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CLAREMONT McKENNA COLLEGE

ELECTRIC MUNICIPALIZATION IN THE CITY OF BOULDER: SUCCESSFUL GREENING OR PATH TO BANKRUPTCY?

SUBMITTED TO

PROFESSOR WILLIAM ASCHER

AND

DEAN GREGORY HESS

BY

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FOR

SENIOR THESIS

SPRING 2013

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Abstract

Climate change will result in variable – but undeniably severe – changes to our natural world. These changes will lead to extreme human and ecosystem consequences if climate change is not mitigated effectively, efficiently, and rapidly. Increasing the use of renewable energies around the world is seen as one of the most effective and promising mitigation strategies. Several communities around the United States have recently denounced publicly their electrical utilities for their failure to offer the choice to increase the percentage of energy that comes from renewable sources. A growing number are taking action to work with – or sometimes against – their energy providers to increase the percentage of renewable energies available. Boulder, Colorado is one of these communities. Since 2005, Boulder has been exploring the possibility of municipalizing its investor-owned electric utility, thereby bringing the utility under city control. In doing so, it would control the sources of electricity that would be used by its residents, and potentially provide these customers with 100 percent renewable energy. Boulder is in the final phases of studying the possibility of full municipalization and aims to begin this process in the near future. While it remains to be seen if the city will successfully create a municipally owned utility (MOU), an examination of Boulder's thought processes, studies, and decision making to date provides an opportunity for a discussion of the benefits and possible downsides of municipalization and allows a glimpse into the future of MOUs in the United States.

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Introduction

A 2011 study showed that 63 percent of Americans believe developing alternative sources of energy (e.g. wind, solar, and hydrogen) is a "more important energy priority" compared to "expanding exploration and production of oil, coal, and natural gas."[1] However, that same year, only 12.5 percent of U.S. energy production came from renewable sources.[2] This is not due to an inability to produce. The United States is capable of producing a greater percentage of its energy from renewable sources. Studies from the National Renewable Energy Laboratory (NREL) have shown that the generation of renewable energy from currently commercially available technologies is "more than adequate" to supply 80 percent of the total U.S. electricity generation by 2050.[3] In light of the increased demand for renewable energies and their availability, in what ways can the supply, distribution, and use of renewable energies be increased?

This study will focus on a community that has tackled this question in an innovative way. Dissatisfied with the amounts of renewable energies provided by its private electric utility, Boulder, Colorado has made moves over the past ten years to take

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[1] "Infographic: Drill, Baby, Drill | Politics on GOOD ", accessed 9/18, 2012, http://www.good.is/posts/infographic-drill-baby-drill/.

[2] "Latest Report: Renewable Energy Surpasses Nuclear Power by 18% | Renewable Energy News Article ", accessed 9/18, 2012, http://www.renewableenergyworld.com/rea/news/article/2011/10/another-milestone-renewable-energy-surpasses-nuclear-power-by-18.

[3] National Renewable Energy Laboratory. (2012). Renewable Electricity Futures Study. Hand, M.M.; Baldwin, S.; DeMeo, E.; Reilly, J.M.; Mai, T.; Arent, D.; Porro, G.; Meshek, M.; Sandor, D. eds. 4 vols. NREL/TP-6A20-52409. Golden, CO: National Renewable Energy Laboratory. http://www.nrel.gov/analysis/re_futures/.

control of its investor owned utility (IOU). Boulder's process towards municipalization reflects a growing interest across the United States for this method of "greening." Boulder is in the final phases of studying the possibility of full municipalization and other means to increase for local control, and aims to take steps towards municipalization in the near future. While it remains to be seen if the city will successfully create a municipally owned utility (MOU), exploring Boulder's thought processes, studies, and decision making to date provides an opportunity for a discussion of the benefits and possible downsides of municipalization and allows a glimpse into the future of MOUs in the United States.

Climate Change

Increasing the use of renewable energies in communities is of growing interest across the nation. Climate change is an accepted phenomenon and a growing concern. In general, the expansion of renewable energy sources will reduce emissions of greenhouse gases, thus slowing climate change. As the National Research Council concluded in a 2010 study, "[c]limate change is occurring, is very likely caused by human activities, and poses significant risks for a broad range of human and natural systems."[4] Global average temperature increased by more than 1.4ºF over the last century, and the decade from 2000-2010 was the warmest on record. The years 2005 and 2010 are now tied as the warmest years ever recorded.[5] These increases in temperature have corresponded with changes in weather and climate around the world. Some areas have seen a large decrease in rainfall that, combined with extreme heat, has led to persistent drought. Other areas

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[4] Committee on America's Climate Choices. 2011. *America's Climate Choices (2011)*. Washington, D.C.: National Academies of Sciences.
[5] *NOAA: 2010 Tied for Warmest Year on Record*. 2011. Asheville, North Carolina: National Oceanic and Atmospheric Administration.

have experienced increased rainfall that has caused flooding and landslides. Glaciers are melting around the world, especially at the poles, resulting in rising sea levels and acidification of the ocean. Sea levels have risen faster over the last century than ever before, threatening coastal communities and island nations around the globe.[6]

These changes in the global climate have already caused enormous change to the Earth's ecosystems. Some species, including butterflies, foxes, and alpine fauna, have moved farther north or to higher elevations to escape the heat.[7] In Antarctica, the number of breeding Adélie penguin pairs has fallen from 32,000 to 11,000 in 30 years.[8] Spruce bark beetles, a bug that has existed for centuries but that until now has been kept at bay by cold winters, have destroyed four million acres of spruce trees in Alaska in the past 20 years.[9] Varieties of pine beetles are spreading across the West and are threatening forests in states like Colorado, Montana, and Wyoming. The dead trees increase the risk and severity of forest fire and decrease the forest's ability to capture carbon. According to a study done for the EPA by Harvard's School of Engineering and Applied Sciences, areas of Montana and Wyoming could see a 200 percent increase in acres burned by wildfire and an 80 percent increase in organic carbon aerosols, chemicals that cause air pollution from fires.[10]

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[6] IPCC, 2007: Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)]. IPCC, Geneva, Switzerland, 104 pp.
[7] Ibid.
[8] Ibid.
[9] Ibid.
[10] Spracklen, D. V., L. J. Mickley, J. A. Logan, R. C. Hudman, R. Yevich, M. D. Flannigan, and A. L. Westerling (2009), Impacts of climate change from 2000 to 2050 on

If climate change continues unmitigated, the effects are estimated to be varied and severe. Storms and hurricanes could become more severe and floods and drought more common. Rainfall in already dry Ethiopia could decline by ten percent over the next 50 years.[11] The disappearance of glaciers would mean the disappearance of drinking water supplies for thousands of people.[12] This melting, combined with the melting of the ice caps on the poles, could cause a rise of sea levels of between eight and 31 inches by the end of the century.[13] A changed climate could also lead to the increased spread of certain diseases, such as malaria carried by mosquitos.[14] Many species will have to adapt, change, or migrate extremely quickly to avoid extinction.[15] Some will not survive.

Climate change will result in variable – but undeniably severe – changes to our natural world. These changes will lead to extreme human and ecosystem consequences if climate change is not mitigated effectively, efficiently, and rapidly. Several studies show that changes in behavior by governments and citizens could dramatically slow the spread and consequences of climate change. For this reason, a wide spectrum of mitigation and adaptation strategies has been proposed. These vary from promoting adaption and accommodation to entirely banning the use of fossil fuels, and from implementing voluntary programs to imposing strict regulations. The United Nations Environment Program (UNEP) breaks mitigation schemes into eight broad sectors: agriculture, forests, energy, manufacturing, transport, tourism, buildings, and waste. UNEP's main energy

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wildfire activity and carbonaceous aerosol concentrations in the western United States, J. *Geophys. Res*., 114, D20301, doi:10.1029/2008JD010966.

[11] Ibid.

[12] Ibid.

[13] Ibid.

[14] Ibid.

[15] Ibid.

strategy is to transition from traditional sources of power to renewable energies or "green energies." As its website states,

> "[i]n 2010, new investments in renewable energies reached a record high of US$ 211 billion, with noticeable growth in emerging economies. While there is much progress to be made, decreasing costs and increasing deployment experience are making renewables more and more competitive with fossil fuels, especially when the latter's negative externalities, like pollution and health impacts, are taken into account. But in order to move towards a greener energy path, governments and local institutions will need to increase their involvement."[16]

The Potential of Renewables

Increasing the use of renewable energies around the world is seen as one of the most effective and promising mitigation strategies. According to a recent IPCC report, close to 80 percent of the world's energy supply could be provided by renewable energy by 2050.[17] This increase in renewables could lead to equivalent greenhouse gas savings of 220 to 560 gigatonnes of carbon dioxide between 2010 and 2050.[18] The report places the burden of action on "the right enabling of public policies."[19] As the Co-Chair of the Working Group III Ramon Pichs emphasizes, "[t]he report shows that it is not the

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[16] "Energy ", accessed 10/4, 2012. http://www.unep.org/climatechange/mitigation/Energy/tabid/104339/Default.aspx.
[17] IPCC, 2011: IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation. Prepared by Working Group III of the Intergovernmental Panel on Climate Change [O. Edenhofer, R. Pichs-Madruga, Y. Sokona, K. Seyboth, P. Matschoss, S. Kadner, T. Zwickel, P. Eickemeier, G. Hansen, S. Schlömer, C. von Stechow (eds)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 1075 pp.
[18] Ibid.
[19] Ibid.

availability of the resource, but the public policies that will either expand or constrain renewable energy development over the coming decades."[20]

Much focus on increasing renewable energy generation is currently placed on developing new technologies and on increasing the incentives, sometimes in the form of regulations, to encourage the greater use of such energies. The U.S. Federal government has several policies that promote the development of renewable energies. The majority of them focus on providing subsidies to renewable energy researchers and developers. These methods have seen some success. However, there is growing frustration over the U.S. government's perceived inaction to prevent and mitigate climate change. Critics of the U.S. climate policy point to the government's continuing support for oil drilling and fuel subsidy programs, less-than-stringent regulations on fossil fuel use of and emissions, and refusal to ratify international climate change agreements, among other things, as a sign that the U.S. government is not doing enough to mitigate climate change.

The Potential of Municipalization

For this reason, a growing number of states, cities, and communities are creating their own programs and regulations to mitigate climate change. Citizens and their state or local government representatives are looking for innovative ways to expand the use of renewable energy. Some success has been achieved through policies that create incentives for solar panel placement on private homes and businesses, or that push for wind energy installation on private land. Some communities have relied on public education campaigns about energy conservation. Others have created voluntary opt-in programs where homes and businesses pay slightly more in electrical utilities to obtain a

[20] Ibid.

larger percent of their electricity from renewable sources. Others have been successful in passing tax measures that pay for renewable energy production for the community as a whole.

However, some communities, like Boulder, are focusing their attention on the providers of their energy: electric utility companies. Many of these communities have already tried public education campaigns or opt-in programs and have seen some improvement. However, they are not satisfied with the level of improvement and are looking for alternative means to achieve increased renewable energy use. Electrical utilities generally control the energy mix that is used by a community. As a result, such utilities are often the focus of communities seeking a big change in the percentage of their energy that comes from renewables. Several communities have recently publicly denounced their energy providers for not offering them the choice to increase the percentage of energy that comes from renewable sources. A growing number are taking action to work with – or sometimes against – their energy providers to increase the percentage of renewable energies available.

Much of this attention has recently been focused on the role of investor-owned utilities, or private utilities, in supplying and delivering renewable energy. Electric utilities have the power to decide from what sources their electricity is generated. For this reason, municipalization has attracted considerable attention, especially from states and communities, like Boulder, that are looking to increase their supply of renewable energies.

For the purpose of this study, municipalization is defined as the process by which municipalities (cities, towns, or counties) take control of the distribution and sometimes

generation, of electricity, usually from an investor owned utility. This process results in the formation of an MOU.

Structure of Utilities in the United States

In the United States, electricity generation and supply is conducted mainly by privately owned utilities or publicly owned utilities. Private utilities are owned by investors and stockholders, whereas publicly owned utilities are operated by the city, state, or county, or by the customers they serve. Electricity can also be provided by rural electric cooperatives, which are community-owned utilities located in rural areas. A small number of energy customers get their electricity directly from power marketers. Power marketers, also known as competitive power suppliers or electric service providers (ESPs), sell electricity on the retail market usually to public or private utilities that then distribute it to their clients.

All states except Hawaii have a mix of these electricity schemes, although most electricity is provided to customers by private utilities. Across the nation, 68 percent of Americans are served by investor-owned electric utilities, 15 percent by public power systems, 13 percent by rural electric cooperatives, and four percent by power marketers. The majority of Americans receive their electricity through 202 investor-owned utilities, as compared to the nation's 2,008 public power systems, 877 rural electric cooperatives, and 173 power marketers (see Table 1).[21] The discrepancy between the number of public power systems and investor-owned electric utilities can be attributed to the fact that most

[21] "Public Power is Hometown Power." American Public Power Association. American Public Power Association, accessed 11/17, 2012, http://www.publicpower.org/files/PDFs/51HometownPowerFlyer.pdf.

public utilities operate on a smaller scale than do investor-owned private utilities, so more are needed to provide energy to a smaller number of customers.

Electric Industry Ownership and Consumers in the United States	
Number and type of provider	**Proportion of customers served**
2,008 public power systems	15%
202 investor-owned electric utilities	68%
877 rural electric cooperatives	13%
173 power marketers	4%

Table 1: Electric industry ownership and consumers in the United States. Adapted from APPA Public Power Fact Sheet

Fewer MOUs have been formed recently. In the past 15 years, 16 MOUs have been formed, whereas in the last 25 years, 46 have been formed and 72 have been formed in the last 35 years.[22]

There are 59 electrical providers that provide service to Colorado's 23 million customers. Of these, two are IOUs, 28 are RECs, and 29 are public electric utilities. The IOUs service 60 percent of Colorado's customers, REA's 23 percent, and MOUs 23 percent.[23]

Electricity Industry Ownership and Consumers in Colorado	
Number and type of provider	**Proportion of customers served**

[22] Johnson, Rebecca. 2006. *Municipal Electric Utilities - Analysis and Case Studies*. Colorado: Five Star Consultants.
[23] Ibid.

2 investor-owned electric utilities	60%
28 rural electric cooperatives	23%
29 public power systems	17%

Table 2: Electric industry ownership and consumers in Colorado. From, Johnson, Rebecca. 2006. *Municipal Electric Utilities - Analysis and Case Studies*. Colorado: Five Star Consultants.

Of the 59 electrical utilities in Colorado, the largest five sell 75 percent of the total megawatt hours used in the state.[24] These five utilities are Xcel Energy (an IOU), which provides 55 percent of the annual megawatt hours in Colorado; City of Colorado Springs Utilities (an MOU), which provides nine percent; Intermural Rural Electric Association (a REC), which provides four percent; Aquila (an IOU), which sells four percent; and Fort Collins Utilities (an MOU), which sells three percent.[25]

Five largest electrical utilities in Colorado (measured by annual megawatt hours)		
Utility	**Type of utility**	**Percent of total megawatt hours provided**
Xcel Energy	IOU	55%
City of Colorado Springs Utility	MOU	9%
Intermountain Rural Electric Association	REC	4%
Aquila	IOU	4%
Fort Collins Utility	MOU	3%

Table 3: Five largest electrical utilities in Colorado as measured by annual megawatt hours. From, Johnson, Rebecca. 2006. *Municipal Electric Utilities - Analysis and Case Studies*. Colorado: Five Star Consultants.

In Colorado, the average retail rate is highest for RECs and lowest for MOUs. Colorado retail customers of an IOU pay on average 7.54 cents per kilowatt-hour if they receive

[24] Ibid.
[25] Ibid.

power from an REC, 6.98 cents per kilowatt-hour if they receive power from an IOU, and 6.31 cents per kilowatt-hour if they receive power from a public electric utility.[26]

Whatever entity owns the utility decides what type of power the utility will buy and distribute to its customers. Because investors and stockholders own private utilities, IOUs are responsible to these stakeholders to generate a profit. As such, IOUs are more often inclined to buy the energy that produces the largest profit. In many areas, energy produced from coal or gas is cheaper and the distribution mechanisms for these sources are already in place. As a result, supplying an energy mix heavy in electricity produced from such non-renewable sources provides the largest profit and so is the energy mix most often chosen. Despite this profit motive, some private energy utilities have been responsive to communities calling for a greater amount of renewable energy in their mix.

The decision of Boulder to move away from their traditional electric utility in favor of more local control has stemmed in large part from the desires to include more renewable energy and have more of a voice in deciding the make-up of its electricity sources. Boulder has also traditionally strived to be an environmental leader.

As a result, Boulder is currently pushing to municipalize its electric utility. This would mean taking full control of finding, buying, and delivering electricity through the creation of a municipal electric utility. To achieve full municipalization, the City would have to buy much of the existing private distribution system, hire new employees to staff the utility, and undergo costly litigation with Xcel. The cost of the distribution system

[26] Ibid.

alone is thought to be $120 million, according to City of Boulder estimates.[27] Xcel, the existing electricity provider, an IOU, argues the true costs will be much higher.

This paper will investigate the potential of municipalization to be an effective method of providing communities with the renewable energy that they demand. This will be accomplished through a case study of the proposed municipalization in Boulder. This case study will include analysis of the:

- Reasons for the initiation of municipalization
- Initial support and opposition, including fiscal feasibility
- Socio-political processes that preceded municipalization
- Social and political action during the process of municipalization
- Flexibility for adaption and change
- Capacity inherent in each scheme for compromise between social, political, and business actors
- Outcomes produced in terms of
    - Percent increase in renewable energy delivered (or predicted to deliver)
    - Community and government satisfaction
    - Influence on other communities
- Future of municipalization in Boulder and around the United States
- Alternatives to full municipalization.

Background and Trends of Utilities in the United States

There has been a mix of privately owned and publicly owned electrical utilities since large-scale electrical generation began in the United States. The industry itself

[27] "Boulder's Takeover of Xcel Energy Faces Strong Winds ", accessed 9/24, 2012, http://www.forbes.com/sites/kensilverstein/2012/04/25/boulders-takeover-of-xcel-energy-faces-strong-winds/.

began in the 1880s and evolved from street lighting systems.[28] Thomas Edison's Pearl Street electricity generating station in Manhattan was the first true electric utility. It offered reliable central generation, efficient distribution, a successful end use, and a competitive price (which the U.S. Energy Information Administration calls the four key elements of a modern electric utility system).

The end of the 19th century marked a period of rapid growth in the number and size of electric utilities. At that time, public utilities mainly dealt with street lighting and trolley services. At the turn of the century, they produced about eight percent of the country's total electricity. Privately owned utilities provided the rest and were aggressive competitors.

The number of municipal electric utilities and their generation capacity dropped during the Depression era. Overwhelmed by the bigger and more efficient private utilities, by 1932 the remaining municipal utilities generated only five percent of the country's total. In contrast, private utilities contributed 94 percent. The remaining one percent was provided by a growing number of state-owned utilities and federal systems. Private utilities profited greatly during this era, despite a drop in electricity prices, due to a huge increase in demand for power: between 1907 and 1932 the percent of dwellings using electricity grew from eight percent to 67 percent. This electricity use was concentrated mostly in urban areas, with 80 percent of urban dwellings receiving electricity in 1932 compared with 11 percent of farm dwellings.

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[28] The material in this section relies heavily on "The Changing Structure of the Electric Power Industry: History of the U.S. Electric Power Industry: An Update - Appendix A - Beginnings: 1882-1900 1882-1991 ", accessed 9/19/2012, http://www.eia.gov/cneaf/electricity/page/electric_kid/append_a.html#N_4_.

Electricity use in farm dwellings grew to 35 percent by 1941 due to increased federal attention on the growth of rural electricity services. The Rural Electrification Administration (REA), formed with the passage of the Rural Electrification Act of 1936, focused on providing loans and incentives to utilities with the aim of bringing electricity to rural areas and towns with populations under 2,500. The 1994 Pace Act extended the REA indefinitely and, by 1960, rural electrification was nearly complete.

Following a period of strong federal development in electric generation (in 1957, federal generation reached 17 percent), generation by cooperatives, power districts, and state projects again took the front stage. Between 1950 and 1960, generation from non-federal public power plants and cooperatives increased from 6.5 percent to 8.5 percent.

Between the end of World War II and the 1970s, electric utilities prospered enormously. Electricity demand increased rapidly, consistently, and predictably, while prices fell. According to the U.S. Energy Information Administration (EIA), the electric utility industry was characterized by three main themes: robust growth, the introduction of commercial nuclear power, and expanding public power that replaced the growth of federal power. Nuclear power was first sold commercially in the 1950s after the passages of the Atomic Energy Act of 1954 and the Price-Anderson Act.

Continued high electricity growth rates, technological advances, and the advent of environmental concerns dominated the history of electricity in the 1960s. Throughout the decade, electricity generation and capacity growth averaged almost 7.5 percent a year, spurred on by economic growth, declining prices, and increased demand. Nuclear power grew to comprise one percent of the U.S. total by 1970 and was the principal cause of technological advances in automated controls and computers. Electricity generation

became subject to increasing environmental regulation during this era. In 1969, the National Environmental Policy Act (NEPA) was passed and required that utilities prepare environmental impact statements for new power plant construction. New science about the environmental impacts of sulfur dioxide (SO_2) led to experimentation with emission control equipment in coal-fired power plants, including the construction of higher emission stacks meant to better disperse SO_2.

The 1960s also saw the advent of new challenges in the electricity industry, mainly due to the halt in efficiency growth, rising costs, and concerns over reliability. Until the mid-1960s, the electricity industry had seen decades of increasing efficiencies in generation and transmission. By the middle of the decade, however, gains in efficiencies had declined. The resulting loss in profits was exacerbated by new environmental regulations, which increased operating costs. Finally, in 1965 the Northeast experienced a major power blackout, which brought to the forefront questions about the reliability of power networks. The aftermath of the blackout saw the formation of regional reliability councils and the North American Electric Reliability Council (NERC) to promote the reliability and adequacy of bulk power transmission.

After the 1960s, the trends of decreasing unit costs and rapid growth reversed and the country saw a period of increasing unit costs and slow growth. These led to price increases averaging 11 percent per year. This reversal was caused in major part by inflation that affected borrowing for capital expansion programs, rising fossil fuel and natural gas prices, environmental regulation, and conservation legislation. Inflation and rising fuel prices increased the operating and expansion costs of utilities by a significant

amount: the price of petroleum increased by an average of over 26 percent per year between 1970 and 1980, more than doubling in 1974 alone.

The 1970s were boon years for environmental and conservation legislation in the U.S. They saw the passage of such landmark legislation as the Clean Water Act (1972) and the Endangered Species Act (1973). Most relevant to the electricity industries were the Clean Air Act of 1970 and its amendments in 1977, the Federal Water Pollution Control Act of 1972, the Resource Conservation and Recovery Act of 1976, the Energy Supply and Environmental Coordination Act of 1974, the 1978 Powerplant and Industrial Fuel Use Act, and the National Energy Conservation Policy Act of 1978. These Acts required utilities to reduce pollutant emissions, limit the use of tall stacks to disperse emissions, limit waste discharges into water, regulate the disposal of utility waste, and conserve natural gas and petroleum. All these factors led capacity to exceed demand for the first time. Faced with excess capacity and stagnant revenues, some utilities suffered financially and investor confidence decreased. Nuclear power faced a crippling blow on March 28, 1979 when nuclear reactor Number 2 at Three Mile Island experienced a partial meltdown. The Three Mile Island incident, coupled with inflation, increasing labor and material costs, and decreasing demand, led to the cancellation of the construction of 63 power plants between 1975 and 1980.

This trend continued into the 1980s and for the first time total net generation of electricity decreased more than two percent in 1982, the first absolute decline since 1945. There was little growth in electric demand or capacity during the first years of the decade. However, by 1984, electricity generation grew 4.5 percent, reflecting a healthy economy,

an increasing preference for electricity, and a decline in electricity's price relative to other types of energy.

Regulation and Structure

Both public and private-owned electric utilities are subject to state and federal regulation. On a state level, Public Utility Commissions, or PUCs, are the main regulating bodies. (State regulation of utilities began in the early 1900s)[29]. The scope of regulation by PUCs varies from state to state. Most have under their purview the regulation of natural gas, telecommunications, water, railroad, rail transit, and passenger transportation companies. Some, such as Colorado's PUC, regulate investor-owned electric, gas, and water utilities and have partial regulatory control over municipal (public) utilities and electric associations.[30] Others, such as California, regulate only privately owned electric, gas, and water utilities.[31] The size of these PUCs also varies by state. Colorado, for example, is allowed 95.6 full time equivalent employees whereas California has around 1,000.

All PUCs have the authority to establish rates, service, reliability, and adequacy standards; enforce compliance; oversee entry and exit from the market; and assist and educate consumers. In so doing, a PUC's main goal is to protect customers and ensure that companies serve these customers on a non-discriminatory basis. In most states, an electric utility must apply to the state PUC for a Certificate of Public Convenience and

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[29] Ibid.
[30] "About the Public Utilities Commission." Public Utilities Commission. State of Colorado, accessed 9/18, 2012, http://www.dora.state.co.us/puc/aboutpuc.htm.
[31] "About Us." California Public Utilities Commission. State of California, accessed 9/18, 2012, http://www.cpuc.ca.gov/PUC/aboutus/.

Necessity (CPCN) before it is allowed to construct facilities to serve the public for profit. The Colorado PUC explains the rationale for CPCNs: "[i]ssuing CPCNs increases public confidence in the companies authorized to provide electric services in the state. It promotes financially healthy companies who will stay in business and provide a high level of service to their customers."[32]

Federal regulation of electric utilities developed in great part between 1901 and 1932. It was brought about by three main factors: recognition of utilities as natural monopolies in interstate commerce; federal ownership of most of the country's hydroelectric resources; and the acceleration of economic programs, including electricity development during the period. Today, both public and privately owned utilities are subject to regulation by the Federal Energy Regulatory Commission (FERC). FERC works at the interstate level to regulate the wholesale sale and transmission of electricity, natural gas, and oil.[33] It also oversees mandatory reliability standards for bulk power, promotes the development of national energy infrastructure, and authorizes transmission line siting and permits. Its additional responsibilities include the oversight of jurisdictional mergers and other corporate transactions to ensure that each is consistent with the public interest.[34]

FERC also directs the formation of Independent System Operators (ISO) and Regional Transmission Organizations (RTOs). Both ISOs and RTOs exist at the regional level. They are formed to administer regional wholesale electricity markets, operate the

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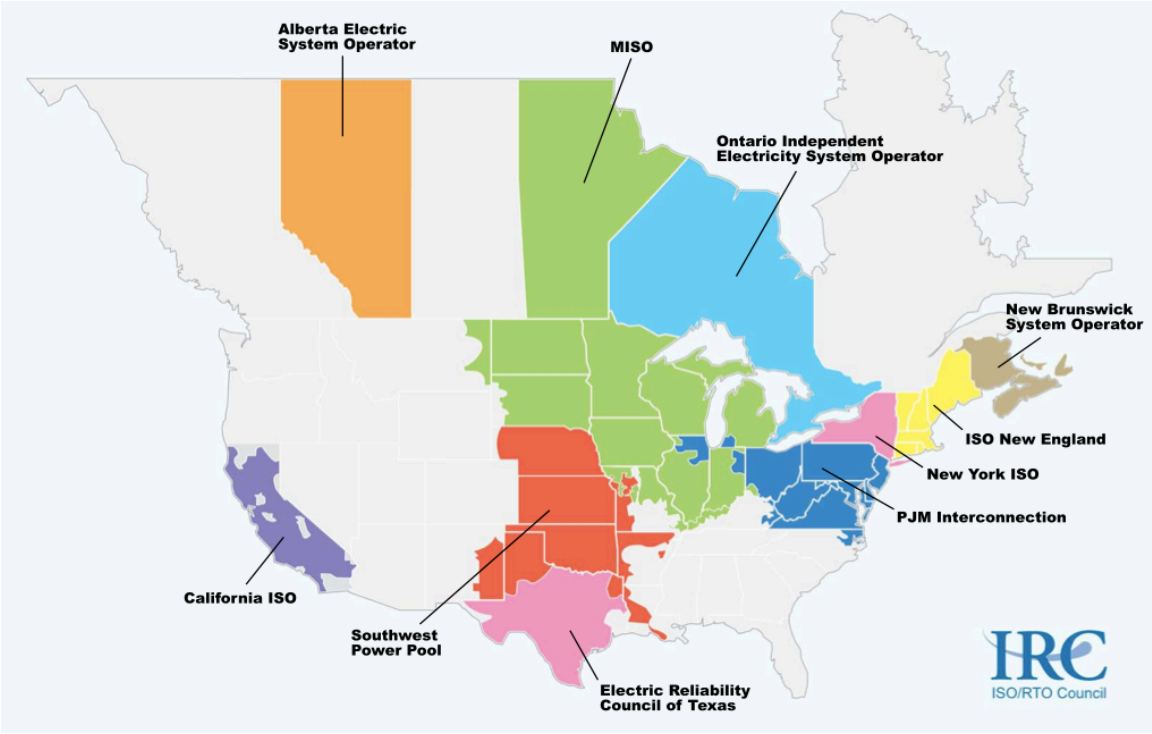
[32] "About the Public Utilities Commission." Public Utilities Commission. State of Colorado, accessed 9/18, 2012, http://www.dora.state.co.us/puc/aboutpuc.htm.
[33] "FERC: About FERC - what FERC does " accessed 9/18/2012, http://www.ferc.gov/about/ferc-does.asp.
[34] Ibid.

electricity grid of the region, and provide reliability when planning for the regional bulk electricity system. RSOs hold a greater share of responsibility for the region's transmission network. ISOs and RSOs exist mostly in the Midwest and Northeast of the country and in California.



Map 1: ISOs and RSOs in the United States. Copyright of the ISO/RTO Council.

Some ISOs and RSOs have actively responded to citizen demand for increased renewable energy. Many are now working to identify and solve issues regarding the integration of renewable resources into their transmission grids. For example, California's ISO is working to support the increase in renewable energies mandated by California's Renewables Portfolio Standard for 2020. It is doing so by increasing and improving transmission grids, developing monitoring technologies for existing grids, and

planning to receive renewable energy from new locations and at variable times and amounts.[35]

PURPA

The Public Utility Regulatory Policies Act (PURPA) is the most significant piece of national legislation that affects utilities around the United States. PURPA was passed in 1978 in response to the 1973 energy crisis. It is part of the National Energy Act (NEA), which also includes the Energy Tax Act, the National Conservation Policy Act (NECPA), the Power Plant and Industrial Fuel Use Act, and the Natural Gas Policy Act. It was, and still is, "the only existing federal law that require competition in the utility industry and the only law that encourages renewables," according to the Union of Concerned Scientists.[36]

PURPA forced IOUs to buy power from efficient producers of energy (dubbed "qualified facilities") provided that the cost was less than or equal to the utility's own "avoided cost." Avoided cost was defined as the additional cost that the utility would incur if it generated power itself, or if it could purchase the energy from a different source.[37] At the time of passage, Congress fearfully expected that oil would soon rise to $100 a barrel. PURPA was meant to protect the industry, and indeed the country, from

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[35] "California ISO - Renewables and Demand Response Integration," accessed 9/18/2012, 2012, http://www.caiso.com/informed/Pages/RenewablesDemandResponseIntegration/default.aspx.

[36] "Public Utility Regulatory Policy Act (PURPA) ", accessed 10/29, 2012, Union of Concerned Scientists. http://www.ucsusa.org/clean_energy/smart-energy-solutions/strengthen-policy/public-utility-regulatory.html.

[37] At the time, "avoided cost" was defined as the costs that would be incurred by the operation, construction, and fossil fuel costs of thermal power plant.

the resulting shock. Its purpose was to "encourage the conservation and efficient use of energy resources and to encourage the development of alternative power supplies capable of displacing the inefficient use of oil and natural gas by electric utilities."[38]

PURPA was successful at promoting the development of alternative energy sources. Those with entrepreneurial spirit saw the openings that PURPA created for renewable energy companies. By 1985, 2.5 percent of all electricity produced came from PURPA-approved facilities.[39] This number jumped to nine percent by 1995.[40] PURPA also included some creative energy efficiency approaches. For example, PURPA required that utility companies purchase power from industrial companies that produce electricity as a by-product of other activities. For example, if a paper company needed steam for its production, it could boil water and send the steam first through a turbine-generator that would produce electricity. This electricity would be used in the factory, and the waste steam used for the production of paper.[41] This cogeneration process created much greater efficiency: more than 45 percent of the energy content contained in the raw fuel could be used towards productive purposes.[42]

One of the most significant effects of PURPA is that it opened the electric power industry to internal market competition. As the Washington Policy Center explains, "[o]nce independently generated energy was successfully integrated into the electrical

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[38] "What is PURPA?" EPSA: The Electric Power Supply Association. Electric Power Supply Association, accessed 3/1, 2013, http://www.epsa.org/industry/faqs/?fa=purpa.
[39] Hirsh, Richard F. "Powering the Past: A Look Back." Powering a Generation of Change. Smithsonian Institution, last modified 9/2002, accessed 10/29, 2012, http://americanhistory.si.edu/powering/.
[40] Ibid.
[41] Example adapted from: Ibid.
[42] Ibid.

transmission grid, pressure increased to open access to all transmission lines, so that all energy producers could sell their wholesale power to the highest bidder."[43]

These energy entrepreneurs were called Independent Power Produces (IPP). Before PURPA, only utilities were allowed to own and operate electric generating plants. Now, IPPs could enter the mix and compete with utilities to sell electric power to utilities and end users. These IPPs included privately held facilities, cooperatives (such as rural solar or wind energy producers), and cogeneration plants like the paper factory described above.[44] Although some of these IPPs failed, those that survived and those that have been created since now provide seven percent of U.S. power.[45]

Despite these numerous successes, some argue that PURPA has outlived its usefulness. These critics hold that PURPA should be replaced by a new law that is in touch with the times and that encourages renewables as they stand in the current market. For example, PURPA only provides that renewable energies be used if their cost is competitive with conventional (much more polluting) resources. Natural gas, though generally not considered renewable, passes PURPA standards, worrying those concerned with the bad effects (such as air pollution) of natural gas use.[46] Furthermore, some

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[43] Davis, Elaine R. "The Problem with Power: Public Threats to Private Utilities " Washington Policy Center. Washington Policy Center, last modified 1/1997, accessed 10/29, 2012, http://www.washingtonpolicy.org/publications/brief/problem-power-public-threats-private-utilities.

[44] "Independent Power Producer (IPP), Non-Utility Generator (NUG) ", Energy Dictionary. EnergyVortex, accessed 10/29, 2012, https://energyvortex.com/energydictionary/independent_power_producer_(ipp)__non_utility_generator_(nug).html.

[45] "Public Utility Regulatory Policy Act (PURPA)", accessed 10/29, 2012. Union of Concerned Scientists. http://www.ucsusa.org/clean_energy/smart-energy-solutions/strengthen-policy/public-utility-regulatory.html.

[46] Ibid.

renewable power generators signed contracts with utilities in the 1980s that guaranteed prices of their power for a number of years in the future. As the contracts expire, many of these generators are going out of business.[47] However, if PURPA had not been passed and utilities continued to construct their own power generators, electric prices would be higher now.[48]

Despite these drawbacks, PURPA has arguably been "the most effective single measure in promoting renewable energy." It has created over 12,000 megawatts of non-hydro renewable generation capacity and opened up the previously vertically integrated and monopolistic electrical generation industry to competition.

Criticism of Municipalization

There are four main criticisms of municipalization of electric utilities. The first argues that municipally owned utilities (MOUs) have unfair competitive advantages over investor-owned utilities (IOUs). The second is the worry that a municipalized electrical system cannot diversify if things go badly, and so represents too much risk to the citizens it serves. Critics of municipalization also point out that the cost of operating, maintaining, and administering a utility depends largely on economies of scale. The large economies of scale that allow IOUs to operate are often not available to MOUs that only serve one city or county. Finally, there is the ideological critique that municipalization is inherently 'un-American' – that America is a country where private companies thrive, and where government should take a back seat to their operation.

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[47] Ibid.
[48] Ibid.

Unfair competition

Critics argue that MOUs have an unfair advantage point to tax exemptions, preferential power purchasing provisions, and access to lower interest tax-exempt bonds, which MOUs can use to finance capital construction. A recent study done by the (conservative) Washington Institute Foundation found that public power users benefit from a subsidy equivalent of 38 percent. In other words, if there were no tax or monetary preferences for public power, the Foundation claims that MOUs in Washington State would need to increase revenues, and therefore rates, by 38 percent to operate under the same financial conditions as IOUs. We will examine each of the three main sources of unfair financial preferences that go to MOUs – tax exemptions, preferential power purchasing provisions, and access to lower interest tax-exempt bonds.

MOUs enjoy a variety of tax exemptions unavailable to IOUs. IOUs must pay a federal income tax, for example, that MOUs and electric cooperatives do not. IOUs must also pay business and occupation taxes, property taxes, and other similar taxes such as property, gross receipts, and excise taxes. MOUs do make payments "in lieu" of these taxes, but not on the same level. In fact, if MOUs were made to pay the same taxes as IOUs, their expenses would see an 18 percent increase, an increase that would be translated into an increase in rates.[49] This necessary rate increase, critics say, would make MOUs less competitive to IOUs. As much of the public and governmental support of MOUs is based on the alleged lower cost to customers that MOUs offer, this critique, if proven true, could pose a large issue for proponents of electric municipalization.

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[49] Davis, Elaine R. *Paying for Power: The Challenge of Municipalization*. Issue brief. Seattle: Washington Policy Center, 1997. Print.

MOUs are also eligible for preferential purchasing provisions that IOUs are not. The federal government owns a number of power facilities. These federally owned facilities often provide power to MOUs at below-market prices. IOUs do not have this same preferential access to low-price federal power.

Both the initial construction and maintenance of electric utility facilities requires access to large, upfront capital. Both IOUs and MOUs normally must sell bonds to finance these capital-heavy projects. IOUs must sell bonds at market interest rates and the bonds are subject to taxation. Capital construction bonds held by MOUs are tax-exempt – income tax is not paid by the holders of the bonds.

This difference gives MOUs an advantage. According to a study done by the Washington Policy Center on policy preferences for MOUs in the state of Washington, "[i]f Washington's government-owned utilities [MOUs] paid market interest rates on capital financing, their debt service would be increased by $84,000,000 per year, requiring an increase of 3.5% in revenues."[50] While not game-changing, MOUs' access to lower interest tax-exempt bonds gives them a significant advantage over IOUs.

Critics are quick to point out that, in addition to creating unfair competition, the economic benefits enjoyed by MOUs do not truly reduce costs. They instead shift the costs that would be incurred by MOUs to taxpayers at large. Customers of IOUs, then, not only pay for power they consume, but also for the subsidies customers of MOUs enjoy.[51] This is due in part to the taxation methods for interest rates of bonds mentioned earlier. Instead of issuing corporate bonds, as do IOUs, MOUs are able to issue

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[50] Ibid.
[51] Ibid.

municipal bonds, or "munis." Munis are bonds that are issued by city, county, and state governments, "as well as by enterprises with a public purpose, such as certain electric utilities, universities, and hospitals."[52] Holders of munis are often exempt from paying taxes on the interest generated by the bond. If they live in the state from which the bond was issued, holders are also exempt from paying the state income tax on their interest.

Because munis are tax exempt, interest rates made on muni bonds are usually lower than those made on corporate or other types of bonds. Because of their tax-exempt status, munis are still attractive to investors. MOUs' ability to issue munis, then, gives them an advantage over IOUs, especially when funding capital-intensive projects.

A switch from an IOU to a MOU would also potentially have a detrimental effect on regional and federal governments. If a city or region switched from an IOU to an MOU, the local, state, and federal governments would no longer have access to tax revenue generated from the interest from corporate bonds. This is one rationale behind arguments against the municipalization of electric utilities. The Washington Policy Center argues, "the existing financial preferences do not 'reduce costs,' they simply shift them from certain consumers of electricity to taxpayers at large."[53] The policies that allow MOUs tax exemptions, preferential power purchasing provisions, and access to tax-exempt bonds hurt IOUs, the customers of IOUs, and eventually taxpayers beyond the area served by the MOU. The residents of the municipality, however, benefit from lower energy prices. This benefit may offset any taxes lost.

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[52] "What You Need to Know about Investing in Municipal Bonds." AAII: The American Association of Individual Investors. American Association of Individual Investors, accessed 11/17, 2012, http://www.aaii.com/investing/article/what-you-need-to-know-about-investing-in-municipal-bonds.
[53] Ibid., 2.

Diversification

Another criticism against the municipalization of electric utilities has to do with the difficulties MOUs have diversifying their portfolios and thereby expanding their scope, and the risk that comes with that inability. Because IOUs are normally larger than MOUs, they can afford to take on the risk that comes with diversifying. IOUs can also invest in areas beyond a single city or region, whereas MOUs are confined to serving and investing in infrastructure in much smaller areas – usually their municipality and the surrounding areas only. MOUs, moreover, often do not have the capital it takes to diversify. They also must often consider local public opposition before considering diversification. These three factors – fiscal constraints, geographic limitations, and forced responsiveness to the public – decrease MOUs ability to diversify. Besides increasing risk by "putting all their eggs in one basket," MOUs challenges to diversification deprive them of the possibility of acquiring additional sources of revenue. This gives IOUs an advantage over MOUs.[54]

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[54] However, a recent study has shown that IOUs are not as successful at diversification as one might guess. A study entitled "Diversification strategy in electric utilities: who wins? Who loses?" looked at the diversification strategy and success of ten IOUs and 20 rural electric cooperatives (RECs) in four upper-Midwestern states. Defining a diversification strategy as "when less than 70% of firm revenue comes from a single line of business," the study found that, although IOUs tended to diversify more than RECs, the "performance outcomes of diversification have been disappointing." Although diversification has the potential to lead to increased market power, economies of scope, risk diversification, and increased size and visibility, both IOUs and RECs experienced only limited success in achieving these results. IOUs that invested in ventures related to their main business as an electric utility, such as utility construction and other energy businesses, faired better. IOUs with more experience with diversification and/or more mature ventures similarly had more stable non-utility performance outcomes. More non-energy-related ventures, such as investments in recycling, economic development, real estate development, housing, telecommunications, a variety of business services, and a

However, failed diversification can be fatal to a utility, and can negatively affect the utility's customers, stockholders, and the community that it serves. If a utility attempts a diversification strategy that is too risky, it can face financial losses and even bankruptcy. These losses would be passed on to the customer through increased rates and decreased level of service. Customers could see a rise in rates or interruptions in their energy supply, such as occurred in the California brownouts and 2003 East coast and Canada blackouts. Jobs may be lost, and the entire community affected by the temporary loss of electrical power or the more permanent loss of an electrical utility. The availability of consistent electric power is a benefit that many take for granted but is vital to community sustainability and growth.

The costs of a failed diversification strategy for energy utilities can be widespread and hard-felt. Whether an IOU, a REC, or an MOU, a utility should be aware of the risks – as well as the benefits – of pursuing a diversification strategy. As a study of diversification strategies of electric utilities states, "electric utility firms should beware of this growth for its own sake, and carefully evaluate competition, requisite skills, and profitability when seeking new opportunities."[55]

The above study did not include MOUs because they are not held by the same regulations or pressures from stockholders to diversify. Although their inability to diversify is a barrier to expansion, this study indicates that perhaps the inability is a blessing in disguise. If an MOU were unable to diversify, it would not be exposed to the

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reliance on debt financing led to losses. One firm studied was forced into bankruptcy because of their diversification strategy.

[55] Froelich, Karen A. and John Ramsey McLagan II. 2008. "Diversification Strategy in Electric Utilities: Who Wins? Who Loses?" *Academy of Strategic Management Jounal* 7.

adverse risks that come with diversification. MOUs, not able to be swayed by stakeholders to undergo risky diversification, could in this regard be seen as a more stable and dependable source of energy than IOUs.

Scale

One characteristic that separates MOUs and IOUs is size. IOUs often serve a much larger area than do MOUs, whose customer base is often confined to a single city, county, or rural area. It is quite expensive to operate, maintain, and administer a utility system. The costs per customer decrease, of course, as the customer base increases. Because of these high costs, the success of utilities depends in large part on economies of scale. IOUs are able to rely on these economies of scale to keep their operating costs low enough to stay in business. The economies of scale allow IOUs to save on operations costs, maintenance crews, and staff in legal, accounting, and engineering, for example.[56] MOUs, because of their smaller size, are often not able to capitalize on economies of scale and so are uncompetitive to IOUs.

MOUs as Un-American

Finally, there is the criticism that the municipalization of electric utilities is simply "un-American." There has long been debate over the questions of what should be under government control and regulation and what should be left up to the private sector. The private sector is often seen as being able to "get things done" more efficiently, in

[56] Poque, Thomas and Solow, John L. "Review of 'Considerations in Governmental Aquisitions of Utility Systems Properties'." Iowa Utility Association. Iowa Utility Association, accessed 4/3, 2013, http://www.iowautility.org/currentissuese.aspx.

terms of both time and resources. As Ronald Reagan, a famous proponent of small government and a robust private sector, said:

> Government has laid its hand on health, housing, farming, industry, commerce, education, and to an ever-increasing degree interferes with the people's right to know. Government tends to grow, government programs take on weight and momentum as public servants say, always with the best of intentions. But the truth is that outside of its legitimate function, government does nothing as well or economically as the private sector of the economy.

This sentiment is still alive today. If business can be carried out well by the private sector, government interference in the U.S. is seldom welcomed unless it is to regulate unfair practices committed by the private sector. The best example of this is the regulation of monopolies through the "trust busting" of President Theodore Roosevelt in the late 19th century.

Although the municipalization of electric utilities can be seen as a response to unfair practices of private-sector companies, municipalization is a much bigger endeavor than regulation. IOUs have been regulated since Roosevelt's presidency with little outcry from or even recognition by the general public. Municipalization represents a more substantial form of government involvement in what is largely a private sector industry. If done on a larger scale, municipalization could be called nationalization.

Virtues of IOUs

Responsiveness to the Public

Perhaps the most significant advantage of MOUs is their responsiveness to the public. In contrast to IOUs, which can serve up to 15 million people (as does California's

PG&E), MOUs serve a significantly smaller number of customers.[57] This means that MOUs have to be responsible to considerably fewer people. As such, MOUs are much more able to take into account the wants and needs of their specific customers – and they are expected to do so. An MOU is directly answerable to its municipality and only to its municipality. IOUs, on the other hand, are responsible to their customers but also to their stakeholders. As stakeholders hold great financial power over IOUs, an IOU is likely to be more responsive to these relatively few stakeholders, whose demands may greatly differ from those of the IOUs customers.

An MOU's ability to respond to the demands of its customers is also made easier by the homogeneity of its customer base. The tastes and demands of a single town, city, or community are likely to be more similar than those of an entire state or region. It is therefore both easier for concerned customers to present a united face when making demands of an MOU and easier for the MOU to please more of its customers. This, however, is of course not always the case. There will be plenty of instances – perhaps a majority of instances – where demands of an MOU's customers are divergent. However, because of its size and geographical similarities, homogeneity in demands is more likely among MOU customers than IOU customers.

This virtue is clearly visible in Boulder's push towards municipalization. Boulder's biggest reason for municipalizing is to decrease the greenhouse gas (GHG) emissions that come from its electric supply by increasing the use of renewable energies. While Xcel has moved to incorporate wind and solar into its energy mix and has created

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[57] "Pacific Gas and Electric Company." Pacific Gas and Electric Company. PG&E Company, accessed 3/3, 2013, http://www.pge.com/en/about/company/profile/index.page?.

numerous programs for energy efficiency, Boulder is not satisfied. Xcel, however, argues that they have done their best to appease Boulder by incorporating these renewable energies, but also must take into account the demands of its other customers – customers who are not demanding renewable energies and who do not want to see their rates go up as a result of incorporating these renewables into their energy supply. By municipalizing, Boulder would have full control over its energy mix and could incorporate as much as financially and physically feasible, until its customers are satisfied.

Thus, because of their size and relatively homogeneous customer base, MOUs are more able to respond quickly and fully to demands from their customers than are IOUs.

Condemnation

MOUs also have an advantage over IOUs in their ability, in some states, to condemn privately owned facilities and transmission lines. Some states, such as Alaska, have laws that facilitate quick condemnation, whereas others, such as Oklahoma, have placed a moratorium on the condemnation of electric plants.[58] Colorado allows the use of eminent domain to obtain electric utility plants and infrastructure, although there are certain restrictions to doing so (the specific laws and processes that go along with condemnation will be discussed later). Despite the restrictions placed on municipalities that wish to condemn privately owned utilities, the mere fact that condemnation is allowed is an advantage held by MOUs but not by IOUs. An IOU does not have the power to condemn a MOU.

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[58] Briggerman, Abby, Radu Costinescu, and Ashley Bond. 2012. *Survey of State Municipalization Laws*. Washington, D.C.: American Public Power Association.

On top of being an advantage only available to MOUs, there are ideological arguments against MOUs having the power to condemn IOUs. Many look at the concept that governments can take over a facility or facilities built and owned by a private entity as overstepping their bounds. As Shelley Ross Saxer observes, "[a]sk most people what they think of a municipality using its eminent domain power to acquire a privately-owned utility company and the typical response is one of disbelief and sometimes, mild outrage."[59] They do not see the possible benefits that would come with an MOU as worth the increased governmental presence, especially at this first step of the process.

Closely related to the worries associated with the power of governments to condemn IOUs are concerns over conflicts of interest in the regulation of IOUs. Especially as the number of MOUs around the nation grows, MOUs and IOUs will compete for consumers, prices, and perhaps resources. Because some governments, especially local governments, as shown earlier, would potentially benefit from the existence of MOUs in their jurisdictions, there is the chance that they would make regulatory or tax decisions that would favor MOUs over IOUs. This conflict of interest, or even the threat of conflict of interest, could potentially be problematic, especially at the local and/or regional levels, creating an uneven playing field for IOUs.

Diversification of Energy Supply

While it is difficult for MOUs to diversify their capital investments, they are more able to diversify their energy mix. Utilities, both investor-owned and municipal, are investing more and more in diversifying their energy sources to include renewable

[59] Saxer, Shelley Ross. 2009. "Government Power Unleashed: Using Eminent Domain to Acquire a Public Utility Or Other Ongoing Enterprise." *Indiana Law Review* 38 (2005): 55.

energies. This type of diversification can benefit a utility's customers and community by adding a stable and reliable energy supply to the existing energy portfolio and creating positive externalities through environmental benefits and job creation.

Often, as with Boulder, the main push to increase the use of renewable energies comes from the public and the local government. It is difficult for the public to access the management of IOUs to communicate its wish for more renewables, and even more difficult to convince the utility to do so. An MOU, in contrast, is directly responsible to its public and can more easily be made to incorporate renewables and diversify its energy supply. This diversification represents serious benefits to the environment and increased demand for renewables, which in turn leads to demand for green jobs and innovation in green technology, and a more varied and thus stable energy supply for the MOU and the community it serves.

Local Employment

The creation and operation of an MOU provides opportunities for local employment. MOUs must employ managers, operators, customer service agents, repairmen, and a host of other workers to run and manage its daily operations. As an MOU is locally run and operated, it will create demand for skilled local labor. These local workers will demand services and buy goods from the local community, helping the economy remain healthy and vibrant.

Renewable Energies

Interestingly, no community other than Boulder has undergone municipalization with the express purpose of increasing its renewable energies portfolio in the past 30

years.[60] If the City decides to municipalize, Boulder will be a trailblazer of the idea to municipalize because of dissatisfaction with the amount of renewables offered by the incumbent IOU. According to *The New York Times*, it is an idea that is already catching on around the nation. In a March 13, 2013 article, The New York Times states, "[a]cross the country, cities are showing a renewed interest in taking over the electricity business from private utilities, reflecting intensifying concerns about climate change…and a desire to pump more renewable energy into the grid."[61]

If Boulder's models are correct, MOUs are able to effectively and economically incorporate renewable energies into their portfolios. The City's most recent study found (through quite sophisticated modeling) that Boulder could "with a very high likelihood" obtain 54 percent or more of its electricity from renewable resources. This increase would exceed the Kyoto Protocol greenhouse gas emission targets and reduce GHG emissions by more than 50 percent in the first year after the MOU is established.[62]

Why can MOUs incorporate renewable energy more easily into their portfolios than IOUs? The first reason is that IOUs are profit-based, and, at least for the near future, coal and other high GHG-producing fuels are less expensive sources of electricity than renewable sources such as wind, solar, and geothermal. To be sure, MOUs are also responsible to their customers to provide them with electricity at a reasonable price. However, across the country, MOUs on average have lower rates than their IOU

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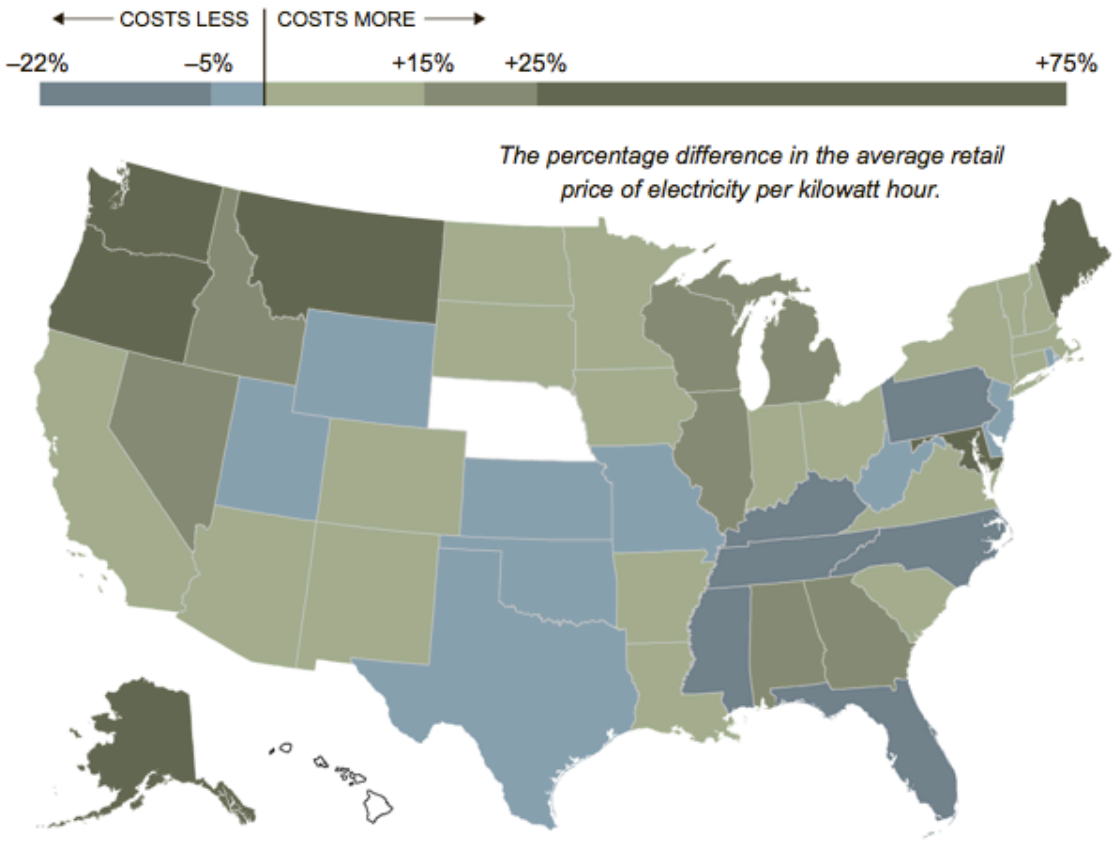
[60] Bellamare, Bob. Interviewed by Kathryn Browning. Personal Interview. Phone, 27 February, 2013.
[61] Cardwell, Diane. 2013. "Cities Weight Taking Over from Private Utilities." *The New York Times*, March 13, 2013.
[62] *Boulder City Council Study Session: Boulder's Energy Future Municipalization Exploration*. 2013. Boulder, CO: City of Boulder. 3.

counterparts. There are several possible reasons for this observation. First, MOUs can often make use of local sources of power, most notably, hydroelectric power. The use of hydropower by municipalities was a major cause of the success and number of municipalization cases in the 1970s. MOUs also usually serve a smaller customer base than IOUs, and so need to employ fewer people, many of whom are city employees who can spread their time in other parts of city business. MOUs often have lower management costs because MOUs are usually headed by a volunteer board or low-paid city council members. As we saw in the criticism of MOUs, MOUs are eligible for subsidies in the forms of lower taxes and interest free bonds. These reduced operations and infrastructure costs are translated into lower rates for customers. Lastly, MOUs, unlike IOUs, do not have to turn a profit to satisfy investors and stockholders. They need only make enough revenue for the upkeep of the system, customer service, and employee salaries.

These facts often translate to lower rates for customers of MOUs. Due to these lower rates, MOUs also have more flexibility to incorporate more expensive but greener energies into their mix.



Map 2: How much more or less IOUs cost than MOUs in price of electricity per kilowatt hour. From, Cardwell, Diane. 2013. "Cities Weight Taking Over from Private Utilities." *The New York Times*, March 13, 2013.

Municipalization in Boulder

Boulder, Colorado is a city of just under 100,000 located 30 miles from the state capital of Denver. Nestled at the foot of the Flatirons near the base of the Rocky Mountains, Boulder has long been known as a bastion of environmental thought in the western United States. In May 2002, for example, the Boulder City Council committed the city to achieving the goals set out in the Kyoto Protocol of reducing community greenhouse gas emissions to seven percent below 1990 levels by 2012. Although the city

came short of achieving the full reductions, the gesture conveys a sense of Boulder's environmental awareness and commitment to action.

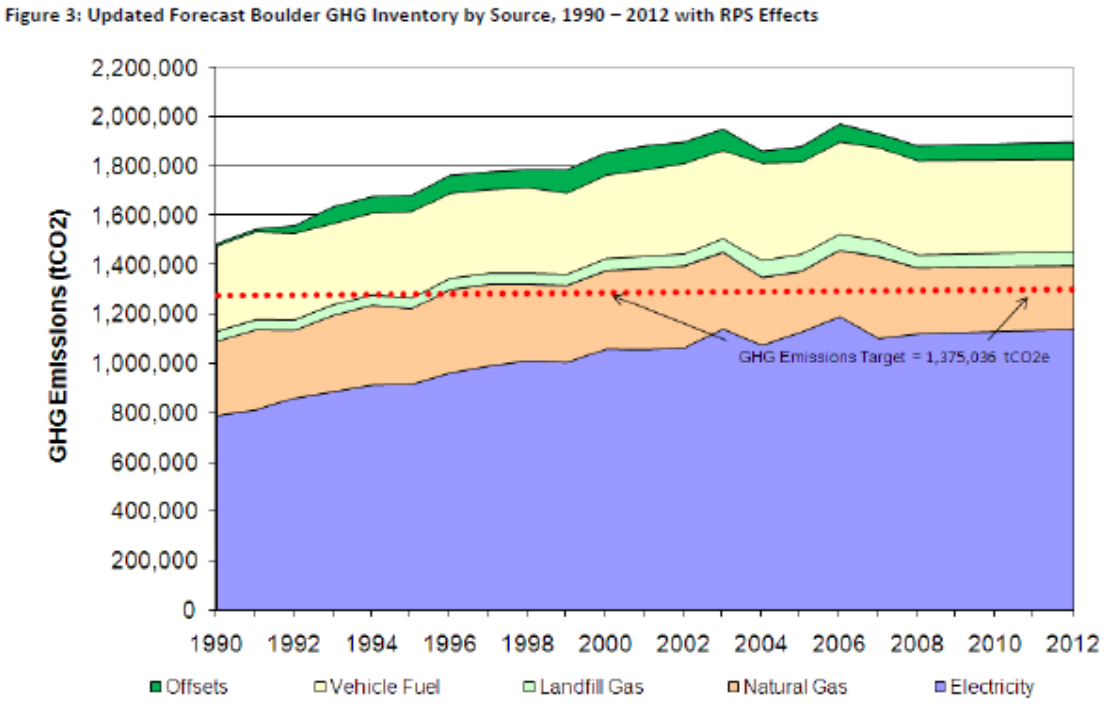


Figure 1: Boulder's greenhouse gas emissions profile. The red line represents the Kyoto Protocol target. From a presentation by Leslie Glustrom, generously provided to the author. Glustrom, Leslie. Interviewed by Kathryn Browning. Personal Interview. Phone, 13 February, 2013.

Xcel

Boulder has contracted with the Public Service Company of Colorado, an operating company of Xcel, for its power and natural gas needs since 1928. At the end of 2010, Xcel served 46,867 customers in the city of Boulder.[63] Of these, 39,329 were

[63] Eicher, Craig. Interviewed by Kathryn Browning. Personal Interview. Phone, February 11, 2013.

residential customers and 7,445 were commercial.[64] The largest remaining customer was the City of Boulder.[65] Xcel has historically agreed to provide energy and gas to Boulder pursuant to the terms of a franchise agreement that is renegotiated every 20 years. The franchise agreement gives Xcel access to the city's rights of way, allowing them to sell and distribute gas and electricity to Boulder's residents. Xcel, in return, agrees to reinvest three percent of its gross retail sales (equivalent to $3.5-4 million) back into the Boulder community. Xcel made $144 million in gas and electricity sales in Boulder in 2009.[66] The most recent franchise agreement between Xcel and the City of Boulder was signed in 1990.

Xcel's relationship with Boulder has seen its ups and downs. Although it is generally agreed that Xcel's delivery of electricity, reliability, and prices (post 1948) are good, there have been conflicts over Xcel's responsiveness to the desires of the Boulder community and Xcel's use of coal to generate electricity. Boulder has considered municipalizing three times in the past due to these factors. The first time was in 1948 and was caused by anger that Boulder customers were being charged a higher rate than Denver customers, though Xcel served both cities. The second instance came in 1968 and was over the issue of undergrounding electricity lines. Boulder citizens were angry that Xcel had continually refused their requests to underground these lines (a strategy that makes electricity more reliable by preventing damage caused by wind, falling trees, etc.). The Boulder government went so far as to place an excise tax on the ballot, but the

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[64] Ibid.
[65] Ibid.
[66] Jaffe, Mark. 2010. "Boulder Willing to Let Xcel Franchise Lapse while it Studies Future Energy Options." *The Denver Post*, October 10, 2010. http://www.denverpost.com/news/ci_16294228.

initiative failed and Boulder signed a new franchise agreement with Xcel. Municipalization was again considered in 1990, but no action was taken.[67]

In advance of the 2010 expiration of the latest franchise agreement, Boulder and Xcel began negotiations on a new franchise agreement in 2008. Two full years were spent negotiating this franchise agreement – negotiations that were characterized by an Xcel employee, Craig Eicher, as "very, very assertive on both sides."[68] A separate side agreement was proposed in the spring of 2009 that would shut down the Boulder-based Valmont plant (a coal fired plant that began operation in 1924), convert land on an ash pile to a 25-acre solar array, increase Boulder's role in Xcel's SmartGridCity program, and begin a data metering plan.

Of these issues, the Valmont plant and the SmartGridCity created the most division between Boulder and Xcel. The Valmont plant had been running its one remaining coal-fired generator since 1964 at a capacity of 186 megawatts, yet Boulder citizens had been calling for Xcel to shut down the plant for years. The issue was resolved in 2010, when Xcel announced it would shut down the plant by 2017 in a move to comply with Colorado's April 2010 Clean Air-Clean Jobs Act.[69]

The SmartGridCity program was an innovative new program developed by Xcel. Implemented in 2008 in Boulder, it used the city as a testing ground. The purpose of

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[67] Eicher, Craig. Interviewed by Kathryn Browning. Personal Interview. Phone, February 11, 2013.
[68] Ibid.
[69] Snider, Laura. 2010. "Xcel Plans to Close Valmont's Coal-Burning Generator." *The Daily Camera*, August 13, 2010.

SmartGridCity was to develop, explore, and test smart-grid tools in a real-world setting.[70] The Boulder pilot program was designed to help determine:

- Customer's preference of energy-management and conservation tools
- Which technologies are the most efficient at delivering power
- The best ways smart-grid technology can be incorporated into operations to improve efficiency, reduce carbon emissions, and modernize the energy delivery system, and
- How to implement the most successful of these smart-grid strategies on a wider scale.[71]

In accordance with the pilot program, Xcel installed approximately 23,000 automated smart electric meters in Boulder.[72] The SmartGridCity program, however, soon fell into trouble. The cost of the program rose from an estimated $16 million to $44 million.[73] When Xcel tried to recover some of these costs from Boulder customers, it ran into trouble with the PUC. As of now, SmartGridCity meters still operate on many Boulder homes, businesses, and university buildings. The future of the program in Boulder, however, is uncertain, especially if the City decides to municipalize. The program did not gain many points for Xcel in the eyes of Boulder citizens. As Steve Pomerance, a prominent Boulder activist, said, "SmartGridCity gave Xcel a black eye rather than giving them bartering points [with Boulder in the municipalization decision-making

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[70] "SmartGridCity." Xcel Energy. Xcel Energy, accessed 3/29, 2013, http://smartgridcity.xcelenergy.com/.
[71] Ibid.
[72] Ibid.
[73] Pomerance, Steve. Interviewed by Kathryn Browning. Personal Interview. Phone, February 11, 2013.

process]. They weren't interested in working with Boulder, and didn't know what they were doing."[74]

The relationship between Boulder and Xcel was once again soured by Xcel's decision to build the Comanche 3 plant. Xcel already operated two coal-fired, steam-electric generation stations when they began construction on Comanche Unit 3 in 2005. Unit 3 is much more efficient that Unit 1 (which came online in April 1971) and Unit 2 (which went online in December 1975). According to Xcel's website, Unit 3 is "…Colorado's first advanced, highly efficient, supercritical coal unit that can generate more electricity with less fuel."[75] The construction of Comanche 3 allowed Xcel to retire two older and less efficient coal-fired plants and retrofit an additional 950 MW.[76] The construction cost $1 billion and the retrofit $260 million.

Many in Colorado and in Boulder were unhappy with Xcel's decision to build a new coal plant. They saw it as Xcel committing to coal and making their customers pay for the existing system until at least 2070.[77] Each Xcel customer pays about $1.55 a month to help fund the construction of Comanche 3.[78] Moreover, because of the timing of the construction of the plant, which took place during the franchise agreement renewal, many in Boulder took it as a sign of bad faith from Xcel. Xcel, they inferred, was not

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[74] Ibid.
[75] "Comanche Generating Station." Xcel Energy. Xcel Energy, accessed 3/29, 2013, http://www.xcelenergy.com/About_Us/Our_Company/Power_Generation/Comanche_Generating_Station.
[76] Eicher, Craig. Interviewed by Kathryn Browning. Personal Interview. Phone, February 11, 2013.
[77] Ibid.
[78] Jaffe, Mark. 2010. "Boulder Willing to Let Xcel Franchise Lapse while it Studies Future Energy Options." *The Denver Post*, October 10, 2010. http://www.denverpost.com/news/ci_16294228.

truly committed to phasing out coal-generated electricity in favor of renewables. Boulder would have to take the situation into its own hands.

Boulder's Environmental Goals

Boulder began seriously addressing the issues of climate change and greenhouse gas emissions in the early 2000s. In addition to the commitment to the Kyoto Protocol goals, the City Council agreed to an "Environmental Goal" that has shaped its environmental policies for the past decade. The goal is: "[t]o enact and enhance city policies that cause the Boulder community to become a nationwide environmental leader among communities. The City will be a role model of exemplary environmental practices."[79] To achieve this goal, the Boulder County Commissioners established a Sustainability Task Force and the Boulder City Council assigned the Office of Environmental Affairs the task of developing an action plan and roadmap to achieve the Kyoto goals. This plan came to be known as the Climate Action Plan. This Plan, released in 2004, "provides a framework to compare and analyze alternative strategies and policies, in order to facilitate Council's review and the decision-making process" surrounding Boulder's many energy goals.[80]

The Climate Action Plan identifies six foci on which the City will direct its attention: use reduction, building standards, renewables, travel, waste, and green growth. The City's goals surrounding renewables are to "promote the use of renewable energy

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[79] "Boulder's Climate Action Plan." Office of Environmental Affairs. City of Boulder, last modified November 1, 2012, accessed 02/07, 2013, http://www.bouldercolorado.gov/index.php?option%3Dcom_content%26id%3D15356%26Itemid%3D2150.

[80] Ibid.

sources for individual buildings and sites" and to "increase renewable sources in our regional energy supply."[81]

Boulder is one of the few cities in the country to have a carbon tax based on electricity use. This tax is up to $21 a year for residences and $94 for businesses.[82]

As of 2004, Boulder received approximately eight percent of its electricity from renewable sources. The City has been recognized by the EPA for its efforts towards renewable energy inclusion and is the first community in Colorado to become an EPA-certified Green Power Community.

As it now stands, Boulder residents have four options to include renewable energies in their mix[83]:

- Xcel Energy's Windsource Program
- Solar*Rewards program
- Solar*Rewards Community
- Renewable Energy Trust

A brief summary of each of these programs follows. Windsource allows customers, for $2.16 a month in Colorado, to include renewable energies in their energy mix. The $2.16 provides the customer with one 100 kilowatt-hour (kWh) "block" of renewable energy. Customers can choose to purchase between a single block and 100 percent of their energy

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[81] Ibid.
[82] Jaffe, Mark. 2010. "Boulder Willing to Let Xcel Franchise Lapse while it Studies Future Energy Options." *The Denver Post*, October 10, 2010.
[83] "Boulder's Climate Action Plan." City of Boulder. City of Boulder, last modified November 1, 2012, accessed 02/07, 2013, http://www.bouldercolorado.gov/index.php?option%3Dcom_content%26id%3D15356%26Itemid%3D2150.

(around $20 for the average customer) from Windsource. Across Xcel's service area, 57,000 homes and 1,200 businesses are enrolled in Windsource.[84]

Xcel's Solar*Rewards Program provides incentives to customers to install grid-connected photovoltaic (PV) systems in return for the renewable exchange credits (RECs) produced by the systems. Xcel is able to purchase the RECs for up to 20 years after installation. The program was reauthorized by the Colorado PUC in June 2012 and has funding to install 30 MW of new installations in 2012 and 2013, respectively.[85] So far, Xcel has paid over $270 million in incentives to Colorado customers and has installed more than 135 MW of solar from more than 12,200 PV systems.[86]

The Solar*Rewards Program is only available to customers and businesses that can install a solar system on their roof or in their yards. To include customers who do not have or do not wish to use this option, Xcel began the Solar*Rewards Community program. The Solar*Rewards Community program allows customers to purchase energy from a PV solar garden system. Interestingly, users of the program are legally allowed to participate in a system only if it is in their city or county. There must be an existing solar garden, therefore, for Xcel customers to join the Solar*Rewards Community Program. The program also provides incentives for developers and municipalities to install a

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[84] "Windsource for Residences - CO." Xcel Energy. Xcel Energy, Inc., accessed 3/3, 2013, http://www.xcelenergy.com/Save_Money_&_Energy/For_Your_Home/Renewable_Energy_Programs/Windsource_for_Residences_-_CO.

[85] "Colorado Xcel Energy - Solar*Rewards Program." Database of State Incentives for Renewables & Efficiency (DSIRE). U.S. Department of Energy, last modified July 2, 2012, accessed 3/3, 2013, http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=CO12F.

[86] "Solar*Rewards - CO." Xcel Energy. Xcel Energy, Inc., accessed 3/3, 2013, https://www.xcelenergy.com/Save_Money_&_Energy/For_Your_Home/Renewable_Energy_Programs/Solar*Rewards_-_CO.

community solar garden. The developer or municipality receives production incentives for the garden and can sell or lease shares of the solar energy produced to subscribing customers.[87]

Xcel's Renewable Energy Trust is a program that Xcel coordinates in conjunction with the Denver Foundation that funnels donations from customers to renewable energy projects around the state. The grants – 30 since 2002 – help fund solar projects and PV systems for non-profits and communities around Colorado. Grants vary between $15,000 and $40,000. Xcel customers can add a donation to their energy bill or donate through the Denver Foundation.[88]

As of 2004, Boulder's GHG emission profile by sector looked like the following:

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[87] "Solar*Rewards Community - CO." Xcel Energy. Xcel Energy, Inc., accessed 3/3, 2013, http://www.xcelenergy.com/Save_Money_&_Energy/For_Your_Home/Renewable_Energy_Programs/Solar*Rewards_Community_-_CO.

[88] "Renewable Energy Trust." Xcel Energy. Xcel Energy, Inc., accessed 3/3, 2013, http://www.xcelenergy.com/Save_Money_&_Energy/For_Your_Home/Renewable_Energy_Programs/Renewable_Energy_Trust_-_CO.

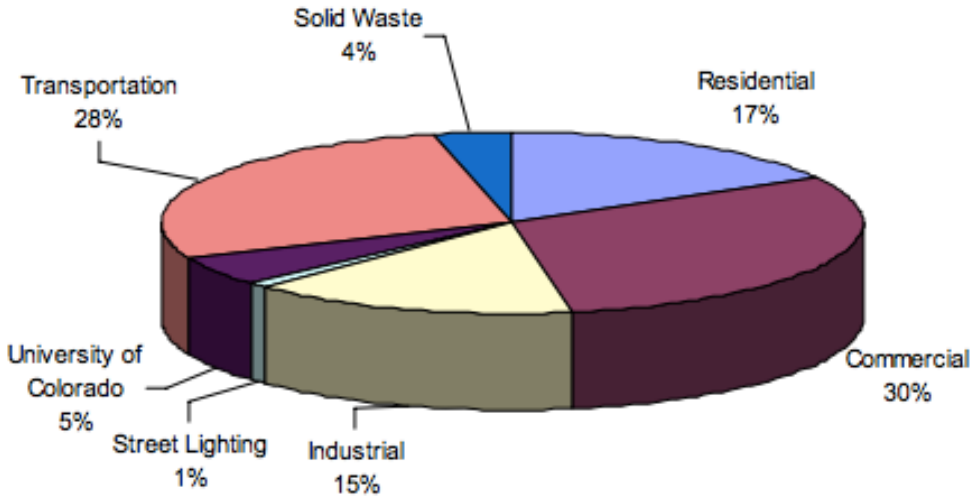

Figure 2: Breakdown of GHG emissions by sector, City of Boulder. Adapted from Climate Action Plan, City of Boulder, 2004.

The following shows the breakdown of GHG emissions by energy source:

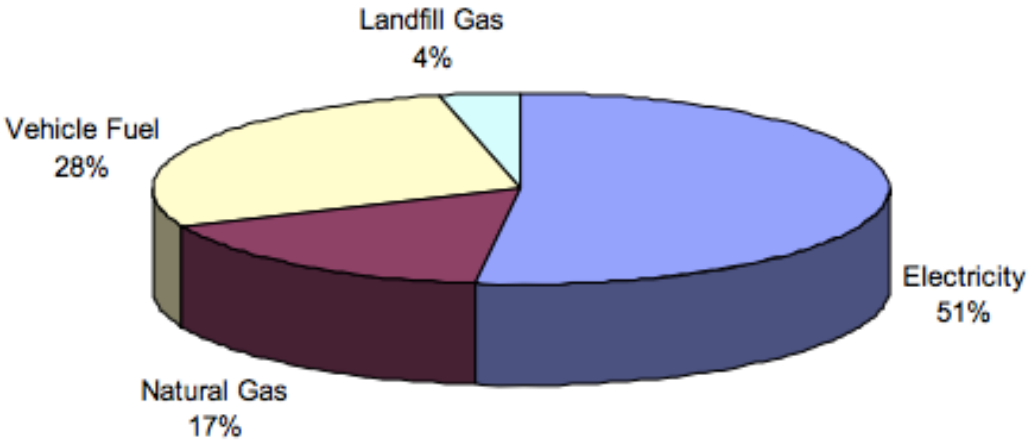

Figure 3: Breakdown of GHG emissions by source, City of Boulder. Adapted from Climate Action Plan, City of Boulder, 2004.

With the above information, it became clear to Boulder city officials that any attempt to decrease the City's GHG emissions necessarily had to address electricity consumption, both at the commercial and residential sides. In fact, decarbonizing only 30 percent of Boulder's electricity would enable the City to fulfill 78 percent of its Kyoto goal.[89] The strategies set out in the Climate Action Plan are more than sufficient to reduce the remaining 22 percent needed to achieve the Kyoto goal.[90]

As Boulder receives its electricity from Xcel, any attempt to address Boulder's electricity use would have to be done in close coordination with the utility. However, as previously discussed, Boulder's relationship with Xcel, especially on use of coal versus renewable energies, was testy. Furthermore, Xcel was committed to generating electricity from coal until at least 2070, because of the construction of Comanche Unit 3. A model of Xcel's projected fuel mix from 2015-2030 is below:

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[89] Boles, Alan. 2013. "Leslie Glustrom is Trying to Save the World – and She May Just Succeed." *The Blue Line*, February 8, 2013. http://www.boulderblueline.org/2010/05/12/leslie-glustrom-is-trying-to-save-the-world—and-she-may-just-succeed/.

[90] Ibid.

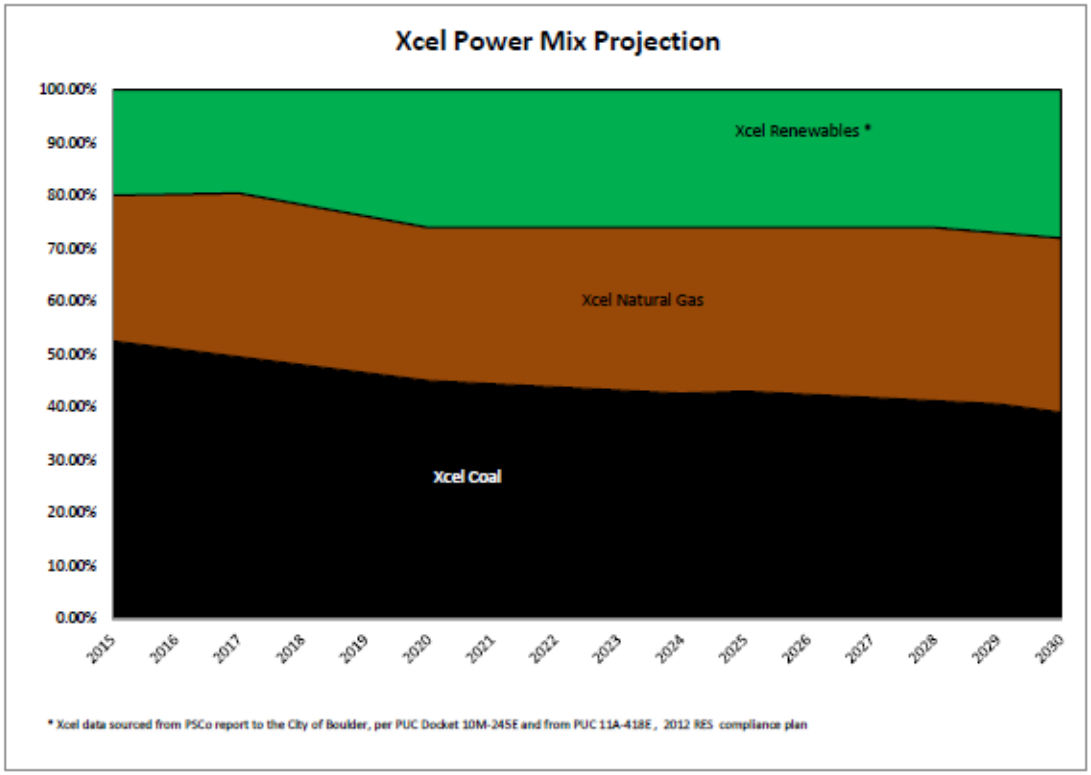

Figure 4: Xcel's projected fuel mix from 2015-2030. Data provided by Xcel to the City of Boulder, December 2010. Graph by Tom Asprey, RenewablesYes.org. Provided by Glustrom, Leslie. Interviewed by Kathryn Browning. Personal Interview. Phone, 13 February, 2013.

Xcel's fuel mix for generation supply in 2010 was made up of 61.3 percent coal, 27.1 percent natural gas, 10.4 percent renewables, and 1.2 percent other sources.[91]

[91] *Critique of Boulder's Feasibility Analysis of Acquiring the Electric Utility Business within the City*. 2011. Albuquerque, New Mexico: UtiliPoint International Inc. 24.

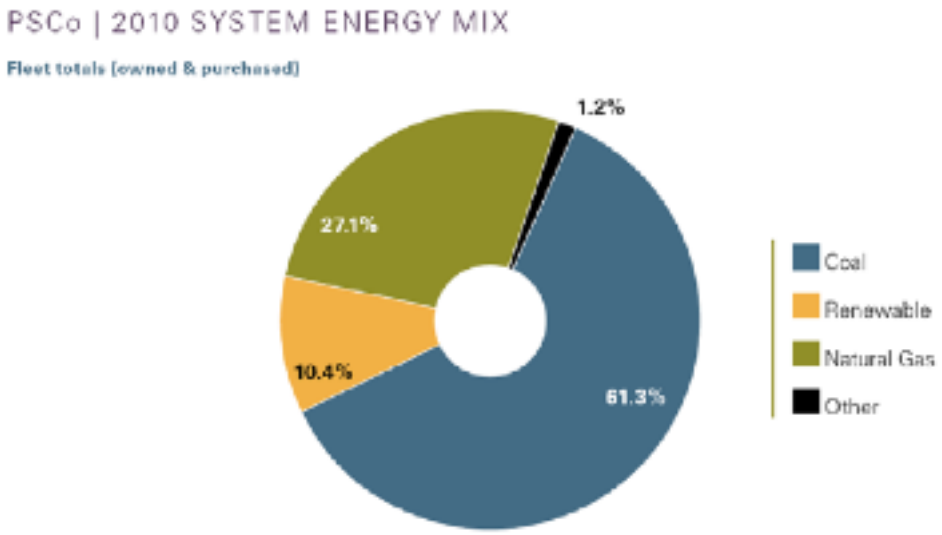

Figure 5: Xcel's fuel mix, 2010. From, *Critique of Boulder's Feasibility Analysis of Acquiring the Electric Utility Business within the City*. 2011. Albuquerque, New Mexico: UtiliPoint International Inc.

Boulder believed that attempts to decrease GHG emissions from the demand-side were not enough to achieve its goals. It had to work to address the use of coal-generated electricity with Xcel. However, because Xcel was tied to the use of coal for at least the next 60 years due to the construction of the Comanche Unit 3, Boulder felt it could not achieve its GHG goals if it continued to be supplied by the investor owned utility.

Boulder Looks at Municipalization

These realizations coincided with the expiration of Boulder's franchise agreement with Xcel in 2010. Boulder city officials saw it as an opportune time to renegotiate the agreement to include steps towards realizing Boulder's new energy goals. As Jonathan Koehn, the Regional Sustainability Coordinator for the City of Boulder, said, the City was looking to, "create a new type of partnership" with Xcel – one that would take into

account the quickly changing energy market and opportunities and help meet Boulder's environmental aspirations.[92]

Several potential iterations of a new partnership were developed for consideration. Research into these possibilities began in earnest in August of 2005. One option that emerged was municipalization. Boulder had been considering municipalization for the past 60 years, but had never taken formal action to initiate the process.[93] Rather, the talk of municipalization had been one in several options and demands presented to Xcel each time the franchise agreement came up for renewal, but it was never actively pursued.

R.W. Beck Study

In 2005, however, in advance of the expiration of the franchise agreement in 2010, Boulder began to consider municipalization in earnest. Driven by the desire to derive more of Boulder's energy from renewable sources, the city council commissioned a preliminary study to research the possibility of municipalization. The "Preliminary Municipalization Feasibility Study" was conducted by R.W. Beck, Inc. and released in October 2005. Its purpose was to "…identify the costs and risks associated with creating and operating a municipal utility so the City Council, as well as Boulder's voters, would have information on a full range of service options when they make a decision on whether to renew a long-term franchise with Xcel."[94]

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[92] Koehn, Jonathan. Interviewed by Kathryn Browning. Personal Interview. Boulder, January 17, 2013.
[93] Ibid.
[94] R.W. Beck, Inc. 2005. *Preliminary Municipalization Feasibility Study*, edited by Colorado City of Boulder. Final Report. 1-1.

The R.W. Beck study reviewed the existing physical structures that the City would take over from Xcel and provided estimates on the costs of severance, stranded investment, and purchase price. It also provided a preliminary cash flow analysis and a list of action items for further study. The study did not find any significant issues that would preclude Boulder from moving forward with the possibility of municipalization and found that the observable existing distribution system was in good to excellent condition.[95]

The study estimated that the City would pay $5 million in severance costs.[96] This is the cost that it would take to segregate the system needed to serve the City from Xcel's existing system that serves the Boulder area.

The R.W. Beck report also attempted to estimate the stranded costs that Boulder would need to pay Xcel. Stranded costs represent the investments made by an IOU into a community that it expected to recover through future rates charged to customers. For example, imagine Xcel had spent $20 million building a new set of power lines in Boulder in 2007. Each year, Xcel expected to receive $1 million from Boulder customers that would pay off the money spent on building these power lines. However, if Boulder completes municipalization in 2017, Xcel would have collected only $10 million from Boulder customers and would still be out $10 million. In this example, if Boulder municipalized, would it owe Xcel $10 million? The answer to that question is not simple. It is likely that, if Xcel had expected in 2007 that Boulder would municipalize, Xcel would not have built these power lines. However, Boulder did not ask Xcel to build

[95] Ibid., ES-2.
[96] Ibid, ES-2.

these lines. Their worth, moreover, may have decreased over time. In the end, FERC decides the amount of stranded cost due to an incumbent IOU.

The R.W. Beck study estimated total stranded costs to be $20 million, although it noted that stranded costs would ultimately be determined through a standard cost proceeding by FERC.[97] It is also important to note that the City is considering arguing that it should pay no standard costs. The R.W. Beck study outlined the approach used by FERC in its Opinion No. 438 in the case of City of Las Cruces v. El Paso Electric Company to calculate stranded costs. This approach is detailed below:

$$SCO = (RSE - CMVE) \times L$$

Where:

SCO = Departing Customers Stranded Cost Obligation

RSE = Revenue Stream Estimate that the utility could have expected to recover from the departing customer if open access transmission had not been available

CMVE = Competitive Market Value Estimate of the capacity and associated energy released by the departing customer

L = Length of time the utility could have reasonably expected to continue to serve the departing customer if open access had not been available.

A little more detail about this equation is useful. RSE is calculated as the annual transmission and distribution revenues of the utility subtracted from the utility's average monthly operating revenue. CMVE is equal to the total retail load multiplied by the price of power. As the study notes, it is "important to realize that the effect of stranded investment is primarily a function of the production cost of the utility compared to the

[97] Ibid., 2-5.

'market' and the length of time (the 'L' value)."[98] The City's estimation of $0 as the stranded costs is based on this L value. It would argue that Xcel had no basis to expect that Boulder would decide to renew its franchise agreement in 2010. Xcel will likely strongly contest this argument.

The R.W. Beck report also did preliminary analyses of cash flow and purchase price. These figures have been refined and updated in a subsequent 2011 report. The 2005 report estimated the purchase price of the electric system at between $82 and $123 million in 2005 dollars. This estimation was based off of the original cost less depreciation (OCLD) and the reproduction cost new less depreciation (RCNLD). OCLD is the original cost of the property when Xcel originally put it into service, less depreciation. RCNLD is the cost it would take to construct an exact replica of the existing facilities at current prices. OCLD and RCNLD values "tend to set the upper and lower limits, respectively, on the range of fair market value for electric system property."[99]

The worth of the system to the City also depends on the retail rates that the new municipal utility would charge its customers. The R.W. Beck study used three models to analyze retail rates and their effects on system value. The base case "assumes that the City's average retail rate will be equal to Xcel's average retail rate over the study period;" the below Xcel case "assumes that the City's average retail rate will be 5 percent less than Xcel's average retail rate for the first 10 years of the study period;" and the above Xcel case "assumes that the City's average retail rate will be 5 percent greater than

[98] Ibid., 4-1
[99] Ibid., 4-1.

Xcel's average retail rate for the first 10 years of the study period."[100] Using these models, the update revised its estimation of the existing system value to between $49.9 million and $136.5 million. These numbers now reflect the uncertainty of the retail rate levels and the severance and stranded investment costs.

The final factor affecting the system worth is power supply costs. Even small changes in the cost of wholesale power can radically shift the value of the system. The R.W. Beck study, for example, found that even a one percent change in markup of power supply costs resulted in a 6.3 percent change in the system worth.[101] This is a change of $6.7 million (calculated as a one percent mark up or down on the base case).

The results of the cash flow analysis found that, if the City is successful arguing that no stranded costs and only minimal severance costs should be owed, the value of the existing system is between the OCLD and RCNLD. However, if rates were to be set five percent above the average Xcel system rate, the system worth would be greater than the RCNLD. Remember that RCNLD is the estimated cost that it would take to rebuild the existing system from the ground up in current dollars.

Despite the volatilities associated with rates, the R.W. Beck study concluded that "there is a reasonable expectation that the City could acquire the Xcel distribution facilities within the City for an amount between the estimated book value of the assets (approximately $93 million) and their estimated replacement value (approximately $123 million). In addition to the uncertainties relating to severance cost, stranded investment, and the cash flow analysis, the R.W. Beck study cautioned that Xcel will "vigorously

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[100] Ibid., 4-2.
[101] Ibid., 4-3.

resist" any attempt made by Boulder at municipalization.[102] Their budget to do so, furthermore, is "effectively unlimited."[103] As such, "[t]he City will have to seriously consider whether it wants to engage in a long, costly fight with Xcel to achieve the municipal utility."[104]

Limitations of the R.W. Beck study

R.W. Beck attempted to get much of the information needed for their preliminary study from Xcel. On March 30, 2005, the City Manager's office requested data from Xcel. Xcel is required to provide the City with various types of information, such as annual electric and gas revenues, components of the rate base that are used to calculate returns, lists of property it owns within the City, capital improvement plans, and other data. Xcel replied to the request on July 15, 2005. However, the R.W. Beck study asserted that "much of the information provided was incomplete or already available via public sources." R.W. Beck used the information provided, but was left with an incomplete picture. As such, they were forced to use alternative means of gathering data, such as visual inspection, and estimates. These data limitations resulted in an incomplete and preliminary picture of the process of municipalization in Boulder, and left the conclusions open to speculation and disagreement. Some of the limitations are described in greater detail below.

The R.W. Beck study took into account only the costs that it would take to physically separate the distribution system that would serve the City from that which Xcel currently uses to serve the Boulder area. These "physical segregation" costs, or

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[102] Ibid., 5-1.
[103] Ibid., 5-1.
[104] Ibid., 5-1.

separation costs, are independent from the "administrative segregation" costs. Administrative segregation entails the sharing of information between the two utilities, including information regarding customer usage and sometimes retail billing. The costs associated with administrative segregation are usually less than those for physical segregation; however, due to the contentiousness of this process between Boulder and Xcel, costs may be higher than normal.

The study also did not consider the costs of incorporating renewable energies into Boulder's energy supply. An estimation of the possible added costs of this inclusion should be included in any future study, as it is a central goal to many, perhaps most, of the proponents of municipalization in Boulder.

Despite these limitations, however, the research compiled in the R.W. Beck study led Boulder city officials to believe, as Mr. Koehn said, that municipalization was the "only option to have the control we want."[105]

Robertson-Bryan Study, 2011

In summer of 2011, Boulder City Council voted not to renew the franchise agreement between Boulder and Xcel. That fall, Boulder voters approved a Utility Occupation Tax by a 68 percent margin allowing Boulder to begin to analyze its municipalization option in more detail. They hired consultant Robertson-Bryan, Inc. and commissioned a feasibility report to follow up on the 2005 R.W. Beck report. The new report was released in mid-August, 2011 and, like the 2005 report, was optimistic about Boulder's ability to municipalize and operate a utility. It found that the "creation of a

[105] Koehn, Jonathan. Interviewed by Kathryn Browning. Personal Interview. Boulder, January 17, 2013.

municipal utility for the City of Boulder…is legally, physically, and financially feasible, and that entity would be capable of meeting the City's core objectives related to rate stability, reliability, and decarbonization."[106]

Physical feasibility

The 2011 study analyzed the distribution system, utility operations, transmission, ancillary services, and available energy resources to make its determination of physical feasibility. In doing so, the study assumed that the responsibilities of the MOU would include operation and maintenance of the distribution infrastructure, meter reading, billing, energy scheduling, risk planning, regulatory compliance and reporting, power procurement, and accounting.[107] The energy resources potentially available to the City could come from Xcel. Boulder also would also have the opportunity of purchasing energy from Independent Power Producers (who often produce renewable energies and power from natural gas), wholesale market suppliers (like Xcel), and city-owned resources (city solar plants, etc.).

Achievement of City's Objectives

The Robertson-Bryan study also found that a Boulder MOU could achieve the City's three main goals of rate stability, reduction of carbon emissions, and reliability of service.

Rates for the first two years of operation will be low because no debt service payments will be due until the third year after the MOU was created. At year three, however, the utility could see a 28 percent cost increase (see blue line in the graph

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[106] Robertson-Bryan, Inc. 2011. *Boulder Municipal Utility Feasibility Study*: Robertson-Bryan, Inc.
[107] Ibid., 3.

below). This cost increase could be mitigated, however, by setting an initial rate to seven percent below Xcel's rate during the first two years of operation and then limiting the annual rate increase to four percent over the following seven years.[108] The graph below shows this mitigation technique. It also estimates the rate costs of Xcel and a Boulder MOU if a federal carbon tax were to be passed. If such a tax is created, Boulder's rates would be significantly more competitive than Xcel's.

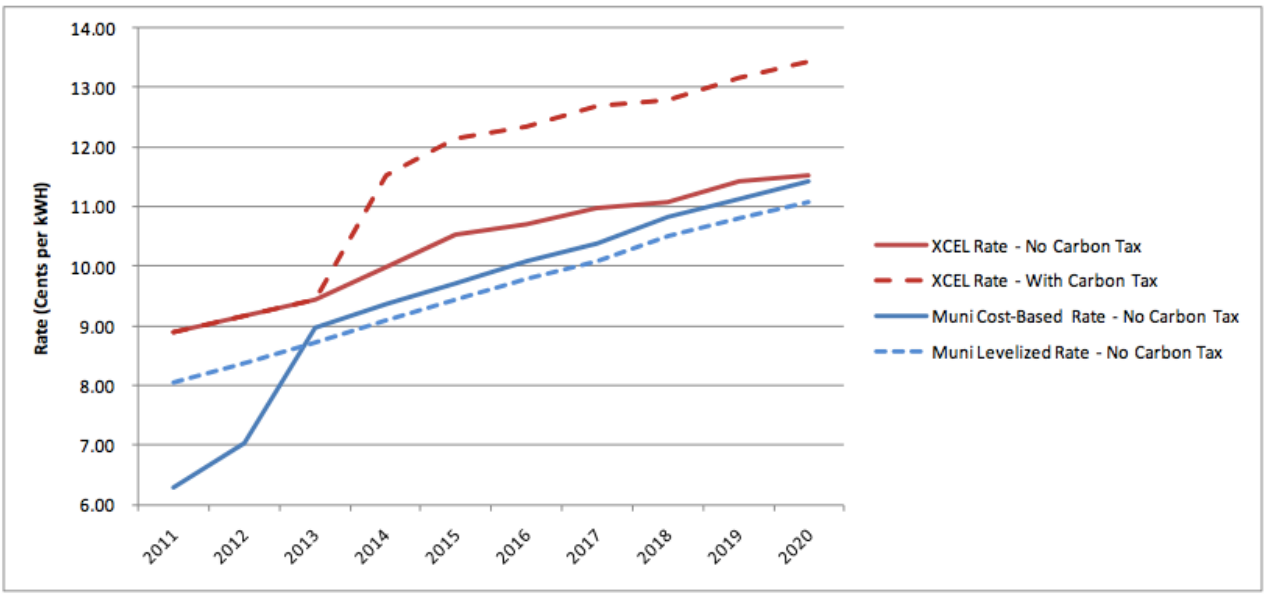

Figure 5: Estimation of future electricity rates with and without a carbon tax. From Robertson-Bryan, Inc. 2011. Boulder Municipal Utility Feasibility Study: Robertson-Bryan, Inc.

The Robertson-Bryan study only focused on a "base case" scenario in operating Boulder's MOU – that is, it modeled operations as similar to those being delivered currently by Xcel. As such, the study did not study the possibilities of including renewable energies in the MOU's energy supply in depth. However, it is important to note that the MOU would most likely not incorporate a significant amount of renewables

[108] Ibid., 7.

into its energy mix right away. It is most likely that the energy supply would be made up of three percent locally owned and generated hydropower and 97 percent low-cost energy from the wholesale market (mostly coal and natural gas generated). As such, the Robertson-Bryan study presented this "base case" scenario and developed two basic models as examples of how Boulder's carbon emissions could be decreased as renewable energy use was incorporated. In the graph below, Scenario 1 is the base case; Scenario 2 models 100 MW of wind energy firmed with natural gas generation; and Scenario 3 models the gradual development of PV-Solar to 45 MW by 2020.

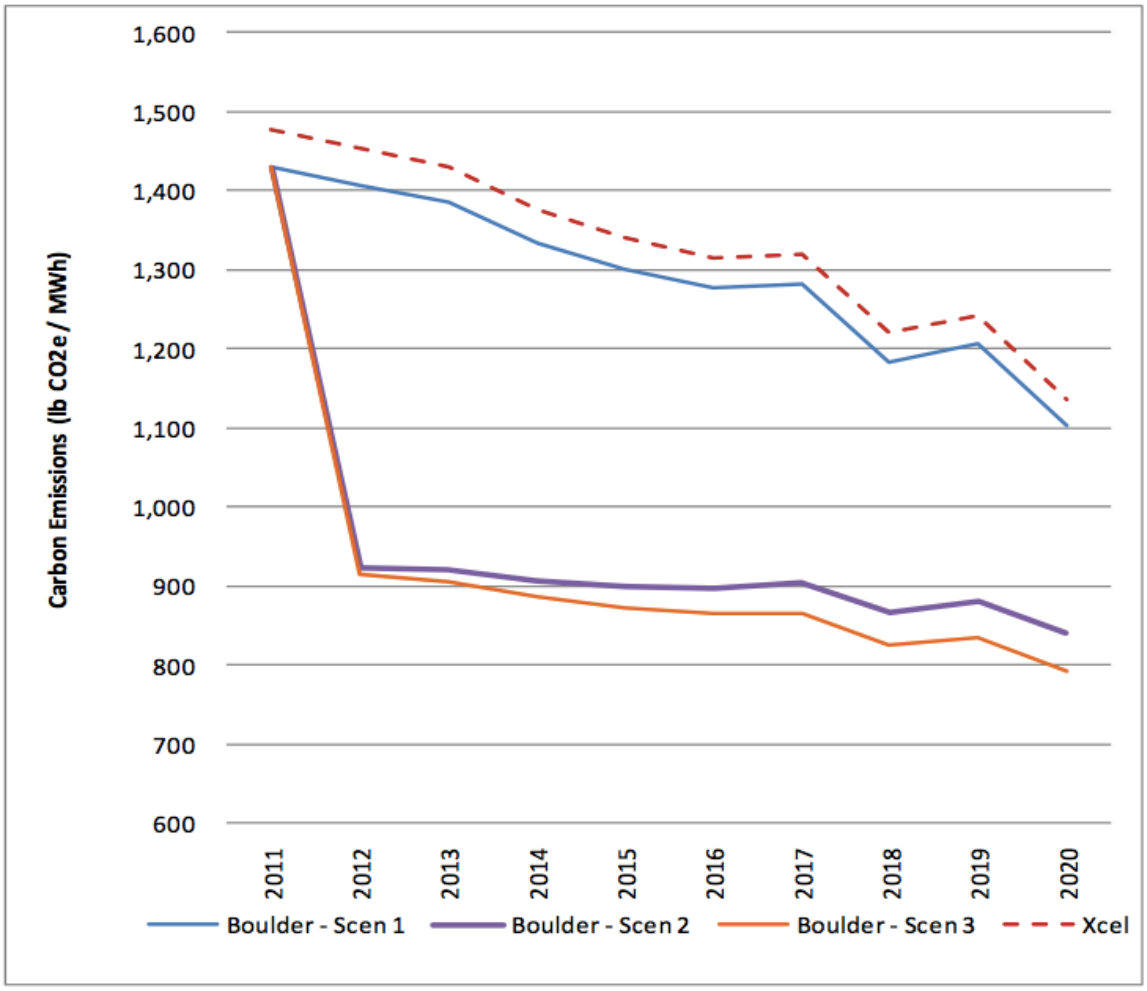

Figure 6: Estimation carbon emissions from municipalization scenarios. From Robertson-Bryan, Inc. 2011. *Boulder Municipal Utility Feasibility Study*: Robertson-Bryan, Inc.

The study also found that an MOU would have reliable transmission, resources, and distribution. The report found that the transmission grid currently used in Boulder would be unaffected and able to transmit the energy Boulder needs. Robertson-Bryan also argued that an MOU would be financially and physically shielded from some degree of uncertainty by its diverse energy portfolio. The development and use of renewable energies would make Boulder less reliant on fluctuating fossil fuel costs, and the development of local resources would reduce dependence on power coming from outside sources.[109] Once these developments are put into place, the report argues that reliably of service would, in fact, "be greatly enhanced by the creation of a municipal utility."[110]

Financial Feasibility

The cost of forming a Boulder MOU is made up of three overarching costs: transfer of ownership costs ($121 million), start-up costs ($60.5 million), and a cash reserve ($41.3 million).

[109] Ibid., 12.
[110] Ibid., 12.

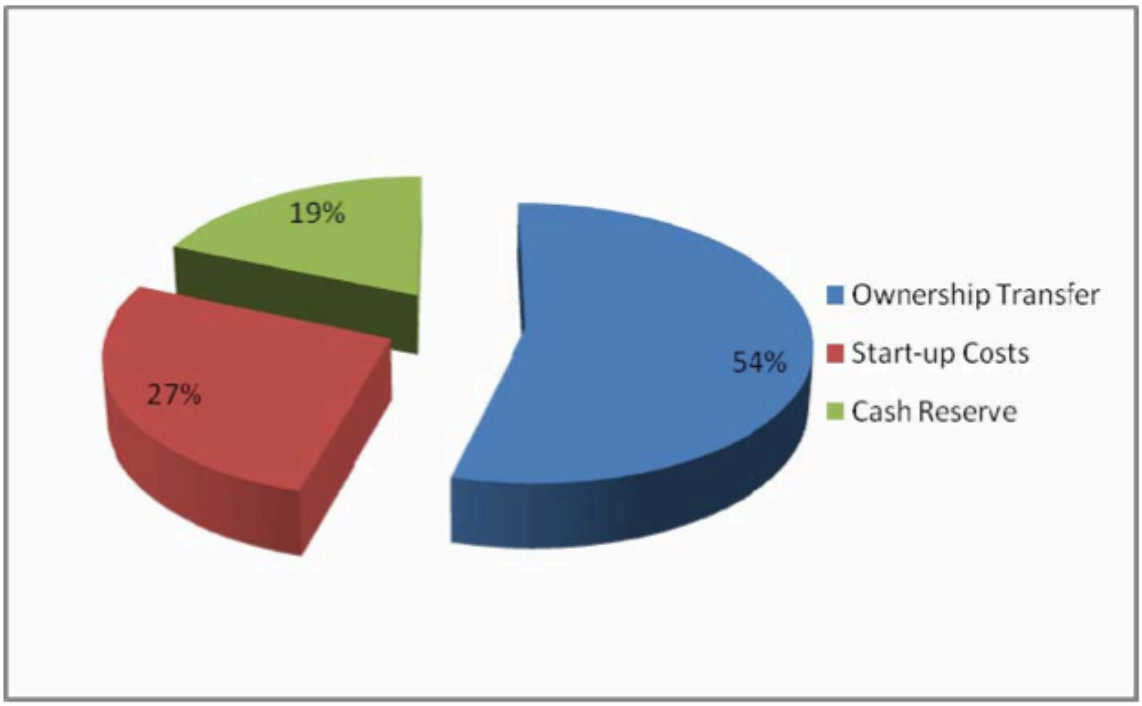

Figure 7: Breakdown of costs of municipalization to Boulder. From Robertson-Bryan, Inc. 2011. *Boulder Municipal Utility Feasibility Study*: Robertson-Bryan, Inc.

The 2011 Robertson-Bryant report estimated a significantly higher cost of forming a Boulder MOU than did the 2005 R.W. Beck study. A summary of the 2011 findings is given below:

Municipal Utility Start-Up Cost Categories	**Start-Up costs (in millions)**
Acquisition of the Distribution Assets	$121.2
5-month Reserve for Energy and Transmission*	$29.5
1-Year Reserve for Utility Operations*	$11.8
Distribution System Severance†	$15
Logistics Setup†	$32.5

Legal and Engineering (excluding Litigation) †	$3
Capital Spares (spare equipment) †	$10
Total	**$223**

* = Operating cash reserve
† = Start up costs

Table 4: Estimated MOU start-up costs. From Robertson-Bryan, Inc. 2011. *Boulder Municipal Utility Feasibility Study*: Robertson-Bryan, Inc.

The 2011 study gave $15 million for severance costs compared to the 2005 study's estimate of $5 million. This $15 million is part of the estimated start up-costs, which total $60.5 million, or 27 percent of the utility financing.[111] These start-up costs include $32.5 million for logistics (staffing, purchasing office space, vehicles, tools, etc. to operate the MOU); $3 million for legal and engineering services (FERC application, OATT wholesale account applications, surveys, utility operations set-up, bonding, creation of the utility charter); and the $10 million for spare equipment (equipment needed to perform maintenance upgrades and repair).

Updated purchase price/acquisition cost of Xcel's distribution assets was estimated as $121.2 (compared to the 2005 estimation of $82-$123 million). The Robertson-Bryan study also included an estimate of the cash reserve the MOU would need to carry to establish creditworthiness with wholesale market energy suppliers and "to be prepared for unforeseen events."[112] These operating cash reserves total $41.3 million and include a maintenance budge reserve for one year of $11.8 million and a wholesale energy transmission cost for five months of $29.5 million.

[111] Ibid., 16.
[112] Ibid., 18.

The sale of taxable and non-taxable bonds would finance the estimated $223 million needed to form a Boulder MOU. A taxable bond worth $177.5 million would finance the acquisition cost, the operating cash reserve, and the severance cost. A nontaxable bond of $45.5 million would finance the start-up logistics costs, the start-up legal and engineering costs, and the purchase of spare equipment.[113]

UtiliPoint Study

Xcel responded with its own commissioned report in August 2011, just after the Robertson-Bryan study was released. Xcel hired a consulting firm, UtiliPoint International Inc., to "review and critique the City's most recent analyses for forming a utility."[114] The UtiliPoint study reportedly found many flaws in Boulder's analysis, especially in its financial estimates (which was the main focus of the study). UtiliPoint concluded that "…the City will see no financial benefit for trying to achieve environmental, rate, and reliability benefits beyond those provided by [Xcel], and may in fact have to compromise or take a step backward on these goals in order to avoid even greater financial losses."[115]

The UtiliPoint study identified several factors that they estimated would drive up the cost of municipalization in Boulder. They are as follows:

- Greater acquisition cost (increase of more than $250 million)
    - Would necessitate an increased debt payment of $24.7 million per year

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[113] Ibid., 19-20.
[114] *Critique of Boulder's Feasibility Analysis of Acquiring the Electric Utility Business within the City*. 2011. Albuquerque, New Mexico: UtiliPoint International Inc. 3.
[115] Ibid., 5.

- Going Concern Compensation[116]
- Stranded Costs
- Separation costs
- Compensation for investments Xcel has made in Boulder, including
    - $38 million in rebates for the installation of roof-top solar systems
    - $40 million in SmartGrid infrastructure and program costs
    - Energy efficiency investments and energy efficient investments
- Greater than anticipated operating cost budget.

If all of these factors were edited into the Boulder estimations, the City would suffer considerable financial losses if it chose to municipalize. According to the UtiliPoint study, an acquisition cost increase of $250 million or a ten percent increase in operating costs could result in negative cash flows to the City even past 2021.[117]

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[116] Going concern compensation has to do with how Xcel will be affected in the future by the loss of Boulder's customers, specifically financially. It also takes into account the value of goodwill (e.g. the value of relationships with investors, vendors, and customer) and other intangible assets that generate income. Boulder estimates it will not owe Xcel anything in going concern compensation. Like stranded costs, it is difficult to determine how courts will rule on the going concern due to an incumbent utility like Xcel.
[117] Ibid., 23.

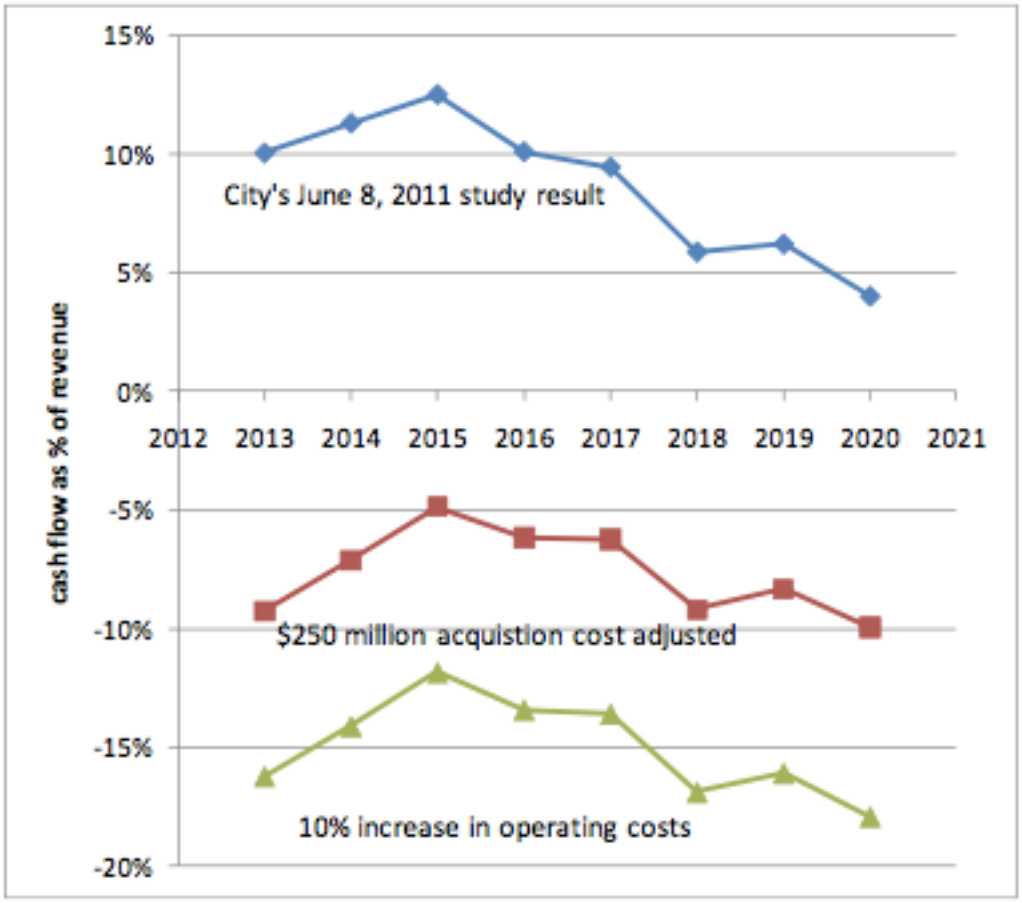

Figure 8: Comparison of City's estimate and UtiliPoint's estimated increases in acquisition cost and operating costs. From, *Critique of Boulder's Feasibility Analysis of Acquiring the Electric Utility Business within the City*. 2011. Albuquerque, New Mexico: UtiliPoint International Inc.

The R.W. Beck, Robertson-Bryan, and UtiliPoint studies evidence how hard it is to estimate the costs of municipalization and how divergent these costs can be. These facts make a community's decision of whether or not to pursue municipalization difficult. If the best case scenario turns out to be correct, the community may see many benefits from local control of its utility. If the costs turn out to be higher than expected, however, a community may see financial losses, debts incur, rates rise, and bond credit worthiness

plummet. These consequences are far reaching and can affect a community long after a failed municipalization scheme is ended.

Colorado Legislation

Whatever Boulder does will be constrained by the complex legislation and institutions that govern the distribution of energy in Colorado and nationally. Utilities that operate within Colorado must adhere to the rules set forth by FERC (described earlier) as well as those set forth by the Colorado Public Utilities Commission. MOUs, however, are not subject to these regulations: "by not owning generation or transmission, FERC jurisdiction is not an issue, so the Boulder system will be self-regulated (municipal utilities in Colorado are not subject to CPUC regulation)."[118]

Additionally, Colorado is a home rule state. Colorado's constitution grants cities, municipalities, and counties the option to pass legislation and govern themselves with relative independence from the Colorado legislature. As Article XX, Section 6 states, "The people of each city or town of this state…are hereby vested with, and they shall always have, power to make, amend, add to or replace the charter of said city or town, which shall be its organic law and extend to all its local and municipal matters."[119] In contrast, in a non-home rule state, a municipality must be granted permission by the state legislature to pass any law that is not expressly permitted under existing state legislation.

Article XX of the Colorado Constitution also explicitly grants municipalities the power to provide electric utility services and to develop generation and transmission

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[118] R.W. Beck, Inc. 2005. *Preliminary Municipalization Feasibility Study*, edited by Colorado City of Boulder. Final Report. 1-3.
[119] Colorado Constitution, art. 20, sec. 6.

capabilities (both independently and in conjunction with other municipalities or private companies). It provides that municipalities,

> shall have the power, within or without its territorial limits, to construct, condemn and purchase, purchase, acquire, lease, add to, maintain, conduct, and operate water works, light plants, power plants, transportation systems, heating plants, and any other public utilities or works or ways local in use and extent, in whole or in part, and everything required therefore, for the use of said city and county and the inhabitants thereof, and any such systems, plants, or works or ways, or any contracts in relation or connection with either, that may exist and which said city and county may desire to purchase, in whole or in part, the same or any part thereof may be purchased by said city and county which may enforce such purchase by proceedings at law as in taking land for public use by right of eminent domain, and shall have the power to issue bonds upon the vote of the taxpaying electors, at any special or general election, in any amount necessary to carry out any of said powers or purposes, as may by the charter be provided.[120]

Article V, Section 35 of the Colorado Constitution also pertains to municipal electric utilities. It prohibits the Colorado General Assembly from forming a body with regulatory control over municipal facilities and improvements.[121] This hands-off approach is extended to the Colorado PUC: Article XXV of the Constitution states that the Colorado PUC does not have jurisdiction over municipally owned utilities.[122] As Article XXV states, "nothing herein shall affect the power of municipalities to exercise reasonable police and licensing powers, nor their power to grant franchises; and provided, further, that nothing herein shall be construed to apply to municipally owned utilities."[123]

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[120] Ibid., sec. 1.
[121] Ibid., art. 5, sec. 35.
[122] Ibid., article 25, sec 1.
[123] Boles, Alan. 2013. "Leslie Glustrom is Trying to Save the World--and She may just Succeed." *The Blue Line*, February 8, 2013. http://www.boulderblueline.org/2010/05/12/leslie-glustrom-is-trying-to-save-the-world—and-she-may-just-succeed/

In 2004, Colorado voters also passed the Colorado Renewable Energy Act (CREA), which will affect the energy mix of a Boulder MOU. CREA requires all Colorado utilities that serve 40,000 or more customers to purchase three percent of their electricity from renewable sources by 2007. The percentage of renewable energies utilities are required to buy increased to six percent by 2011, and will increase again to ten percent by 2015. Of this renewable electricity, at least four percent must come from solar. Its compliance will be the cause of a ten percent decrease in emissions in Boulder.

Other Municipalization Attempts

Las Cruces, New Mexico

Las Cruces, New Mexico is the classic example of a municipalization effort that failed. Any discussion of municipalization without mention of Las Cruces would be remiss. During the 1970s, Las Cruces was served by El Paso Electric Company (EPE). EPE and Las Cruces came into conflict in 1970 when EPE invested in the Palo Verde Nuclear Generation Station that was to be built near Phoenix. EPE's decision was based on two factors. It projected that oil and natural gas prices – both of which were abnormally high at the time – would continue to increase. The company also worried that it had little or no excess electricity generation capacity. With no extra capacity, the company would be unable to add more customers and had no cushion room for times of high demand.[124]

[124] Daniel, David and Gegax, Douglas. "A Cautionary Tale on Municipalization," *Forum for Applied Research and Public Policy* 15(2), 2000, pp. 49-53.

Las Cruces, however, disagreed. The city argued that EPE's estimation of oil and gas prices were too high, as was its estimation of future electricity demand. The city also foresaw the development of energy-conservation technologies that could reduce electricity consumption, thus negating EPE's need for additional electricity generation capacity.[125]

The city turned out to be correct in its predictions.[126] The Palo Verde Nuclear Generation Station came online in 1988. The plant was immensely expensive to construct and, once completed, did not see the expected demand. EPE was unable to cover its investment in the plant, and had to increase its rates to recover the financial losses. Las Cruces's electricity rates soared.[127]

Las Cruces was fed up with EPE. The franchise agreement between the City and EPE was to expire in 1993.[128] Las Cruces saw this as an opportunity to escape from the over charging and uncooperativeness it perceived from EPE. The city council passed an ordinance in 1991, in advance of the expiration of the franchise agreement, to establish a municipal electric utility. Like Boulder, the City planned to purchase the local distribution system from EPE and buy its power wholesale.

The City estimated that by switching to an MOU, Las Cruces customers would save 29 percent over 14 years.[129] This projection was based on a number of assumptions. First, the City believed that it could buy the distribution system from EPE for $20-30

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[125] Ibid.
[126] Ibid.
[127] Ibid.
[128] Ibid.
[129] Ibid.

million.[130] This number was equal to EPE's original cost less depreciation (OCLD). Second, Las Cruces estimated that the price of establishing the MOU would be almost entirely limited to the cost of EPE's distribution system. Finally, the City assumed that EPE's rates after municipalization would stay relatively flat.[131]

By 1997, it was clear that the City had been wrong in all three of its predictions. EPE, trying to keep its right to serve Las Cruces, initially refused to sell its distribution system to the city. The City decided to undergo condemnation proceedings in 1994. The decision initiated a series of legal battles that lasted years and consumed millions of dollars.[132] The state legislature eventually intervened and the issue was sent to the New Mexico Supreme Court, which approved the condemnation in 1998.[133] More legal fees were incurred when EPE took the City to the state district court over the subject of bonds. In 1992, Las Cruces decided to sell $72.5 million in bonds out of the $90 million allowed by the state to fund municipalization.[134] EPE charged in the case that Las Cruces needed approval by the New Mexico Public Utility Commission to sell these bonds. The case was dismissed, but the City incurred yet more money in legal fees.

The cost of just compensation added to the expense. The City estimated that they would owe EPE $37.9 million in just compensation. Other estimates, however, were as high as $200 million. The discrepancy between these prices was based, besides on uncertainty, on differing systems of valuation used to determine the cost of EPEs system.

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[130] Ibid.
[131] Ibid.
[132] Ibid.
[133] Ibid.
[134] Ibid.

Las Cruces had not predicted that it would have to pay EPE any stranded costs. In Order 888, its first stranded cost decision, FERC ruled in 1998 that the city pay EPE $53 million. This increased the total cost, including legal fees, from an estimated $30 million in 1994 to $100 million.[135]

Two events, combined with these new realizations about the cost, made Las Cruces stop the process towards municipalization. In 1999, New Mexico passed the Electric Utility Industry Restructuring Act. The Act, in effect, deregulated the electric industry. In doing so, it made it less likely that electricity provided through an MOU would be less expensive than that provided through EPE.[136] Around this time, EPE also reduced its rate to eight percent below the levels the city had predicted at the beginning of their study of municipalization.[137] With these realizations of cost, deregulation, and EPE's new rates, Las Cruces folded and signed a franchise agreement with EPE.

By the time the city signed the franchise agreement, it had already spent between $21 million and $40 million, including the money spent to annul the $75 million in bonds that Las Cruces had already sold to fund municipalization.[138] EPE ended up paying the city $21 million and granted the city the right to buy the distribution when the new franchise ended for 30 percent more than the book value of the system.[139] The graph below gives an illustration of the large differences between the estimated costs and the actual costs.

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[135] Ibid.
[136] Snider, Laura. "Former Las Cruces Mayor to Boulder: Municipalization Has Perils." *The Daily Camera*, April 30.
[137] Ibid.
[138] Ibid.
[139] Ibid.

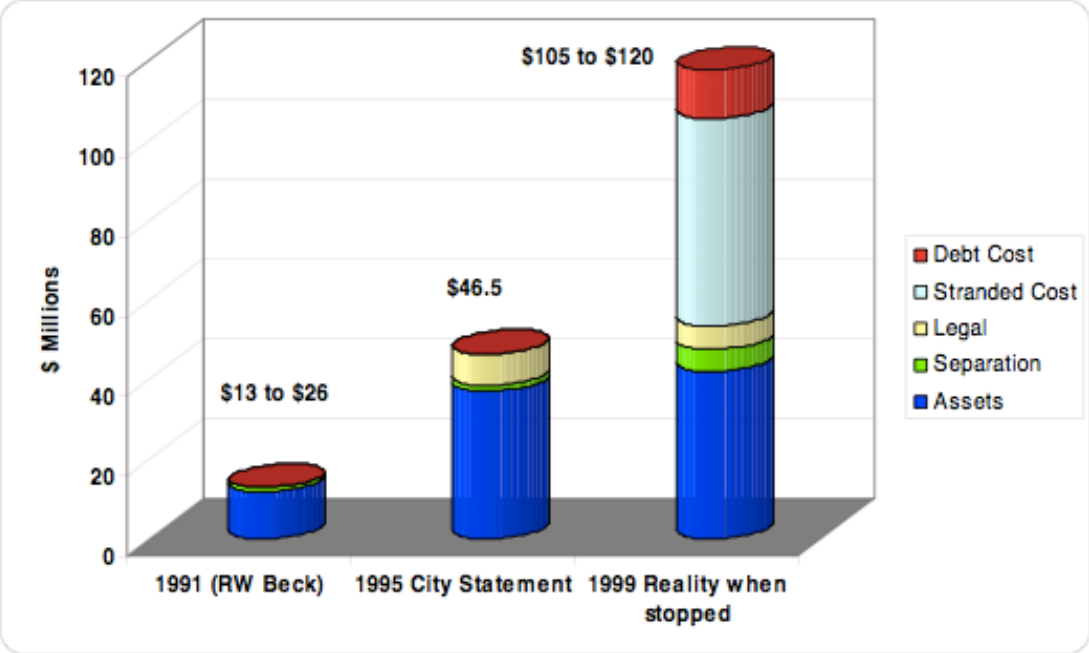

Figure 9: Las Cruces costs over time, estimations and real costs. From, *Critique of Boulder's Feasibility Analysis of Acquiring the Electric Utility Business within the City*. 2011. Albuquerque, New Mexico: UtiliPoint International Inc.

All in all, Las Cruces's attempt to municipalize was disastrous. The City spent millions of dollars and countless employee hours on a process that was never completed. The episode made many in the industry and in local and state governments wary of municipalization. Based on the experience of Las Cruces, it seemed as though "municipals may have lost their edge."[140]

Massena, New York

Massena, New York municipalized its electric utility in 1981. In contrast to Las Cruces, Massena is considered one of the most successful examples of municipalization.

[140] Daniel, David and Gegax, Douglas. "A Cautionary Tale on Municipalization," *Forum for Applied Research and Public Policy* 15(2), 2000, pp. 49-53.

At the time, Massena was the home to approximately 20,000 residents and was served by Niagara Mohawk. Niagara Mohawk was beleaguered by a heavy tax structure that resulted in high rates for its customers.[141] On May 30, 1974, voters approved the creation of the Massena Electric Department (MED). After a hostile takeover of the incumbent utility's distribution system, MED began operations on May 8, 1981. After municipalization was complete, Messina rates were 24 percent lower than those it had paid under Niagara Mohawk.[142] Its rates are now in the lowest ten percent nationally.[143] MED currently serves 9,000 customers over 131 square miles and has one of the highest leading indicators of service reliability and environmental commitment.[144]

What made Massena's municipalization efforts so successful? One of the biggest reasons is Massena's access to inexpensive hydropower resources. Massena is home to the Niagara Power Project. Almost all of the 75 percent of Messena's energy that comes from renewable energies is hydropower generated through the Niagara Power Project. In fact, this power is equal to more than three times the amount of renewable energy purchased by all of the IOUs in New York State.[145]

The other factor that made Massena's municipalization so successful was its access to tax-exempt bonds, which it could use to finance the acquisition of Niagara

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[141] McNamara, Will. "Scientech Issue Alert: Hermiston, Ore., Will Municipalize Electric System this October." ElectricNet. VertMarkets, Inc., last modified July 25, 2001, accessed 4/1, 2013, http://www.electricnet.com/doc/Scientech-Issue-Alert-Hermiston-Ore-Will-Muni-0001.
[142] Ibid.
[143] "About Massena Electric." Massena Electric Department. Massena Electric Department, accessed 4/1, 2013, www.massenaelectric.com/docs/aboutmed.htm.
[144] Ibid.
[145] "Green Power." Massena Electric Department. Massena Electric Department, accessed 4/1, 2013, http://www.massenaelectric.com/businesspower/greenpower.htm.

Mohawk.[146] The ability of Massena to use these tax-exempt bonds decreased the acquisition costs, especially over time. These two factors are the main reasons for Messina's remarkable and continuing success. Messina has served as a role model for many communities interested in municipalizing their electric utilities.

Reverse Municipalization – Vero Beach, Florida

Once a community chooses to create a municipal utility, that MOU will not necessarily serve the municipality forever. Some communities choose to sell their MOU to an IOU in a process termed "reverse-municipalization." Communities choose to reverse municipalize for a number of reason, the most common of which seem to be rate and reliability concerns.

Vero Beach, Florida is an example of a community that decided to sell its MOU to an IOU. Vero Beach formed its MOU more than 50 years ago. However, the residents of Vero Beach voted to approve an agreement to sell the city's electric utility to Florida Power & Light Co. (FPL) in March of 2013. The vote was 64 percent in favor of selling the MOU and 36 percent against (a total of 3,663 ballots were cast).[147] The MOU, which serves 34,000 (primarily residential) customers, would be sold to FPL for $179 million.[148] Though voters have approved the sale, the Florida Public Service Commission, the Florida Municipal Power Agency, the Federal Energy Regulatory

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[146] McNamara, Will. "Scientech Issue Alert: Hermiston, Ore., Will Municipalize Electric System this October." ElectricNet. VertMarkets, Inc., last modified July 25, 2001, accessed 4/1, 2013, http://www.electricnet.com/doc/Scientech-Issue-Alert-Hermiston-Ore-Will-Muni-0001.

[147] Salisbury, Susan. 2013. "Vero Beach Voters Approve Utility Sale to Florida Power & Light Co." *The Palm Beach Post*, March 13, 2013.

[148] Ibid.

Commission, and the IRS must also approve the deal. Officials hope the sale will be finalized by the first quarter of 2014.[149]

Vero Beach's decision to pursue reverse municipalization was based on rates. Vero Beach's MOU charged a customer using 1,000 kilowatt hours a month $137.89. FLP charges the same customer $99.91 and as a company would pay a six percent franchise fee to Vero Beach.[150] This discrepancy in cost is due partly to FPL's use of natural gas as its primary fuel (made possible because of its economies of sale). Vero Beach, in contrast, is 60 percent dependent on coal.[151]

Opponents of municipalization like to point to communities that choose to reverse municipalize as proof that municipalization is a flawed practice. Although for some communities, reverse municipalization may make sense and be welcomed, it does not spell the demise or inherent failure of municipalization.

Lessons and Conclusions

In our study of the municipalization of electric utilities, one thing has become abundantly clear: municipalization is a long and complicated process characterized by high uncertainty. It is unheard of for MOUs to be formed in less than a year, and even a length of a year or two is rare. Hard-fought municipalization battles between communities and investor-owned utilities often take between seven and eight years, and have lasted up to ten years. Once the legal terms are agreed upon, it usually takes between one and two years for the new municipal utility to begin operations.

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[149] Ibid.
[150] Ibid.
[151] Ibid.

If a community decides to municipalize, it still faces great uncertainties. As Bob Bellamare, a long-time industry leader notes, "buying [an electrical utility's distribution system] is very costly, even if it's voluntarily sold."[152] The hope of many communities looking to municipalize – that they will be able to purchase the incumbent utility for book value – is "wishful thinking," according to Bellamare.[153] As seen in the case of Las Cruces, the legal process can add large costs in terms of the court's ruling and also from legal fees. As there have been relatively few cases of municipalization, especially in the past decade, it is difficult to predict how a court will rule on the amount of stranded costs owed to the incumbent utility.

If a community is successful at municipalizing, there is still the risk that the newly formed MOUs' rates will be higher than those of the incumbent IOU, its reliability worse, or its customer service unsatisfactory. Although the presence of these factors does not necessarily mean the failure of the MOU, it has been reason for several MOUs to reverse municipalize. This is less likely to occur if there was another reason to municipalize than lower rates, unreliability of the IOU, or bad relations between the community and the IOU.

How can communities considering municipalization cope with these uncertainties? First, the community can attempt to obtain all the information possible about costs, logistics, and energy sources. This is a daunting task. As Boulder has seen, there is an enormous amount of data about demand, supply, costs, mapping, and other key factors. Wading through this data takes time, effort, and a necessary level of

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[152] Bellamare, Bob. Interviewed by Kathryn Browning. Personal Interview. Phone, 27 February, 2013.
[153] Ibid.

expertise on energy issues. Furthermore, if Xcel is any example, the incumbent utility may be unwilling to provide information to the community, even if they are required to do so by law. Communities can rely on the knowledge of outside counsels, although this can be quite expensive. Alternatively, they can hire additional staff (also costly) or rely on the know-how of community members, as Boulder has done. As more communities municipalize, they will provide support and expertise to places beginning the process.

FERC could help mitigate some of the financial uncertainties of municipalization. One of the largest possible costs of municipalization is the stranded cost that a community will owe to the incumbent utility. As of now, this stranded cost is one of the biggest uncertainties for a community looking to municipalize. As discussed earlier, the stranded cost estimates for Boulder range from $0 to $255 million. These are make-or-break costs for a community considering municipalization. FERC should provide more detailed guidelines on how stranded costs are determined in its legal proceedings.

No matter how detailed and comprehensive a community's data collection and modeling, unpredicted circumstances can arise that make municipalization more or less viable. As such, communities should incorporate off-ramps into their planning processes. These off-ramps can take many forms. They can be a vote, either by the community or by the city council; a decision to stop the process based on the outcomes of a key study or court decision; or a set of metrics that, if not fulfilled, dictates the end of the process.

Closely tied to all of these factors is the necessity of mature leaders in the local government that are willing and able to examine municipalization objectively. As Boulder comes closer to a City Council vote on whether or not to begin action on municipalization, this is a criticism that is being articulated by skeptics – Boulder city

leaders, they say, are already too invested in municipalization. They will choose to see the process to fruition because of interest in its outcome, even if municipalization may not be the best thing for Boulder.

There are several key factors that most often lead to the success or failure of municipalization. Municipalization will more likely be successful if,

- The local government is well-perceived by the citizens
- Funding is available for the campaign effort
- The incumbent utility is in financial trouble
- The incumbent utility is unpopular in the community
- State and local laws provide for municipalization
- The community does substantial research on municipalization before undergoing the process
- The courts find a low stranded cost is due
- There is a well-articulated reason for municipalizing.

It is rare that all of these factors are true for a given community. However, if a majority of these factors are present, or even if a few of these factors are very strong, municipalization can still be successful. In the case of Boulder, six of these factors are currently favorable: the local government is on the whole well-perceived by Boulder residents, funding was available for the campaign effort (though Boulder did not outspend Xcel by any means, enough was spent that the referendums passed), the incumbent utility is unpopular in the community (at least to some extent), the community has done substantial research on municipalization, and there is a well-articulated reason

for municipalizing. It remains to be seen if the courts will find that a low stranded cost is due.

Several other factors have made Boulder's push for municipalization successful so far. First of all, Boulder is home to an exceptionally educated and informed citizenry. Boulder houses 16 federally funded research centers, including the National Center for Atmospheric Research (NCAR), the National Climatic Data Center (NCDC), and the National Oceanic and Atmospheric Administration (NOAA). NCAR alone employs more than 120 Ph.D. researchers on staff and hosts hundreds of visiting scientists. The University of Colorado, Boulder boasts 30,000 students and 8,000 staff. These factors combined have led to the fact that Boulder has the highest percentage of college graduates in the country.[154]

These highly educated citizens are very involved in local governance. Many heated arguments heard around the city are about city parks or local water quality issues. The citizens of Boulder have been just as involved in the process of studying municipalization. The latest study exploring municipalization was made possible in large part by a volunteer group of 50 individuals who put large amounts of time, effort, and expertise into studying and modeling various processes and iterations of municipalization.

These involved citizens provide numerous advantages to Boulder in its pursuit of municipalization. They provide expertise that may be lacking in city employees. They provide additional manpower and time on a volunteer basis. For local governments often facing tight budgets and overworked employees, an educated volunteer base is a huge

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[154] Eaves, Elisabeth. 2006. "America's Smartest Cities." *Forbes*, December 15, 2006.

advantage. Lastly, these volunteers were able to fill in gaps in modeling knowledge that was not provided by Xcel but that was necessary for accurate estimations of energy use and cost. The models created by these volunteers were important in the 2011 Boulder Election and will be central to the City Council's yes or no vote on municipalization in April of 2013.

Lastly, there is a general consensus around the goals that are driving municipalization in Boulder. It has been clear from the start that a major reason for municipalization in Boulder is to increase the availability and use of renewable energies in the City's power supply. This is a goal that dovetails with the beliefs and desires of many Boulder citizens. Boulder has consistently been named one of the greenest (if not the most green) cities in the country. This distinction is due as much to the general pro-environmentalism of Boulder residents as to the City's efforts and regulations towards sustainability. In a recent interview, one of the most active proponents for municipalization in Boulder, Leslie Glustrom, responded to the question of why she has volunteered so much of her time towards the cause. She replied that she thought it was the best and fastest way to make a real difference in combating climate change in Boulder, a goal that was of primary importance to her.[155] The goal of increasing availability of renewable energies through municipalization has brought the Boulder community together and inspired it to action. It remains to be seen whether this mutual civic inspiration will survive what promises to be a lengthy, complex, costly, and contentious journey. What is certain is that municipal customers and utilities across the

[155] Glustrom, Leslie. Interviewed by Kathryn Browning. Personal Interview. Phone, 13 February, 2013.

country will be watching closely as Boulder makes its way along the path towards municipalization.

Bibliography

"About Massena Electric." Massena Electric Department. Massena Electric Department, accessed 4/1, 2013, www.massenaelectric.com/docs/aboutmed.htm.

"About the Public Utilities Commission." Public Utilities Commission. State of Colorado, accessed 9/18, 2012, http://www.dora.state.co.us/puc/aboutpuc.htm.

"About Us." California Public Utilities Commission. State of California, accessed 9/18, 2012, http://www.cpuc.ca.gov/PUC/aboutus/.

"Boulder's Climate Action Plan." Office of Environmental Affairs. City of Boulder, last modified November 1, 2012, accessed 02/07, 2013, http://www.bouldercolorado.gov/index.php?option%3Dcom_content%26id%3D15356%26Itemid%3D2150.

"Boulder's Takeover of Xcel Energy Faces Strong Winds ", accessed 9/24, 2012, http://www.forbes.com/sites/kensilverstein/2012/04/25/boulders-takeover-of-xcel-energy-faces-strong-winds/.

"California ISO - Renewables and Demand Response Integration," accessed 9/18/2012, 2012, http://www.caiso.com/informed/Pages/RenewablesDemandResponseIntegration/default.aspx.

"Colorado Xcel Energy - Solar*Rewards Program." Database of State Incentives for Renewables & Efficiency (DSIRE). U.S. Department of Energy, last modified July 2, 2012, accessed 3/3, 2013, http://www.dsireusa.org/incentives/incentive.cfm?Incentive_Code=CO12F.

"Comanche Generating Station." Xcel Energy. Xcel Energy, accessed 3/29, 2013, http://www.xcelenergy.com/About_Us/Our_Company/Power_Generation/Comanche_Generating_Station.

"Energy ", accessed 10/4, 2012. http://www.unep.org/climatechange/mitigation/Energy/tabid/104339/Default.aspx.

"FERC: About FERC - what FERC does " accessed 9/18/2012, http://www.ferc.gov/about/ferc-does.asp.

"Green Power." Massena Electric Department. Massena Electric Department, accessed 4/1, 2013, http://www.massenaelectric.com/businesspower/greenpower.htm.

"Independent Power Producer (IPP), Non-Utility Generator (NUG) ", Energy Dictionary. EnergyVortex, accessed 10/29, 2012,

https://energyvortex.com/energydictionary/independent_power_producer_(ipp)__non_utility_generator_(nug).html.

"Infographic: Drill, Baby, Drill | Politics on GOOD ", accessed 9/18, 2012, http://www.good.is/posts/infographic-drill-baby-drill/.

"Latest Report: Renewable Energy Surpasses Nuclear Power by 18% | Renewable Energy News Article ", accessed 9/18, 2012, http://www.renewableenergyworld.com/rea/news/article/2011/10/another-milestone-renewable-energy-surpasses-nuclear-power-by-18.

"Pacific Gas and Electric Company." Pacific Gas and Electric Company. PG&E Company, accessed 3/3, 2013, http://www.pge.com/en/about/company/profile/index.page?.

"Public Power is Hometown Power." American Public Power Association. American Public Power Association, accessed 11/17, 2012, http://www.publicpower.org/files/PDFs/51HometownPowerFlyer.pdf.

"Public Utility Regulatory Policy Act (PURPA) ", accessed 10/29, 2012, Union of Concerned Scientists. http://www.ucsusa.org/clean_energy/smart-energy-solutions/strengthen-policy/public-utility-regulatory.html.

"Renewable Energy Trust." Xcel Energy. Xcel Energy, Inc., accessed 3/3, 2013, http://www.xcelenergy.com/Save_Money_&_Energy/For_Your_Home/Renewable_Energy_Programs/Renewable_Energy_Trust_-_CO.

"SmartGridCity." Xcel Energy. Xcel Energy, accessed 3/29, 2013, http://smartgridcity.xcelenergy.com/.

"Solar*Rewards - CO." Xcel Energy. Xcel Energy, Inc., accessed 3/3, 2013, https://www.xcelenergy.com/Save_Money_&_Energy/For_Your_Home/Renewable_Energy_Programs/Solar*Rewards_-_CO.

"Solar*Rewards Community - CO." Xcel Energy. Xcel Energy, Inc., accessed 3/3, 2013, http://www.xcelenergy.com/Save_Money_&_Energy/For_Your_Home/Renewable_Energy_Programs/Solar*Rewards_Community_-_CO.

"The Changing Structure of the Electric Power Industry: History of the U.S. Electric Power Industry: An Update - Appendix A - Beginnings: 1882-1900 1882-1991 ", accessed 9/19/2012, http://www.eia.gov/cneaf/electricity/page/electric_kid/append_a.html#N_4_.

"Windsource for Residences - CO." Xcel Energy. Xcel Energy, Inc., accessed 3/3, 2013, http://www.xcelenergy.com/Save_Money_&_Energy/For_Your_Home/Renewable_Energy_Programs/Windsource_for_Residences_-_CO.

"What is PURPA?" EPSA: The Electric Power Supply Association. Electric Power Supply Association, accessed 3/1, 2013, http://www.epsa.org/industry/faqs/?fa=purpa.

"What You Need to Know about Investing in Municipal Bonds." AAII: The American Association of Individual Investors. American Association of Individual Investors, accessed 11/17, 2012, http://www.aaii.com/investing/article/what-you-need-to-know-about-investing-in-municipal-bonds.

Bellamare, Bob. Interviewed by Kathryn Browning. Personal Interview. Phone, 27 February, 2013.

Boles, Alan. 2013. "Leslie Glustrom is Trying to Save the World – and She May Just Succeed." *The Blue Line*, February 8, 2013. http://www.boulderblueline.org/2010/05/12/leslie-glustrom-is-trying-to-save-the-world—and-she-may-just-succeed/.

Boulder City Council Study Session: Boulder's Energy Future Municipalization Exploration. 2013. Boulder, CO: City of Boulder. 3.

Briggerman, Abby, Radu Costinescu, and Ashley Bond. 2012. *Survey of State Municipalization Laws*. Washington, D.C.: American Public Power Association.

Cardwell, Diane. 2013. "Cities Weight Taking Over from Private Utilities." *The New York Times*, March 13, 2013.

Colorado Constitution.

Committee on America's Climate Choices. 2011. *America's Climate Choices (2011)*. Washington, D.C.: National Academies of Sciences.

Critique of Boulder's Feasibility Analysis of Acquiring the Electric Utility Business within the City. 2011. Albuquerque, New Mexico: UtiliPoint International Inc. 24.

Daniel, David and Gegax, Douglas. "A Cautionary Tale on Municipalization," *Forum for Applied Research and Public Policy* 15(2), 2000, pp. 49-53.

Davis, Elaine R. *Paying for Power: The Challenge of Municipalization*. Issue brief. Seattle: Washington Policy Center, 1997. Print.

Davis, Elaine R. "The Problem with Power: Public Threats to Private Utilities " Washington Policy Center. Washington Policy Center, last modified 1/1997, accessed 10/29, 2012, http://www.washingtonpolicy.org/publications/brief/problem-power-public-threats-private-utilities.

Eaves, Elisabeth. 2006. "America's Smartest Cities." *Forbes*, December 15, 2006.

Eicher, Craig. Interviewed by Kathryn Browning. Personal Interview. Phone, February 11, 2013.

Froelich, Karen A. and John Ramsey McLagan II. 2008. "Diversification Strategy in Electric Utilities: Who Wins? Who Loses?" *Academy of Strategic Management Jounal* 7.

Glustrom, Leslie. Interviewed by Kathryn Browning. Personal Interview. Phone, 13 February, 2013.

Hirsh, Richard F. "Powering the Past: A Look Back." Powering a Generation of Change. Smithsonian Institution, last modified 9/2002, accessed 10/29, 2012, http://americanhistory.si.edu/powering/.

IPCC, 2007: Climate Change 2007: Synthesis Report. Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, Pachauri, R.K and Reisinger, A. (eds.)]. IPCC, Geneva, Switzerland, 104 pp.

IPCC, 2011: IPCC Special Report on Renewable Energy Sources and Climate Change Mitigation. Prepared by Working Group III of the Intergovernmental Panel on Climate Change [O. Edenhofer, R. Pichs-Madruga, Y. Sokona, K. Seyboth, P. Matschoss, S. Kadner, T. Zwickel, P. Eickemeier, G. Hansen, S. Schlömer, C. von Stechow (eds)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 1075 pp.

Jaffe, Mark. 2010. "Boulder Willing to Let Xcel Franchise Lapse while it Studies Future Energy Options." *The Denver Post*, October 10, 2010. http://www.denverpost.com/news/ci_16294228.

Johnson, Rebecca. 2006. *Municipal Electric Utilities - Analysis and Case Studies*. Colorado: Five Star Consultants.

Koehn, Jonathan. Interviewed by Kathryn Browning. Personal Interview. Boulder, January 17, 2013.

McNamara, Will. "Scientech Issue Alert: Hermiston, Ore., Will Municipalize Electric System this October." ElectricNet. VertMarkets, Inc., last modified July 25, 2001, accessed 4/1, 2013, http://www.electricnet.com/doc/Scientech-Issue-Alert-Hermiston-Ore-Will-Muni-0001.

National Renewable Energy Laboratory. (2012). Renewable Electricity Futures Study. Hand, M.M.; Baldwin, S.; DeMeo, E.; Reilly, J.M.; Mai, T.; Arent, D.; Porro, G.; Meshek, M.; Sandor, D. eds. 4 vols. NREL/TP-6A20-52409. Golden, CO: National Renewable Energy Laboratory. http://www.nrel.gov/analysis/re_futures/.

NOAA: 2010 Tied for Warmest Year on Record. 2011. Asheville, North Carolina: National Oceanic and Atmospheric Administration.

Pomerance, Steve. Interviewed by Kathryn Browning. Personal Interview. Phone, February 11, 2013.

Poque, Thomas and Solow, John L. "Review of 'Considerations in Governmental Aquisitions of Utility Systems Properties'." Iowa Utility Association. Iowa Utility Association, accessed 4/3, 2013, http://www.iowautility.org/currentissuese.aspx.

R.W. Beck, Inc. 2005. *Preliminary Municipalization Feasibility Study*, edited by Colorado City of Boulder. Final Report.

Robertson-Bryan, Inc. 2011. *Boulder Municipal Utility Feasibility Study*: Robertson-Bryan, Inc.

Salisbury, Susan. 2013. "Vero Beach Voters Approve Utility Sale to Florida Power & Light Co." *The Palm Beach Post*, March 13, 2013.

Saxer, Shelley Ross. 2009. "Government Power Unleashed: Using Eminent Domain to Acquire a Public Utility Or Other Ongoing Enterprise." *Indiana Law Review* 38 (2005): 55.

Snider, Laura. "Former Las Cruces Mayor to Boulder: Municipalization Has Perils." *The Daily Camera*, April 30.

Snider, Laura. 2010. "Xcel Plans to Close Valmont's Coal-Burning Generator." *The Daily Camera*, August 13, 2010.

Spracklen, D. V., L. J. Mickley, J. A. Logan, R. C. Hudman, R. Yevich, M. D. Flannigan, and A. L. Westerling (2009), Impacts of climate change from 2000 to 2050 on wildfire activity and carbonaceous aerosol concentrations in the western United States, J. *Geophys. Res*., 114, D20301, doi:10.1029/2008JD010966.