MEMORANDUM

TO: Members of City Council
FROM: Jane S. Brautigam, City Manager
Heather Bailey, Executive Director of Energy Strategy and Electric Utility Development
Tom Carr, City Attorney
DATE: December 6, 2012
SUBJECT: City Council Round Table Discussion: Exploring Alternative Opportunities for Reaching Boulder's Energy Future Goals

I. INTRODUCTION

Attached to this memorandum is a paper that outlines possible ways the city might be able to partner with Xcel Energy to achieve the community's energy goals short of acquiring Xcel's distribution system and creating a municipal electric utility. The paper was drafted by staff from the Energy Strategy and Electric Utility Development Department and the City Attorney's Office. One of the reasons for writing the paper was to honor our commitment to Boulder residents, businesses and voters that the city will look at a variety of possibilities for meeting our community's energy goals.

The paper represents the city's perspective on areas that have been the topic of prior conversations, as well as those that would be worth further discussion if officials of Xcel are interested. While several conversations have been held between the city and Xcel since the time the franchise negotiations concluded, and even after the November 2011 vote, these meetings have not resulted in any meaningful alternatives to municipalization.

The attached paper identifies some of the opportunities, as well as the constraints, the city may encounter as it explores options addressed. The Boulder community has said it wants cleaner energy that is reliable and affordably priced. The community's goals also include a desire to achieve more local control and decision-making on how energy dollars are invested.

II. BACKGROUND

In November 2011, Boulder voters agreed to allow the City Council to issue bonds to purchase Xcel's system if certain criteria related to rates, reliability, bonding revenue, more renewable energy and goals for lowering greenhouse gas emissions can be met. Voters also agreed to pay a Utility Occupation Tax of $1.9 million a year for five years to fund attorneys, engineering and other costs related to the city's continuing research into the possibility of municipalization. Xcel has opposed the city's interest in municipalization and pledged to its shareholders that it will vigorously defend its interests in court and before regulatory bodies that would consider such a request.

III. HOW THE CITY'S ALTERNATIVES PAPER IS INTENDED TO BE USED

The paper is not a comprehensive list, but it is a starting point that is based on prior proposals and present thinking on methods toward achieving our goals. For many of the ideas expressed in

the paper, Xcel would need to be a willing participant in serious negotiations. The paper is intended to continue a conversation about how our energy future goals can be met, not to re-plow old ground or to end conversations about alternatives to meet the city's goals. Staff welcomes feedback from the council and members of the community.

IV. NEXT STEPS

Many of the ideas contained in the paper will require Xcel to develop specific ideas and demonstrate a commitment to work with the city to achieve Boulder's energy future goals. The next step would be for Xcel to come forward with great ideas that could form the basis for a strong partnership. Any continued conversations would need to be a public process and cannot result in staff resources being diverted from the exploration of municipalization, which is on a tight timeline based on its five-year funding source. A partnership solution also cannot be conditioned on a 20-year franchise or other requirements that have been rejected consistently by council and the community. Optimally, the city would invite Xcel to consider and propose a clear path for a meaningful partnership with the city, including a specific plan for how it could help achieve the community's energy goals.

In the event that Xcel presents a specific proposal to implement some of the ideas in the paper, or others they may develop that would further the city's goals, staff is committed to completing an initial high-level analysis of that proposal. In the event that the ideas or proposals have the potential to achieve Boulder's energy future goals, staff will return to City Council to request authorization and additional funding to conduct further analysis, negotiation, lobbying or other activities to pursue Xcel's proposal.

Exploring Opportunities for Reaching Boulder's Energy Future Goals

Energy Strategy and Electric Utility Development Department

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Exploring Opportunities for Reaching Boulder's Energy Future Goals

Introduction

When voters approved measures 2B & 2C in November 2011, they authorized the city to explore energy options with the aim of determining whether municipalization is feasible, and passed a five-year utility occupation tax to fund that exploration. At the same time, the city committed to examining all options that could achieve Boulder's short- and long-term goals.

While the city remains steadfast in its rigorous analysis of municipalization, this paper aims to identify some of the opportunities the city has previously explored or could explore to move forward on its goals absent municipalization, as well as some of the constraints the city may encounter as it evaluates those options. This paper should not be seen as a thorough vetting of all possibilities, but rather a summary of a few key ideas and opportunities that could be pursued. As was concluded in prior franchise discussions and in the analyses conducted in 2011, full implementation of many of these ideas requires the full cooperation of and partnership with the city's current retail electric utility, as well as approval by the Colorado Public Utilities Commission and/or changes in state law. However, they are presented here in summary form to highlight the options and potentially serve as impetus for further dialogue among interested parties.

This paper:

- begins with a reminder of the city's agreed-upon energy future goals;
- addresses the question of whether "localization" could mean anything other than the acquisition of the electric distribution system;
- briefly reviews the recent history of negotiations with Xcel;
- outlines the core principles that would guide a genuine partnership with Xcel; and
- suggests some of the tools the city could use to move it toward its energy future goals absent municipalization.

"It's not about the wires and poles; it's about the goals."

Framing Boulder's energy discussion as a choice between a franchise relationship with Xcel Energy and municipal acquisition of Xcel Energy's electric distribution system fails to reflect all of the goals that the Boulder community wants to achieve. The city is not interested in owning the local distribution system as an end in itself. The core of the discussion is not about which entity should operate the local utility, but rather what is the best framework within which Boulder can achieve its goals.

While Boulder will ultimately face a decision point about who will be the community's energy services provider, the community's energy future goals must guide Boulder's energy discussion and eventual decision. Those goals include:

1. Ensuring an energy supply that is stable, safe and reliable;
2. Ensuring competitive rates while balancing short-term and long-term interests;
3. Significantly reducing carbon emissions and other pollutants to improve environmental quality;
4. Providing Boulder energy customers with a greater say about their energy supply;
5. Promoting local economic vitality; and
6. Promoting energy equality, protecting vulnerable populations and encouraging energy literacy.

As highlighted in discussions with residents, businesses, key energy stakeholders and council over the past months, Boulder's energy strategy should not only reduce carbon emissions associated with energy generation, but also support innovation and competition; create long-term rate stability; provide the opportunity for energy customers to become energy investors; reduce dependence on external (and increasingly expensive) fuel sources; and support economic vitality. In short, the strategy should focus on changing the energy supply system and traditional utility model. Changing ownership of the local distribution network may ultimately prove to be a means to achieving the energy future goals of the community, but it is not the end in itself.

Access to clean, affordable and reliable energy will continue to be the cornerstone of Boulder's increasing prosperity and economic growth. Our use of energy in the 21st century and beyond must also be sustainable. Maintaining this focus, regardless of who provides our energy service, will ensure that our pathway leads to a prosperous, sustainable and secure energy future.

Localization ≠ Municipalization

Recently, representatives from Xcel have suggested that a partnership with the city is not possible because the city is focused on "localizing" its power. While it is certainly true that creating a municipal electric utility would give the city the greatest degree of control over its energy future, the fourth goal, "providing Boulder energy customers with a greater say about their energy supply," could also be met through a genuine partnership with Xcel.

Within the city's definition of localization, a wide range of strategies would be seen as supportive, including an increase in distributed generation and local renewables; investments in energy efficiency and demand management; and increased customer choice for clean energy sources.

Boulder's History with Xcel

Public Service Company of Colorado (which now operates in Colorado as Xcel Energy or simply, "Xcel") has served the Boulder community since 1929. For most of those 83 years, this service was provided pursuant to a franchise agreement. Franchise agreements give utilities the right to use the public rights-of-way and provide additional terms with which the utility must comply when using the public rights-of-way.

In 2005, the city began exploring ways to reduce its greenhouse gas ("GHG") emissions. In Boulder, 75% of those emissions are the result of residential and commercial energy consumption. The city began to focus on both the reduction of energy consumption by residents and businesses (the "demand-side") and the shift away from those fuels that create GHG emissions (the "supply-side").

The focus on supply-side issues caused the city to begin exploring the possibility of not renewing its franchise agreement with Xcel, but rather forming its own municipal utility, which would use its revenue to increase the amount of renewable energy in the fuel mix. City Council authorized and appropriated funds to conduct a feasibility study designed to begin a high-level analysis, identifying any significant obstacles that would preclude the city from moving forward with its investigation in creating a municipal utility. The study concluded that there was a reasonable expectation that the city could acquire the Xcel distribution system without any rate increases.

The municipalization study was halted in 2008 when Xcel proposed making Boulder its SmartGridCity. Xcel expressed its desire to partner with the city as it explored the future of electric utilities. With the franchise agreement set to expire in 2010, the city began negotiating with Xcel regarding not only the "nuts and bolts" franchise agreement, but also other opportunities to partner that would move Boulder closer to its goal of a cleaner fuel mix. For nearly two years, city staff and Xcel staff met to discuss possible ways to reduce demand and "green up" the city's fuel supply.

Some of the ideas suggested by the city, but ultimately rejected by Xcel for a variety of reasons, included changing the city's fuel source mix to increase renewable energy, installing solar at Valmont Butte and Windsource aggregation. In some instances, the parties had different visions of the future of electric service in Colorado, but in many instances, Xcel could not agree to certain proposals from the city because state laws and regulations (1) require investor-owned utilities like Xcel to treat each of its customers similarly or (2) do not currently permit the suggestions proposed by the city.

Xcel did agree (1) to support Community Solar Gardens[1]; (2) to confer regularly with the city regarding SmartGridCity; (3) to work with the city to design and operate a customer usage data access pilot program; (4) to collaborate with the city on energy efficiency and demand-side management programs; (5) to apply to decommission the Valmont coal-fired generation or complete conversion of that unit to natural gas by January 1, 2013[2]; (6) to study and develop a shared strategy to develop a plan that will allow the city to accomplish 100% decarbonization of its electric supply on an accelerated basis; and (7) to advertise the Windsource program in an effort to increase subscriptions to the program in the city. While these agreements were valuable, the city had several remaining concerns:

- the agreements still did not embody the spirit of partnership sought by the city;
- the agreements were conditioned on the approval of a 20-year franchise agreement; and
- it was unclear how far the agreements would go towards the achievement of the community's energy goals and how new opportunities that might emerge during a 20-year franchise would or could be pursued.

But perhaps most importantly, there was concern that Xcel wanted the city to agree to a 20-year agreement prior to defining what would or could be achieved, a key objective of the study/plan development idea in #6 above. The city expressed interest in conducting the study and then re-entering franchise discussions, while Xcel wanted to sign the franchise first. The parties were not able to reach agreement.

In August 2010, at the time City Council decided not to place the franchise agreement on the ballot for voter approval, council made clear that the city continues to remain open to discussing new partnership opportunities with Xcel. Xcel, as an electric utility that has operated for over 100 years, is well positioned to develop new and innovative

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[1] Community Solar Gardens legislation was drafted by the city, sponsored by Rep. Clair Levy and ultimately supported by Xcel. The Community Solar Gardens bill was approved by the Colorado General Assembly in 2010. HB 10-1342.

[2] As part of the Clean Air-Clean Jobs Act, Xcel was required to convert 900 MW of its coal-fired generation to other generation sources. Xcel did apply to decommission the Valmont unit. It will be closed by the end of 2017.

ideas that address Boulder's energy goals. Unfortunately, although city representatives have met periodically with Xcel since the council's decision, there have been no substantive discussions of a potential partnership.

Several months after the November 2010 election, representatives from the city met with Xcel several times to "think outside the box" to see if there were new and creative ways for Xcel to serve the city that would help Boulder meet its energy future goals. One idea that emerged from those meetings, at the suggestion of Xcel's general counsel, was the "Wind Deal," in which Xcel would contract with a third party to build a 200 MW wind farm to serve Boulder. The proposal was structured as what is known as a "contract for differences." Under the proposal, electric rates in the city would decrease when wind prices were lower than the projected price of the fuel they were replacing on Xcel's system, but go up when the replacement fuel, principally natural gas, was cheaper than its projected cost.

The parties were unable to reach an agreement concerning the Wind Deal for a variety of reasons. Those reasons included questions concerning (1) the prudence of committing to what was essentially a hedge against the price of a single fuel source[3]; and (2) Xcel's condition that the city agree to place a 20-year franchise on the ballot despite City Council's position that it wished to develop a new partnership with Xcel that went beyond what was possible within the constraints of a franchise agreement.

Since the November 2011 election that authorized the city to continue exploring municipalization, the city and Xcel have continued to meet to discuss a possible future relationship between the parties. These meetings began the day after the election when the City Attorney met with Xcel's General Counsel. Members of City Council, the City Manager, the Executive Director of Energy Strategy and Electric Utility Development and various members of staff have met with Xcel in half a dozen meetings in the course of the past year. To date, these meetings have not been fruitful in finding new ways to partner.

Core Principles of a Partnership with Xcel

There is no doubt that Xcel must contend with a legal framework that makes it difficult to present a creative new partnership approach with Boulder. Frankly, Colorado's current laws and regulations give far more freedom to municipal utilities. We recognize that meeting Boulder's energy future goals requires transformation of the traditional electric utility business model in Boulder. It may also require changes to state law. Delivering

[3] Xcel ultimately received approval from the Colorado Public Utilities Commission to build the 200 MW wind farm known as Limon II. The Commission approved Limon II as a system resource that could hedge against high natural gas prices in the future. Increasing the resource mix was seen as prudent. With the addition of Limon II, Xcel will have 2100 MW of wind power serving its Colorado customers. However, wind constitutes under 1/2% of the power generated by Xcel-owned facilities and just 9% of the power purchased by Xcel from independent power producers in 2012.

safe and reliable electricity will always form the bedrock of what Xcel is required to do, but the modern utility must expand its vision and adapt to changing circumstances in order to provide energy sustainability for its customers, communities and shareholders.

City staff is committed to working with Xcel to create a partnership with the utility in response to the Boulder community's priorities. To that end, staff suggests that the following principles should be the core of any new partnership with Xcel:

1. The partnership must recognize the importance of both energy demand and supply.

There are two essential elements of a partnership for reducing energy-related carbon emissions: first, continually improving the efficiency of energy use (energy efficiency and conservation); and second, 'decarbonizing' Boulder's energy supply – that is, reducing the carbon intensity of the energy system by moving away from high carbon fuels for electricity generation towards low or zero-carbon electrical generating technologies. It is evident that these two elements of an overall strategy are interdependent. The more rapid the transition to low carbon energy supplies, the less we will need to rely on energy end-use efficiency gains to achieve a given emission reduction target, and vice versa.

There are two primary reasons why the recent conversations around Boulder's energy future have focused on the supply side of the energy equation: first, a relatively small shift in energy supply has the potential to exponentially affect greenhouse gas emissions as compared to significant shifts in customer demand for energy; and second, the demand side of the equation is already being addressed by the many demand-side management (DSM) programs that the city and Xcel currently offer Boulder customers. A partnership should acknowledge the interdependency and importance of both of these areas.

2. The partnership model must fit within the framework of state statutes and regulations.

In Colorado, investor-owned utilities must abide by the laws and regulations of the state. If state law currently prohibits methods of operation that the city and Xcel recognize as critical to the city meeting its energy future goals, it will be important to join forces to seek a change to those laws at the state legislature.

3. Customers must have opportunities to make choices about their energy consumption.

Today, retail customer choice in electricity is no longer an experiment or a novelty. In 16 states and the District of Columbia, jurisdictions that account for over 40% of all electricity consumption in the continental United States, customer

electricity choice is well established and widely accepted. Even as the policy debate has continued over opening retail electricity to competition, millions of customers are opting for electricity choice and dramatically changing the facts.

The numbers of accounts that have electricity choice and the volumes of sales represented by those accounts continue to increase, with nearly 9 million residential customers and over 1.8 million business and government customers exercising electricity choice in 17 jurisdictions. Most jurisdictions that have implemented competitive retail models have seen a doubling of the number of customers electing choice between 2003 and 2010. There is a growing awareness and understanding that electricity choice effectively accommodates and complements demand response, energy efficiency, integration of renewable resources and the emergence of the Smart Grid.

Alternatives provide benefits to the utility and customers as the products and services desired by customers gradually become more diverse, moving beyond merely a discount to the utility tariff product. There are fixed-price products, both for the energy commodity and electricity bundled with load-following delivery. Other contracts provide a mix of fixed-price supply and daily, hourly or other index-priced energy. Customers can take advantage of demand response programs offered through competitive wholesale markets and regional transmission organizations.

With clear price signals comes a more refined ability of customers to commit the capital and effort necessary for more efficient utilization of energy, resulting in cost savings and environmental benefits. No longer is product and rate design dictated by the seller or the regulator.

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.

Electric customers' services and fees should be thought of much the way cell phone companies and application developers think when they design custom packages based on customer want and need. Customers should be able to choose "lifestyle" rates that save them money for reducing peaks in energy use, help them manage electric vehicle charging opportunities and compensate them fairly for generating distributed renewable energy. Xcel and the city could provide the best incentives and service packages to allow customers to manage their usage, if they chose, or take advantage of incentives that promote distributed generation (DG).

5. The partnership should represent a creative, new business arrangement.

The partnership should be a contract to work together collaboratively to achieve the community's goals. It should provide for a vehicle to address issues and a structure for working together and resolving conflicts over time. The term "localization" has been used to describe the type of system change that is most consistent with Boulder's values and priorities. It means giving customers more control over their energy consumption, whether through demand reduction or change in the fuel mix, while supporting the development of local renewable and low-carbon generation. It envisions a future where energy is delivered as a service, rather than a commodity, with a business model that does not rely on "selling more electricity" as its primary profit generator.

Opportunities for Reaching Boulder's Energy Future Goals

This paper identifies a number of options that could help the city reach its energy future goals. It is by no means the final word on this complex and consistently evolving subject. Rather it is a starting point for City Council, Xcel, legislators, policymakers, regulators, investors, analysts, advocates and customers to consider the decisions and behaviors best suited to helping us realize the energy future we all want - a future that minimizes costs, risk and environmental impact, and maximizes opportunity, options and societal benefit.

Boulder's energy future goals can be met through a variety of methods. As mentioned above, simply "greening" the supply side may not be sufficient. Similarly, focusing only on the demand side, without considering the environmental effects of electric generation, is not likely to get Boulder to its goals. This portion of the paper looks at a variety of tools that the Boulder community may wish to consider in its efforts to reach its energy future goals. Some of the tools could move the city farther than others, but nearly all require some level of support from or partnership with Xcel, if it remains the city's retail electric utility.

They are grouped by:

(1) those that require partnering with Xcel (and possibly regulatory approval);

(2) those that may require regulatory approval (and a partnership with Xcel);

(3) those that would require a change in state law; and

(4) those that the city can use whether or not it acquires Xcel's electric distribution system.

Again, this list is by no means complete, but it is intended to spark discussion.

1. Opportunities That Require Partnering with Xcel (and Possibly Regulatory Approval)

The city and Xcel currently collaborate to provide services like EnergySmart, which leverage Xcel's existing energy efficiency rebates by utilizing advisors who assist customers directly to save energy and money. There are other projects and services on which the city and Xcel could collaborate. Collaboration is necessary because even those services the city could provide without Xcel's help will be improved and provide greater benefits for Boulder residents and businesses with Xcel's help.

What this collaboration looks like could vary. It could range from staff-to-staff collaboration to improve delivery of key services to the development of a full partnership between the city, Xcel and the Boulder community with the participants co-creating solutions.

The following ideas would help Boulder achieve aspects of its Energy Future goals, by reducing energy consumption, creating local jobs and producing clean, renewable energy close to home. Yet there are restrictions as well. The city could not provide energy billing services, so Xcel would need to enable on-bill financing. Energy usage data is not consistently available and useful. Additionally, Boulder cannot simply put solar panels on every roof because of statutory, regulatory and utility business practice restrictions on the size and number of panels, and the amount that are interconnected in an area. Most importantly, enhanced DSM, despite its substantial economic and environmental benefits, does not change the carbon intensity of Boulder's fuel mix—any DSM effort should be coupled with a strategy to shift to less carbon intensive fuel sources.

This section outlines ideas that would require partnership with Xcel in a meaningful and fundamental way and briefly describes what we might accomplish together. By joining forces, the city and Xcel could create the electric utility of the future.

A. Enhancing SmartGridCity

SmartGridCity, as currently installed and operated, has limitations as a result of being structured to permit communication only between the utility and the meter. There may be much to be learned from enhancing SGC to permit the meter to communicate with both the utility and the customer. For example, appliances could be turned on or off in response to price or grid stability signals.

The extent to which smart grid technology can support distributed generation is unknown. Working together, the city and Xcel 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 in the system.

Additionally, 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.

B. Partnership with NREL National Wind Technology Center

The National Renewable Energy Laboratory (NREL) National Wind Energy Technology Center is located just south of Boulder on Colorado State Highway 128. The Department of Energy (DOE) proposes to expand operations within the site, including additional power capacity. While the current electrical generation capacity is 11.2 MW, turbine operations are being curtailed to stay below Xcel's 10 MW limit. The site's generation capacity is expected to increase up to 50 MW over the next five to 10 years. While the DOE is currently scoping a site-wide environmental assessment of the project, Xcel could facilitate the transmission of the new wind power to Boulder to serve the community load, perhaps as part of the Boulder Rate, discussed later in this paper.

C. "Xcel Boulder"

An unprecedented, but pathbreaking, form of partnership would be for the city and Xcel to work together to (1) create a municipal utility with its attendant benefits in terms of flexibility and responsiveness to community priorities; and (2) create a subsidiary of the company that would serve as a Boulder-specific utility and testing ground for a new business model and technology applications that help to reduce energy use, focus on low- and no-carbon generation opportunities and deliver "energy as a service, not a commodity."

After forming the municipal utility, Boulder would contract with Xcel to provide it with electricity on a wholesale basis, as well as operations services. This would require a long-term contract, not unlike a franchise agreement, that would define how the jointly run utility would operate (permission to be in city streets, governance, investment, safeguards, etc.). Xcel Boulder would continue to manage the distribution system and utility operations *and* partner with the city in determining power purchases, delivering DSM and piloting new initiatives in areas such as distributed generation, demand response, and feed-in tariffs.

Because Boulder would have formed a municipal utility and would be a wholesale customer of Xcel, this approach may be achievable without approval from the PUC or changes to state law. However, it would require a high level of trust and collaboration between the city and Xcel; a commitment to transparency and public input in decision-making; and a clear understanding of the profit needs of the private utility operator. Through this joint effort, the city and Xcel could create a true model for "the utility of the

future," to the shared benefit of all parties: a public-private partnership that is customer-centric and committed to achieving the community's energy goals.

2. Opportunities That Would Require Regulatory Approval (and Partnering with Xcel)

The party seeking a change in state regulations has the burden of proving that the change is in the public interest. Joining forces with Xcel to seek approval for these ideas would increase the likelihood of success.

A. A "Boulder Rate"

The concept of a Boulder rate was proposed by Xcel in early 2011, but withdrawn because Xcel was concerned it might not be available under current regulations. However, since that time, Boulder citizens voted to explore municipal acquisition of the Xcel electric distribution system.

Section 40-3-104.3 of the Colorado Revised Code permits utilities to request that it provide electric service to a particular customer without reference to its tariffs if the Public Utilities Commission finds that:

(1) the price of service is not below that service's variable cost;

(2) the customer has expressed its intention to discontinue service, to provide its own service or to pursue the purchase of alternative services from another provider;

(3) the approval of the application will not adversely affect the remaining customers of the utility; and

(4) the approval of the application is in the public interest.

If the November 2011 election is interpreted as Boulder customers having expressed their collective intention to discontinue current service and seek service from another provider, then an argument could be made that Boulder should be able to negotiate a contract on behalf of its electricity users that would require increased renewable energy for a rate not found in Xcel's current tariffs.

B. 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 three services provided by investor-owned utilities (generation, transmission and distribution) and ancillary services. A Boulder rate would likely require that Xcel's services be unbundled in order to separate out generation costs (which would likely change) from transmission costs (which might change) and distribution costs (which should not change).

3. Opportunities That Would (or May) Require a Change in State Law

Changes in state law do not come easily. The city partnered with many other municipalities, counties and organizations when it developed the solar gardens legislation. Support from Xcel, while not absolutely necessary, would make any of these proposals more likely to succeed.

A. Community Choice Aggregation (CCA)

Available in certain states (CA, MA, NJ, OH, RI), Community Choice Aggregation, or CCA, is a program within the service areas of investor-owned utilities, such as PG&E in California, that permits cities and counties to purchase and/or generate electricity for their residents and businesses. CCA 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 CCA, the investor-owned utility would continue to deliver the electricity through its transmission and distribution system and provide meter reading, billing, maintenance and outage response services. Proponents argue that this concept would improve economic efficiency, take advantage of technological improvements in electric generation and lower costs to end-use customers.

B. Netting Use and Generation through Contract

Under current regulations, Boulder produces hydro power and solar power and sells that power to Xcel through power purchase agreements at wholesale rates. When Boulder purchases power from Xcel, it does so at retail rates. Individual customers are currently allowed to net their use and production, however, users with more than one non-contiguous facility, like the city or CU, are not allowed to produce energy on one parcel and use it (or be credited for that generation) on another parcel. Netting use and generation would save the producers of renewable energy the difference between wholesale and retail rates and potentially encourage more renewable energy development.

C. Feed-In Tariffs

Feed-in tariffs permit parties that are producing energy in excess of their demand to sell that excess to the utility. According to NREL[4], feed-in tariff policies in the US may require utilities to purchase either electricity or both electricity and renewable energy attributes from eligible energy generators. The contract provides a guarantee of payments in dollars per kilowatt hour for the full output of the system for a guaranteed period of time, typically 15 to 20 years.

[4] http://www.nrel.gov/docs/fy09osti/45549.pdf

Under current Colorado law, customers are permitted to generate no more than 120% of their historic use at their premises. Feed-in tariffs would permit parties to exceed this amount, thereby encouraging more customers to provide more renewable energy to the electric grid and decreasing the need for new, fossil fuel generated electricity.

4. Opportunities for the City Whether or Not It Acquires the Electric Distribution System or Is Able to Partner with Xcel

If the city is unable to move forward with forming a municipal utility for any reason and none of the partnership ideas discussed in the previous sections are approved, the city will still move forward with its energy future goals. The ideas listed below, while perhaps not as productive as they could be under a partnership with Xcel, are tools the city may want to explore further.

A. Expanded Energy efficiency and demand-side management

Energy efficiency, conservation and local distributed generation or "demand-side" (DSM) programs offer a substantial and cost-effective local resource investment opportunity, with the potential to save up to 20 percent of forecast electricity demand by 2020 (measured against baseline year 2011). The city currently offers programs and services that could be expanded to achieve even more energy savings and reductions in customers' bills.

The city could amend its occupation tax and use the revenue to:

(1) create or enhance incentives, such as rebates to reduce the cost of local distributed generation (wind/solar/biomass, etc);

(2) provide additional rebates for energy efficiency improvements;

(3) create a revolving loan fund for (1) and (2); and/or

(4) reduce the overall electric bill through incentive rates or credits for demand side management.

Enhancements to existing programs could leverage funds from the city to retrofit buildings in the city with advanced energy monitoring equipment, communications and energy management software and, combined with on-bill financing, unlock the potential for continuous energy management through smart buildings. It is estimated that the value of the energy savings could outweigh the debt service for these improvements by year seven and pay for the improvements by year 12.

While enhanced DSM has substantial economic and environmental benefits, it does not change the carbon intensity of Boulder's fuel mix. Therefore, any DSM effort should be

coupled with a strategy to shift to less carbon intensive fuel sources. This effort could be instituted as part of the local utility described in E, below, or as a stand-alone program.

B. Local Distributed Generation Opportunities

Though it takes many forms, distributed energy boils down to two basic strategies. The first is to harvest as much power as possible locally, close to where it is consumed, from small-scale, low-carbon sources such as solar, small-scale wind, geothermal or waste-to-heat technologies. The second is to wring the maximum amount of useful work out of every unit of energy available. The overarching goal is to create a resilient, self-reliant community prepared for the 21st century.

While there has been a strong interest in distributed electricity generation in Boulder, particularly onsite generation, there are a number of real barriers faced by distributed generation projects seeking to connect with the electricity grid. Removing these barriers has been a high priority of the city. These barriers are, in part, an artifact of the present electricity industry institutional and regulatory structure, which was designed for a vertically integrated utility industry relying on large central station generation.

Boulder will continue to gradually increase the amount of local generation through traditional technologies and potentially "section 123 Resources,"[5] but it is clear that any substantial leaps would require regulatory changes to the rules that limit development.

For the foreseeable future, however, local generation is unlikely to supply all of Boulder's energy needs. Thus follows the second imperative of distributed energy: to maximize the use of every unit of energy. By some estimates, more than two thirds of the primary energy that enters the U.S. economy is ultimately wasted. For virtually any urban area, "negawatts"—energy never expended as a result of efficiency and conservation efforts—could become the most significant strategy in responding to Boulder's future energy needs. In other words, even though the need for electricity may grow, the amount of electrical generation could stay the same or be reduced through increased efficiency.

C. Formation of an Energy-Efficiency/Distributed Generation Incubator

Boulder is home to some of the best and brightest minds in the fields of energy-efficiency and distributed generation. Promoting research and development and engaging in market-building activities in order to advance new technology/new approaches in these fields will move the city, the state and the country closer to a time when consumers have better options from which to choose.

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[5] Section 123 Resources are defined in statute at § 40-2-123(1)(a), "Section 123 resources" means new energy technology or demonstration projects, including new clean energy or energy efficient technologies under § 40-2-123(1)(a), C.R.S. and § 40-2-123(1)(c), C.R.S., and Integrated Gasification Combined Cycle projects under § 40-2-123(2), C.R.S.

Boulder could develop a carefully crafted partnership of highly-qualified and experienced technical institutions, regional entrepreneurs, scientists, innovators and inventors to stimulate the development and success of local early-stage concepts and companies that will provide the next generation of clean, renewable and efficient energy technologies. If Boulder can incubate a new round of innovation, spurred by the dispersion of energy technology, it may be possible to create a new model that is resilient, self-reliant and sustainably prosperous.

As with the previously described programs, this program could be promoted by the city within the local utility described in E, below, or as a stand-alone program. However, for the incubator to be able to engage with the local grid in testing or demonstrating pilot initiatives, partnership with and the cooperation of Xcel would be essential.

D. Amendment of the Boulder Revised Code

The current land use code does not allow for backyard wind turbines. That issue, as well as revised regulations for solar energy installations, is currently being studied by the city. The city also recently implemented new energy efficiency requirements for rental housing; is in the process of considering updates to the energy efficiency requirements of its building codes; and is working to develop an "energy rating and reporting" ordinance for commercial buildings. The city can and will continue to review and update its ordinances and regulations to promote further energy-efficiency and distributed generation.

E. Form an Energy-Efficiency/Distributed Generation Utility (Boulder Local Electric Utility – BLEU)

Pursuant to Sec. 2(d) of the city's Charter, as well as the powers the city possesses as a home rule municipality, the city could form a utility - not the light and power utility anticipated by article XIII of the Charter, but a utility that would focus on demand-side issues and the promotion of distributed generation (solar, wind, biomass, etc.) This municipal utility could supplement the programs Xcel currently has in place for all its customers. The utility could be funded by fees, making it an enterprise under TABOR, or it could be funded by a voter-approved tax. As discussed previously, the cheapest energy is the energy conserved. Focusing its efforts on demand-side management, as well as on-site renewable energy, the city could make significant progress toward meeting Boulder's energy future goals. Additionally, because there is a specific exemption from the Colorado Open Records Act for municipal utilities, customer data could be obtained from Xcel without concern that it could be subject to a CORA request. However, as highlighted in several of the strategy areas outlined earlier in this section, implementation of efficiency and distributed generation programs that require or are enhanced by interaction with the grid or tools, such as on-bill financing, would require the full cooperation of and a partnership with Xcel.

Conclusion

Boulder is committed to realizing its energy future goals, which may or may not include acquisition of the local distribution system. This paper describes Boulder's relationship with its current electric service provider, Xcel Energy, and outlines the core principles of a future partnership with Xcel.

In this paper we have identified some of the opportunities, as well as some of the constraints, the city may encounter as it explores the various options for reaching Boulder's energy future goals. Some of the possibilities discussed could be available to the community whether or not Boulder acquires the electric distribution system. Some may require approval by the Colorado PUC. Others would require a change in Colorado law.

This is not intended to be a complete list of possibilities the city might explore or even a complete description of the possibilities listed. Rather it is intended to be the impetus for further dialogue among interested parties.

This is an invitation to put on our thinking caps, get creative and talk about the best, most cost-effective way for Boulder to reach its energy future goals.