaining an industry leading energy system. We have some history of providing voluntary or opt-in services and offerings, including our DSM programs, our Windsource program, and our

Solar*Rewards and new Solar*Rewards Community program (Solar Gardens). These programs depend on voluntary customer participation and the costs for the programs are attributed to and paid for by varying degrees by a combination of the participants and the customers on our system.

Looking forward, we plan to work toward the creation of more optional programs and services. We also envision efforts to create a new level of voluntary participation at the community level, provided that our customers (the voters of the community) elect for their community to participate in our voluntary programs. Xcel Energy provides the following descriptions of the concepts and issues that we believe will lead to fruitful discussions and ultimately to product and service offerings that can be proposed to the Colorado PUC to allow participating customers and communities to achieve even greater reductions of carbon emissions and greater amounts of renewable energy. Xcel Energy is focused on meeting the energy needs of customers and the communities we serve in the least expensive, most reliable, safest and cleanest way possible. It is our belief that we offer the City of Boulder the best opportunity to meet its energy and environmental goals without the risks and costs associated with forming a municipal utility.

We encouraged the Task Force to consider the opportunities and likelihood of achieving further carbon dioxide (CO_2) emissions reductions and increased renewable energy through the following areas of opportunity with Xcel Energy:

1. Leveraging projected, long-term CO_2 emission reductions on the PSCo system
2. Continuing participation in Xcel Energy voluntary renewable and DSM programs
3. Boulder can augment and leverage Xcel Energy programs, service options and projects utilizing City of Boulder resources and expertise
4. Developing potential new voluntary programs and services

In developing optional programs and services, Xcel Energy believes the participant needs to be ultimately responsible for any additional costs (or benefits that may arise) that is associated with the programs or service. As a result, the following are guiding principles that we believe are critical to making the proposed services and options successful.

Guiding Principles:

1. No new cross subsidization
2. Available to all
3. Ability to administratively manage program/service/offering
4. Customer friendly
5. Customer relationship term consistent with program term
6. Regulatory approval

2. CONTINUING PARTICIPATION IN XCEL ENERGY VOLUNTARY RENEWABLE AND DSM PROGRAMS

Xcel Energy currently offers a number of voluntary or optional renewable and DSM programs and services to our electric customers across Colorado. These programs can be viewed in two broad categories based on cost responsibility:

1. Programs and services that are paid for by participant customers

2. Programs and services that are partially or totally paid for by all PSCo electric customers because of overall system benefits

Windsource® is an example of a voluntary program where participating customers pay a small incremental price to drive the Company's use of wind energy above and beyond its RES compliance and ERP driven resources.

Solar*Rewards® and Xcel Energy's business and residential DSM programs offered in Colorado are examples of programs and services paid for by all PSCo customers because of either the system benefits provided by the reduced load that we have to serve, or the need for compliance with state goals on solar.

The Solar*Rewards and new Solar*Rewards Community (solar gardens) programs were developed specifically to enable Xcel Energy to meet the retail distributed generation portion of Colorado's Renewable Energy Standard (RES). The recovery of rebate and Renewable Energy Credit (REC) payments made to participating customers is facilitated through the Company's Renewable Energy Standard Adjustment (RESA) clause, which is capped at 2 percent of each customer's bill.

Similarly, DSM programs create future system benefits by avoiding the need to build new power plants and other facilities and avoiding marginal energy generation. As of year-end 2012, our Colorado DSM programs had deferred the need for three-250 MW power plants. The DSM rebates and incentives paid to participating customers are recovered from all PSCo customers based on the overall system benefits derived, as well as the opportunity for all customers to participate and realize program participant benefits. Notably, if Boulder's load is no longer on our system there is no benefit to our other customers from investing in DSM initiatives in Boulder.

Boulder customers have been engaged and participating at high rates in our existing programs. While Boulder's load accounts for roughly 3.5 percent of our system, Boulder customers are 14 percent of the total Solar*Rewards program and 5.2 percent of total DSM dollars spent on rebates and incentives. Boulder customers also comprise 18 percent of our Windsource program sales in Colorado. These participation levels demonstrate how effective the programs can be and how community participation leads to success. Xcel Energy would like to continue to work with Boulder to leverage and expand the Company's existing programs and to develop new programs. There would be no benefit to our non-Boulder customers to permit Boulder customers access these programs going forward if we do not serve Boulder, as they would not address compliance concerns or create system benefits.

The actual electric-associated emissions and renewable energy profile of the community should incorporate consideration of Xcel Energy's system portfolio profile, but also layer in the incremental impact of high participation in these programs, whether participant funded or system benefit funded.

3. THE CITY OF BOULDER CAN AUGMENT AND LEVERAGE CURRENT AND PLANNED XCEL ENERGY VOLUNTARY PROGRAMS, SERVICE OFFERINGS AND PROJECTS.

Xcel Energy believes that Boulder can achieve its objectives and significantly benefit by working with Xcel Energy on expanding and enhancing existing energy efficiency, distributed generation and SmartGridCity programs and applications, along with possibly developing additional clean-energy resources. By leveraging resources available through Xcel Energy's existing programs, Boulder can use internally generated funds to expand and enhance existing programs by targeting greater penetration and expanding program scope. Boulder customers have already demonstrated interest in using existing incentives at an increased rate of participation. The City could utilize Climate Action Plan tax revenues,

general funds, or other voter approved revenues to provide additional funding to further improve adoption and participation rates and potentially to drive programs that, absent city funding, would not otherwise be cost effective for Xcel Energy. Through the use of city funding, in combination with Xcel Energy's existing programs, we believe that together we can work to make many of the ideas and concepts for new and expanded programs and services (identified in Section 4) a reality.

4. DEVELOPING POTENTIAL NEW VOLUNTARY RENEWABLE AND DSM PROGRAMS AND SERVICES

Xcel Energy is also interested in working with the City and Boulder community stakeholders, in parallel with other interested stakeholders, to investigate and develop new service offerings that would meet customer and community needs. Our customers are increasingly looking for more diverse energy solutions, and we want to offer alternative programs and services, including options that give communities and individual customers choices that result in real and tangible environmental improvement and the development of renewable energy while assuring a fair and reasonable assignment of costs.

Listed below are options and potential new programs and services, categorized into three groups:

A. Near-Term concepts and options that are either unique to the Boulder Community or more general, but likely to be achievable within 3-9 months from an agreement to pursue them.
B. Mid-Term concepts and options that Xcel Energy would be willing to investigate and consider. We envision it would take 6-18 months to work though each of these ideas, not including any necessary regulatory approvals or legislation.
C. Long-Term concepts and options that we envision would take two years or longer to develop before seeking authority to implement them.

4A. <u>Near-Term Concepts and Options (3-9 months)</u>

4A.1. Enhancing SmartGridCity

Xcel Energy is willing to engage the SmartGridCity (SGC) Advisory Council to perform industry research and make future suggestions that include a number of ideas and concerns that Boulder has raised. We would invite the City of Boulder to actively participate on this Advisory Council.

We would engage the Advisory Council to help us select new pilot programs. Once selected, we would develop additional pilot details, including cost projections, and present the pilot details to the Advisory Council within six months. The following list has been prioritized to highlight the programs that Xcel Energy believes have the greatest potential and most benefit. Since a number of options revolve around common themes and are also similar to options listed on the mid-term list, it appears that options associated with distributed generation may provide the greatest benefit.

While the Task Force had asked Xcel Energy to quantify the cost and benefits of the various options, most of these options or alternatives are in the nature of research and development projects and should be viewed as enablers for future actions. As a result, meaningful quantification of specific alternatives is not available.

1. Use smart grid technology to analyze the impact of high penetrations of distributed renewable energy on the distribution system and use the information to structure appropriate transmission and distribution system modifications for the Solar*Rewards and Solar*Rewards Community programs. This study is very feasible and will help the

industry to understand the operational and reliability impacts of distributed generation. We estimate that we will need at least six months of solar panel data collection at a one-second resolution. During this time, an appropriate modeling software platform could be chosen, acquired and mastered. An additional six months will be required for the distribution and transmission impacts study. The study will be scalable to an extent; however, distribution feeder features vary and feeder specific studies will still be required for PV integration at feeder penetrations greater than 15 to 20 percent. We expect this study could be complete in 12 to 24 months. The cost to perform this task is estimated to be $1 million.

2. Working together, the City and Xcel Energy could test the structural limits of SmartGridCity by installing solar panels on homes served by a particular substation to determine how much distributed generation can be added without causing a disruption on the distribution system. This option is feasible and links into option 1 above.

3. Test the ability for appliances to be turned on or off in response to price or grid stability signals.

4. Develop a plan to streamline customers' ability to obtain near real-time, "raw" information. This option can be accomplished in the short term. Xcel Energy is implementing several upgrades to MyAccount that will not only allow customers to download raw data, but will also help customers who wish to better understand their usage and data. On the residential and small business side (<250kW), we will be creating a "MyEnergy" tab within MyAccount. Possible features for customers will include looking at their usage based on comparisons and audits. We are researching a program that would include a "download my data" button, and we would provide interval data if meters will support this level of granularity.

5. Develop a plan for rolling out smart-meters to the half of Boulder residential premises that don't have access to even day-delayed interval data, as well as a plan to provide smart meters to more commercial premises in Boulder. The cost of installing additional smart-meters in Boulder is estimated to be in the range of $125 to $175 per device.

6. Study the condition of transformers associated with the premises participating in the Electric Vehicle Charging Station Pilot, as transformers have anecdotally been reported to be easily overloaded by EV charging.

7. Smart-meter retrofits could support plug-in electric vehicle technologies, such as vehicle-to-building (V2B) strategies, in which the vehicle battery also serves as a storage/back-up system for the building, and managed charging, in which the charging schedules of electric vehicles are aggregated and controlled in response to grid stability and power-price signals for both customer and utility benefit.

The cost responsibilities for these SmartGridCity concepts would be subject to negotiation between Xcel Energy and the City. Any costs borne by Xcel Energy would be subject to approval by the Colorado Public Utilities Commission.

4A.2. Expanded Energy efficiency and demand-side management

This option would expand the energy efficiency and demand response options for Boulder. Currently Xcel Energy offers a large portfolio of energy efficiency and demand response options for customers. Through quarterly roundtable meetings, interested parties can submit additional program or technology ideas for inclusion into our program portfolio. The City has been an active participant at our quarterly roundtable meetings.

A program that can be expanded is the Energy Smart Program. Through Energy Smart, the City can fund incremental rebates to drive higher levels of energy efficiency. Xcel Energy is open to working in partnership with the City to more effectively market Energy Smart to customers and trade allies and to find solutions for easing participation by Boulder customers (i.e. one rebate form).

Xcel Energy is also open to expanding cost-effective options as part of our existing regulatory process and we support efforts by the City to enhance the cost effectiveness of technologies not currently offered to customers. Xcel Energy would be open to providing expertise in the evaluation of these technologies.

a. **Scope:** 4 -5 percent of additional demand reduction over 20 years
b. **Cost:** $750,000 to $1,000,000 per year
c. **Emission reduction benefit:** 40,000 tons by 20th year

4A.3. Local Distributed Generation Opportunities

Boulder has indicated an interest in exploring ways to increase the utilization of distributed generation and provide more input into possible programs and concepts that could be implemented in the City. Xcel Energy believes that Boulder could expand the adoption rate of the Company's existing solar programs by offering additional incentives in combination with the Company's existing programs. Xcel Energy would also be open to creating a working group that could focus on identifying other DG opportunities and exploring issues that may be related to the potential implementation of these new ideas.

a. **Scope:** 4 percent demand reduction over 20 years
b. **Cost:** $200,000 per year cumulative to $4,000,000 in year 20
c. **Emission reduction benefit:** 33,000 tons by year 20

4A.4. Formation of an Energy-Efficiency/Distributed Generation Incubator

Xcel Energy would expect to have a continuing collaborative process with Boulder to establish additional energy efficiency programs and concepts. Historically Boulder has been an active participant in similar efforts. Additional DSM programs and concepts enabled by the Advanced Metering Infrastructure (AMI) environment in Boulder could be developed and explored through this incubator concept. The magnitude and potential impact of these possible programs take the form of research and development, and therefore, are difficult to quantify at this time. It is also anticipated that potential programs and opportunities would be tailored in such a way as to allow local Boulder companies to participate. Since Boulder and Xcel Energy would be looking to use the incubator concept to gauge customer acceptance of new services or concepts, Boulder would have the opportunity to propose project concepts of their own and have these concepts evaluated through this process. As such Boulder would be in the position of controlling and possibly funding certain programs of interest to the City.

4B. Mid-Term Options and Concepts (6-18 months)

4B.1. Unbundling of Charges – Generation/Transmission/Distribution

Retail electric utility service today is offered under tariffs that typically include a simplified rate that groups together (bundles) the services provided by investor-owned utilities —generation, transmission and distribution — and ancillary services. To facilitate a better understanding of the cost components and services that make up today's bundled rate, we would investigate our ability to unbundle the current rate structures and to discuss with Boulder the benefits of making this change available to customers on their bills. Unbundling the current service components on a customer's bill would lead to a greater understanding of the costs of each of these utility services and could ultimately lead to a different paradigm for new services and redefining existing services. This option falls in the realm of customer education and enabling of future program development. One possible future benefit of this option is to allow rates to be differentiated based on the type of energy supply received by a specific customer and the customer's possible participation in various voluntary programs.

4B.2. "Green City Rate"

One way to achieve energy savings is through pricing signals. Customers are likely to respond to a higher marginal price signal by reducing usage and adopting higher cost DSM alternatives, which become more cost effective. Currently, Xcel Energy's rates are based upon average costs, not marginal costs. We would agree to explore the possibility of developing and implementing customized rate structures for Boulder and other communities that would want this option. Together with Boulder, we would investigate the rate structures Boulder may desire, how these structures would vary between customer classes, how such a program would be implemented and developed, and explore any type of true-up mechanisms that could be necessary. The cost and benefit of this program is largely dependent on the specific rate design that would be proposed.

4C. Long-Term Options and Concepts (2 years plus)

4C.1. Environmental Re-Dispatch Option

Xcel Energy understands that some customers may be willing to pay an additional fee to reduce the operation of the Company's coal-fueled generation to reduce overall emissions. Although a permanent change to the Company's coal fleet would be significantly more complicated, we could possibly develop a program where customers voluntarily agree to fund the reduction in overall CO_2 emissions that would result from dispatching our system differently to reduce carbon dioxide emissions. Currently our generation system is dispatched on the basis of cost. By reducing coal generation, in an uneconomical manner, and replacing that reduced coal generation with natural gas-fueled generation, the Company would incur an additional fuel cost. Under this proposal, customers could voluntarily commit to pay these additional fuel costs for the purpose of reducing their carbon footprints. In general, a MWh of coal generation produces approximately one ton of carbon dioxide emissions and natural gas fired generation produces approximately half the carbon emissions or about one-half a ton of carbon dioxide emissions. By paying an additional fee to reduce the amount of coal generation and increase the amount natural gas generation, Boulder could reduce its overall carbon emissions by an amount (in tons) equal to 0.5 times the number of MWh of reduced coal operations.

To develop program details, we would identify in advance the amount of energy that could be re-dispatched and the cost of that re-dispatched energy. The specific program details would identify the carbon reduction benefits and the voluntary costs associated with re-dispatching the system over a stated period of time.

a. **Scope:** The re-dispatch of the existing coal fleet could result in 10 to 20 percent of Boulder's energy being switched from coal to natural gas.
b. **Cost:** Preliminary estimates suggest the cost of economic re-dispatch could be in the range of $3 to $6/MWh for the period of 2013 through 2017. Xcel Energy will need to perform additional modeling to look at the costs for 2018 and beyond.
c. **CO_2 reduction benefit:** The expected CO_2 benefit from an environmental re-dispatch program would be up to 5 to 10 percent in overall reduction of CO_2 emissions annually.

4C.2. Add incremental wind or solar resources through a wind garden/solar garden concept or an enhanced Wind-Solar Source Program

We would agree to explore opportunities for developing new or expanding current products and services that would enable additional sources of renewable energy to be developed and possibly dedicated to specific cities or customers. It is likely that additional wind or solar resources would be the most cost-effective options.

a. **Scope:** 200 MW of wind or 100 MW of solar
b. **Cost:** See chart
c. **CO_2 reduction benefit: See Chart (**Annual reduction)
Cost:

	Cost ($/MWh)	Carbon Reduction (tons)
200 MW wind with PTC-Colorado (prior to 1/1/2014)	$35	500,000
200 MW wind with PTC-Kansas (prior to 1/1/2014)	$25	500,000
200 MW wind without PTC-Colorado (after 1/1/2014)	$60	500,000
200 MW wind without PTC-Kansas (after 1/1/2014)	$50	500,000
100 MW large solar with ITC (prior to 1/1/2017)	$80-$100	150,000

4C.3. Partnership with NREL National Wind Technology Center

This opportunity is viewed as a sub-set of 4C.2 above.

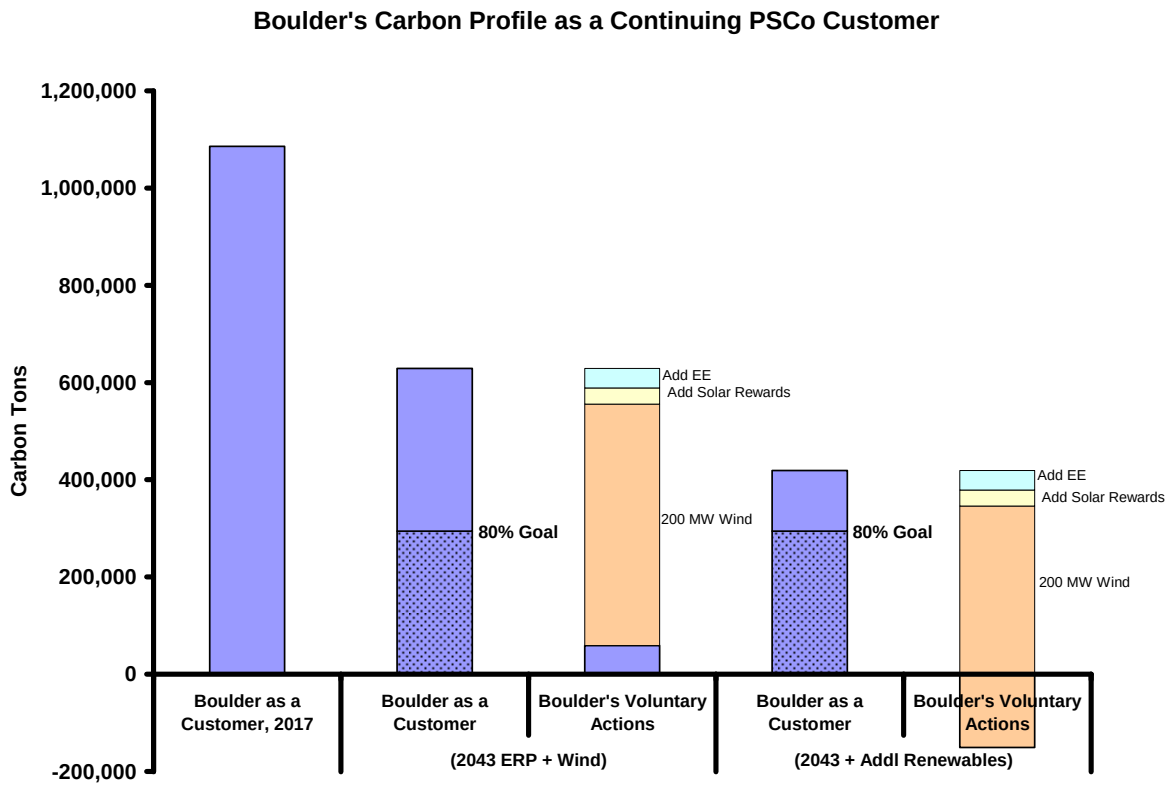
5. BENEFITS OF BOULDER CONTINUING WITH XCEL ENERGY

Over the past ten years, Boulder and Xcel Energy have made significant progress reducing overall CO_2 emissions and increasing production of clean energy. Xcel Energy believes that Boulder can meet and surpass its goal of 80 percent CO_2 reduction for the City by continuing to work with Xcel Energy and leverage the Company's existing and possible future energy programs. We firmly believe that a continuing relationship with Boulder can help the entire state of Colorado, not just the City, attempt to meet the 80

percent emission-reduction goal by 2050. Through the development of incremental voluntary programs, in concert with the strong base of renewable resources already assembled by Xcel Energy, Colorado can become a showcase for the country on how to transition the electricity energy business into a clean energy business. Based on the system-wide average carbon emission scenarios identified in Chart 1A and the voluntary program and services we have identified, we believe Boulder can achieve its stated goal of an 80 percent reduction in carbon emission by 2050 and may have the opportunity to approach or surpass carbon neutrality from the power sector.

Chart 5A demonstrates how Boulder can achieve its carbon reduction and renewable energy goals by remaining part of the Xcel Energy Colorado system. If Xcel Energy did not acquire any additional renewable resources (an unlikely scenario), Xcel Energy's projected carbon dioxide emissions associated with Boulder's electric usage in 2017 would be approximately 1,100,000 tons annually. However, using more realistic assumptions, Boulder can expect to see reductions in the carbon dioxide emissions associated with its electricity usage because Xcel Energy is likely to continue to reduce its carbon dioxide emissions. Under the concepts outlined in this Report, Boulder could create additional reductions by participating in voluntary product and service offerings.

Chart 5A: Boulder's Projected Carbon Profile as a Continuing Customer of Xcel Energy



The first column shows the annual Boulder "carbon footprint" in 2017 from using Xcel Energy's electricity. The second column shows the significant reduction in that annual carbon footprint that will result from Xcel Energy's pending proposal before the PUC to add 548 MW of wind by the end of 2013. Using the "ERP plus wind" case, Boulder's carbon emissions as a system customer are estimated to be approximately 630,000 tons. The third column shows that Boulder could achieve even further carbon emission reductions by providing additional incentives for participation in energy efficiency and solar rewards

programs and by working with Xcel Energy to fund the incremental cost of adding an additional 200 MW of wind that would be dedicated to Boulder. By participating in additional EE, DG and a 200 MW voluntary wind purchase, Boulder's carbon emissions could possibly be reduced to approximately 60,000 tons.

The fourth and fifth columns show the carbon emissions reductions that would be achieved by Boulder by staying with Xcel Energy under the "ERP plus additional renewables" scenario, a scenario that assumes that Xcel Energy will continue to add renewables to our system at a rate that is about one-third the rate that Xcel Energy has added renewables over the last ten years. Boulder's carbon emissions under this scenario are projected to be approximately 420,000 tons. Again, by participating in additional EE, DG and a 200 MW wind purchase, Boulder's carbon emissions could possibly be reduced to a negative carbon emission (or net offset) of (150,000) tons. Any net offset in carbon emissions could be used by Boulder to offset other carbon emitting activity within the City, e.g., carbon dioxide emitted from vehicles.

As shown in Chart 5A, Boulder's projected carbon emissions profile as a continuing Xcel Energy customer, with participation in incremental voluntary services, ranges from a positive 60,000 tons of carbon to a net negative emission level of (150,000) tons of carbon. These scenario results compare very favorably to the projected net carbon emission level included in Boulder's Municipalization study of 400,000 tons by 2037.

The Task Force requested that Xcel Energy provide a comparison of the cost to achieve the carbon profile detailed in Chart 5A. While it would take a great deal of time for Xcel Energy and Boulder to review and agree to all of the modeling assumptions necessary for a rigorous cost comparison, in an effort to provide some level of cost comparison for the Task Force the Company attempted to use the assumptions included in the City's study. Based on using Boulder's cost assumptions from its median scenario, a carbon cost or tax beginning in 2017 and the availability of wind resources priced to include the cost benefits of the current federal Production Tax Credits, it is expected that implementing the three voluntary programs shown in columns 3 and 5 of Chart 5A would result in an average *reduction* in cost of approximately $2 million per year for the period of 2017 to 2037. These voluntary savings, coupled with the reduced cost of the higher renewable energy portfolio identified in Chart 1A using these same assumptions from the City's study, would suggest that based on Boulder's assumptions in its median scenario, Xcel Energy rates would average 2 to 3 percent lower than in the base case.

The cost savings result primarily from using the carbon regulation assumptions that the City has used in its municipalization feasibility study. Carbon regulation will make adding renewable resources and increasing energy efficiency more cost effective and create rate savings. Charts 1A and 5A show two reasonable responses by Xcel Energy to the carbon regulation future assumed by the City in its municipalization study.

APPENDIX E – XCEL ENERGY'S JUNE 10th MEMO

To: Task Force Members

From: Xcel Energy

Dated: June 10, 2013

Re: Xcel Energy's Position on Task Force Alternatives

Xcel Energy appreciates the opportunity to work with representatives from the City of Boulder and with the Boulder citizens who have volunteered their time on this Task Force. The Task Force members have demonstrated substantial knowledge of the electric industry and have been working very hard and very creatively to find a solution that would be attractive to both the City and Xcel Energy. We also appreciate the efforts of our facilitators to coordinate the discussions we have had over the past six weeks. We at Xcel Energy have listened with great interest to all of the Task Force discussion and suggestions and have concluded the focus of this work has been channeled into developing a Boulder only solution and not one that could be reproducible for other customers.

When Xcel Energy approached the City to request the establishment of this Task Force, we had anticipated the Task Force discussion would focus on specific programs and product offerings that we could develop and offer to Boulder to achieve the City's overall carbon emission reduction goals. Xcel Energy also believed that these new products and services could also be offered to other Colorado customers and cities that have similar environmental goals. Over the past month it has become apparent to us that Boulder's primary focus in this process has been to attempt to transform the utility industry, rather than work with us on specific projects or programs that could be used to reduce carbon emissions for the City and that could be offered to our other customers. While we have been exploring specific carbon reduction plans, it seems that it is more important to the City that it obtain control over utility decision-making and that it change the legal and regulatory structure of the utility business in Colorado.

As a result of the group's focus on potential partnership structures, Xcel Energy began researching many of these issues to determine if we could develop an action plan or partnership concept that could be successfully implemented in a reasonable amount of time and that could be reproduced for other customers. This research raised a number of very complex issues and the fundamental question of how could Xcel Energy reasonably expect to develop a city specific legal and regulatory structure for each community that had a desire to have a different energy mix or utility program. At the same time Xcel Energy began investigating how we could acquire and offer additional renewable energy projects or services based on resources that were offered in our current All-Source RFP process or by modifying the operation of our existing generation. Xcel Energy anticipated that bids that were marginally cost effective could possibly be offered to specific customers, such as Boulder, on a voluntary basis, so that these customers could obtain even more renewable energy than what is already included in our industry leading renewable portfolio that is provided to all customers. After analyzing the wind bids that we received on April 30, we determined that streaming the energy from a renewable project to a specific customer was not going to be feasible. Instead, we determined that aggressively acquiring as much wind as we think our system can handle today, on behalf of all of our customers, was the most appropriate way to achieve the greatest quantity of verifiable carbon emission reduction for Boulder and for Colorado. On Thursday May 30 Xcel Energy announced that we proposed to increase our overall wind portfolio by nearly 25% and to increase our overall level of renewable energy to 30% for all of our customers. The addition of 548 MW

of new wind will bring the level of wind on the PSCo system to over 2,700 MW for a system that is designed to serve a 6,500 MW load. In regards to options that could possibly alter the operations of our existing generation, the Task Force expressed an interest in a more permanent option that would result in a permanent closure of another coal plant. Obviously a more permanent option of this nature is much more complex and would need the involvement of a much broader group of stakeholders.

After a great deal of internal discussion and review about various partnership concepts offered by the Task Force, Xcel Energy has come to the conclusion that we do not believe that additional Task Force discussion regarding transforming the utility industry in Colorado, or about reorganizing Xcel Energy's business structure to satisfy the City's ultimate goal of control, is a cost-effective way of achieving real carbon emission reductions for Boulder or for the State. We also believe the very complex legal and regulatory issues related to the forms of change of control and ownership of the utility assets or services under discussion by the Task Force will likely take a long time to investigate and resolve, and would not result in a concept that could easily be reproduced for other cities or customers in Colorado. Developing a legal and regulatory structure that would require a very complex and exhaustive customer specific solution is not practical.

Xcel Energy believes that the carbon issue is bigger than Boulder. Concentrating our efforts on addressing a complex new contractual and regulatory model with Boulder is not the best way to tackle this important environmental issue. As a result we continue to believe that focusing our efforts on the development of an increasingly greener generation portfolio, enhanced energy efficiency programs, and other voluntary customer programs for all customers will provide the opportunity to reduce more carbon and at a faster rate than tackling the extremely complex legal and regulatory issues that are inherent in many of the structural proposals raised by the City and by Task Force members.

Our recent announcement of the addition of another 548 MW of wind is just another step in the process of demonstrating Xcel Energy's overall commitment to the environment. We also believe that with a comprehensive approach with all of our customers that we can achieve additional carbon emission reductions in the next ten years, mirroring the significant reductions we have already achieved over the past ten years. Focusing on more of a statewide comprehensive planning approach will result in greater overall greenhouse gas emission reductions for Boulder and the State, versus what could likely be achieved by debating the control issues raised by the City. Looking back over the last ten years, Xcel Energy has made remarkable strides to reduce our carbon footprint. During this period, Xcel Energy has added or proposed to add nearly 2,700 MW of wind, agreed to close over 1000 MW of our coal plants including the Cameo, Arapahoe 3 and 4, Valmont, and Cherokee 1, 2 ,3 and 4. We have developed a U.S. top ten distributed solar program, a top DSM program, avoiding the need for two power plants the size of Boulder's power requirements, and just completed the installation of 60 MW of large solar resources. During this same ten year period, Xcel Energy has reduced carbon emission by 6,800,000 tons in Colorado, nearly 6 times greater than Boulder's entire carbon footprint from electric generation needs.

In contrast to the focus on control issues and legal structures that has occupied so much of the Task Group's time over the past month, Xcel Energy believes that the Task Force, or a subset of this group, still has an opportunity to help identify and develop new product and services that can be offered to all customers on a voluntary basis. Xcel Energy has developed a very aggressive renewable base for all of its customers but understands that some customer may want to go even further. While the issues surrounding these voluntary service offerings can also be complex, the time necessary to develop these concepts is expected to be significantly less than the time that would be required to restructure the utility industry. As identified by Boulder, product and service offerings that are based on new wind resources are likely to be the most cost effective. To help facilitate the opportunity to add more wind resources and

to develop voluntary services around this new wind, we need more transmission in Colorado to bring the wind energy from the Colorado Eastern plains to the load centers along the Front Range. We are continuing to plan for constructing this new transmission capacity and will be making the necessary regulatory filings later this year. It is anticipated this additional transmission will be constructed by 2019.

In conclusion, Xcel Energy believes the complexity and the time involved to sort through all of the legal and regulatory hurdles associated with the changes suggested by the City will not result in meaningful carbon emission reductions for many years to come and will not be transferable to other customers and communities. We also strongly believe that by working together on overall system changes, larger and less costly carbon emission reductions can be achieved on a more timely basis and to a much broader set of customers. Xcel Energy has an extremely strong track record of changing our resource mix to reduce overall carbon emissions; we look forward to continuing the progress we have made so far. In keeping with the expectations of our company when we entered into this Task Force process, Xcel Energy would like to continue to extend an invitation Task Force members to assist us in discussing and developing product services and offerings that can be offered to all customers.

CITY OF BOULDER, COLORADO

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MEMORANDUM

TO: City Council

FROM: Heather Bailey, Exec. Dir. of Energy Strategy & Electric Utility Development
Carl Castillo, Policy Advisor
Bob Harberg, Principal Engineer, Public Works, Utilities Division
David Gehr, Deputy City Attorney

SUBJECT: Governance Working Group Recommendations

DATE: July 15, 2013

In May of this year, a Governance Working Group (the "Working Group") was created to work with city staff to understand the flexibility and limitations of the Boulder City Charter electric utility advisory board language, specifically Article XIII "Light and Power Utility," and to develop a recommendation for City Council on any necessary ordinance amendments or other suggestions about how the utility should be governed. It was deemed important to convene this group for a variety of reasons, most notably to ensure the appropriate level of customer participation in the governance structure, including those who might be within the service territory but outside the city's boundaries.

The Working Group consisted of 15 members selected on the basis of their diverse backgrounds and perspectives (see names and bios in **Attachment A).** It met four times beginning on May 29 and ending on June on 26 (copies of the meeting summaries can be found at **Attachment B).** During this time the Working Group reviewed the system of governance already provided for by Boulder's Charter and the types of decisions that the City Council and the utility advisory board could be expected to face.

RECOMMENDATIONS

During its last two meetings, as well as during online discussions on "Basecamp," an interactive online tool, the Governance Working Group discussed and developed the following recommendations related to the governance of a potential Boulder light and power utility:

A. Advisory Board Role in Rates and Rate Structure

The Working Group **recommends** that the utility advisory board (the "Board") be given the specific role of advising the council on electric rates (e.g. rate structure and parameters). The Charter gives council the decision-making role on these matters. Charter Section 187 provides that the utility advisory board review, make recommendations, and provide advice on budgets, appropriations, bonds and policy matters. It does not explicitly address the Board's role in setting electric rates, as is described generally for the utility in Charter Section 182, "Utility Service Standards."

In any organizing ordinances describing the role of the Board, it should clearly state that it has an advisory role on rate issues. This is a very important part of the process that will support transparency and public involvement while helping to build community trust in the decision making process.

B. Advisory Board Composition related to County Residents

The Working Group **recommends** that at least one seat on the utility advisory board be filled by a non-city resident within the service territory known for this or her ability, probity, public service, and particular fitness to serve on the electric utility board to ensure that the utility service standards of Charter Section 182 are provided to non-city customers in a fair and reasonable manner, including the Charter prohibitions related to preferences and advantages for customers.

This goal could be reached in two steps:

1. Currently, the City Charter provides for a majority of the nine-member advisory board to be composed of registered electors. Up to four of the members need not meet the requirement of being a city resident so long as they are owners or employees of a business or governmental entity that is a customer of the utility. An ordinance could be enacted requiring one of these four seats to be filled by a resident within the service territory but outside the city limits who meets the above noted qualifications.

2. Additionally, at the point when there is more certainty with respect to the defined service territory, the Charter could be amended to replace the current language referring to "registered electors of the city" with language allowing any customer of the utility to be eligible to serve on the board, without regard to being an elector of the city, while still preserving the requirement that a majority of the board consist of registered electors of the city. This would allow people residing in the non-city portion of the service area to serve on the board regardless of whether or not they own or are employed by a "business or governmental entity that is a customer of the electric utility." While it would require a vote of the city electorate this change would allow a county resident to serve without potentially diminishing the business/governmental representation originally envisioned by the Charter.

The first of these steps would demonstrate good faith with the county residents who did not participate in the election that authorized the creation of a city electric utility. The second step is

very important should the city end up providing electric utility service outside of its municipal boundaries.

The Working Group believes that it may be appropriate to include a sunset provision to any requirement that a Board member be a non-city resident. This would allow any requirement for a "county" seat to be evaluated as to whether it should be phased out after a certain period of time has passed or after certain milestones in the utility's evolution have been met.

C. Advisory Board Composition related to Customer Classification

The City Charter currently requires "at least three" members of the utility advisory board to be either "owners or employees of a business or governmental entity that is a customer of the electric utility." Conceivably all three of these seats could be filled by small sole proprietors or employees of very small businesses. Conversely, all nine seats on the Board conceivably could be filled by owners or employees of very large organizations in the city (business or governmental).

The Working Group believes there is a significant distinction between large and small customers of an electric utility. Accordingly, it **recommends** that an ordinance be adopted that ensures some representation of each of the major customer classifications (large and small businesses as well as residential). Individuals designated to fill these seats should be judged for their ability, probity, public service, and particular fitness to serve on the electric utility board to ensure that the interests of a variety of residential and nonresidential (commercial, institutional and industrial) customer classifications are represented.

Most of the Working Group believed it would be sufficient to combine any designated large non-residential seat among commercial, institutional or industrial customers. However, one member felt strongly that the interests of governmental institutions, such as BVSD, were fundamentally different than those of businesses (one having the ability to leave the city, the other not). Accordingly, this member felt a separate large customer seat should be guaranteed for both governmental institutions and businesses.

At least in its early years, assuring this balanced level of representation is important to build trust that a city electric utility will serve the interest of both large and small customers. However, recognizing that after such trust is built such limitations on council appointments may become unnecessary, the Working Group recommends that the requirement for seats by large and small "customer class" be evaluated as to whether it should be phased out, or allowed to "sunset," after a certain period of time has passed or after a certain milestones in the utility's evolution have been met.

D. Advisory Board Composition related to Skills

Effectively serving on an electric utility advisory board requires a minimum level of skills to consider the complex types of issues that will come before the board. The Working Group recognizes that the combination of candidate self-selection and council appointment could ensure an appropriate mix of skills on the board. Moreover, the Working Group recognizes that the

necessary mix of skills can be met in a variety of ways. Accordingly, except for the energy strategies skill, listed as “5” below, it does not recommend any prescribed number of Board seats be reserved for members that demonstrate one or more skill.

The Working Group **recommends** that council institutionalize a requirement to make best efforts to recruit Board members that collectively have the following skills:

1. Engineering
2. Finance and economics
3. Legal
4. Energy strategies to achieve greenhouse gas reductions such as: distributed renewable energy, grid management and modernization, energy efficiency, and demand management
5. Utility operations

The Working Group discussed the importance of Board members having strong skills to communicate to and with the broader community. However, the group eventually decided that it was an implied skill for all Board members that did not need to be called out.

The Working Group had a spirited conversation about the need for representation from the perspective of what energy consumption does to our environment. The City Charter ensures minimum representation on the utility advisory board for business and governmental interests. Because representatives filling these seats could likely have cost and reliability as a primary or even sole concern when considering issues brought before them, many in the Working Group felt expertise and advocacy in the area of climate change would provide balance and focus on the original intent of the utility.

The Charter addresses issues related to clean energy, environmental stewardship (Charter Section 178(c)(3) and (5)) and energy efficiency and renewable energy (Charter Section 182(b)). However, it does not ensure any representation on the Board for the perspective that motivated most to even consider creating a city utility: reduction of fossil fuels in the generation of electricity. The Working Group recognizes that the current council is likely to ensure such interests would be represented when making appointments to a utility advisory board. Nevertheless, many in the Working Group believe it is important to institutionalize this as a requirement.

At first the Working Group considered recommending that an ordinance be adopted that ensures one seat on the utility advisory board be filled by an individual that has the interest, knowledge and ability to represent the perspective of an environmental impact advocate.

The Working Group, however, did not reach consensus on this recommendation. Some members believed designating such a seat was unnecessary because the already adopted goals and objectives for the utility require that reduction of carbon emissions be an important consideration for the utility's governing body. These members expressed concern that creating a designated seat for a "special interest," important as it may be, could create a slippery slope which would lead to other interests requesting similar guarantees for seats on the board. These same

individuals believed that the city should instead seek to designate someone with these types of skills, rather than interests, as is the case with other areas of expertise. In this regard, the Working Group eventually concluded that ensuring the presence of the skill of "energy strategies to achieve greenhouse gas reductions," listed above, would likely meet the desire for an energy advocate, and in any event, do so in a manner that ensures the knowledge and skills to address these issues. Nevertheless, the group does think that this energy strategies skill is uniquely important and accordingly **recommends** that identifying one or more member with this skill to sit on the board be made a requirement for all Board appointments, not simply a "best efforts" goal, as is the case with the other skills.

GOVERNANCE ISSUES NOT YET ADDRESSED

The Working Group was not able to consider recommendations on several other topics, including:

- Advisory board appointment process
- Advisory board term limits
- Delegation of powers from council to the advisory board
- Advisory board/staff relationship

While these topics were of interest to one or more members, time limitations prevented them from being addressed. Moreover, it was determined that it might be best to seek council direction on whether it wanted to receive recommendations on these or other topics of governance, later this year or at a date closer to the creation any Boulder Electric Utility. If City Council is interested in receiving recommendations on these or other topics, the Working Group expressed an interest in reconvening for such purpose.

Bios of Governance Working Group Members

David Cohen, Founder of E7 Ventures - David is currently founder E7 Ventures which is a developer of hybrid renewable energy systems. He is actively involved in several other ventures including: acting President of General Microgrids; Partner of S2 NRG Holdings and founder and Chairman of Evolution7 Labs a GridAgents spin-off company developing technology to enable and integrate solar and other renewable-based MicroGrids. David has 22 years of management, product development, and business development experience for emerging renewable energy technology companies. He has specialized in the areas of distributed energy, intelligent buildings, telecommunications, software, and renewable power system finance, due diligence, and development. David co-founded four start-up companies and has a track record in building, scaling, and selling innovative ventures. He has completed numerous R&D joint ventures, and partnerships in the US, Europe, Latin America, Africa, Middle East, Australia, and Asia-Pac. He has developed and commercialized over 20 energy-related software products, and is nationally renowned for his pioneering work in distributed energy and SmartGrid software applications including the pioneering development of the SmartGrid industries first intelligent agent-based software platform, GridAgents™. David was named as one of the top 100 movers and shakers in the SmartGrid in 2012 by Greentech Media. He wrote *The Electrinet: A Communications Architecture for a Competitive Electric Power Industry.* David has been a judge for emerging technology startups for the CleanTech Open for the past two years. He is also a founding Emeritus Member of the GridWise Architecture Council (GWAC). He currently serves on the advisory boards of Cool Energy, Fabriq, Bella Energy, and Heart Transverter, S.A. and recently served as acting COO of Lighthouse Solar where he advised the company in its move into Utility-scale and Community Solar solutions. He has a BA in Environmental Conservation and a MS in Energy Engineering from the University of Colorado, Boulder.

Manohar Croke MA, CCP, Psychotherapist and Educator, Points of Light LLC dba U. S. Esogetic Colorpuncture Institute - Manohar Croke has primarily been a resident in the Boulder, Colorado area over the past 28 years. She currently resides in the unincorporated area of Gunbarrel. Ms Croke is the owner and president of a Boulder-based business, Points of Light LLC, under whose auspices she offers a private practice in somatic psychotherapy (involving counseling, trauma resolution methods and body/mind acu-light therapy) and an educational institute that conducts nationwide professional trainings in a bodymind system of alternative healing (see www.colorpuncture.org for more information). She has a masters degree in Transpersonal Psychology and is currently a PhD candidate. Finally, Ms. Croke is an member of Gunbarrel Energy Future (GEF), an organization involved in researching, informing and educating the Gunbarrel community as to what municipalization might mean for them.

Angelique Espinoza, Public Affairs Manager, Boulder Chamber - Angelique Espinoza is the Public Affairs Manager for the Boulder Chamber, a post she has held since May 2011. She has lived in Boulder since 1991 and completed and M.A. at the University of Colorado at Boulder. Her husband also attended graduate school at CU in the early nineties and works in downtown Boulder. Their son, who currently attends his neighborhood BVSD middle school was, was born at Boulder Community Hospital, just a few blocks from their present home in a North Boulder cohousing community. Angelique has worked in Boulder for over twenty years, at both non-profit and for-profit organizations and startups. She served on the Boulder City Council from 2007 to 2009 and has volunteered for several local organizations. Her primary contribution to the Governance Working Group will be to ensure that local businesses are treated fairly and have a voice and role in how the electric utility is operated, if it is formed.

Karl Gerken, Manager of Facilities Engineering, Ball Aerospace & Technologies Corp. -

Virginia Holtzman-Bell, Boulder Laboratories Site Manager - Virginia Holtzman-Bell assumed the newly created position of Boulder Laboratories Site Manager working for the National Institute of Standards and Technology (NIST) in November 2009. In this role, she serves as the Department of Commerce's primarily liaison with other federal, state and local governmental entities, community-based interest groups and the general public on matters affecting the operations, safety and security of the DOC Boulder Laboratories site. Captain Holtzman-Bell retired from the United States Coast after 32 years of service. As a Coast Guard officer she primarily served in the fields of civil engineering, facilities portfolio management, and strategic resource planning. Virginia graduated from the U.S. Coast Guard Academy in 1981 with a B.S. in Civil Engineering and the University of Illinois, Champaign-Urbana in 1985 with a M.S. in Civil Engineering.

Michelle Krezek, Boulder County Commissioner's Deputy –

Ken Leiden – Ken is a resident of Dakota Ridge.

Barney Moran – Barney Moran was born and raised on the East Coast, and attended Wesleyan University. He moved with his wife to Boulder in 1996. Barney is a property manager and tax advisor, and has served on these Boulder HOA Boards: Iris Hollow, Remington Post, Palo Park III. He is an advisor the the Horizon West HOA Board. Barney was general contractor for one of the largest private solar farms in Boulder, Phase I at Remington Post, which covers 4 roofs and 2 carports. It was installed in 2011. He worked with XCEL on an 80% rebate for replacing all 24/7 lighting fixtures with energy efficient fixtures in all of Remington Post's underground garages. Project was completed in 2011. Barney teaches Daddy Boot Camp at hospitals throughout Boulder County, and he and his wife live in unincorporated Boulder County and have two daughters that currently attend Boulder schools. They installed a residential solar system on their home in 2012. Barney can be reached at barneymoran@yahoo.com

Mike Parenteau, Manager: Maintenance, I&E and Facilities, Corden Pharma Colorado – Mike is currently is the site facilities and maintenance manager for Corden Pharma Colorado, as well as the site electrical engineer. Has been involved in the electrical field since 1995. Has worked as an electrician, electrical consultant, an electrical engineer for Square D (Schneider Electric) and one of two electrical facility engineers for IBM. Electrical engineering experience consists of Arc Flash analysis, Short Circuit Analysis, Time Current Coordination Analysis, Power Quality and electrical systems design for industrial and commercial facilities (120V up to 13.2kV). He lives in Longmont and enjoys mountain hikes and mountain lakes.

Steve Pomerance - Steve Pomerance served on Boulder City Council from 1986-93 and again from 1995-97, six years as Boulder's representative to Denver Regional Council of Governments (DRCOG). In 1975 he built one of the first passive/active solar houses in Boulder. In 1982 he designed Boulder's solar access ordinance using concept of "solar fence". In 1983, as legislative assistant, he wrote the bill to create the Colorado Office of Consumer Counsel, to represent residential and small business ratepayers at PUC; revised bill ultimately passed in 1984. In 1987, as council member, he initiated the effort to create Boulder's first Raw Water Master Plan, to examine and address impacts of global warming on Boulder's water supply. In the 1990's he helped to start the Energy Project at the Land and Water Fund, now Western Resource Advocates. In 2006 he initiated the concept of a popularly-voted-on "Carbon Tax" on utility bills to fund Boulder's energy efficiency programs; tax passed in the November, 2006 city election. In 2009 he co-created a group to improve and expand Boulder's energy efficiency programs.

Susan Riederer - Susan Riederer has been a resident of Boulder for 24 years and lived in the Gunbarrel area for 17 years. She has a MA in Education and her 35 year career includes work in elementary, special, and early childhood education as well as administration and program management. Her last position before retirement was Director of the Community School Program where she managed Facility Rental, Lifelong Learning, Kindergarten Enrichment and the School Age Care Program for the Boulder Valley School District. This program which brought in significant revenue for the general fund was managed by her for 10 years. In retirement, Susan enjoys volunteering, sharing her art space with adults and children and figuring out how to do more errands on her bicycle to reduce her carbon footprint.

Nolan Rosall, Public Affair Chairs, Downtown Boulder Inc. Board of Directors - Nolan has a varied and extensive background in both public and private sector planning and analysis. He has been principally responsible for a wide range of tourism-related research and master planning for ski resorts, convention and visitors' associations, and municipalities, as well as national level strategic planning and forecasting for the National Ski Areas Association and Canadian Ski Council. He has also administered numerous Public Planning projects, starting with his involvement as Planning Director for the City of Boulder in the 1970s, and continuing through his private sector work. During his tenure as Planning Director, Nolan oversaw the design and implementation of both the Pearl Street Mall and the Danish Plan (Boulder's original growth management system), as well as the adoption of the first Boulder Valley Comprehensive Plan. Nolan has coordinated several large-scale PUD and development projects, including their public processing before a wide array of local, regional, and federal agencies. He also has extensive experience in moderating focus group discussions and other types of public meetings. Nolan was a founding partner and President of RRC Associates (Rosall Remmen Cares, Inc.). He retired from RRC in 2011 and is currently a partner with R and C Advisors, which provides complementary planning and market research services.

Coby Royer – Coby is a resident of Martin Acres.

Steven Wallace, Operating Partner of The Best Western Plus Boulder Inn – Steven Wallace is a 27 year resident of the city. He lives in the Whittier Neighborhood. He the operating partner of The Best Western Plus Boulder Inn, President of The Boulder Hotel Motel Association, Board Member of Boulder's Convention and Visitors Board, Past, ten year, board member of Boulder's Beverage Licensing Authority.

Louise Vale, Vice Chancellor for Administration, CU Boulder -

Governance Working Group Meeting Notes – May 29, 2013

Attendees:

- City Staff
  - Carl Castillo
  - Heather Bailey
  - David Gehr
  - Bob Harberg
  - Andrew Barth
- Community – sorry if any names are misspelled
  - Angelique Espinoza
  - Karl Gerken
  - Steve Pomerance
  - Mike Parenteau
  - Susan Riederer
  - David Cohen
  - Virginia Holtzman-Bell
  - Nolan Rosall
  - Manohar Croke
  - Coby Rowyer
  - Steve Wallace
  - Barney Moran
  - Allison Burchell

6:05 p.m. – Heather Bailey introduction of the Municpalization Exploration Study

6:12 p.m. – Introductions

6:23 p.m. – Information sharing

- Biography request
  - Will be used to provide information to community on who's working on this project and where they're involved.
- Group work
  - This will be the group throughout the process.
  - Experts may be brought in as we move forward
  - Basecamp and filing system. You are allowed to share items too. Discussion and commenting feature has been valuable for meeting follow-up
- Ground Rules and Protocols – handout (available on Basecamp)
  - Discussion on sharing materials outside of the group
    - Don't share documents marked "DRAFT" or "CONFIDENTIAL"
    - All else is free for you to use as you'd like.
    - Any needs for anyone else?

- Basecamp info is potentially subject Colorado Open Records Act requests
- Don't share sensitive information about businesses
- Declare your opinions
- Multiple working groups going on at same time, similar but distinct in their charges. Is there info for this group that might impact other group's work or recommendations? Or vise versa?
    - A joint meeting was held in Phase 1 for everyone to hear what was going on. Another meeting like that may be held in this phase as well. If another group's recommendation will impact other working groups, they should be discussed and we'll share what we can and what is needed. The city's goals and guiding principles are how a utility would be operated.
    - Heather Bailey provided a brief summary on the other working groups and their charges.

- Other general questions
    - Angelique – Protocols> Do you need to be here to provide input or comment?
        - Angelique - I think Basecamp works if someone wants to add info even if they can't make it.
            - Carl – might be difficult if there was a consensus at the last meeting.
            - Angelique – That is the exception to the rule.
            - Conclusion: It is a best practice to provide comments before a discussion occurs rather than after the conversation has come to a conclusion.
    - Will decisions be made as we go or will they wait until the end?
        - Carl – We'll make decisions as we go.
    - David Cohen – Can we dial in?
        - Heather – Yes, we'll facilitate dial-in.
        - Carl – If you're there or on the phone, you can provide comment and "vote" if necessary.
        - Conclusion: the staff will attempt to provide call in information prior to each meeting.
        - Provide homework or read-aheads that people can comment on and digest before the next meeting
    - Steve P – This group is not representative of the city. What the meaning of group consensus is – is a function of the people in the room. I'd like that feedback if I was on council.

        - Carl – We want the group to move forward, but we also want to be able to comment so council knows what everyone's thoughts are.
    - Future meeting dates – the dates we've chosen are dates when all city representatives can attend.
    - Brevity of this discussion
        - One of many working groups
        - Had to have a governance discussion
        - Wanted to give the 5,800 properties outside the city to have input somehow
        - Need to be realistic on what we're going to tackle during our month together

- 6: 50 p.m. - David Gehr – Background on City Charter Language and voter-approved language on utility Governance
    - Charter Section 130 is general language on boards
        - By city law, you have to be a registered voter to serve on a board, but there is other law that deals specifically with other boards and their powers
    - City Charter – voter approved – on electric utility board
    - Home Rule Cities are given a broad grant of authority by the constitution
        - Under the state constitution, a home rule city can govern on matters of local concern. For matters of local concern, Boulder can adopt laws that may conflict with similar state laws.
        - A city becomes eligible for home rule through the adoption of a city charters tend to limit the broad authorities that are provided for by the Constitution.
        - The powers in the constitution related to the creation of municipal utilities are quite broad. The city charter narrows those powers.
    - <u>Boulder Government:</u> City Council - City Manager Form of Government.
        - City Council -- Policy Maker
        - General governing responsibilities are done by the City Council. Typical board level decision center around rates, budget, bonding, general operational direction, monitoring performance, rule making, and the use of eminent domain.
        - City Manager -- Executive -- Runs the day to day operations of the utility.
            - Utilities Director as an employee that reports to the city manager.
        - Boards and Commissions.
            - Generally advisory to the council and the manager

- Charter Section 130 Boards -- This is the authority that the city charter provides for boards generally. The light and power charter provisions are much more specific.
    - Broad discretion given to the council to define the duties and responsibilities of the Board.
    - Limited to 5 members.
    - Given specific responsibilities -- Generally advisory
    - Council acts as the board of the City's other three utilities. Until 1992 with the creation of WRAB, there were no boards that specifically provided the utilities advise.
    - Even the utilities function has evolved over time with the general oversight of the planning board giving way to the more specialized water resources advisory board.
- Charter Level Boards. These are Boards that are specifically created in the charter. For example, Planning Board, Parks and Recreation Advisory Board and the Open Space Board of Trustees
    - Tend to have greater specificity in responsibilities
    - Given Authority over certain responsibilities. e.g. open space disposals.
    - The light and power utility Board will be the most recent addition to the Charter level boards.
- Utility Charter Provisions.
    - Guiding Principles
        - Reliable Energy
        - Fiscal Responsibility
        - Clean Energy
        - Rate Payer Equity
        - Environmental stewardship
        - Enterprise status.
    - Service Standards -- Charter Section 182.
        - Service to benefit the customer
        - Clean Energy
        - Fair and responsible rates
        - Limits on fund transfers - Require to have books separate from the general fund.
        - No preferences, advantages, or free service.
    - Customers represented by an elected city council.
    - Council and Utility will be advised by a Customer Based Nine Member Board
        - A minimum of 3 seats dedicated to employees of businesses and governmental customers

            - A minimum of 5 seats are required to be city voters
        - Board will provide advice on budget, rates, debt and service delivery. Its role may expand over time
        - Can have additional responsibilities as delegated by the council.
    - The Charter provisions are consistent with other approaches the City has taken. Charter level boards have evolved over time, with the current structure of the
        - planning board taking form in the 1950's;
        - the parks and recreation advisory board in the 1960's and
        - the open space board of trustees in the 1980's
- If you have questions, ask David Gehr.
- Question and Answer Session.
    - Charter materials – City Council has ultimate authority but may delegate certain duties/responsibilities. (YES). Is there flexibility in the charter if we make a recommendation to allow a utility board to be formed from the beginning?
        - YES. A utility board has a great deal of opportunities for responsibilities under the charter. If the makeup of the board is changed than is different than is specified, then the city would need to hold an election to amend the charter
        - Many issues were raised early on with City Council during the ballot drafting process in the summer of 2011. The council looked at a variety of governance models including the traditional council - manager approach, or to go with a completely independent agency approach like the Denver Water Board. The Denver Water Utility is governed completely separate from City and County of Denver. Denver mayor appoints members of that board. For the most part, all other governance is done separately from the City and County of Denver.
        - The charter provides that council will make certain decisions and board is advisory in nature. However, the council can delegate additional responsibilities to it. We can talk about what powers should be delegated. It might be difficult to get a new charter brought back to voters this year.
            - Could still vote somewhere down the road.
            - The city could change the approach if something isn't working. Cities can and have shifted governance structures over time.
        - Three members must be of business - governmental entity class?
            - Businesses and institutions like NIST, CU, NOAA, etc.

            - A majority of the board must be registered voters in Boulder
            - Will send a link to actual charter language to the group.
            - Page 3 and 4 of packet are charter requirements
    - Goals and Objectives, council adopted, are included in your packet.
        - These pertain to the larger Energy Future project
    - Steve P. – Planning board structure. PB makes decision, Council calls them up if they want to look at them. This seems to work. PB has authority, and council can call them up.
        - This authority was granted by City Council by ordinance, as opposed to provisions in the charter related to the planning board's authority.
    - Angelique – Want to make sure I understand our scope of possible recommendations correctly. Do they run from leaving the charter as it is all the way to some very substantial delegation of powers to board (quasi-judicial)? If we recommend anything beyond that, for example, going to an independent board, when we should describe what would be needed to get there (vote to amend charter)?
        - Answer from Heather – Yes with caveat that Charter language isn't that prescriptive and is really just an outline. The charter doesn't say exactly what the advisory board will do or requirements to be on the board.
        - We'll need to fill things in, tell council what we think they should do. And look at membership requirements and make recommendations on that aspect as well.

    - We're looking for an opening day entity that will have enough power when the utility opens and subsequently moving into something more substantive?
        - Yes, that is a good assessment

- 6:20 p.m. – Page 9 – Purpose/Scope – Group Adoption
    - What will this group's output be?
        - A report with those principles. Working Group won't write it, but the group's thoughts will be articulated in a report to council.
        - Agreement on those principles.
    - Conclusion. This purpose seems fair to all and will be posted on website.

- 6:25 p.m. – Issues this group would like to tackle - Discussion
    - Service area issues

        - Heather B – Look at Energy Future goals and objectives. Page 5 and 6 of the packet. Provides examples of key things an advisory body needs to consider. Use those to determine what representation you'd want to cover those things. Low income housing? Business community? Etc.?
- The Group had a discussion about ideas related to the composition of the Board.

    - Steve P – Talking about this board being representative customers. WRAB is filled with experts. That is more valuable to city council because they want quality advice. Pick representatives or pick people that actually know something? Just representation doesn't do City Council much good. Council members tend to have a community representation perspective.
    - David Cohen – Pick advisors that know how to run the business. Could customers have their own committee and have experts on an advisory board? It may be appropriate to consider more than one board to address the issues.
    - Alison Burchell – Have looked at governance boards in other communities. Take a look at these.
        - Colorado Springs – good board – they have ways to fix mistakes quickly
        - Portland, OR citizen utility board is great for democracy standpoint
        - Marin County, CA
        - Denton, TX
        - Los Angeles and San Diego, CA
        - Have an expert board and also use community representation
- We should look at board composition.
- Consider creating opportunities for Involvement of residents within unincorporated areas in the service area. Don't "expertise" them out. There are three of us on this working group. Maybe the three of us can work together outside of the overall group. Will share emails after meeting.
- What power should be delegated to advisory board?
        - The more you delegate the more expertise you will need.
- Use Basecamp as a bulletin board of what you'd like to discuss/tackle and then discuss and bring back 2 to 4 or 5 items that we really want to use
- Issues upon which the working group could provide feedback to the council.
    - COMPOSITION of the Board and DELEGATION responsibilities to the Board are two issues to address
    - Transitions. Possibly talk about a transition of the board. An evolution from what happens on day 1, and how the board's powers and scope may evolve as the utility itself grows and needs change.
        - Customer representation should last forever, but will need to look at how many.
        - Can we talk about creating two different entities?
            - David G – You can do this. We have Charter section 130 that allows us to do this. Subject only to the limitations of 130
            - According to the charter criteria, a majority of the 9 member electric utilities board must be registered elector. They may be electors, but we

can apply additional requirements. An advisory board can be made up of people appointed by council, but there may be another industrial advisory board. A church board. A small-business board. That is what we need to talk about. There are many ways. Independent review panels. Special project boards.

  - You'll have special interests that come out of this representation, but you have community interest in running the utility as much as possible. The special interests can become sub-servient to the broader community. How do you balance the two entities? Special interests can get lost in the larger community voice, or vise versa, depending on situation. This can deteriorate a situation.
  - Guiding principles should be abided by. If they are followed, you will get to the common realm on many decisions. These are parameters on the board and the community.
- EXAMPLE PROVIDED – Unincorporated citizen- what is the tax rate for me? Don't need an answer. But this is something to think about. How will issues affect different classes of customers.
- Look at the role and duties of the board and then what they will do. What qualifications are needed. Start there and work your way down. What is it that the board needs to do and what are the qualifications to do that.
- Charter constraints on what the utility can do. Can't treat people arbitrarily. The utility will end up in court. Inside vs. Outside customers – must be charged the same rates or end up that PUC.
- What do you want the Board to do? Water utility's biggest decision was buying Barker reservoir. Decisions like that are infrequent. That involved a lot of community discussion. A big decision will end up being discussed and decided by the community. Council will defer to them.
- Composition issue – Look at the rate classes we will have. Commercial, Industrial, Residential. City and County currently don't pay different rates, so they are essentially equal by Charter. Need to look at who you'll be leaving out instead of who is in. How do you incorporate all interests. Customer classes will be good start.
- There is a potential negative if we keep too many people out of the equation. Look at trade-offs. Are there issues you have thought about?
- Maybe the city could list the kinds of decisions the utility will have to make so the group knows what a board will be working on. This will help guide decisions. Determine the decisions that need to be made, then look at the people who can make Such decision and who should advice on such decision.
  - Approval of the budget – operating and capital budget
  - Issuing debt – can be done at council level, but the board will make recommendations
  - Sale of any system assets – impacts debt and bond covenants
  - Use of eminent domain.

        - Rates – impacts everyone
        - Construction and major capital improvements
        - Quality of service
        - Resource decisions
    - Rates are huge. Community residents can affect large users and industries.
        - If the large users don't like it, they may leave or choose to start making their own power.
    - The City currently serves water and waste water service to many out of city customers and the water board is only made up of registered electors.
        - The water board members currently all have an industry expertise. There have been times when members had no industry expertise and it has ben rare to have business interests directly represented.
    - Will we discuss boundaries and service area?
        - No – the service are boundaries have been established and annexation of service area is not required.
    - Board and the staff. Can the board direct staff or is staff responsible to the city manager? We should talk about this.
        - City manager hires and staff are responsible to them. But when we get down to budget and policy, it affects city staff and those are discussed by the board.
        - Can the board request staff do something? Research specific items?
        - Water board makes recommendation, and city council then asks city manager who asks staff to research and determine items.
- 6:56 p.m. – Meeting adjourned.
    - Next meeting on Tuesday, June 4.

Governance Working Group Minutes
June 4, 2013

Attendance: Steve Pomerance, Mike Parenteau, Coby Royer, Manohar Croke, Susan Riederer, Karl Gerken, Steve Wallace, Virginia Holtzman-Bell, Ken Leiden, Louise Vale, Angelique Espinoza, Barney Moran, David Cohen, Michelle Krezek (on phone)

City Staff: Carl Castillo, Heather Bailey, David Gehr, Bob Harberg, Sarah Huntley

Agenda

Information Sharing on Basecamp

C. Castillo kicked off the meeting with a welcome, introductions around the table and checked in with the group to make sure everyone is managing to navigate Basecamp. The group members indicated they have been able to access and utilize this forum.

Types of Decisions an Electric Utility Might Face

Referring to a “straw dog” proposal made on Basecamp by A.Espinoza, D. Gehr explained the types of decisions that a utility board might make from a legal perspective. He said board actions generally fall into three categories: administrative, legislative and quasi-judicial. Gehr said that while some boards act in a quasi-judicial nature, he is not anticipating that this board will be playing more of a legislative or policy-advising role.

B. Harberg outlined how the Water Resources Advisory Board works as an example of how one of the existing boards works. He said the board offers input on policy, largely around water quality issues and requirements. The board also looks at the budget and capital needs and makes ratemaking recommendation. In addition, the board weighs in on the setting of priorities and goals as part of the Master Planning process. Harberg cited recent policy discussions that have occurred at the board level, including fluoridation and Barker Reservoir public discussions.

V. Holtzman-Bell asked if public weighs in at advisory board level instead of council or if it can be discussed at both venues. She indicated she was trying to understand the value-add of the board. Bob said the public discussion at the advisory board level sometimes addresses key issues brought to staff’s attention by members of the public. The goal is to try to resolve most of the issues at that level. But there is nothing to preclude the public from going to council and council from choosing to discuss issues that are of particular public interest or controversy.

S. Wallace asked to what extent budget recommendations are prepared by staff. Bob indicated that staff usually takes the first stab, but the board plays a role of evaluating whether the proposed budget makes sense based on goals and Master Plan. H. Bailey added that there may be some requirements set by the city’s financing procedures and the bonding agency’s

requirements. Wallace said he would want to make sure the information is well vetted before it comes to the board. There was a brief discussion on insurance. Bailey indicated the board would be expected to provide feedback but would have guidance from the bonding agency on the issue related to insurance.

Harberg discussed the example of the water resources board raising and considering the issue of equity of water use and water budgets.

C. Royer asked how the board will be asked to balance competitive rates with the desire to decarbonize the energy supply. Bailey responded that the guiding principles spell out a variety of factors in hopes of helping to strike this balance. Some of this may require expertise, but often, it requires good judgment.

Castillo brought up the example of the Denver Water Board, which is a wholly separate entity that makes all of the decisions. Typically, this board looks at the bottom line as opposed to having to make qualitative decisions based on the goals of the community. The idea is that a community-based board that is making recommendations to council, which is also accountable to the public, may be more responsive to the variety of goals Boulder has set.

S. Pomerance said the most valuable boards show they have thought the issues through from all perspectives and values as opposed to any individual value.

A. Espinoza said the Planning Board often has to evaluate cash value versus some kind of human value. There is some documentation and text that the board adheres to, so when council calls up an issue, council has limited scope. While accountability is important, she wondered if there is some aspect of objectivity or consistency in terms of operating guidelines and rules. Some of these have been included in the Charter – others might be necessary.

Gehr pointed out that this is especially important for boards that are in a quasi-judicial role and conferring a special right on an individual.

Wallace asked the former council members whether council can choose qualified people or do there need to be specific seats that require qualifications.

- Pomerance said this is not a problem as long as qualified people apply.
- Espinoza said she would like to define some number of seats that have specific requirements, to take it out of the political arena. Writing qualifications in ensures you get people with qualifications.
- Pomerance pointed out, however, that the cycling of board members can make this challenging.

D. Cohen said he feels like the board needs to be more knowledgeable than the people running the utility so they add value.

Harberg said boards can offer different perspectives, help staff think through issues and make sure they understand and take into account community viewpoints.

Guiding Principles and Role of the Board

Bailey walked the group through the goals and anticipated roles of the board as spelled out in the purpose, framework, goals and objectives document, which set the stage for the Charter guidelines. This document gives some concrete examples about the types of issues the board could expect to address. Bailey suggested it could frame the discussion about the kinds of people you would want to serve to meet these responsibilities and address these goals in a way that represents the community.

Decision on Issues to Tackle

- **Review spreadsheet of suggested topic areas (attached to minutes)**

  The working group discussed the list of issues itself, and several asked questions.

  B. Moran said he wants to make sure the group builds “a two-way” street so that county residents understand that they have a say in their utility.

  Espinoza asked about some language that suggested there would only be geographic seats for early stages. Castillo explained that the idea is that over time, as the utility matured, these seats could be phased out or sunset if the community felt like that was a good idea.

  Espinoza asked about how delegate some decisions from council to utility advisory board could impact city’s ability to secure a good bond rating. Gehr explained that there is a strong history of City Council setting rates to meet bond requirements. City utilities have a AAA rating. This history has been a selling point in the past with bonding agencies. Espinoza said that in some instances, bonding agencies trust board members more because they don’t face the same political pressures. Staff said that can be true, but in Boulder, that has not been the case.

  Bailey said she believes council should retain the ultimate decision about rates and issuing bonds. The advisory board can play a role in these areas, however.

  Castillo made it clear that there is a board described in the Charter. The working group has the opportunity to decide which issues it most wants to tackle and refine or suggest changes to what voters have already approved.

  Royer indicated he is struggling with deciding the types of people who might need to be on the board to be effective.

  Riederer asked if WRAB has ever had someone with no experience in water. Harberg said typically the members have interest and skills. They self select and apply because they have confidence they have abilities to bring to the table.

  K. Gerken said he wants the board to be grounded and not too political.

D. Cohen, who is in the electric industry, said when he looks at the goals he sees them as areas that require specialized knowledge. He said he would support having a customer-base representation side panel and then have a separate advisory board that is running the business.

Bailey questioned whether any advisory board should be making operational decisions. That will be the responsibility of the utility's management. Boards that deal with issues "down in the weeds" never have an opportunity to get to the broader policy issues.

D. Cohen said he feels like he needs more information about what the advisory board will do. He said he agrees with the six operational goals and is open to a mix of ideas about how to achieve them, but it would be advisable to have at least one expert per goal.

Wallace said you need people who have specialized knowledge but also people who have different perspectives that could be valuable.

M. Croke said some of the goals would likely be supported best by individuals who have different proficiencies, not just engineering and legal. For example, promoting energy literacy may require communications backgrounds.

Pomerance said he would have no problem with an ordinance that defines participation by constituency, but he wants brainpower to provide useful input to the elected officials who are making decisions. He wants to be able to trust the perspective and expertise even if he disagrees with the individual.

Holtzman-Bell asked whether the robust knowledge needs to come from the energy sector. Pomerance said no, it would not.

K. Gerken reminded the group about what the Charter says related to what the advisory board would do. He said some more specific recommendations about what council should delegate to the board would be helpful.

The board agreed that it clearly needs to discuss composition of the Utility Advisory Board.

Holtzman-Bell said it might be good to start out by considering only what the Charter says the board should do and see what areas of discomfort, if any, arise.

Bailey pointed out that the description in the Charter does not address rates. Harberg said council typically delegates master planning and making recommendations about rates to the existing utility boards.

Gehr said there is a separate section of the Charter that addresses rate-making. Responsibilities of the board include offering advice on the "elements of the Charter," so he believes that offering advice on rates would be appropriate. Gehr estimated that 85 percent of the time, council accepts the recommendations of its advisory boards.

Wrap-up and next steps:

Gehr agreed to provide some more information about the major responsibilities he would see the advisory board would assume based on the Charter.

Bailey asked the working group to confirm that nothing is missing from the board's responsibilities as outlined by the Charter.

The group agreed to discuss this on Basecamp, with the discussion occurring in a timely way.

Pomerance said after all the responsibilities are outlined, then it would be important to determine who (broadly) should handle them – the board or council.

Once that has been worked out, there needs to be a discussion about the types of individuals on the board.

Espinoza said it would then be appropriate to address how they are selected.

The group seemed to concur.

Governance Working Group Meeting #3 – June 12, 2013

Attendance:

Nolan Rosall
Steve Pomerance
Manohar Croke
Virginia Holtzman-Bell
Louise Vale
Susan Riederer
Angelique Espinoza
Michelle Krezek
Ken Leiden
Barney Moran
Coby Royer

City Staff:

Carl Castillo
Bob Harberg
Andrew Barth
David Gehr

Carl Castillo opened with the agenda.

AGENDA ITEM I - Carl – Started with a review of the comments made by workgroup members on Basecamp. Recounted that Virginia made a comment about whether the utility advisory board had a charter-defined role in advising on rates.

David clarified that the The board would have a role in advising council on rates.

Carl – Comment on Boulder County (BC) residents by Manorah on council's selection process for advisory board.

Menorah – Just need to clarify.

Carl – Let's add that to agenda item 4.

David – Charter says City Council appoints members after an application period. The group can make recommendations to Council on this issue.

Nolan – Let the Gunbarrel community decide who their representative should be. Allow different constituencies to do this too.

Carl – Manohar's question on recommendations about delegation of power from council to the advisory board can also be addressed in agenda item #4.

Steve – When we talk about “rates” we need to realize there are three parts to rates. Revenue requirement is basically the cost. There are some long term decisions on resource used. But not much you can do about revenue requirements. That is clear. Rate structure is the issue. Once you make structure, it’s over with and the rest is someone doing the math. Just wanted to make sure people know.

Virginia – It is about the rate structure and parameters.

Louise – Variable costs and how do you develop those.

Steve- Big issue in rate setting is people with solar. There is no net consumption with many. All of that is up for grabs because rate structure methods are old. Time of use is also an issue.

Louise – Functions of the board. Budget and appropriation. Rate setting is in a different section – Council section. There’s a disconnect because rate structure and rate setting are tied together.

Carl – So to clarify, the group is recommending that the city establish a clear role for the advisory board to advise both on the rate structure and parameters.

Susan – Transparency and fairness in how decisions are made is also an issue. We have a lot of mistrust from some folks about honesty in rates. During recent meeting in Gunbarrel the Mayor assured people that rates would be the same across the board. But Gunbarrel water rates are more expensive. Gunbarrel had to sue the city to get rates more comparable with in-city limits.

Nolan – There was obviously a misunderstanding on those issues.

Susan – Some in the county are worried about annexation too. And that the rates of a city utility could be higher than Xcel.

Nolan – Recounted Basecamp posting regarding composition of the board inresponse to Mike P.’s comments on geographic distribution. Supports ensuring representation within and outside of the city. Also representation by certain classes – commercial/industrial should be represented and I support that. Comm/Ind pay 70% or more and they should have guaranteed representation. Also should find way to have areas of expertise like financial representation on the board. Should get expertise included by doubling up on different categories. Commercial/Industrial member who has financial background.

AGENDA ITEM II – Question was asked whether, other than rates, there were any other major decisions that have not specifically been assigned to the council and/or board. Is anything missing?

Steve – Not worried about it. Council will say to the board to look at everything and tell us what you think. They don’t have the time to do that. To make the tough decisions.

Virginia – But trust factor is an issue.

Bob H – Role of issues will be very much influenced by the approved guiding principles. Those are the important aspects of creating a new utility. This board will advise on all of those goals and objectives

and a lot speak to rate payer equity. There are others too that are important. Do we want to call out other goals and objectives as being under the boards review?

AGENDA ITEM III - COMPOSITION DISCUSSION USING SPREADSHEET

Carl – Using the spreadsheet, Carl began walking workgroup through each specific idea for regulating board composition. Encouraged a a discussion on each regarding how they could work and their pros and cons. Indicated that after conversation that group would have opportunity to conduct dot voting on the options. Two favorite and then we'll discuss those that get top votes. Try for consensus.

Carl – Spreadsheet explanation

1. Unincorporated area resident that also owns a business. One or two seats . Con is that it narrows the pool. Hard to find a board of nine when we have a small pool to choose from. This approach could be done by ordinance if one or more business owners are also residents of unincorporated area. Alternatively, it could be done through a charter amendment if the language regarding registered electorate of the city was changed to registered electorate of the service area. One question is whether thehe interests of out of city residents are different than in city residents. Also an option that this approach could be phased in or phased out over time. Matter of trust issue? Perhaps ensure county seat(s) early in the utility's life to to build trust"
    a. Nolan – Annexation issue with all of commercial and industrial areas. All were annexed.
    b. Virginia – What is more difficult ordinance resolution or amending the charter?
        i. Carl – Charter is like constitution. Ordinances are like laws. Charter amendments require vote of people. Ordinance resolution can be done by council – majority vote.
    c. Steve – Current charter allows people that live in surrounding community to be on board. They could work in boulder but live in Arvada?
    d. Carl – Charter says four of nine. Yes they could live in Arvada so long as they work in Boulder.
    e. Steve – On the question of whether we should designate one or two seats for county residents, I believe it should be one seat.
    f. Nolan – I agree. Charter amendment would be required on two.
    g. Virginia – Should be a minimum of one.
    h. Ken – A little concerned about the idea of business owner who also lives in county. Would that person really represent the community if he has a huge electric bill with his business? Would it be about his business or the community? Might not be the type of representative county people want.
    i. Carl – Perhaps, but it could be. Council is allowed to l choose a person who is an employee and not an owner of a business. Charter says they can be on the board and not live in the city if they are an employee or an owner. Conceivably these seats would be filled only by employees and not business owners, and thus their interest could be closer aligned with the average interest of a resident.

j. Steve – Having an employee doesn't guarantee anything either. It's about their interest and ability to represent. This would give the member direction on their expectations. This will be a function of who shows up.
k. Angelique – If we created a designated seat for a county resident and there isn't an applicant for thatspecific seat, what are council's options? How do they move forward
    i. Carl – Council would need to do an outreach effort and find someone.
    ii. Steve – If you don't find someone the first time, people will apply the second time. It's about knowing the competition and who's there
l. Virginia – What about retirees? Could they have worked in Boulder?
    i. Carl – Not according to the way the charter is currently written.
m. Angelique – Not comfortable being required to share the three business seats with the county residents. When the current charter language was written, we didn't know the service area count extend into the county. Had we known that, things would have been written differently. Working within the current charter language is not a perfect fit. Has potential to compete with business
n. Manohar – Goals and objectives. Suggests possibility of citizen advisory board that would advise the board. Thinking about elderly, low income, etc. Citizens board that brought issues to representatives on the main board. How does board get fed information about specific demographics.
o. Virginia – You hold public hearings during the board meetings.
p. Angelique – There is currently plans for a ballot issue to address a bonding matter. It is seen as a technical change that voters will look at. Amending the charter to clarify that county residents in the service territory qualify regardless of business affiliation is on par with that kind of charter amendment. Over multiple years we will need to make several charter adjustments. As the utility evolves, the board will need to evolve too. Might be good to take it to the ballot

2. Carl – Acknowledge that he combined option one and two into one discussion.
    a. Barney – Very important that non county representatives are here too. Thank you for listening to our side.
    b. Nolan – Would Palo Park feel represented by Gunbarrel representative?
    c. Barney – Yes. We currently don't have any representatation on the Xcel board. Some may oppose the creation of a city utility, but if one is created, then county residents that are served want to see it succeed.
    d. Susan – Last week's Gunbarrel meeting was contentious, but not that bad. The city representatives listened and people thanked me. There are upset people but I don't think they are the majority. They just want to be heard. Ensuring a county position on the utility's advisory board will go a long way
3. Discussion about the option to designate one or more board seats by customer class
    a. Susan – Does that include governmental entities? Who are the biggest users?
    b. Angelique – CU, Ball, IBM, Corden Pharma,
    c. Nolan – 80/20 rule – 80 percent pay 20 percent – not exact, but close.
    d. Carl – Are we really talking about two general classes? Non residential and residential?

e. Steve – Actual numbers are not what people think they are. I think that's by Xcel's doing. Units vs. Meters. Its big chunks vs single families. Just a point. Rate structure may not be the same as it has been. Class distinctions may not persist. Think about this as type of user – Large, small, medium – Classes may change.
f. David G. – Xcel's PUC practices. Various rate classes. They shouldn't prejudice one class against another.
g. Nolan – We should know what those categories are, but we don't at this time.
h. Steve – Large res, small res – large bus, small bus.
i. Carl – Charter requires at least three be business owners or employees. Theoretically, all three seats could be filled by employees or owners of very small businesses.
j. Louise – It says three members, but there are six other members. Clarify?
k. Steve – Do not turn this into a primary process. It will be a non-functional board.
l. Angelique – Language is attempting to find that balance.
m. Manohar – This is a good faith item. IBM has arrangements through Xcel so they'll be wary.

4. Discussion about the idea of designate one or more board seats by a special interest category such an environmental advocate or low income resident advocate.
    a. Virginia –Doesn't the charter say that the board can hold open meetings where people can come talk about their special interests?
    b. David – Yes.
    c. Virginia – Perhaps we ensure that people can be heard that aren't board members.
    d. David G. – Special interests go to boards and council to press their interests. That's part of the political process. That's normal.
    e. Ken – The reason I'm here and why I voted for allowing the city to explore to municipalization is that Xcel isn't trying to reduce carbon footprint. The average Boulder citizen thinks this is about green energy. It would be disservice to not ensure that we have one seat for an advocate for the environment. That's what people voted for.
    f. Nolan - I think in reality, Council is committed to that and they'll make the decisions. The board members will have people that support it. We can't isolate this special interest because it allows so many other entities that are now vying for the seat. Slippery slope.
    g. Virginia – We have six goals and we can't single out one goal over the others. Everyone should work towards the goals at all times.
    h. Ken – If you took out the carbon issue, I don't think these ballot measures would have passed in 2011.
    i. Michelle – How do you ensure that someone actually has a specific interest. Hard to clarify what you advocate for.
    j. Steve – What is important is that people trust this gets off the ground and doesn't damage what they already do. Once it gets going, then things will drop away to a certain extent.

k. Carl – So what I hear you saying, Steve, is that this effort was led by environmentalist and that their voices are already heard but that now we need to make sure the other voices are being heard.
l. Steve – The community will regulate things if Council starts making decisions against the goals of the community.
m. Angelique – I agree with Steve completely. Is there a mechanism to get input from existing boards who listen to special interests like Human Relations Commission and EAB?
n. Carl – A recommendation could be to create a requirement that ensures for for comment from EAB, Human Relations, and other boards that represent special interests.
o. Barney - Change word "advocate" to "communications" – Communications is a huge part of what this board will need to do

5. Discussion about designating one or more board seats by expertise
    a. Carl – Idea put forth by David Cohen. They'll need smart, skilled people – engineers, law, finance, etc.
    b. Steve – Rather than require it, we could say council should make a best effort to include following skills on board. Engineering, finance, legal, energy efficiency, etc
    c. David – This isn't in the charter except for probity and good civic spiritAngelique – Important that people don't have an agenda. Proper diversity and level of expertise.Carl – We'll discuss the wording in a discussion on Basecamp regarding the working group's recommendation with regards to expertise and skills, values include…=David – Observation – I've watched many council appointments. When a board is not working right, council corrects it. When something is narrowed, you're constraining council's ability to correct. When it comes to expertise (quote from Charter) – I like that same spirit. Lay out what Charter language means as far as skill sets goAngelique – There has been community discussion about people who have a great deal of knowledge vs. people who are representing the greater community. I want to give council a clear sense about technical expertise – that it is really important. It should be most of the board. Louise – I agree that we should spell it out. Carl – We will discuss this again. Wording is important. Steve – Mostly in terms of startup. That's when expertise will be critical. Initially, experts are necessary. We are here to advise council. We shouldn't tell them what to do. We should advise them on why.

Second Review of all the options.

Carl – Agreement that a combo of #1 and #2 will move forward. Seemed like support for number three too.

Virginia - #3 – I don't like to set parameters. Shouldn't be permanent. Don't bind council's hands. Don't lock this in.

Carl - #4 – Special interest group.

Ken – I think it would be a good faith gesture to have one designated person there to reduce city's carbon footprint. Could be a person from Sierra club, or along those lines. I don't think the other items address that.

Carl – Vote - #4 vote – Five people agreed that #4 should be talked about.

Barney – I would vote for this if we could include the verbiage for carbon footprint. Worded where it was the viability of the hardship.

Ken – This is one person on the board. You have an amoeba working around.

Angelique – I wouldn't oppose it.

Nolan – I oppose it. I think it will be represented on the board. That is an essential function of the board – being green.

Ken – Three seats for businesses, you have conflict in cost factors. You could lose the goal of the board if costs are going up and businesses are on the board.

Steve – The idea of someone on the board that is a climate expert, carbon expert, etc. We have people in this town that know a lot more than most. This expertise area doesn't show up. Having that voice is important.

Are we talking about enviornmental skills or advocacy?

Barney – I think we are talking about an environmental impact advocate.

David – No arguments from me. Not an issue of law. It's policy.

Carl – We'll summarize the recommendations and send them out to Basecamp.

Carl – We could talk about delegating tonight with our remaining time.

Angelique – I'd like to talk about that next time.

Virginia – We should have a separate "discussion" on Basecamp about each of the the composition recommendations. Raise one issue and then discuss it. Four discussions.

ADJOURNED>

Governance Working Group Meeting #4 – June 26, 2013

Attendance:

Ken Leiden
Steve Pomerance
Nolan Rosall
Manohar Croke
Virginia Holtzman-Bell
Louise Vale
Karl Gerken
Angelique Espinoza

Staff:
Carl Castillo
Heather Bailey
Andrew Barth
Bob Harberg

Meeting Notes:

Agenda

1. Review of workgroup recommendations from meeting #3 and city staff summarization of working group conclusions
2. Consideration of new recommendations on other topics
3. Next Steps

Carl Castillo – Introduction and Agenda Item #1

- Look at the memo that was handed out – attempt to get agreement on topic
- City has reviewed and revised recommendations.
    - Example – Having positions to represent interest of county residents or class of customers
        - City recommends alternative words that are in-line with Charter
        - Page 2 section 2 – change is ok
- Charter language explanation/interpretation
    - Charter amendment – Not just customers of the city, but customers of the utility
    - Charter amendment can be delayed until we know service area
    - Nolan – County resident chosen shows primary objective of representing that demographic – county residents.
    - Carl – Issue of what hat are they wearing? Want to make sure people have the big picture of representing the utility in mind. Not narrow perspective.
    - Steve – Charter says what people need to pay attention to.

- Karl – Focusing on who is in the geographical area, no discrimination there. Not saying you have to have "x" number here or there. Representing the customers. You may get people who are interested, but you have limited number available.
- Heather – Timing issue. If we do a charter amendment, it can be done next fall – David G- That is correct.
- Heather – We'll know more a year from now and will be better able to craft language in the charter. Do an ordinance in the short-term. Charter amendment down the road.
- Carl – All agree ordinance can be done immediately. Amendment can be done next year?
- Virginia – Charter amendment language in memo. Add a clause about service area.
- Angelique – Two conflicts
  - Waiting until more info available make sense.
  - But you could argue about "striking while the iron is hot." New council may not have same priorities as current.
  - Do an ordinance, but suggest that when service area is known that a charter amendment should go forward. Charter change should be done when service area is done. Change "could" to "should" in memo.
  - Communicating the clarity of intention
- Virginia – First option is most flexible. Group recommends council add "x" number X then.
- Steve – The language in #2 appears to say that there would then be no requirement that someone on the board be a city-resident.
- Karl – All would have the same opportunity though.
- Steve – It's a Boulder utility, so a majority should be city residents. Easier to address the business/non-resident issue.
- Carl – Proposed charter change is to ensure that board members either be utility customers and/or a business/government owners or employees, but the provision that at least a majority be city residents would remain.
- Manohar – Line 25. This goal could be reached in two steps.
- Heather – Charter to be general and ordinance to be specific
- Angeliuque – What if utility becomes successful and other county residents want to opt in?
  - Heather – Can't be done under current Colorado law without annexation
- Steve – Language in preface is key.

- Customer Classification section
  - Concerns?
    - Manohar – How do you define size based on percentage? Don't understand.
    - Angelique – Don't see having institutional (big guy) as separate?
    - Bob – Line 28 – parenthetical include residential, commercial, large industrial
    - Karl – Differences between commercial and large industrial or small and large industrial.
    - Angelique – Large industrial for-profit and large-industrial governmental entity

- Heather – Have three seats for business community. That community can shift over time. You don't want to limit what business community could evolve into and limit their representation.
- Angelique – Thought we talked about not assigning low income, but we wanted minimally, large industrial, large institutional, small industrial
- Karl – Energy is a huge expense for large industrial. Commercial sector doesn't do the same things to reduce use and conserve as a large industrial. Utility will approach those customers differently.
- Carl – Doesn't matter where you fall, if you use large amounts of energy, you'll have similar interests.
- Nolan – Difference between owning your building and leasing too. You may be a large user in a complex with other energy users.
- Steve – different types of customer classes have different interests. There may be two smalls that think about energy differently. We want these skills and represent a range of interests.
- Heather – 3 seats dedicated to business, council should consider these things…
- Angelique – Concerns – Council's guidelines, the way it's written, we can advise, but they could make their own decision on who should be appointed. Could all be clean-tech industry people. How to build in insurance that large users will have guaranteed representation. Large commercial/industrial and large institutional have different interests. There needs to be more than a strong suggestion that those two need to be represented.
- Carl – Should have a big and small that should sunset at some point, is what I heard. Other issue is whether we should separate commercial-private and commercial-government/institution.
- Virginia – I think we've agreed to have big and small businesses on the list. They may have different interests.
- Carl – Angelique's comments will be carried forward as a minority opinion.
- Angelique – I've been talking to this sector and I think my/our concerns are significant.
- Carl – We will highlight the importance of the differences, at a minimum
- Heather – From an energy perspective, I don't see that as being a big difference. Large users have same concerns in both industrial-private and industrial-institutional.
- Angelique – from a rates perspective it's different. Commercial users are representing their company and their company values. Costs affect industrial-profit differently. Institutions are here and aren't leaving due to costs. They have a certain amount of sovereignty and relationship with government is different.
- Heather – The utility should be designing programs for different groups, so it's on them to do the research. Reality is rate setting – board will be advisory in

nature and there will be many other voices who come to talk. Staff will have to know all sides.

- Nolan – Concerned that an employee or owner doesn't fulfill what we need. Employee may be an IBM employee but they aren't representing the company.
- Carl – Lines 26 – 29 on page three – not a token representative
- Virginia – Add institutional on line 28
- Steve – This isn't written in stone forever. I think having those three classes is valuable. Do you pick experts or interests. No one has figured this out. At this point it's interests, so we start that way. It can evolve.
- Angelique – It's about establishing and setting a sunset or at least reassessing later. Get it off the ground. It's uphill for those who aren't on board.

- Skills
  - Added skills- communication, renewable energy, utilities management
  - Carl – What is communication?
  - Virginia – It came from a conversation about having a liaison for other community groups in lieu of representation on the board of their interest. The example was low-income housing.
  - Carl - We don't want to restrict the board by having to wait for someone to talk to all the groups that have an interest.
  - Carl – Is it public policy? It's vague.
  - David – I don't think this is needed. Staff is always asked if they talked to potentially affected parties. It just happens. Staff is pushed into the community to make sure all have been heard.
  - Carl – The suggestion was to ensure that just that happens.
  - Angelique – Not sure if it makes the list. It did, but now it doesn't make sense.
  - Virginia – It's like when hiring someone, you don't just hire them for one thing. You want a cross section of many skills.
  - Carl – Ok, let's drop communications then.
  - Virginia – Is it law/public policy? What exactly does Law mean?
  - Heather – there's all types of law out there. Want a legal background because they'll know what will need to be further addressed by utilities lawyers and other counsel.
  - Heather – Staff is responsible for technical and supporting info that allows the board to make a decision. May have a board member with specific interest, but that can be managed within the board. If utility is formed, the board is formed, you want to put together guiding procedures on staff interaction and what staff should present to the board.
  - Nolan- Do we want to mention that in the document or let it evolve into that?
  - Steve –Nothing in the charter about what staff's role will be.
  - David – Board is an advisor and staff supports that. Nothing too specific, even with other existing boards.
  - Steve – It more or less works without massive procedural direction.

- Steve – In renewable energy skill you want energy efficiency too. Utilities and grid management instead of just utilities management.
- Virginia – Line 12 is to achieve low carbon goals. Do we want to keep adding? Expertise is carbon-reduction or expert on low-carbon emissions. For the purpose of reducing GHG such as…
- Heather – Skill set in GHG reduction technology, such as…
- Karl – Is energy sourcing going to be an issue in 50 years? Who knows. We don't want to specify because energy sector will evolve.
- Heather – Skill set should be in energy sourcing – DSM, energy emissions, etc. For today, can change in the future. I think it should be Knowledge of Utilities Operations not Utilities Management. It should be broad in order to include all things that it could be or is right now.
- Angelique – I had energy industry? It's a little different. Could designate.
- Carl – We're trying to address the environmental advocacy role.
- Angelique – I would add strategic planning or business management. We want to pull apart the "utilities"
- Heather – Use Energy Strategy to pick up all other things, and have finance and economics instead of just finance. That allows for flexibility. Utilities Operations and not Utilities Management.
- Karl – Think about what will happen 50 years from now.
- Heather – Have two categories.
- Angelique – energy strategy is great, but they aren't strategic
- Virginia- Change Law to Legal

- Environmental Advocate
  - It's a recommendation that didn't receive consensus.
  - Ken – Consider going back to skill set, however make it a requirement to have one person on board that has the skill set that Steve P. laid out on Basecamp. Any one of the nine members can represent the skill set.
  - Carl – So the suggestion is to drop advocacy and keep new skill of energy strategy, but to make sure it's one of the board seats – in other words, the Board "shall" have this skill?
  - Nolan – That is getting closer to something I'm comfortable with.
  - Virginia – It's essential that we have that, even though we're just starting to get this rolling.
  - Karl – I don't think this discussion should get lost. Describe both sides to council in our memo.
  - Ken – Look at Steve's last comment on Basecamp –
  - Carl – Regarding the memo to council, should we add it to skills, but reference it outside of that section? Should we have a paragraph to address this?
  - Steve – I'd leave the whole section for council to review. It could help trigger their thinking on this issue.

  - Heather – Still bring it up and bring it into the skill set.
  - Steve – This hasn't been resolved. It's important to have that skill set on the board.
  - Carl – Keep it as a separate section and reference it in the skills section.
  - Ken – The main change is that the knowledge implies the advocacy. The underlying intent of what the person brings.
  - Steve – I know people who aren't advocates but are skilled in this area.
  - Virginia – Line 37 page 4 – Recommends ordinance on individual on board for environmental impact advocate. The recommendation has changed because we think skills can meet it.
  - Carl – Change it to be a "MUST" requirement rather than a "CONSIDERE" guideline
  - Steve – List of skills is great, but rewrite the section to say we've had this discussion .
  - Carl – Skill would potentially meet that need.
- Heather – We could have more meetings if the group thinks they're important.
- Heather – Tomorrow is a presentation to other working groups on updates and qualitative analysis. All are invited.
- Heather – Steve Catanac from Ft. Collins has offered to come talk to this group about governance and Ft. Collins' experience. And a conference call with Austin Energy
- HOW TO PROCEED
  - Carl – Would you be willing to discuss these at a future date? We've addressed the critical questions that are time sensitive. Others on agenda are next steps. There are deadline issues.
  - Angelique – These are important issues and this group is uniquely positioned to work on them. Maybe after July? Two or three more meetings.
  - Karl – Delegation of power is very important to governance structure. They are related.
  - Steve – That is a big issue. Delegation of power – we haven't actually done this. We don't have this in any other board, except OSMP – (David – Parks and Planning Board too)
  - David – Issues that are "near and dear" to the hearts.
  - Steve – This discussion could go a lot further. Get some feedback from council first, before we go too far down the hole.
  - Virginia – Ask council what they want us to look at. They need to define "the box."
  - Bob - We can ask that question at the July study session.
  - Carl – There is a timing issue.
  - Angelique – Council has discussed the issue. When chamber suggested independent board suggested by City Manager. Not completely cold. I think council is expecting a recommendation from this group.
  - Karl – Council is elected by city voters – who will delegate powers – could be an issue for county customers.
  - Carl – If working group is interested in being called back to service to continue this discussion, let me know
  - All - YES – Call us back

- Heather – Aug. 7 you might get an email.
- Carl – Memo will be revised and sent around for review.
- David – Get something up early next week and get your review, the report could be included in study session material.
- Carl – July 23 – Study Session. Please come.

COMMUNICATION PLAN
Boulder's Energy Future and Municipalization Exploration Study
Phase 2 – April 17, 2013, through August 2013

Situation Overview:

In November 2011, City of Boulder voters narrowly approved two measures that supported exploring the possibility of purchasing Xcel Energy's distribution system and forming a city-owned and operated electric utility. Since the election, significant staff, consultant and volunteer time has been put into this initiative. The main objective of the work has been to determine how the Boulder community could meet its climate change and emission reduction targets while giving Boulder electricity customers reliable and competitively priced energy as well as a voice in decision-making. Over the past several months, staff has started to characterize this vision, both internally and publicly, as "The Electric Utility of the Future."

In 2013, city staff, following Phase 1 of the work plan, modeled six options in order to evaluate the feasibility of forming a local electric utility. All but one of the options involved forming such an entity. The remaining option was to stick with the system as it is today, with Xcel Energy providing electricity to Boulder customers outside of any franchise agreement. Phase 1 of the work plan ended on April 16 when City Council instructed staff to move forward with refinement of the options and associated legal and financial processes needed to make a condemnation decision in August 2013.

Phase 2 of the work plan is beginning now and will involve further refinement of the analysis and associated legal work. Key tasks in this phase will include:

- Due diligence and appropriate legal steps resulting from the April 16 City Council motion
- Additional modeling on local generation and other possible options that arise
- Community and stakeholder engagement, outreach and education around the utility's potential governance structure
- A third-party, independent evaluation of the city's modeling to determine if staff has demonstrated Charter requirements could be met
- Continued work with Xcel and working group community members on potential partnership options
- Consideration of a potential amendment to the City Charter to allow bonding by negotiated sales
- Response to attempts by interest and community groups to seek public support for proposed Charter amendments that could either limit or end the city's ability to create a local electric utility

Phase 2 work will be intense and fast-moving; this period is expected to last four to five months. The city has a responsibility to keep the community informed and engaged about work taking place in this phase and the remaining two phases that will occur should formation of a municipal electric utility move forward. In addition, the city must provide meaningful opportunities for the community and stakeholders to participate in the process. The city is committed to making this process as open, accessible and engaging as possible, while using resources effectively and efficiently.

Objectives:

- Provide information about past, current and future work so that potential customers of a city utility understand the issues, the opportunities and the challenges of meeting the community's energy goals; demonstrate and reinforce that the city is conducting appropriate and reliable analyses that are informed by public input and priorities.
- Educate the community about the relationship between changing the energy supply and other climate action initiatives to expand their understanding about the importance of this decision. Help frame the discussion about what a successful outcome would look like.
- Offer potential customers meaningful opportunities to share their input at times that would be most influential; promote and provide avenues for feedback, check-ins and alternative ideas; draw on the expertise and innovation in the Boulder and surrounding 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.
- Support the larger staff team itself by providing collaboration, communications, analysis, messaging, counsel, memo support, council updates and related support as appropriate.

Key Themes:

- Phase 2 of the work plan is relatively short but will involve significant undertakings that are likely to result in valuable information about whether municipalization is the best way to achieve the Electric Utility of the Future.
- The city continues to recognize that the vote about municipalization was very close. While the community appears to largely agree on the city's energy objectives, it is valuable, and necessary, to continue to pursue a variety of ways for achieving them. In addition to moving forward with a full analysis of municipalization, city staff members are participating in a city-Xcel working group to discuss and evaluate possible alternatives, including a new partnership with our current provider. Recommendations made by this group will need to be modeled when details become available. The city is committed to keeping its work and processes open and accessible. Transparency is a core value in the City of Boulder, and robust participation is seen as the best way to reach an informed outcome. There may, however, be specific aspects of the municipalization work

effort that are communicated confidentially to City Council in order to protect the city's negotiating position and/or legal strategy.

- There is urgency to these issues. The global climate is changing, and we all – as individuals and a community – must act now to reduce damaging greenhouse gas emissions.
- Timing during this phase is extremely crucial to the outcomes of the municipalization study. There are several key dates between now and the end of August when important information will become available that will help determine whether a municipal electric utility is technically feasible and will provide sufficient added value to the community to proceed.
    - This qualitative analysis is expected to involve community and stakeholder input.
- The Boulder community is unlikely to meet its climate commitment goals through behavior change and demand-side energy management alone. Despite groundbreaking and successful energy efficiency programs and a community commitment that was recently reinforced with the overwhelming approval of a renewed Climate Action Plan tax, lowering emissions remains a challenge for our community. Reducing the carbon intensity of our energy supply, either through the creation of a municipal electric utility or a unique partnership with Xcel Energy, is critical to the city achieving its greenhouse gas emission reduction and associated climate change goals. It's important that we work to re-tie the municipalization effort back to the community's overall climate commitment objectives so that the community can understand why the city is undertaking this effort. While the municipal electric utility charter was narrowly passed by voters in 2011, 82 percent of Boulder voters supported the renewal of the CAP tax in 2012.There is a chance that citizens could petition to place an item on the November 2013 ballot that could derail the municipalization exploration study. It's important that we continue to educate potential customers of a Boulder electric utility about the importance of the work we are doing, so that they understand why a potential ballot measure may be detrimental to the success of the municipalization effort. Legally, City Council does not need to place an item on the November ballot to form a municipal electric utility. The voter approval for municipalization occurred when voter approved the city Charter amendments in November 2011.
- A technically optimal potential service area was developed during Phase 1 of the study. The service area includes approximately 5,800 properties outside of the current city limits that could become customers of a Boulder municipal utility. Many of the property owners in this area are unhappy with this situation because they did not get to vote on the Charter amendments in 2011, and feel they have had no say in the project. It's important that these people are engaged, informed and educated as to why the city drew the boundaries this way and what benefits they would enjoy as customers of a local electric utility. It's also important that they know that they currently have no choice as to who provides them with their current energy supply. Engaging these property owners, and maintaining clear

lines of communication with Boulder County government officials, will be important during Phase 2.

- A key task in this area will be refining the specific governance structure of a potential Boulder municipal electric utility. The city plans to form a working group that will be tasked with discussing governance options, similar to the process used successfully during the options modeling and review process. While the power to delegate authority to the governance board rests solely with City Council, which was set by the Charter, council has indicated it wants residents, business owners and stakeholders of the potential utility to have a strong voice in utility decisions.

Key Stakeholders:

- All potential customers of a municipal electric utility – residents (including students who rent housing), business owners, industrial sector, Boulder County residents in the potential service area
- City leaders, decision-makers and advisors, including Boulder City Council, Environmental Advisory Board, Planning Board, Water Resources Advisory Board, etc.
- Boulder County government (as related to serving residents and businesses in limited portions of unincorporated Boulder County)
- State government officials and the Public Utilities Commission
- Other regulatory and legal bodies
- Area youth
- Business leaders and partners (Boulder Chamber, Downtown Boulder Inc., Boulder Business Bureau, etc.)
- Businesses that stand to benefit from municipalization/local control
- Commercial property owners
- Scientific/ federal labs/ technical resources
- Advocacy groups
- Anti-municipalization groups
- Boulder Valley School District
- 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 Manager Sarah Huntley oversees this team. Andrew Barth, Communications Specialist II, is the lead on communications planning and implementation. Intern Wynne Adams has been retained for 15 hours each week to assist Andrew in his implementation efforts. Wynne's current staffing term ends May 31, 2013. We are

recommending extending her term until Sept. 1, 2013, at a total cost of $2,730, which will be paid for in its entirety from the municipalization/communications and outreach budget that is managed by Sarah Huntley. Outreach professionals and the Communications Specialist from the Local Environmental Action Division (LEAD) are also available to provide expertise and additional support for both engagement and communications efforts when needed.

Role of Consultants/Creative Professionals:

As occurred in 2011 and 2012, the city anticipates utilizing the expertise and specialized knowledge of creative communications consultants. The types and extent of the work are being explored but will likely include:

- Messaging
- Document creation
- Graphic design

In addition to consultants, in late 2012, a Communications Working Group of consultants and interested community stakeholders was convened to gain a unique outside perspective on the outreach and engagement aspects of the project. This group's work was extremely helpful in gauging community awareness and also in forming new ways for reaching out to potential utility customers. We plan on maintaining contact with individual members of this group and utilizing their expertise as appropriate.

Proposed Budget:

There is approximately $30,000 remaining in the Energy Future communication budget for use throughout the rest of 2013. The communications team will strive to complete most work in-house, but will need to outsource some materials that need to be worked on or created by specialists. Because we anticipate there will be budgetary needs in the final third of the year, outside spending during Phase 2 will not exceed $20,000 (unless additional sources of funding become available).

Desired Outcomes:

- The city obtains meaningful input with which to structure an appropriate and engaging outreach process.
- Participants with a variety of perspectives are comfortable giving their input and feel heard; the city continues to address divisions within the community in a constructive and positive way.
- The city continues to learn who, where and how best to inform, educate, and engage at key points in the process in hopes of providing the groundwork for informed decisions.
- Participants receive information and updates on the process, the work that is planned, the relationship between various efforts and what will happen in the future.

- Participants learn about key findings from the municipalization exploration study.
- Community helps establish clear and reasonable expectations about participation opportunities.
- Potential customers outside of the city limits engage with the city, provide valuable feedback, and feel like they're a part of the process and have a voice in the potential formation of a municipal electric utility.
- The community understands the scheduling and timing issues associated with Phase 2 and don't feel like the city is rushing through the work.
- Quality feedback is obtained and provided to City Council regarding potential governance of the municipal utility.
- The community understands the importance of forming a municipal utility as associated with its overall climate commitment.

Communication Techniques, Tactics and Strategies:

The following are ways the city plans on distributing important, timely, and relevant information to interested community members, stakeholders, and potential customers of a municipal electric utility. Exact dates have not been established for many tactics, as the overall project schedule remains in flux. The use of each tactic will be determined on an as needed basis depending on the target audience, the timing of the message, and the message itself.

Community Guide 3.0 - A third issue of the *Know Your Power* community guide will be created to provide factual information in an easily digestible form for all interested parties. Topics in the guide could include, but are not limited to:

- Background information
- Updated information on the municipalization option selected for refinement
- Potential governance structure
- A qualitative analysis of the "Should We" question that will determine value added to the community by formation of a municipal electric utility
- Third-party, independent review findings
- Municipalization and its role in the city's Climate Commitment
- Findings of the City/Xcel Energy task force on partnership options
- Project schedules/key dates
- Operations and Maintenance of a potential electric utility
- Service area information
- Rate information
- Renewable energy resources in the utility's energy resource plan (ERP)
- FERC and PUC proceedings - Stranded cost, condemnation, acquisition and transition plan
- Financing requirements and findings

- Information about the Climate Commitment effort (this will allow us to connect the two initiatives, consistent with a key communications objective during this phase, and possibly share in production and publication costs)

The community guide will be printed and distributed throughout city facilities and private locations where allowed. In addition, it will be made available as a resource for community groups to use and distribute at their own meetings. It will also be available electronically on the Energy Future website. It will require some messaging and design assistance from a consultant, but content will be created by the city. Design and printing costs will be determined. It will be created and distributed in June or July 2013.

Staff resources – Sarah Huntley, Andrew Barth, Wynne Adams

Project Website - The www.BoulderEnergyFuture.com project website has become the most useful communications and engagement tool used by the project. It's home to all project documents and other background information, and is where most people learn about current events and meetings associated with the municipalization study. The site underwent a redesign in March and April 2013 in order to increase the usability and readability of available information. This site will continue to be updated and refined frequently, sometime daily, throughout the life of the project.

In June or July 2013, the entire city website will be moved to a new content management system (CMS) that has a completely different look and feel. This work will involve considerable time by communications staff, but it is another opportunity to ensure that the site is fresh and can be used by anyone. The new CMS will allow for easy viewing on mobile devices like phones and tablets, which should help increase visitor numbers to the site.

The website is also home to the project comment form, which has seen a significant increase in use in 2013. The form allows people to ask questions, provide feedback and request information about the project at any time.

As was done for community working groups in Phase 1, specific webpages will be created and dedicated to the work undertaken by the community working group assembled to discuss possible governance structures. Biographical group member information, background information on their charge and approved meeting minutes will be posted to the site.

In addition, new Web resources will be dedicated to reengaging the community with the municipalization work as it applies to the community's climate action goals. It is likely that the LEAD website will be cross-referenced in order to tie the climate commitment to the municipalization effort.

Staff resources – Andrew Barth and Wynne Adams

Energy Future Today Newsletter - After producing and distributing monthly issues of the project newsletter in 2012, we have moved to a bi-monthly production schedule. The next edition is slated to come out towards the end of April, with subsequent issues in June and August. The newsletter has become a valuable tool for informing the community about current events surrounding the project using the city's own voice and facts. In Phase 2, the newsletter will focus on current events surrounding the municipalization exploration study (including the emerging legal, governance and 3rd party review processes), but it will also reengage the discussion that was started in 2012 regarding the municipalization study, what it means for demand side management programs and services, and its potential short- and long-term effects on climate change mitigation.

Newsletters are printed and distributed to all city recreation centers, senior and community centers, city building lobbies, and at several coffee shops throughout the city. In addition, electronic copies are available on the website and are emailed to the 620 members of the project listserv. The cost of producing this runs about $110 for each edition.

Staff resources – Andrew Barth and Wynne Adams

Project listserv – Since creating the project listserv in 2011, 620 members, and growing, have registered to receive project updates via email. At least one message is provided each week to registered users in order to keep them engaged and aware of events surrounding the project and other climate change issues.

Many registered listserv participants have also expressed an interest in learning more about programs and services that are currently available to help reduce their overall energy use. The staff team will use this information dissemination tool to help engage and educate people about the ties between the municipalization study and the community's climate commitment.

Staff resources – Sarah Huntley, Andrew Barth and Wynne Adams

Social Media - The Energy Future project utilizes Facebook, Twitter, and Inspire Boulder social media websites to distribute timely information about the project to a wide audience. In order to keep the public interested in the project, the communication team tries to push out at least two messages to Facebook and Twitter each week. Inspire Boulder, the city's online community collaboration tool, has been useful for creating a running dialogue about different aspects of the project. Communications plans on continuing and refining the use of each of these social media platforms throughout this phase and the remaining phases of the project.

Facebook and Twitter audiences are typically interested in a wide array of subjects, which makes these idealplatforms to reach a large audience that might not be actively engaged or aware of programs and services aimed at reducing energy demand. Future message to both social media sites will focus on the tie between the municipalization exploration study and the community's

climate commitment, in addition to timely information and facts about the municipalization study and Boulder's Energy Future.

Staff resources – Andrew Barth and Wynne Adams

Channel 8 – In 2012 and 2013, the city used Channel 8's production team to create several informative videos regarding certain aspects of the project. In 2013, Channel 8 produced an 11-minute video that explained the options for moving forward with the project and 10 one-minute "Know the Facts" videos that were an attempt to clear up common misinformation heard from the Boulder community. We are anticipating additional videos will be helpful during Phase 2. All Channel 8 videos are available on both the Energy Future project website and the Channel 8 website, as well as through Vimeo, which is another social media platform that is dedicated to professional-quality video sharing.

In addition to creating videos, the Energy Future project utilized existing shows like Inside Boulder News and A Boulder View to provide timely information. In Phase 2, communications will continue to use these resources to distribute information about the project as appropriate. These shows are shown frequently on Channel 8 and are available any time on www.BoulderChannel8.com. The videos are also cross-linked from the Energy Future project website.

Both produced videos and existing programs will be used to help the community understand why the municipalization exploration study is important to achieving Boulder's Climate Commitment. Short, factual videos and longer informational videos can be produced and aired on Channel 8 and cross-promoted on various city websites (Energy Future, LEAD, Community Planning, Parks and Rec, Open Space) to help the community understand that we cannot reach our climate targets efficiently and effectively without the formation of a municipal electric utility or formation of a valuable partnership between the city and Xcel Energy.

Staff resources – Sarah Huntley, Andrew Barth, Wynne Adams, and the Channel 8 team, specifically Cale Rogers, Natalie Wood, Jeane Woods, Joe Stientjes, as assigned

News releases/ media advisories/pitches/ responses to inquiries from local media – Whenever there is valuable information to share with the media and local and national audiences, the communications team will distribute a news release or media advisory. It is anticipated that several news releases will be distributed during Phase 2.

In addition, staff plans to make direct pitches of possible stories/articles to local media including the Daily Camera and Boulder County Business Report.

The team has developed strong working relationships with reporters covering this issue from a variety of news outlets. These will continue to be maintained and leveraged in order to increase the chances for accurate and comprehensive coverage.

Staff resources – Sarah Huntley and Andrew Barth

Op-Ed Pieces – During Phase 2, communications staff will write and present between one and three op-ed pieces from the city, likely from Executive Director Heather Bailey, to the Daily Camera. This is an invaluable way to correct misinformation that is heard in the community. Op-eds will also be valuable in the work to re-tie the municipalization effort to the community's climate commitment. They allow the city to use its own voice to provide information that it is valuable and timely. While op-eds are created by the city, it is up to the Daily Camera's staff to determine if they are covered in the paper.

Staff resources – Sarah Huntley and Andrew Barth

Paid Advertisements – The city has made good use of limited funds in order to advertise events and information in local media publications like the Boulder County Business Report and the Daily Camera, both in hard copy and digital forms. It is likely that new ads will be created, when appropriate, and placed in these publications in order to solicit feedback and provide information on upcoming events. The team expects to use approximately $5,000 of available funds for this phase of work for paid advertisements (includes production and publication of the ads).

Staff resources – Sarah Huntley, Andrew Barth and Wynne Adams; consultants may be used for messaging and design assistance, if necessary

Unpaid Advertisements – During Phase 1 of the project, the communications team made use of digital ads that were placed on televisions in city recreation centers and libraries. There is no charge for this. The same ads that are placed in newspapers can also be added to these TVs. In addition, the same ads are provided to Channel 8 for inclusion in their digital signage packages that run between programs on the station. This practice will continue during Phase 2.

Staff resources – Andrew Barth and Wynne Adams

City Council and Community Correspondence – The communication team will continue to monitor and assist in preparing staff responses, as appropriate, to correspondence related to this project and associated processes. Council members, of course, are welcome to respond to any correspondence as they wish and feel is appropriate.

Staff resources – Sarah Huntley, Andrew Barth, and Wynne Adams; more technical responses may be required from other team members but will be coordinated by communications staff

City Council and Board Memorandum Preparation Support – The communication team will continue to assist project staff with preparation of memos and informational packets that are supplied to City Council and various city boards for their meetings. Communications staff routinely provides information on outreach and engagement activities in memos that correspond to the work surrounding the municipalization exploration study. In addition, communication staff helps edit and format all documents for grammar issues and readability. It is anticipated that

communication support will be needed for the July 23 and Aug. 6 memos to City Council. There may be requests for additional information and updates prior to these meetings that communications will help with.

Staff resources – Sarah Huntley and Andrew Barth

Flyers and informational handouts – Event flyers and informational handouts will be created and printed in-house as needed to announce meetings and provide timely information about current events. Flyers and handouts are distributed throughout city facilities. The same materials are also distributed to community gathering spaces like coffee shops, pharmacies and on community bulletin boards at churches and other available locations.

Staff resources – Andrew Barth and Wynne Adams

City and Community Calendars – Information about upcoming events is added to the city's online community calendar. It is also added to community calendars that are made publicly accessible through the Daily Camera, radio stations (KBCO, KGNU), and area churches and community groups.

Staff resources – Andrew Barth and Wynne Adams

Community group presentations – Beginning in 2012, city staff made themselves available to meet with community and neighborhood groups at their regularly scheduled meetings. The communications team will continue to offer these presentations, which are usually given by Heather Bailey, whenever a particular group may be interested. We have found that meeting people where they already are is an invaluable way of getting information out to the community. In 2012 and 2013, the city was invited to present at neighborhood group meetings, the Boulder Chamber, NREL, and the Boulder Economic Council, just to name a few. There is typically no charge for this service. After each meeting, the presentation and all meeting handouts are made available on the project website for individuals who may not have been able to attend the meeting.

Staff resources – Andrew Barth, Wynne Adams and appropriate members of the EF project team.

Cross promotion of city and community group events and information – In 2012 and 2013, the city has worked with community groups like Renewables Yes, New Era Colorado, Clean Energy Action and CU student groups to cross-promote both city and community group events and information. By utilizing existing external networks, the city has been able to reach additional people that may not have been tuned-in to the city's own promotion efforts.

Staff resources – Andrew Barth and Wynne Adams

Conclusion:

The Energy Future communication team welcomes feedback and additional suggestions from colleagues and City Council. Please feel free to contact Sarah Huntley at 303-441-3155 or huntleys@bouldercolorado.gov or Andrew Barth at 303-441-1937 or bartha@bouldercolorado.gov at any time.

July 15, 2013 Executive Advisory Team Meeting Participants

Karl Gerken, Ball Aerospace

Jeff Lipton, University of Colorado, Boulder

Pete Lorenzen, IBM

Diana Moss, University of Colorado, Boulder

Dave Patterson, UCAR

Nolan Rosall, Downtown Boulder Inc.

Avram Sanders, LEC Global

John Tayer, Boulder Chamber

Communications and Outreach efforts from April 17, 2013 through July 16, 2013

- March/April newsletter – 350 printed and distributed – electronically distributed to 620 listserv members
    - Topics
        - Council moves municipalization study into Phase 2
        - Phase 2 work explained
        - Municipalization Facts
        - Denton, TX: On the road to becoming the utility of the future
        - Charter guiding principles on rates
        - City/Xcel create task force on partnership options
- May/June newsletter – 350 printed and distributed – electronically distributed to 640 listserv members
    - Topics
        - Letter from Director Bailey – Facts matter when considering energy paths
        - CO2 levels pass feared milestone
        - City receives sustainability grant from Boulder County
        - What a progressive local electric utility could do
        - Upcoming meetings and events
- Twelve new messages to 640 listserv members as of July 16
- Media Coverage
    - Channel 8's *Inside Boulder* news coverage
    - Channel 8's *A Boulder View* interview with Councilmember Cowles in June
    - Five City of Boulder-issued news releases
    - Thirty-three Daily Camera articles
    - Fifteen Boulder County Business Report articles
    - Eleven additional stories in various media
        - Denver Post
        - Washington Post
        - Forbes
        - Minneapolis Star Tribune
        - Twin Cities Business Magazine
        - Other industry publications
- Social media
    - Multiple Facebook posts regarding meetings and new information
        - Staff has been consistently posting to Facebook with new information on project facts on Tuesdays and Thursdays since May and have seen a solid growth in interactions from the community
    - Multiple Twitter posts regarding meetings and new information
        - Staff has been consistently posting to Twitter with new information about project facts (using the hashtag #bldrenergy) and have seen a solid growth in interactions from the community.
    - Considering Boulder's Next Steps video available on project website and Vimeo

        - 347 views since April 17, 2013
- Presentations given by City of Boulder staff
    - Watershed School
    - Citywide staff meeting update
    - Shining Mountain Waldorf School Earth Day
    - Sustainable Energies Law Center Webinar
    - Green Streets on Inspiring Innovation and the Creative Community
    - Boulder County Planners
    - Gunbarrel Energy Future citizens' group
    - Commercial Brokers of Boulder (CBB) – Xcel also presented at this meeting
    - Downtown Boulder Inc. (DBI)
    - Colorado Association of Municipal Utilities (CAMU)
    - Boulder Economic Council (BEC)
    - Boulder Area Realtors Association (BARA)
- Presentations given by Xcel Energy and Bob Bellamare – city was in attendance when permitted and provided handouts when and where appropriate
    - Boulder Tomorrow
    - Boulder Chamber
    - Multiple HOAs in unincorporated Boulder County hosted Xcel and Bob Bellamare on June 27
    - Xcel hosted two open houses
        - June 19
        - July 17
- Advertising
    - Daily Camera
        - Ads and copy - Clean. Reliable. Low-Cost. Local. Energy.
            - Hard copy in Sunday, June 9, paper
            - Email to 50,000 addresses within five Boulder specific zip codes
            - Digital ads – 50,000 impressions (10,000 a day) – June 11, 12, 13, 14, 15
- Website
    - From April 17 to July 9 – in order of site visits
        - Home page viewed 4,956 times
        - Boulder Energy Facts – 1,580 views - (website launched June 7, 2013)
        - Third party evaluation – 1,305 views
        - Events and Previous Events Archive
        - Know the Facts (old site incorporated into new "Boulder Energy Facts" page)
        - Resources
        - Newsletter
        - Newsroom
        - About
        - Documents and archives

- Public feedback from comment form or email to energyfuture@bouldercolorado.gov – as of July 16, 2013 – some correspondence included feedback on multiple topics
    - Pro-municipalization – 27
    - Anti-municipalization – 9
    - Service area questions – 7
    - Requesting another vote – 2
    - Governance question – 1
    - Third-party evaluation question –2
    - Fiber optic along with muni – 1
    - Solar rewards questions – 7
    - EPA regulations – 1
    - Carbon costs – 1
    - Rate questions – 2
    - Offers to assist –1
    - Reliability question – 2
    - 2011 Charter vote – 1
    - Meeting information –3
- Energy Future pop-up display at city recreation centers and libraries – display is moved every two weeks to a new location and updated with new information.