

BOULDER MUNICIPAL UTILITY

BUSINESS PLAN - DRAFT

Prepared for:



CITY OF BOULDER
1777 Broadway
Boulder CO 80302

Prepared by:



1942 Broadway, Suite 314
Boulder CO 80302
Contact: Nils Tellier
303.938.3088



Boulder Municipal Utility

Business Plan

EXECUTIVE SUMMARY

OPERATIONS

- Pending a positive vote on November 2, 2011, the creation and start-up of the electric utility should take between 10 and 14 months.
- Using external resources, such as contractors and other electric utilities, could hasten the start-up of the new utility.

FINANCES

- Bond financing is very expensive. The taxable bond par value is almost 30 percent higher than the financed amount. The city will need to minimize financing as much as possible to ensure a successful, competitive, and robust utility operation.
- The electric utility will likely rely on wholesale market energy during its first 3 to 4 years of operations. The lower supply cost and deferred bond payments will result in initial revenues that can fund:
 - Bond reduction
 - Rate stabilization fund (rate buy down)
 - Acquisition of generation
 - Investment in "localization" infrastructure
- The City should negotiate clauses for early bond reduction and retirement.
- The revenues generated in the utility's initial years can be used in a number of alternative ways, such as acquiring 88 MW of natural gas generation, developing 48 MW of rooftop solar, or acquiring 49 MW of wind generation. An analysis would need to be performed by the utility governing board or technical team to compare the cost-benefit of various scenarios. Upon initial investigation of these alternatives:
 - Wind generation shows the highest cost-benefit, with a reduction in long-term rates comparable to the rate stabilization fund.
 - Solar, under a rebate program, shows good cost benefit and the highest "social" benefit.
 - Natural gas generation shows marginal returns – it might gain value with bio fuels.
- The City may choose to look for alternatives to the \$15 million severance of its distribution system, such as servicing customers outside the City or passing through Xcel's billing.

Boulder Municipal Utility

Business Plan

LOCALIZATION

- A municipal utility would establish a local governing board that could make resource investment decisions based on the local load profile and the desires of Boulder customers. As compared to the incumbent utility, if conservation programs were maximized, the local utility could procure less power and offer demand-side management programs without prejudice and regardless of the statewide context.
- Through the Clean Air-Clean Jobs Act, Xcel's Colorado carbon footprint will decrease from over 1,500 lb of CO₂ per megawatt-hour (MWh) to 1,200 lb/MWh. By contrast, the local municipal utility can reduce its carbon footprint to 800 lb/MWh.¹

¹ See 2011 Feasibility Study Report - RBI

TABLE OF CONTENTS

section		page
EXECUTIVE SUMMARY	.....	ES-1
1 OBJECTIVE	.....	1
2 GOALS	.....	1
3 STRUCTURE OF THE UTILITY	.....	2
4 OPERATIONS INFORMATION FLOW	.....	3
5 ESTIMATED BENEFITS	.....	4
5.1 City's Goals	.....	5
5.2 Financial Benefits	.....	6
5.3 Information Transparency	.....	6
5.4 Accountability	.....	6
6 UTILITY CREATION	.....	7
6.1 Planning	.....	7
6.2 Creation of the Municipal Utility	.....	7
6.3 Resource Procurement	.....	7
6.4 Utility Start-up	.....	8
6.4.1 City Staff	.....	8
6.4.2 Distribution Operation	.....	9
6.4.3 Metering Database	.....	9
6.4.4 Scheduling Agent	.....	10
6.4.5 Scheduling Database	.....	10
6.4.6 Accounting and Billing	.....	11
6.4.7 Final Notes on Operations Start-up	.....	11
6.5 Simulations	.....	11
7 OPERATIONS	.....	12
7.1 Legal Activities	.....	12
7.1.1 Legal for planning	.....	12
7.1.2 Legal for start-up	.....	13
8 ALTERNATIVE STRATEGIES	.....	13

TABLE OF CONTENTS

section	page
8.1 Early Repayment of Cash Reserve	13
8.2 Generation Asset Purchase.....	14
8.2.1 Wind Generation.....	14
8.2.2 Gas Generation	15
8.2.3 PV Solar Generation.....	16
8.3 Alternative to Severance	18
9 CONCLUSION	18

List of Tables

Table 1: Initial Additional Revenues	14
Table 2: Wind Capacity Potential.....	14
Table 3: Gas Generation Potential.....	16
Table 4: PV Solar Generation Potential	17

List of Figures

Figure 1: Utility Structure	2
Figure 2: Information Flow	3
Figure 3: Comparative Rates.....	15
Figure 4: Comparative Rates.....	17

Appendices

Appendix A:	Load, Resources, Trading, and Scheduling
Appendix B:	Bond Financing
Appendix C:	Scheduling Coordinator Sample Agreement
Appendix D:	Sample EEI Power Purchase and Sale Agreements

Boulder Municipal Utility

Business Plan

1 Objective

The City of Boulder is considering the creation of an electrical municipal utility to serve its community according to its core values. The city's objectives align with the following four key components

- Rate stability
- Service reliability
- Reduction of carbon emissions
- Local control of energy decisions and maximum investments in local power

Boulder's core values are reflected in many years of policies that have shaped the community:

- Growth limitation, as outlined in the Danish Plan and supported by the first tax-funded Open Space program in the nation;
- Environmental stewardship, with a particular concern for carbon emissions and climate change (including the first self-imposed climate action tax in the nation)
- Social equity as reflected in Boulder's robust human services and aggressive city-sponsored affordable housing programs;
- Economic vitality, fostering advanced technology businesses and national laboratories

2 Goals

The Business Plan states the following goals to realize fully the objectives:

- Create a local municipal electric utility with cost-based rates tailored to its customers.
- Achieve economies of scale with regard to operating expenses and public purpose incentive programs.
- Improve short- and long-term reliability of service with upgrades to the distribution system, access to alternative transmission, access to alternative energy supplies and acquisition of local generation.
- Reduce dependency on fossil fuel generation through an increased renewable resource portfolio, distributed generation, demand-side management, energy storage and other advanced technology solutions.
- Create a local municipal utility that will be available and responsive to its customers.

Boulder Municipal Utility

Business Plan

3 Structure of the Utility

The electric utility would be formed as a municipal utility that reports to the City Council.

City Council could have approval authority of the utility budget, rates, bonds, and policies.

The utility would likely be directed by a Board comprised of City Council members, utility experts and stakeholders. The Board would designate a General Manager (GM) to run the utility operations in conformance with the City Council vision and the Board's strategic directions. The GM would have an indirect report to the City Manager. The Board would also designate a Trustee and a legal counsel. Both would assist the GM and report to the Board. The Board would also have supervision over a Technical Committee that would assist the GM with the investigation, feasibility and planning for new technologies, renewable resources, rebate programs and demand-side management.

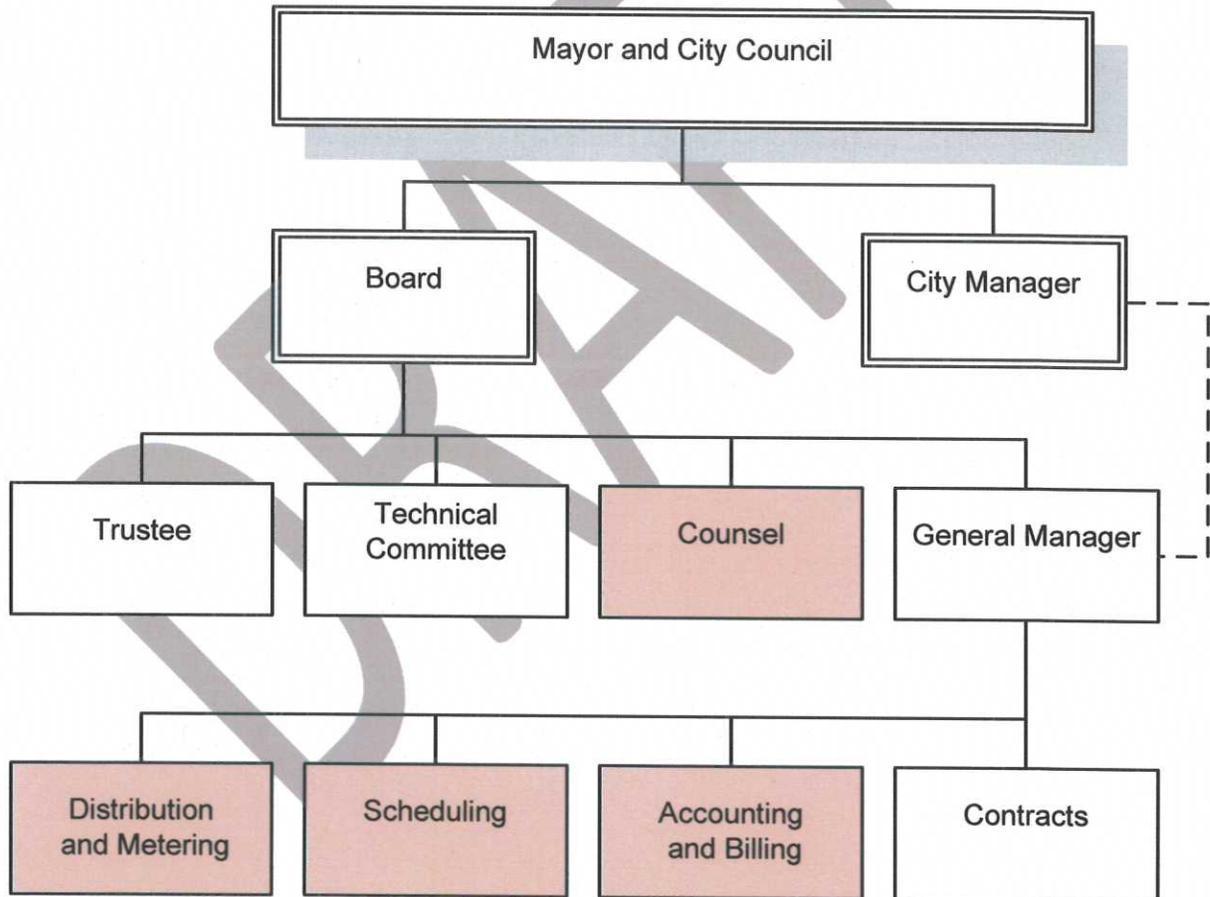


Figure 1: Utility Structure (The shaded services can be started by third-party contractors)

Boulder Municipal Utility

Business Plan

The utility would have four departments reporting to the GM:

- Distribution and Metering
- Load and Resource Scheduling
- Accounting and Billing
- Contract Management

The municipal utility would be created as a Load Serving Entity (LSE). The LSE may elect to become a transmission utility in the future.

4 Operations Information Flow

The following diagram illustrates the intricacies of operational information flow, much of which can be automated.

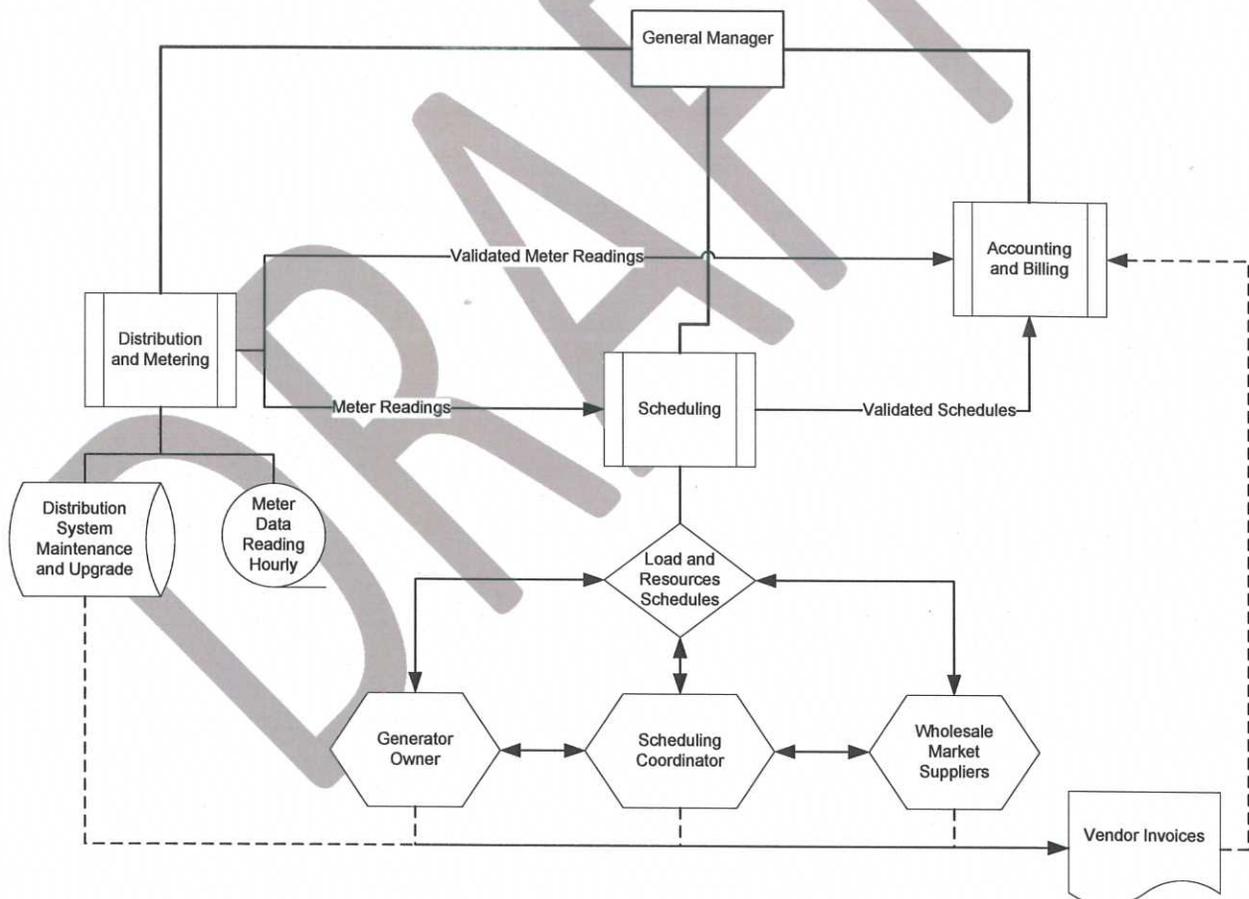


Figure 2: Information Flow

Boulder Municipal Utility

Business Plan

The **Distribution and Metering Department** ensures the functioning and upgrade of the distribution system, from the substations to the individual meters. It continuously feeds meter readings from the substations to the Scheduling Department. It verifies, validates and estimates (VEE) the customer meter readings and sends the detail to the Accounting and Billing Department once a month.

The **Scheduling Department** forecasts the load and generation resources, and adjusts the forecasts with incoming meter data. The department sends the load and resource schedules to the Scheduling Coordinator (SC), to the generation operators and market vendors on the day-ahead market. As meter data keeps flowing in, the department makes adjustments on the real-time market when necessary. It sends the validated schedules to the Accounting and Billing Department daily or weekly.

The **Accounting and Billing Department** generates the customer billing from the VEE meter readings and receives payments. It receives vendor invoices, which it validates against Power Purchase Agreements, schedules, contracts and work orders. The Accounting and Billing Department handles payments up to a specified clearance, beyond which payments are handled by the Trustee or the Board. Finally, the department prepares cost and revenue forecasts, budget and rates under the direction of the GM.

The **Contract Department** (not shown) initiates the Requests for Proposals, issues the Power Purchase Agreements and vendor contracts. This department also resolves any contractual issues.

All four departments report to the GM, who provides coordination and review of performances. The GM also provides guidance to departments based on instructions received from the Board. Finally, the GM reports to the Board the results from operations, the budget, rates and cash flows.

The majority of the operational information, such as meter readings, load forecast, scheduling, schedule validation, billing and invoice validation can be handled from a computerized database. The database offers a central repository with instant access to all data, and the ability to analyze trends across all inputs. Additional input to the database would include weather forecast, commodity prices, generator operations, and network capacity constraints.

5 Estimated Benefits

Based on the city's objectives of:

- rate stability,
- service reliability,
- reduction of carbon emissions, and
- local control of energy decisions and maximum investments in local power,

a local municipal utility could realize benefits as measured against the incumbent utility.

Boulder Municipal Utility

Business Plan

5.1 City's Goals

Rate Stability

Local utility: The municipal utility can choose to create a rate stabilization fund to minimize rate increases over the 10 year planning horizon. In the feasibility study cost model, the rates are held to a 3 percent annual average increase over the 10 year period. This rate stabilization could be achieved by procuring wholesale market energy to supply the load. Contracting for wind, firming with natural gas, and developing PV Solar will require careful planning. The option of developing City-owned wind is discussed later. The utility can likely strike alliances with neighbor municipal and publicly owned utilities for emergency response, portions of the distribution operations, management of capital spares, access to other transmission networks and generation resources. In addition, the City will be able to upgrade its distribution system according to its own policies.

Incumbent utility: Xcel, limits its customers' options to its portfolio of resources and general corporate policies on generation ownership. Rates are vetted through a PUC process and any approved rate increases are based on Xcel's resource decisions in a statewide context regardless of Boulder's priorities.

Service Reliability

Although the incumbent utility has provided reliable service to its Boulder customers, it provides a uniform maintenance policy, which may not be as proactive or customer-oriented as a local utility's.

Carbon Reduction

The incumbent utility has been a leader in wind development over the past 20 years and its renewable portfolio complies with the State Renewable Portfolio Standard (RPS); yet even under the Clean Air-Clean Jobs Act resource shifts, its carbon footprint will only decrease from 1,500+ lb to 1,200 lb of CO₂ per MWh. By contrast, the City can reduce its carbon footprint to 800 lb per MWh by purchasing wind resources that are firming with natural gas.²

Local Control, Local Resources

Incumbent utility: Xcel is an investor-owned utility governed by the rules and regulations of the Colorado Public Utilities Commission (PUC). The decisions Xcel makes relating to resource acquisition, demand-side management and rates must be applicable to its entire service territory, regardless of regional differences in load profile, conservation efforts or local building code efficiency requirements. It is difficult for a Boulder customer to have an influential voice at the PUC alongside other statewide interests.

Local utility: In contrast, a local municipal utility could offer rebates and conservation services as well as power supply resources that match its local demand and the desires of the community it serves.

² See 2011 Feasibility Study Report - RBI Attachment E10

Boulder Municipal Utility

Business Plan

Preference could be given to local businesses that can provide energy management solutions to its customers and the local utility board can take other community priorities into consideration.

5.2 Financial Benefits

The IOU allocates its transmission and distribution costs for its entire service territory to all its rate payers in proportion to energy billings. In reality, much of these costs are subject to complications for transmission and distribution such as: long distances, irregular and rocky terrain, low population, difficult vegetation, etc. Little of this applies to Boulder; therefore, it is likely that the Boulder customers pay more than their share for transmission and distribution infrastructure and services.

Boulder rate payers are billed approximately \$100 million annually by Xcel, out of which \$5.5 million returns to the City under the occupation and property taxes.

The local municipal utility, on the other hand, would create new employment and retain a larger portion of the cash flow within the City and County. At the minimum, the city would retain at least \$21 million annually from the following operation costs (in 2011 dollars):

- Utility operations: \$ 13 million
- Public Purpose Fund: \$ 4 million
- Payment In Lieu of Taxes: \$ 3.5 million
- Interest payment on bond retirement fund: \$ 0.5 million

This amount would increase as the city implements additional local generation resources.

5.3 Information Transparency

The incumbent utility serves a large territory and cannot practically focus on Boulder's needs and desires. A municipal utility would enable the city to access its energy data and devise, implement and monitor progressive solutions that meet its core objectives. Furthermore, the utility board could choose to pull from local technological resources to implement many of its programs.

5.4 Accountability

As stated above, under section 5.1: Local Control, Local Resources, a Boulder customer of Xcel has very little say over its policies and programs. A local municipal utility would be held accountable at all levels on the operation performance and transparency of information. Boulder customers would have more influence in the general energy policies of the utility.

Boulder Municipal Utility

Business Plan

6 Utility Creation

6.1 Planning

Once the legal, financial and technical feasibility studies are complete, the next steps include seeking voter approval for the authority and bonding capacity required to initiate and operate the local municipal utility. If approved by the voters, transition planning should begin.

Prior to seeking voter approval, the city must make strategic decisions associated with governance and charter for the municipal utility.

6.2 Creation of the Municipal Utility

The municipal utility is created first as an administrative entity and, later as a functioning entity. The first step entails financing the legal setup, the negotiations and possibly litigation over acquiring the distribution system.

The Board can initiate a FERC³ filing to create a Load Serving Entity as a wholesale customer of Xcel under the Open Access Transmission Tariff (OATT) and start negotiations with Xcel on acquisition and stranded costs. It is the Board and the City's decision to start the utility upon FERC filing or to wait until negotiations are settled with the incumbent utility.

6.3 Resource Procurement

The utility should promptly secure Power Purchase Agreements (PPAs) with wholesale market vendors to ensure a portfolio of firm resources. The initial contract is a Master EEI⁴ Agreement. Additional agreements should include a Day-Ahead Market, a Real Time Market and an Odd-Lot Confirm. Market vendor may be able to provide a renewable mix with their contracts; however, the generators are typically non-designated, meaning that the city would receive grid energy and Renewable Energy Certificates (RECs).

Wholesale market contracts take less than three weeks to set up. They provide the necessary protection against load imbalance. With the market PPAs secured, the utility can commence operations.

The next set of PPAs is for local generation, renewable and firming resources. The Board and the GM should be mindful of the following:

- New generation can take up to 5 years from planning through permitting to start-up.

³ Federal Energy Regulatory Commission

⁴ Edison Electric Institute

Boulder Municipal Utility

Business Plan

- It may be in the city's interest to own generation assets rather than issue a 20+ year PPA. There are different strategies to lease-to-own assets with financial benefits. These strategies should be reviewed on a case-by-case with the developers.
- Firming and capacity generation PPAs should not exceed 3 years, renewable. The generator should guaranty output, ramping capability, and heat rate.
- Generators with a heat rate above 9,000 BTU / kWh should not be contracted for firming.
- PPAs should include a clause that enables the utility to compete with its own generators, as well as exit clauses.
- The Board should consider electric energy PPAs as well as heat rate contracts.

The utility should make its first trade two days before commencing operations, otherwise it would be entirely exposed to costly imbalance for 48 hours.

6.4 Utility Start-up

Taken together with the city's Draft Utility Development Plan, the following sections provide a general outline of the steps necessary to start a new electric utility. There are many variables and some tasks may be taken on in a different order than is described here. If voters approve creation of the local utility, a transition and operating plan will need to be developed with specific and detailed guidance and work plans to govern the utility start-up.

There is no deadline to start the utility, other than financial and political pressure. The City will first coordinate a start date with the incumbent utility for the municipal utility as a wholesale customer; meanwhile the incumbent will continue to serve its ratepayers as retail customers.

A bonding effort will be necessary to fund the utility start-up. The bond financing affords the utility enough credit-worthiness to issue contracts for Open Access (transmission and ancillary services) and wholesale resources. The bond amount is estimated at \$286 million to facilitate a \$222 million start-up financing. The City should negotiate the possibility to repay the taxable bond, or parts of it, early in order to have the option to reduce the debt service. Bond financing parameters are detailed in Appendix B.

6.4.1 City Staff

The utility would need to hire a General Manager (GM) to orchestrate the start-up.

The city has departments and existing utilities that may provide experience and resources for contracting, billing and meter reading. Further analysis is needed to assess overall staffing needs and the feasibility of sharing existing positions.

Boulder Municipal Utility

Business Plan

6.4.2 Distribution Operation

Next, the nascent utility could issue a Request for Proposal (RFP) for the survey and documentation of the distribution system, as well as possible operation and maintenance. If the distribution contractor is being utilized for operation and maintenance, it should provide specific levels of staff and equipment, insurance and performance bonding. The contractor should also have a training and safety program. The distribution contract should have the following clauses:

- Allow the city to hire another contractor (no monopoly of service)
- Limit contract term to 3 years, renewable annually.
- Set performance criteria for safety, regulatory compliance, system availability and reliability, meter data accuracy, completeness and availability.
- Request a training and safety program that City staff can attend.
- Request monthly operations report and meeting attendance.
- Indicate the City's desire to take over distribution operations.

At a minimum, the contractor should complete a detailed inspection and assessment of the distribution system to uncover any safety issues or other operational deficiencies, especially after a period of time wherein the incumbent utility had known the system was being purchased and may have deferred maintenance of system components.

6.4.3 Metering Database

During the system survey period, the contractor and the utility should develop a strategy for the metering database. The contractor is likely to make recommendations; however, the GM should be careful not to commit the utility to built-in incompatibilities or proprietary issues that would prevent the utility from letting go of the contractor.

The database should remain the property of the city, although the software might be licensed from a third party. There are several commercial packages available, including from the meter manufacturers. The metering database and software specifications should include the following capabilities as a minimum:

- Local server
- Fast technical support
- Easy interface with other databases
- Ease of configuration
- Data security
- Reporting capabilities with other common office software
- Expandability
- Speed of operation

Boulder Municipal Utility

Business Plan

The municipal utility should contact other utilities to discuss merits and pitfalls of common software packages.

6.4.4 Scheduling Agent

The City should issue an RFP for a scheduling agent to perform the following tasks:

- Load and resource modeling
- Day-ahead schedule preparation, compatible with the Scheduling Coordinator's format. The Scheduling Coordinator would be Xcel's dispatch center
- Schedule validation
- Support the Accounting and Billing functions when requested
- Prepare Net-Short Position reports monthly
- Support the GM in developing the risk policy

The scheduling agent's contract should follow the same guidelines as the distribution contract, with less pressure on safety since it does not involve field work or high voltage. The clauses should include:

- Allow the City to hire another contractor (no monopoly of service)
- Limit contract term to 2 years, renewable annually.
- Set performance criteria for forecast and schedule accuracy, completeness and availability.
- Request a training program that City staff can attend.
- Request monthly operations report and meeting attendance.
- Indicate the City's desire to take over scheduling operations.

6.4.5 Scheduling Database

The scheduling agent, distribution contractor and the utility should develop a strategy for the scheduling database. Again, the GM should be careful not to commit the utility to built-in incompatibilities or proprietary issues that would prevent the utility from dismissing the contractor.

The database should remain the property of the City, although the software might be licensed from a third party. The scheduling database and software specifications should include the following capabilities as a minimum:

- Local server
- Fast technical support
- Easy interface with other databases, weather forecast, commodity pricing
- Interface with the Open Access Same Time Information System (OASIS) for the Rocky Mountain Region and Xcel.
- Approved interface with leading market suppliers and Scheduling Coordinator
- Automatic generator control (AGC) as an option

Boulder Municipal Utility

Business Plan

- Ease of configuration
- Data security
- Reporting capabilities with other common office software
- Expandability
- Speed of operation

The municipal utility should contact other utilities to discuss merits and pitfalls of common software packages.

6.4.6 Accounting and Billing

The accounting and billing department can be contracted or staffed from existing city departments and utilities. If contracted to a third party, the contract should follow the same guidelines as for the scheduling agent. The accounting and billing software should be the same platform as the Water and Wastewater Utility.

If the city decides not to outsource the Accounting and Billing functions, it should be able to rely on the Scheduling Department's support.

6.4.7 Final Notes on Operations Start-up

The utility set-up and staffing should take between 6 months and a year before the contractors are routinely running simulation exercises and ready to start real operations.

The Board and GM should be constantly aware of the following pitfalls:

- Conflicts of interest created by running too many functions with a single contractor, for example:
 - Having the scheduling agent own and operate generation
 - Having the distribution and metering contractor run the accounting and billing
 - Having Contractor stakeholders on the utility board
 - Software captivity:
 - Having a contractor provide or develop its operations software without proper legal safeguards that ensure the City's rights to continue operations after the contractor leaves.
 - Having obsolete or incompatible software
 - Underestimating the need for data storage and speed of operation

6.5 Simulations

With the key operation departments in place and setting up for operations, the utility should start running simulation exercises. The simulation phase entails running the utility as realistically as possible, with a Board, staff, software, up-to-date price and schedule information.

Boulder Municipal Utility

Business Plan

The distribution system's simulated operation and maintenance can include field surveys, training and drills. The scheduling simulation should include mock scheduling with the Balancing Area Controller (Xcel).

Simulation exercises will increase in scope as the utility staffs up and gears up its accounting department. They should also increase the accuracy of the data used in planning. The annual budget and rate structure should be revised accordingly.

7 Operations

The first day of operation should feel like "just another day" for the utility staff and board, except that trades and operations are no longer for exercise. The first month will require a higher level of effort in terms of scrutiny and information verification. The second month will require another level of effort as the financial settlements start coming in and need to be validated, likewise with vendor invoices. The effort level tapers down to a normal activity level for operations over the remainder of the year. Meanwhile the planning activity increases, first to compare the planning models with actual results and then to investigate alternative forms of resource procurement, cost impacts, rate structures and deployment of renewable strategies.

The first 3 years of operations should follow a conventional pattern of operations, although the utility may elect to commit to certain long-term resources such as the development of "localization assets," acquisition of renewable generation and/or transmission rights.

The unique character of the Boulder municipal utility, together with the results of its core value, will develop after the third to fifth year.

7.1 Legal Activities

Legal support is needed in all phases of the utility planning, inception and operation.

7.1.1 Legal for planning

The involvement of legal support is needed in the following planning activities:

- Communications with Xcel for data acquisition, stranded and acquisition costs determination.
- Understanding of regulatory compliance requirements from FERC, NERC and WECC for transmission, large generation permitting, renewable and intermittent generation.
- Coordination with Xcel for wholesale services such as transmission, network integration, ancillary services, etc.
- Understanding of State and Federal incentive programs for energy development, such as renewable financing.
- Drafting of the utility charter, bylaws, and governance.

Boulder Municipal Utility

Business Plan

- Bond financing
- Generator permitting for rooftop PV solar as well as large wind, hydropower, etc.

7.1.2 Legal for start-up

Legal support will be required during the following start-up activities:

- Stranded and acquisition costs negotiations with Xcel and FERC
- FERC filing for the new municipal utility
- Bond financing
- Initiating wholesale contracts with Xcel
- Transition of incentive programs from Xcel for roof-top PV Solar
- Power purchase agreements with third parties
- Sub-contractor hiring
- Staff hiring

8 Alternative Strategies

The following options should be studied early on before the utility is formed.

8.1 Early Repayment of Cash Reserve

The taxable bond finances the following items at 8 percent for 30 years:

- Acquisition of the Distribution assets: \$121 million
- Severance of the distribution system: \$15 million
- Utility operations reserve for 1 year: \$12 million
- Energy and transmission cost reserve: \$28 million

Acquisition and severance of the distribution system constitutes a tangible asset, which benefits the municipal utility bond rating.

Cash reserves represent \$40 million, costing the utility an extra \$52 million in bond par value and \$4.7 million extra in annual debt service repayment. Under the base assumptions⁵, the first two years would bring excess revenues of \$66 million if the municipal utility rates matched the incumbent's. Depending on the bond structure, the municipal utility could potentially cancel its cash reserve in the third year and use 60 percent of its first two years' revenues for reserve. The advantage is that its reserve would then generate interest income.

⁵ See Feasibility Study

Boulder Municipal Utility

Business Plan

8.2 Generation Asset Purchase

The utility will have the choice between Power Purchase Agreements (PPAs) and generator ownership. PPAs offer the advantages of procuring energy promptly and on a short-term basis. Generator ownership involves a long-term commitment and may require 3 to 5 years to permit and build.

The municipal utility can pair its rates with the incumbent, resulting in the following net revenues to purchase generation:

Year	Net Revenue
2012	\$36 million
2013	\$30 million
2014	\$7 million

Table 1: Initial Additional Revenues

An alternative to paying bonds early would be to purchase generation.

8.2.1 Wind Generation

The estimated cost for wind (Engineering, Permitting and Construction - EPC) is \$2,125 per MWh. Under the above assumption, the utility could have the following wind resources:

Year	Wind Capacity (MW)	Utility Cost Savings
2015	17	\$2 million
2016	31	\$4 million
2017	35	\$7 million
2018	39	\$7 million
2019	45	\$7 million
2020	48	\$8 million

Table 2: Wind Capacity Potential

Incidentally, each new wind development is less than 20 MW and thus is not burdened by large generator interconnection requirements. The result would be a net benefit in operating costs after 2014. The wind development results in net cost savings derived from the lesser reliance on wholesale purchases. The above results are preliminary, they assume:

- Zero energy cost from the wind resources since the utility owns the generators
- 30 percent wind generation capacity factor
- Operation and Maintenance (O&M) costs not included but presumably accounted for with the lower capacity factor.
- Asset Depreciation not accounted for (may offset the revenues)

Boulder Municipal Utility

Business Plan

The result is an alternative form of cost parity with the incumbent utility. This strategy has the following benefits:

- Generation asset acquisition
- Additional revenues from Renewable Energy Credits (not included in the above numbers)
- 10 percent renewable portfolio owned by the utility.

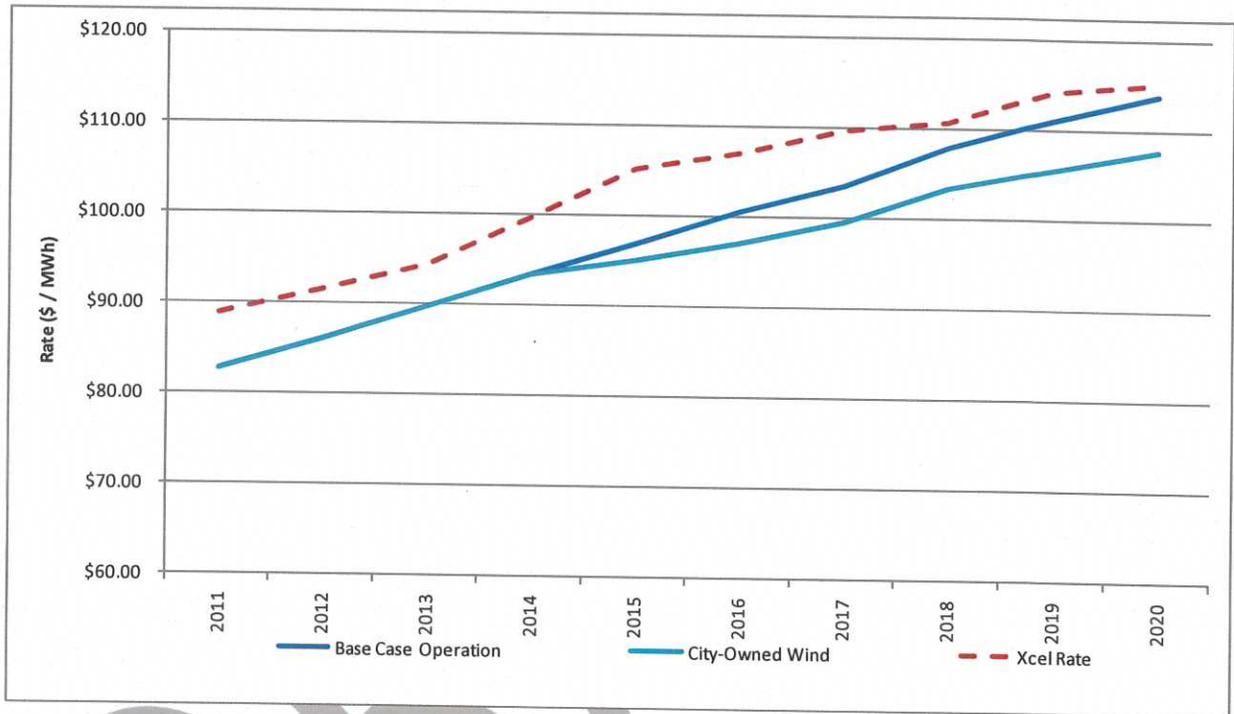


Figure 3: Comparative Rates

8.2.2 Gas Generation

The same reasoning can be held for a natural gas generator as for wind. The gas generators would not protect the utility from the volatility of natural gas prices, but would provide a firming resource and capacity reserve. The natural gas generators could be specified to run on multiple fuels, such as gas or liquid bio-fuels.

The specifications for gas generation are:

- 9,800 BTU / kWh Heat Rate (Lower Heating Value)
- \$1.1 million per MW installed (Engineering, Permitting, Construction)
- 100 percent capacity factor during on-peak hours. Not competitive against off-peak wholesale market.

Boulder Municipal Utility

Business Plan

Year	Gas Capacity (MW)	Utility Cost Savings
2015	34	\$0.1 million
2016	62	\$0.7 million
2017	88	(\$0.7 million)
2018	88	\$0.2 million
2019	88	\$0.2 million
2020	88	\$0.4 million

Table 3: Gas Generation Potential

Even if installed locally to offset transmission charges, the gas generator shows a marginal advantage.

8.2.3 PV Solar Generation

PV solar is typically installed “behind the meter” and the energy generation is first absorbed by the customer, with the surplus sent to the distribution grid. Behind-the-meter generation results in load reduction and therefore higher cost allocation to the remaining load. Pushing the idea to the extreme, if PV Solar were to completely offset the residential load, it is easy to visualize how the remaining 78 percent load carries the entire utility fixed costs. This risk can be addressed with tiered rebates and purchase prices. The following proposal focuses on a first tier generation of PV-Solar installation.

The two main options to purchase solar generation are to pay a rate derived from the capital cost, typically upwards of 18 cents per kWh, or to contribute to the capital investment with a rebate and purchase the energy at a discount. The former solution can be implemented without affecting the utility’s capital reserve, but it affects energy costs because the generation rate is several times higher than market. The later is a joint venture between the utility and its customer that has significant benefits to all parties.

Supposing that the municipal utility implements a solar program with the following parameters:

- Installation rebate: \$2.00 per Watt (\$2 million per MW)
- REC purchase: 5 cents per kWh (\$50 per MWh) without escalation

The solar generation can be deployed relatively quickly, compared to wind and natural gas. The table below summarizes the potential PV Solar deployment and utility cost reduction.

Boulder Municipal Utility

Business Plan

Year	PV Solar Capacity (MW)	Utility Cost Savings
2013	18.5	
2014	34	(\$0.1 million)
2015	48.5	\$ -
2016	48.5	\$0.2 million
2017	48.5	\$0.4 million
2018	48.5	\$0.7 million
2019	48.5	\$0.8 million
2020	48.5	\$0.9 million

Table 4: PV Solar Generation Potential

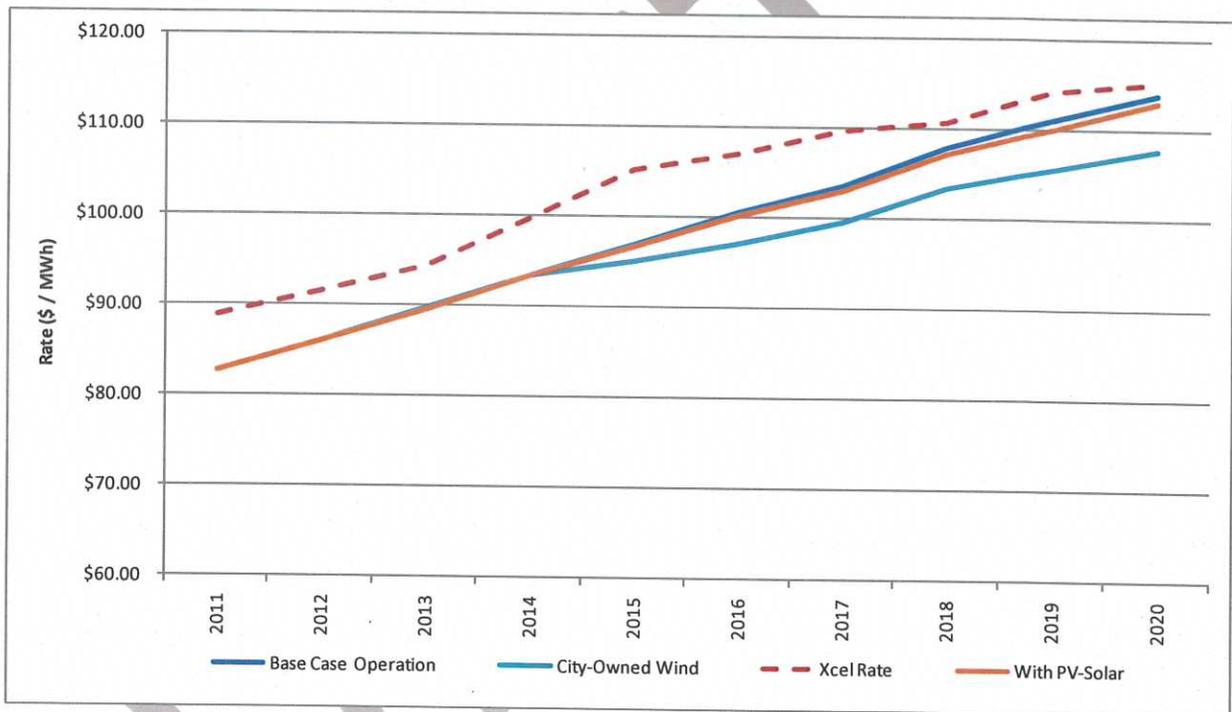


Figure 4: Comparative Rates

The solar program presents the following advantages:

- Solid growth in savings
- Local resource and economy
- Flexibility to implement program variants for higher returns
- Can be applied to thermal solar with even higher returns

The disadvantages include:

- Reliance on overseas manufacturing

Boulder Municipal Utility

Business Plan

- Customer tolerance for higher rates
- Need for energy storage

It seems that photovoltaic technology has broken new ground for distributed generation; however, the future will likely turn to solar thermal electric generation.

8.3 Alternative to Severance

This last topic addresses the \$15 million set aside for the severance of the distribution system, which costs an additional \$4.5 million in bond debt service reserve and capitalized interest. The severance costs the utility an extra \$2.1 million in annual debt service payment over 30 years. This is a high price to pay and the City should consider alternatives such as:

- Servicing all customers connected to the City substations. The City would have to file rates with the Public Utility Commission to retail outside of its limits.
- Annexing the areas connected to the municipal electric utility
- Passing through Xcel charges

9 Conclusion

The business plan outlines the creation, start-up and operation of the municipal electric utility. The costs are based on the feasibility study. The upcoming November 1st election is the last determinant to the feasibility of the municipal utility; based on a positive outcome, the City should then review carefully each step of the utility creation in order to define its transition period, conduct follow-up studies and potentially adjust its bond requirement.

The municipal utility will rely on wholesale market energy for the first 3 years and it should hedge against price volatility by securing liquidated damage contracts as early as possible. The first 3 years will likely yield higher than average revenues commensurate with the delay in bond repayment. The utility needs to weigh all its options for near- and long-term goal achievement. Three options discussed in this report entail using the initial profits to buy down the rates over the next 7 years, acquire 88 MW of natural gas generation, develop 48 MW of rooftop solar, or acquire 48 MW of wind generation. The final answer may be a mix of the above.

In addition to the initial profit margin, the utility will generate upwards of \$4 million annually in public purpose program funding. This will replace Xcel's current demand-side management spending in Boulder, as well as the current Climate Action Plan tax. This funding should be assessed for efficiencies and can be used to fuel additional research and development with local enterprises, laboratories and academia to ultimately lead to the Boulder solution to rate stability, system reliability carbon reduction and maximum localization.

Appendix A

Load, Resources, Trading And Scheduling

The City load must be met on an hourly basis with energy supply. This section describes the process of load balancing.

Aggregated City Load

The incumbent utility has provided the 2010 hourly load data after numerous requests from the City.

The table below summarizes key load profile characteristics of the actual City 2010 load profile:

Load factor	68 percent
Peak demand	236 MW in July
Base load	116 MW
Annual energy	1,396,234 MWh
Annual growth	1.80 percent

Table 1: Load profile characteristics

The figure below shows the monthly average City load profile.

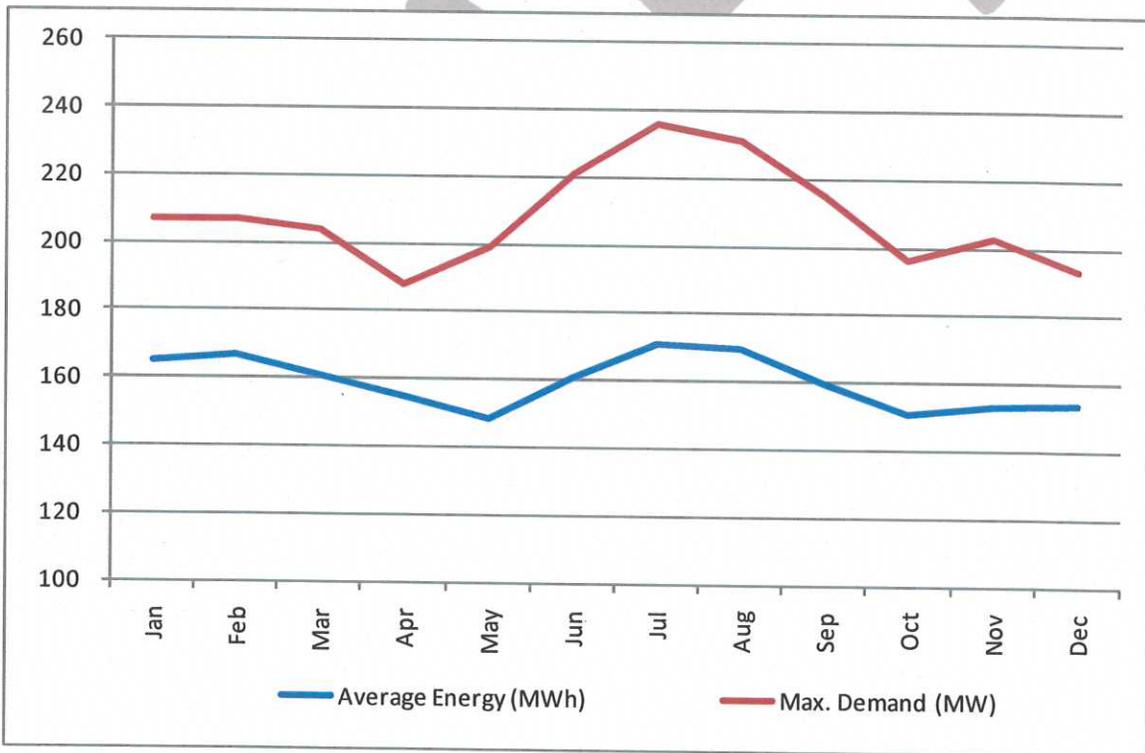


Figure 1: City load profile

Renewable Resources

The renewable resource modeled for the study entails the City-owned hydroelectric generation.

It is assumed that the energy rate is the cost to operate the hydro, \$45.60 per MWh in 2008, and that there is no transmission charge. The City-owned hydroelectric plants include:

- Maxwell
- Orodell
- Kossler
- Sunshine
- Betasso / Lakewood
- Silver Lake
- Boulder Canyon

The model uses actual hourly output from PV-Solar panels located in Boulder:

PVWATTS: Hourly PV Performance Data, 1962 to 1990⁶

City:	BOULDER
State:	Colorado
Lat (deg N):	40.02
Long (deg W):	105.25
Elev (m):	1634
Array Type:	Fixed Tilt
Array Tilt (deg):	40.0
Array Azimuth (deg):	180.0
DC Rating (kW):	10.0
DC to AC Derate Factor:	0.770
AC Rating (kW):	7.7

The actual data brings the intermittency of solar generation, as shown in the figure below.

⁶ Courtesy of RenewableYES, T. Asprey

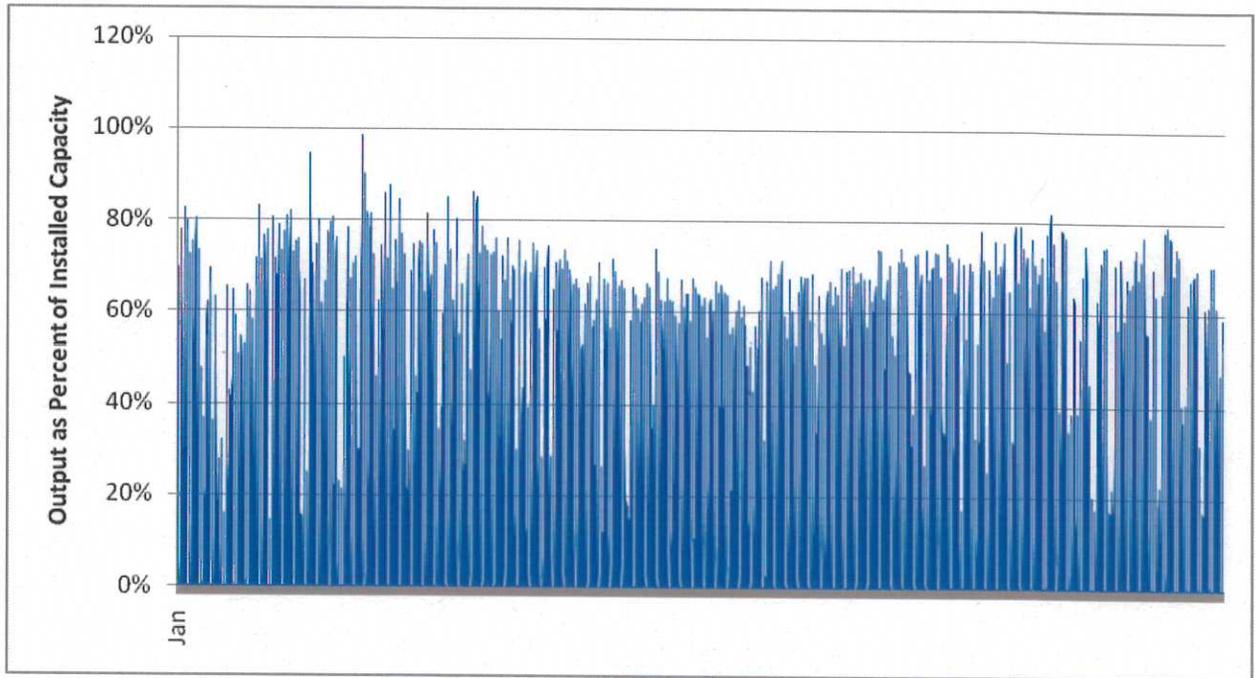


Figure 2: Hourly solar generation for a year

Wind generation is based on east Colorado plains data. The rate used for wind, at 6.5 cents per kWh, is reasonably higher than the current ongoing rate of 5.5 cents. The wind generation profile stems from the NREL site id 12883 for 2006:

State:	Colorado
Lat (deg N):	40.41
Long (deg W):	102.19
Elev (m):	1127

The wind generator is located approximately 7 miles north of Holyoke, CO. The 10-minute dataset was averaged to hourly readings. The hour-averaged wind data, depicted in the figure below, provides enough intermittency for the model.

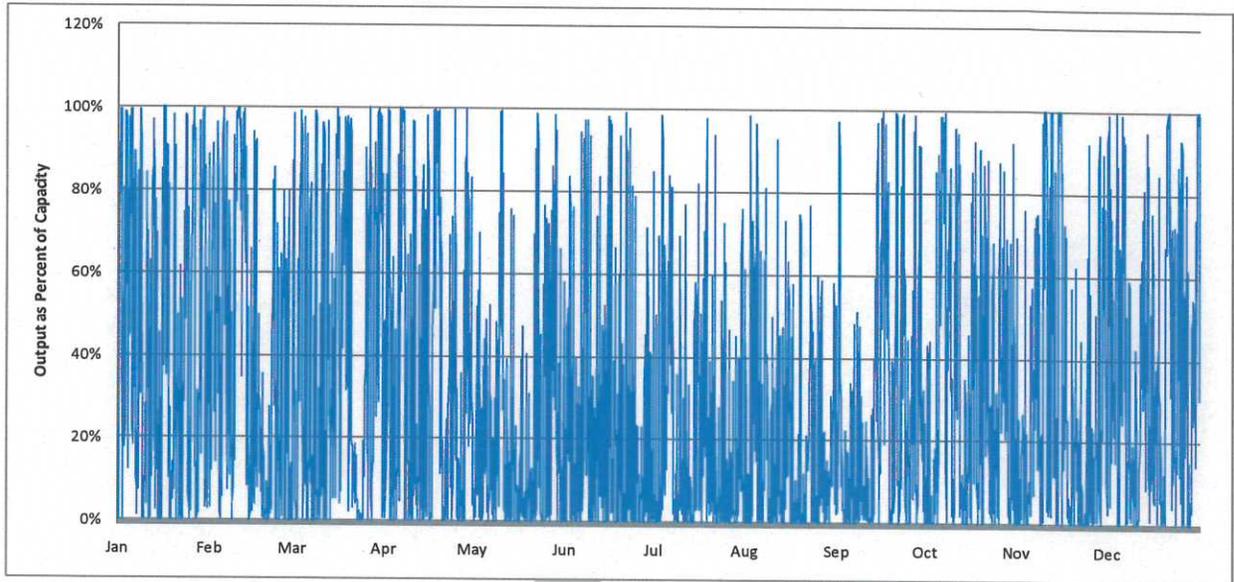


Figure 5: Annual Wind Generation Profile

The table below summarizes the PV-Solar and wind rates and characteristics.

	PV Solar	Wind
Installation Rebate Rate	\$ 2 / Watt	N/A
Load Factor	17 percent	30 percent
Actual curve from	PVWATTS	NREL

Table 2: PV-Solar and wind model parameters

The model computes load and resources with a granularity of one hour over 10 years.

Supplemental Market Energy

The operation of an electric utility requires that the resources match the planned load every hour. The wholesale energy market offers different options to procure supplemental energy, or sell back surplus energy. The market energy is supplied from non-designated resources, meaning that Boulder would only need to schedule a purchase or a sale at given hours with a counterparty, without specifying which generator the energy comes from. Examples of Power Purchase and Sales Agreements are included in Exhibit C. These agreements are designed for another Control Area hence references to the “ISO” should be construed as the “Balancing Area”.

Wholesale market trades are an agreement between Boulder, a counterparty and Xcel Energy.

- Boulder purchases energy from a counterparty, asking it to deliver it on the Xcel grid
- Xcel is notified of the delivery on behalf of Boulder so that Xcel knows the Boulder load is balanced with the resource

- Xcel takes the energy on its network and delivers a similar amount of energy from its grid to Boulder. Xcel does not charge Boulder or credit the counterparty for the energy.
- Boulder pays the market counterparty for the energy purchased and Xcel for the transmission charges

Wholesale market energy trades can take several forms: Future purchases, day-ahead and real time.

FUTURE PURCHASES

Future purchases – or Liquidated Damage Contracts – are used to protect against the volatility of the spot market in future months and years, it is a form of hedging. This type of transaction, primarily as a purchase, consists in buying blocks of energy for a period of time in the future at a fixed price. For example, the utility might consider today buying 100 MW for each on-peak hour in July 2013 at \$63.00/MWh from counterparty X. This purchase creates an obligation for the counterparty X to deliver 100 MWh at \$63.00/MWh on the grid on behalf of Boulder at each on-peak hour during July 2013; it also creates an obligation for Boulder to take the energy and pay the counterparty. If the market rate drops to \$30.00/MWh in July 2013, Boulder is still obligated to buy the energy at \$63.00/MWh; conversely if the market price jumps to \$120/MWh, the counterparty is still obligated to sell the energy at \$63.00/MWh to Boulder. Now suppose that Boulder only needed 43 MW at a given hour, it can sell back the 57 MW surplus on the market. The sale may be at a profit or at a loss, depending on the spot market price at that time. Future purchases are an insurance policy, they seldom result in competitive pricing at the time of delivery but they do protect against price spikes.

DAY-AHEAD MARKET

Day-ahead market (DAM) trades can be purchases or sales (called CALL and PUT, BUY and SELL in the energy parlance). Unlike future purchases, DAM trades are executed two days prior to the delivery date for variable amounts of hourly energy, and priced according to an index such as the Intercontinental Exchange (ICE) for the particular region where energy is delivered. In trading on the day-ahead market, the municipal utility would purchase the energy, priced at an index, plus a margin; it would sell the energy, priced at the index, minus a trade margin.

REAL TIME MARKET

Real time market (RTM) trades are a corrective tool to adjust a schedule within an hour of delivery in the event that the load or generation appears to differ substantially from what was scheduled on the day-ahead market.

Examples of scheduling mishaps include:

- Sudden weather change, resulting in substantial increase or decrease of air conditioning load
- Failure at a substation or distribution feed, resulting in a sudden load drop.

- Large customer back-up generator start, resulting in a sudden load decrease.
- Generator failure or malfunction.

Real time market trades are used to avoid costly imbalance charges. The municipal utility has a +/- 2 MW error band for its scheduling accuracy, within which it does not incur penalties. Beyond this dead band, Xcel charges up to 125 percent for under-schedules and credits as little as 75 percent for over-schedules.

Load and Resource Scheduling

Load and corresponding resources will need to be forecasted and scheduled by the municipal utility. This requires Boulder to have scheduling agents who will submit the schedules to a Scheduling Coordinator. The Scheduling Coordinator (SC) is responsible for submitting the schedule to the grid operator, which is Xcel. For SC services; Boulder can become its own SC, hire Xcel, or a third party consultant. A sample Scheduling Coordinator Contract is in Appendix B.

DAY-AHEAD SCHEDULING

Day Ahead scheduling consists in balancing the load with resources on a 36-hour forecast basis, and using day-ahead market trades to supplement generation. In other words, at each hour:

Day-Ahead load forecast = Day-Ahead generation forecast + / - Day-Ahead Market resources

Hourly load can be routinely forecasted by computer according to patterns and select variables.

Generation day-ahead forecast is instruction-based for firm generation (hydro, biogas, natural gas) but intermittent resources such as wind and PV-Solar are far more challenging as they require a best guess of the next 36 hour weather conditions. Intermittent resources are scheduled on an average basis on the day-ahead, and corrected on a real-time basis.

Day Ahead Scheduling is handled during normal business hours. Subject to clarifications from the Scheduling Coordinator (SC), the schedule can be placed on a two-day ahead during business hours to ensure the SC has received scheduling instructions by 6:00 am on the day ahead.

		Monday	Tuesday	Wednesday	Thursday	Friday
	HE	Scheduling Day for Tuesday	Scheduling Day for Wednesday	Scheduling Day for Thursday	Scheduling Day for Friday & Saturday	Scheduling Day for Sunday & Monday
Market: day ahead trading	0600	Customer provides SC and market provider with a copy of its load and resource schedules for Tuesday	Customer provides SC and market provider with a copy of its load and resource schedules for Wednesday	Customer provides SC and market provider with a copy of its load and resource schedules for Thursday	Customer provides SC and market provider with a copy of its load and resource schedules for Friday & Saturday	Customer provides SC and market provider with a copy of its load and resource schedules for Sunday & Monday

Table 3: Day Ahead Trading Schedule

The daily scheduling requires one staff; it is desirable to have at least three to four staff taking turn in the day-ahead scheduling for redundancy.

The example schedule below shows the following elements of a daily schedule:

- Hourly load forecast. The load is net of local resources, that is total load minus local generation. It is then increased by 5 percent to compensate for transmission losses.
- Resource schedule for the wholesale energy, including renewable resources, day-ahead trades and a future purchase
- The summary of net energy trade for the scheduling coordinator (SC). In the case of Boulder, the SC would be XCEL Energy.
- The schedule shows on-peak hours to be from 6 am to 10 pm. In Colorado, peak hours are from 7 am to 11 pm.

Schedule Coordinator ID:XXXXX
 Schedule For: Thursday 08/11/2005

Hour Ending	Net Load		RESOURCE												Summary for SC		
	Total		Hydro			Market Counterparty 1			Market Counterparty 2			FIXED (Future)			Buy	Sell	
			Call	Put	Buy	Sell	Call	Put	Buy	Sell	Call	Put	Buy	Sell			
1	60.47		52	0	0	0	0	0	0	0	0	0	0	0	MW	52	0
2	60.46		52	0	0	0	0	0	0	0	0	0	0	0	MW	52	0
3	60.42		52	0	0	0	0	0	0	0	0	0	0	0	MW	52	0
4	60.48		52	0	0	0	0	0	0	0	0	0	0	0	MW	52	0
5	60.69		52	0	0	0	0	0	0	0	0	0	0	0	MW	52	0
6	60.65		52	0	0	0	0	0	0	0	0	0	0	0	MW	52	0
7	61.23		0	34	1	0	0	0	0	0	0	0	0	0	MW	1	34
8	61.88		0	34	0	0	0	0	0	0	0	0	0	0	MW	0	34
9	62.29		0	34	1	0	0	0	0	0	0	0	0	0	MW	1	34
10	62.56		0	34	0	0	0	0	0	0	0	0	0	0	MW	0	34
11	62.54		0	34	0	0	0	0	0	0	0	0	0	0	MW	0	34
12	62.23		0	34	0	0	0	0	0	0	0	0	0	0	MW	0	34
13	61.64		0	34	0	0	0	0	0	0	0	0	0	0	MW	0	34
14	60.87		0	34	0	0	0	0	0	0	0	0	0	0	MW	0	34
15	60.11		0	34	0	0	0	0	0	0	0	0	0	0	MW	0	34
16	59.32		0	34	0	2	0	0	0	0	0	0	0	0	MW	0	36
17	58.71		0	34	0	0	0	0	0	0	0	0	0	0	MW	0	34
18	58.47		0	34	0	0	0	0	0	0	0	0	0	0	MW	0	34
19	58.7		0	34	0	0	0	0	0	0	0	0	0	0	MW	0	34
20	59.18		0	34	1	0	0	0	0	0	0	0	0	0	MW	1	34
21	59.59		0	34	0	0	0	0	0	0	0	0	0	0	MW	0	34
22	59.81		0	34	0	0	0	0	0	0	0	0	0	0	MW	0	34
23	59.88		52	0	0	0	0	0	0	0	0	0	0	0	MW	52	0
24	59.93		52	0	0	0	0	0	0	0	0	0	0	0	MW	52	0
TOTALS	1452.09		416	544	3	2	0	0	0	0	0	0	0	0	MW/H	419	546

Table 4: Example of day-ahead energy schedule

REAL TIME SCHEDULING

Utilities operating in a deregulated market (Independent System Operators, ISO), generator owners and Regional Transmission Operators (RTO) such as Xcel and WAPA, have a 24-hour desk for real time market trades. The motivations are twofold:

- An ISO utility may see financial value in gaming the hourly market prices.
- An RTO needs to ensure grid integrity around the clock.
- Generator owners (power producers) need to respond to instructions from the RTO dispatch center.

The City's utility may want to delay the decision to have a 24-hour desk because it adds a layer of staffing complexity, cost and stress that may not be justified. Short-term alternatives include:

- Having a staff on call
- Contracting with an SC for real-time trading

Once the City acquires large intermittent generation (above 20 MW) such as wind, or deploys enough local resources (distributed generation, storage), it needs to have staff round the clock comprised of a 24-hour desk and ground technicians.

Appendix B

Bond Financing

The City envisions financing the municipal utility start-up with revenue bonds. The feasibility study modeled the financing as a being from a combination of taxable and a non-taxable revenue bonds, using the following parameters:

BOND:	TAXABLE	NON-TAXABLE
Project Fund (\$000's):	\$ 176,450	\$ 45,500
Term (years)	30	30
Payments/year:	2	2
Coupon Rate:	8.00%	5.76%
Debt Service Reserve:	10%	10%
Capitalized Interest (Years):	1.5	1.5
Interest Income:	1.50%	1.50%
Start Year:	2011	2011
Underwriting Cost (\$000's):	\$ 2,292	\$ 566
Capitalized Interest Fund (\$000's):	\$ 27,499	\$ 4,892
Debt Service Reserve Fund (\$000's):	\$ 22,916	\$ 5,662
Bond Par Amount (\$000's):	\$ 229,156	\$ 56,620

Table 1: Bond Financing Parameters

The financing entails the following:

- Acquisition Cost (taxable): \$121 million
- Energy reserve fund (taxable): \$28 million
- Utility O&M reserve fund (taxable): \$12 million
- Severance cost (taxable): \$15 million
- Start-up logistics (non taxable): \$32.5 million
- Start-up legal and engineering (non taxable): \$3 million
- Capital spares (non taxable): \$10 million

The taxable bond has a coupon rate at 8 percent and the non-taxable bond rate is set at 5.76 percent. The bonds will be issued under competitive bids as mandated by the city charter.

The bonds are modeled as carrying 1.5 years of capitalized interest and 10 percent debt service reserve (DSR), which together with an 8 percent coupon rate on the taxable bond, result in a 1.3 load factor on the financed amount.

The city will review carefully the utility financing options at start-up time based on actual acquisition, stranded costs and detailed start-up and severance cost estimates. One clause the city needs to negotiate is that of early payment, bond reduction and early bond repayment, as early repayment of bonds could save the utility substantial expenses in later years.

Appendix C

Scheduling Coordinator Sample Agreement

SCHEDULING COORDINATOR SERVICES AGREEMENT

This SCHEDULING COORDINATOR SERVICES AGREEMENT (this "Agreement"), dated as of _____, 200__, sets forth the rates, terms and conditions under which **XXXX, L.L.C.** a Delaware limited liability company ("XXXX") agrees to perform scheduling coordinator services for _____, a _____ [corporation] [limited partnership] [general partnership] [limited liability company] ("Owner"). XXXX and Owner are hereinafter collectively referred to as "Parties" and individually as "Party." Capitalized terms used but not defined in this Agreement shall have the meanings ascribed to such terms in Appendix A, Master Definitions Supplement of the tariff, as amended, from time to time (the "ISO Tariff") of the Independent System Operator Corporation or any successor organization ("ISO").

1. **Description of Owner's Assets.** XXXX will perform scheduling coordinator services in connection with the Owner's assets described on Exhibit A (the "Assets").
2. **Term and Effective Date.**
 - (a) This Agreement shall commence on the date first set forth above and, except as otherwise earlier terminated in accordance with this Section 2, shall continue for an initial term (the "Initial Term") of [twelve (12) months] [_____]. Upon the conclusion of the Initial Term, this Agreement shall automatically renew for successive twelve (12) month periods, unless either Party has given the other Party ninety (90) days' written notice prior to the end of the then effective term that it does not wish to renew this Agreement or unless terminated by a Party under the provisions of Sections 2(b) or 2(c).
 - (b) **Termination for Cause.** If one of the following events occurs with respect to one Party, the other Party (the "Non-Defaulting Party") shall have the right to terminate this Agreement, upon the delivery of written notice to such other Party:
 - (i) The failure by Owner to make, when due, any undisputed payment due under this Agreement or the failure by Owner to post security as required pursuant to Section 15 hereof if such failure is not remedied within 5 Business Days after written notice of such failure is given to such Party failing to make payment or post security; or
 - (ii) The default in the observance or performance by a Party of any of such Party's material covenants or agreements in this Agreement (other than a default in a payment obligation or obligation to post security set forth herein) and such default continues unremedied 10 Business Days after written notice is given to such Party failing to perform its covenants or agreements under this Agreement; or
 - (iii) Either Party shall:

Attachment E37

- make an assignment or any general arrangement for the benefit of creditors; or
 - file a petition or otherwise commence, authorize or acquiesce in the commencement of a proceeding or cause under any bankruptcy or similar law for the protection of creditors, or have such petition filed against it and such proceeding remains undismissed for thirty (30) days; or
 - otherwise become bankrupt or insolvent (however evidenced); or
 - be unable to pay its debts as they fall due.
- (c) **Optional Termination.** Notwithstanding anything to the contrary in this Agreement, either Party may terminate this Agreement at any time for any reason or no reason by providing ninety (90) days' prior written notice to the other Party.
- (d) **Effect of Termination.** Notwithstanding anything else set forth herein, the termination of this Agreement shall not relieve either Party of (a) any unfulfilled obligation or undischarged liability of such Party existing as of the termination date, (b) the consequences of any breach or default under this Agreement to the extent not excused by this Agreement, or (c) any obligations or liabilities arising from provisions of this Agreement that either expressly or by their nature survive the termination of this Agreement. Within ninety (90) days after the termination of this Agreement, any amounts due from either Party shall be paid, any corrections or adjustments to payments previously made shall be determined, and any refunds made.
- (e) **LIMITATION OF LIABILITY.** NOTWITHSTANDING ANYTHING TO THE CONTRARY IN THIS AGREEMENT IN NO EVENT SHALL XXXX'S LIABILITY TO OWNER HEREUNDER EXCEED THE AMOUNT OF THE SCHEDULING COORDINATOR FEES PAID TO XXXX BY OWNER FOR THE SERVICES PROVIDED HEREUNDER.

3. **Services to be Performed by XXXX; Owner Covenants regarding Information.**

- (a) **Scheduling Energy:** XXXX shall submit Schedules to the ISO for the Day-Ahead Market and Hour-Ahead Market for the Owner. XXXX shall not take title to energy, but shall act only as Scheduling Coordinator. Energy that is scheduled and not utilized by the load or any incremental energy above the scheduled amount that is utilized by the load will automatically default into and be sold into or purchased from the ISO's Imbalance Energy market.
- (b) **Information for Balanced Schedules:** Owner shall be responsible for providing detailed information regarding the load or generation to be scheduled and XXXX will rely on that information for the purposes of preparing Schedules on Owner's behalf. Such Owner information shall be provided to XXXX prior to the opening of the relevant Day-Ahead and/or Hour-ahead market, as appropriate.
- (c) **Daily Timeline:** By 4:00 p.m. MPT on every Business Day, XXXX shall provide Owner with a final hourly listing of all pre-scheduled Day Ahead generation transactions for the following day or days. Transactions shall be provided for the next day(s) starting on Hour Ending 0100 MPT

through and including Hour Ending 2400 MPT. Instructions by Owner for scheduling Hour Ahead transactions should be provided at least one (1) hour prior and no later than thirty (30) minutes prior to the time schedules are due to the ISO. Schedules received after the one hour deadline will be handled on a reasonable efforts basis.

- (d) Adjustment Bids for Congestion Management: XXXX shall submit Adjustment Bids to the ISO on behalf of Owner in accordance with the ISO Tariff to the extent that Owner has provided XXXX with bidding instructions therefore.
- (e) Monthly Summary Report. Within ten (10) Business Days following the end of each month during the term, XXXX will e-mail to Owner electronic reports summarizing the activities during the prior month, which reports shall be in form and substance reasonably satisfactory to Owner and XXXX. The monthly reports will be supported by appropriate documentation.
- (f) Schedule Modifications: If conditions require a modification to a Schedule, XXXX will notify Owner of the need to modify the Schedule (for example, if the ISO requires an adjustment to a Preferred Schedule due to congestion management) ("Revised Schedule"). Any such Revised Schedules whether, directed by Owner, suggested by XXXX and confirmed by Owner or directed by the ISO shall be deemed to be made at the direction of Owner. XXXX will contact the ISO and arrange for the Revised Schedule as directed by Owner. Owner shall provide such direction to XXXX at least thirty (30) minutes prior to the time XXXX is required to submit such Revised Schedule. XXXX shall not be required to make, nor shall XXXX be liable for losses that may arise out of economic decisions resulting from Revised Schedule.
- (g) Tagging and Checkout: XXXX shall be responsible for tagging and checkout of all transactions on a daily basis, as required.
- (h) Discrepancies: XXXX shall use reasonable efforts to aid Owner in resolving any discrepancies with third parties resulting from the services provided by XXXX to Owner. XXXX shall use reasonable efforts to assist Owner in resolving any discrepancies with the ISO, including the filing of disputes on Owner's behalf with the ISO as may be appropriate, but not including disputes encompassed in the ISO ADR Procedures.
- (i) XXXX Excused. XXXX shall be excused from performing its obligations under this Agreement to the extent that any failure by Owner to perform any of its obligations under this Agreement prevents, delays or interferes with XXXX performing its obligations under this Agreement.

4. Owner's Obligations.

- (a) Information for Scheduling. Each day prior to 5:00 a.m. MPT, Owner shall identify all Assets that Owner intends to make available for the next trading day based upon the then-current trading timelines (e.g., the current trading timeline for sales into the Day-Ahead market requires identification of Asset availability on Thursday for trading on Friday and Saturday, and on Friday for trading on Sunday and Monday) into the relevant and available markets, which may include bilateral energy and capacity markets and the ISO Ancillary Services, Supplemental Energy and Adjustment Bids markets. XXXX will review the Asset availability and seek Owner's direction and agreement on the next day's scheduling plan. Owner shall provide to XXXX all information required to offer the applicable Assets into the relevant market, including information required

under the ISO Tariff, and all information provided to XXXX must be true, complete and consistent with Owner's operational plans. Owner shall comply with all rules, regulations, policies and procedures of the ISO in Owner's operations and in all scheduling matters. Owner acknowledges that XXXX will be communicating information that XXXX receives from Owner to the ISO. **OWNER AGREES THAT IT WILL INDEMNIFY AND HOLD HARMLESS XXXX AND THE XXXX RELATED PARTIES WITH RESPECT TO ANY FINES OR PENALTIES THAT MAY BE ASSESSED AGAINST XXXX BY THE ISO FOR INACCURATE INFORMATION THAT OWNER REPORTED TO XXXX.** Owner acknowledges that XXXX will be requesting that Owner confirm the accuracy and completeness of the information and consistency with Owner's operational plans and that XXXX may refuse to provide the Services at any time XXXX does not receive that confirmation, AND XXXX shall have no liability hereunder for such refusal to provide the Services.

- (b) Meter Data. The Owner shall establish its ability to perform, or have performed by a third party on the Owner's behalf, all metering requirements necessary for XXXX to comply with the requirements of the ISO Tariff in connection with providing services. The Owner shall actively intervene with third parties, as necessary and appropriate, on XXXX's behalf to ensure that XXXX has all reasonable access to relevant meters, associated Assets and facilities and meter data as is necessary for XXXX to comply with the requirements of the ISO Tariff. The Owner shall submit to the ISO any meter data required by the ISO related to the Owner's schedules consistent with the ISO's Settlement and Billing Protocol and Metering Protocol.
- (c) Contact List. Owner shall provide XXXX with a 24 hour emergency contact list.
5. Fees for Scheduling Coordinator Services. Owner shall be obligated to pay to XXXX fees under this Agreement as follows:
- (a) Imbalance Fee. A fee for unscheduled energy or for energy that is scheduled but not delivered, priced at the then effective ten minute interval price, for Imbalance Energy from the ISO plus any associated charges. In the case of a power supply interruption or curtailment of scheduled power transaction as a result of an event of Force Majeure or a contingency beyond the control of either the supplier or Owner, if the demand remains available, and if in XXXX's sole judgment it is practicable and economically advantageous to do so, XXXX may, in its sole discretion provide substitute power from either its own resources, or alternatively obtain substitute power from available market resources at a price determined by XXXX to be generally reflective of market conditions and the imbalance fee, if any, charged by the ISO will be passed through by XXXX to Owner. If XXXX believes it is either not practicable or economically advantageous to either obtain or provide substitute power or scheduling timelines do not permit, XXXX shall be forced into the ISO Imbalance Energy market incurring ten minute interval pricing and other applicable ISO Charges as specified in the ISO Tariff and XXXX shall pass all such imbalance charges and other costs on to Owner.
- (b) Volumetric Charges Fee. A fee for all volumetric charges imposed on XXXX by the ISO as a consequence of XXXX being an ISO Participant on behalf of Owner. Such volumetric charges shall include, but are not limited to, Grid Management Charges, no pay charges, Ancillary Services charges, transmission charges, congestion charges, line loss charges, Unaccounted for Energy and neutrality charges, and any other load and/or generation based fees including an Uninstructed Deviation Penalty ("UDP") if applicable.

(c) Scheduling Coordinator Service Fee. In consideration of XXXX providing scheduling coordinator services pursuant to the terms of this Agreement, Owner shall pay XXXX a monthly fee (the "Scheduling Coordinator Fee") in the amount of \$ _____/month, escalated at ___% per year.

6. **Monthly Settlement.**

(a) Third Party Costs. Each month by the tenth Business Day of the month, XXXX shall assemble all third party charges incurred for services performed by XXXX during the previous month pursuant to Section 5 of this Agreement for inclusion in the Monthly Report. If actual third party charges are not available for inclusion in the Monthly Report, XXXX may estimate such charges, with appropriate invoice adjustments to be made when actual charges are known.

(b) ISO Settlements. Each month by the tenth Business Day of the month, XXXX shall provide Owner with an estimate of the amount of ISO Settlement costs attributable to Owner through the forthcoming Settlement Period. XXXX shall pay any Settlement costs incurred by XXXX on behalf of Owner and incorporated within invoices from the ISO on or before the due date in accordance with the ISO Tariff for inclusion in the Monthly Report.

(c) Payment Information. On or before the 10th Business Day of the month following the end of the previous month, XXXX shall deliver to Owner a statement, which may be based on reasonable estimated amounts if actual amounts are not available, in electronic form and in writing setting forth amounts due Owner or XXXX, as the case may be, under this Agreement. Each Party shall pay all amounts owed by it under this Agreement in dollars by wire transfer in immediately available funds to the account of the payee Party set forth below. XXXX and Owner shall net all amounts due between Owner and XXXX arising under this Agreement. If XXXX and Owner each owes an amount to the other in the same month, then such amounts with respect to each Party shall be aggregated, and the Parties shall satisfy their payment obligations through netting, in which case the Party owing the greater aggregate amount shall pay to the other Party the difference between the amounts owed. Owner shall pay to XXXX the net amount owed to XXXX, if any, by the later of the tenth day after the statement was received or the 20th day of the month in which the statement was received. If XXXX owes an amount to Owner, XXXX shall pay the amount to the Owner by the 20th Day of the month after the month to which the amount relates or, if amounts are due from XXXX after the Term of this Agreement has expired and the calculations of such amount is based on estimates, XXXX shall make such payment within ten (10) business days after actual amounts are known; ISO amounts due Owner by XXXX will be paid 10 days after received from the ISO. If the payment due date is not a Business Day, the payment will be due on the next Business Day.

Payments by XXXX to Owner shall be made via wire transfer to the following account:

ABA Routing No. _____

Account No. _____

Payments by Owner to XXXX shall be made via wire transfer to the following account:

ABA Routing No. _____

Account No. _____

7. **Force Majeure.** If a Party is rendered unable, by an event of Force Majeure, to carry out wholly or in part its obligations under this Agreement and if such Party gives notice and full particulars of such event of Force Majeure to the other Party promptly after the occurrence of the event relied on, then the obligations of the Party affected by such event of Force Majeure, other than the obligation to make payments then due or becoming due hereunder, shall be suspended from the inception and throughout the period of continuance of any such inability so caused, but for no longer period, and the affected Party shall use commercially reasonable efforts to remedy the event of Force Majeure with all reasonable dispatch. The term "Force Majeure" shall mean an event that is beyond the control of the Party affected including but not limited to flood, earthquake, tornado, storm, fire, lightning, epidemic, war, riots, civil disturbance or disobedience, labor dispute, material shortage, sabotage, terrorist activity, restraint by court order or public authority, and action or non-action by or inability to obtain the necessary authorization or approvals from any governmental agency or authority, which by exercise of due diligence such Party has been unable to overcome. Force Majeure shall not include economic hardship or unscheduled outage of an Asset due to breakage of equipment or imminent breakage of equipment or other imminent property damage for any reason.

8. **Indemnification.**

(a) **Indemnity by XXXX.** XXXX RELEASES, AND SHALL INDEMNIFY AND HOLD HARMLESS, OWNER AND ITS AFFILIATES AND THEIR RESPECTIVE AGENTS, REPRESENTATIVES, CONTRACTORS, SUBCONTRACTORS, PARTNERS, MEMBERS, PARTICIPANTS, PRINCIPALS, REPRESENTATIVES, SHAREHOLDERS, DIRECTORS, TRUSTEES, OFFICERS, AGENTS, EMPLOYEES, SUCCESSORS OR ASSIGNS OF ANY OF THEM (COLLECTIVELY, "OWNER RELATED PARTIES"), FROM AND AGAINST ANY AND ALL SUITS, ACTIONS, LIABILITIES, LEGAL PROCEEDINGS, CLAIMS, DEMANDS, LOSSES, FINES, PENALTIES, COSTS AND EXPENSES OF WHATSOEVER KIND OR CHARACTER, INCLUDING REASONABLE ATTORNEYS' FEES AND EXPENSES (COLLECTIVELY, "LOSSES"), RELATING TO OR ARISING OUT OF THIS AGREEMENT FOR ILLNESS, INJURY AND DEATH OF XXXX'S PERSONNEL AND FOR DAMAGE TO AND LOSS OF XXXX'S PROPERTY.

(b) **Indemnity and Release by Owner.**

(i) OWNER RELEASES, AND SHALL INDEMNIFY AND HOLD HARMLESS, XXXX AND ITS AFFILIATES AND THEIR RESPECTIVE AGENTS, REPRESENTATIVES, CONTRACTORS, SUBCONTRACTORS, PARTNERS, MEMBERS, PARTICIPANTS, PRINCIPALS, REPRESENTATIVES, SHAREHOLDERS, DIRECTORS, TRUSTEES, OFFICERS, AGENTS, EMPLOYEES, SUCCESSORS OR ASSIGNS OF ANY OF THEM (COLLECTIVELY, "XXXX RELATED PARTIES"), FROM AND AGAINST LOSSES (A) RELATING TO OR ARISING OUT OF THIS AGREEMENT FOR ILLNESS, INJURY AND DEATH OF OWNER'S PERSONNEL AND FOR DAMAGE TO AND LOSS OF OWNER'S PROPERTY AND (B) RELATING TO OR ARISING

DIRECTLY OR INDIRECTLY FROM THIS AGREEMENT OR FROM THE DEVELOPMENT, CONSTRUCTION, OWNERSHIP, OPERATION OR MAINTENANCE OF THE ASSETS, EXCEPT IN THE CASE OF THIS CLAUSE (B) TO THE EXTENT DUE TO XXXX'S FRAUD OR INTENTIONAL TORT; PROVIDED, THAT OWNER'S RELEASE, INDEMNIFICATION AND HOLD HARMLESS OBLIGATIONS UNDER THIS SECTION 8(b)(i) SHALL NOT APPLY TO LOSSES FOR WHICH XXXX HAS INDEMNIFIED THE OWNER UNDER SECTION 8(a).

(ii) OWNER RELEASES, AND SHALL INDEMNIFY AND HOLD HARMLESS, XXXX AND ITS AFFILIATES AND THE XXXX RELATED PARTIES FROM AND AGAINST LOSSES OF OWNER AND ITS AFFILIATES AND THE OWNER RELATED PARTIES RELATING TO OR ARISING OUT OF THIS AGREEMENT EXCEPT FOR LOSSES (A) CAUSED SOLELY BY THE FRAUD OR INTENTIONAL TORT OF XXXX, OR (B) FOR WHICH XXXX HAS INDEMNIFIED OWNER UNDER SECTION 8(a).

(c) Scope of Indemnities, Releases and Allocation of Liability. EXCEPT AS EXPRESSLY PROVIDED IN SECTION 8(b)(i)(B), THE INDEMNITIES, RELEASES AND ALLOCATIONS OF LIABILITY IN THIS AGREEMENT ARE WITHOUT REGARD TO THE CAUSES OF LOSSES, INCLUDING THE NEGLIGENCE OR GROSS NEGLIGENCE OF ANY INDEMNIFIED PARTY, RELEASED PERSON OR PERSON AWAY FROM WHICH A LIABILITY IS ALLOCATED, WHETHER SUCH NEGLIGENCE IS SOLE, JOINT OR CONCURRENT, OR ACTIVE OR PASSIVE, OR THE STRICT LIABILITY OF AN INDEMNIFIED PARTY, RELEASED PERSON OR PERSON AWAY FROM WHICH A LIABILITY IS ALLOCATED.

9. Limitation of Damages. EXCEPT TO THE EXTENT ARISING FROM THE PARTIES' RESPECTIVE OBLIGATIONS UNDER SECTIONS 8(a) AND 8(b), NEITHER PARTY NOR ITS AFFILIATES NOR THEIR RESPECTIVE AGENTS, REPRESENTATIVES, CONTRACTORS OR SUBCONTRACTORS NOR THE PARTNERS, MEMBERS, PARTICIPANTS, PRINCIPALS, REPRESENTATIVES, SHAREHOLDERS, DIRECTORS, TRUSTEES, OFFICERS, AGENTS, EMPLOYEES, SUCCESSORS OR ASSIGNS OF ANY OF THEM SHALL IN ANY EVENT BE LIABLE TO THE OTHER PARTY OR ITS SUBSIDIARIES OR AFFILIATES OR THE OFFICERS, AGENTS, EMPLOYEES, REPRESENTATIVES, PARTICIPANTS, PARTNERS, MEMBERS, SHAREHOLDERS, PRINCIPALS, DIRECTORS OR TRUSTEES OF ANY OF THEM FOR CLAIMS FOR INCIDENTAL, PUNITIVE, EXEMPLARY, CONSEQUENTIAL OR INDIRECT DAMAGES OF ANY NATURE, ARISING AT ANY TIME, FROM ANY CAUSE WHATSOEVER, WHETHER ARISING IN TORT (INCLUDING NEGLIGENCE OR GROSS NEGLIGENCE), CONTRACT, WARRANTY, STRICT LIABILITY, BY OPERATION OF LAW OR OTHERWISE, CONNECTED WITH OR RESULTING FROM PERFORMING OR NOT PERFORMING UNDER THIS AGREEMENT.

10. Governing Law. THIS AGREEMENT IS GOVERNED BY AND SHALL BE CONSTRUED ACCORDING TO THE LAWS OF THE STATE OF COLORADO, EXCLUDING ANY CHOICE OF LAW RULES OR PRINCIPLES THAT WOULD RESULT IN THE APPLICATION OF THE LAWS OF A DIFFERENT JURISDICTION.

11. Amendment. This Agreement can be amended only by a written agreement executed by an authorized representative of each Party.

12. Waiver. If on any occasion a Party does not insist upon the performance of any term, condition or provision of this Agreement, such forbearance shall not operate or be construed as an acceptance of

any variation in any term, condition or provision of this Agreement or relinquishment of any right under this Agreement. No waiver by either Party of any right or of any default by the other Party under this Agreement shall be effective unless the waiver is in writing and signed by the waiving Party, and no waiver shall operate or be construed as a waiver of any other or further right or as a waiver of any future default, whether of like or different character or nature.

13. **Confidential Information.** Each Party shall hold in confidence all information disclosed to it by the other Party or its representatives that pertains to Owner's or XXXX's business, as the case may be, and that is not publicly available, including this Agreement, proprietary practices, technical information, information regarding Owner's or XXXX's management policies, economic policies, financial information and other data ("Confidential Information"). For the avoidance of doubt, XXXX considers its scheduling and trading strategies and the pricing information contained in this Agreement to be proprietary and confidential. Confidential Information shall not include (a) information that is publicly available, or (b) information obtained by a Party from a third party not known to be under an obligation of non-disclosure to Owner or XXXX, as the case may be. The obligations in this Section 13 shall continue in effect during the term of this Agreement and for two years after the termination date. Notwithstanding the foregoing, each Party may disclose Confidential Information (i) to the extent necessary to perform this Agreement, (ii) to any governmental authority or as otherwise required by law, but only to the extent legally required to do so, and (iii) to its advisors, auditors, legal counsel and insurers.
14. **No Dedication of Facilities.** Neither the services performed by XXXX under this Agreement nor either Party's actions or inactions under this Agreement shall constitute or be construed as a dedication of the systems or assets, or any portion thereof, of either Party to the public or to the other Party.
15. **Payment Security.** In addition to any credit line or other credit allowance established by XXXX for Owner, XXXX may from time to time request that Owner provide and maintain for XXXX's benefit additional payment security for amounts owed under this Agreement. Any such payment security may be a letter of credit or cash deposited in an account established in a bank acceptable to XXXX and must be provided by Owner within ten Business Days after XXXX delivers a request for payment security to Owner. To the extent Owner delivers cash to XXXX as payment security, Owner hereby grants to XXXX, as secured party, a present and continuing security interest in, lien on, and right of setoff against, all such cash, and any and all proceeds resulting therefrom, held by or on behalf of XXXX. Owner agrees to take such further action as XXXX may reasonably require in order to perfect, maintain, and protect XXXX's security interest in any such cash. If Owner does not timely provide or maintain the requested payment security, XXXX may suspend performing the services until such time as Owner provides the payment security.
16. **Complete Agreement.** This Agreement is the Parties' complete and final expression of agreement on the subject matter of this Agreement and supersedes all prior agreements, representations, understandings, negotiations, offers and communications, whether oral or written, regarding the subject matter of this Agreement.

17. **Obligations Several / Relationship.** The duties, obligations and liabilities of the Parties are intended to be several and not joint or collective. Nothing contained in this Agreement shall ever be construed to create an association, trust, partnership or joint venture or to impose a trust or partnership duty, obligation or liability on or with regard to either Party. Each Party shall be individually and severally liable for its own obligations under this Agreement. The relationship of XXXX and Owner hereunder is that of independent contractor and not that of agent, representative, partner or joint venturer. No fiduciary duty or relationship shall exist between the Parties.
18. **No Third Party Beneficiaries.** This Agreement is intended solely for the benefit of the Parties and nothing in this Agreement shall be construed to create any rights in favor of, any duty to or standard of care with reference to, or any liability to any third party, except for the rights of Owner Related Parties and XXXX Related Parties who are indemnified and released under Section 8.
19. **Authorized Representatives.** Each Party shall designate in writing one or more persons as its authorized representative(s) to act on its behalf in carrying out the provisions of this Agreement. The Parties shall be bound by the oral and written communications, directions, requests, decisions and other actions taken by their respective authorized representative.
20. **Assignments.** Neither Party may assign this Agreement or any right or obligation under this Agreement without the prior written consent of the other Party. Notwithstanding the foregoing, XXXX may, without Owner's consent, assign this Agreement to an affiliate and shall notify Owner of any such assignment. Any purported assignment in violation of this Section 20 shall be void. This Agreement shall be binding upon and inure to the benefit of the Parties and their respective successors and permitted assigns.
21. **Notices.** Except as otherwise expressly provided in this Agreement, all notices and other communications to be given or made under this Agreement shall be in writing, shall be addressed as specified below, and shall either be personally delivered or sent by courier, by registered or certified mail, or by facsimile. Initially, the respective Parties' addresses and facsimile numbers are:

If to XXXX: XXXX, L.L.C.

Attention: Contract Administration
Facsimile:

With a copy to: XXXX Energy Holding, L.P.

Attention: General Counsel

Facsimile:

If to Owner: _____

Attention: _____

Facsimile: _____

With a copy to: _____

Attention: _____

Facsimile: _____

All notices shall be deemed delivered (a) when delivered in person, (b) if received on a Business Day for the receiving Party, when transmitted by facsimile to the receiving Party's facsimile number specified above and, if received on a Day that is not a Business Day for the receiving Party, on the first Business Day following the date transmitted by facsimile to the receiving Party's facsimile number specified above, (c) one Day after being delivered to a courier for overnight delivery, addressed to the receiving Party at the address specified above (or such other address as the receiving Party may have specified by written notice delivered to the delivering Party at its address or facsimile number specified above) or (d) five Days after being deposited in a United States Postal Service receptacle, postage prepaid, registered or certified, return receipt requested, addressed to the receiving Party at the address specified above (or such other address as such the receiving Party may have specified by written notice delivered to the delivering Party at its address or facsimile number specified above). Any Party may by written notice change the address or facsimile number, or both, to which notices and communications are to be sent.

22. **Severability.** If any provision of this Agreement is held invalid or unenforceable, all other provisions of this Agreement shall not be affected. With respect to a provision held invalid or unenforceable, the Parties shall amend this Agreement as necessary to effect the Parties' original intent as closely as possible.

23. **Owner's Representation and Indemnity.** Owner acknowledges that XXXX will be communicating information that XXXX receives from Owner to the ISO. Owner covenants and agrees with XXXX that all information provided to XXXX by Owner, its officers and employees will be true, complete and

consistent with Owner's operational plans and in compliance with ISO and FERC Rules. By giving an operational instruction, Owner shall be deemed to make a representation and warranty that the information included in such instruction is accurate and consistent with Owner's operational plans and in compliance with ISO and FERC Rules. Owner agrees that it will indemnify and hold harmless XXXX and the XXXX Related Parties with respect to any fines or penalties that may be assessed against XXXX by the ISO or FERC for inaccurate information that Owner reported to XXXX or for the failure of Owner to comply with ISO or FERC Rules. Owner acknowledges that XXXX will be requesting that Owner confirm (i) the accuracy and completeness of the information; (ii) consistency with Owner's operational plans and (iii) compliance with the ISO and FERC Rules. XXXX may refuse to provide the Services at any time XXXX does not receive that confirmation.

To evidence their acceptance of this Agreement, the Parties have caused their authorized representatives to sign below as of the date set forth in the introductory paragraph.

XXXX, L.L.C.

By: _____

Name:

Title:

By: _____

Name: _____

Title: _____

EXHIBIT A

Attachment E47

ASSETS

_____ **Plant**

Appendix D

Sample EEI Power Purchase and Sale Agreements

EEI MASTER POWER PURCHASE & SALE AGREEMENT
- CONFIRMATION AGREEMENT -

Day-Ahead Power
XXX

This agreement ("Day-Ahead Confirmation Agreement"), dated as of __, 20__ ("Effective Date"), confirms the terms and provisions of a Transaction between XXX ("XXX") and the YYY Power Authority ("YYY"), each individually a "party" and collectively the "Parties," regarding the sale and purchase of the Products, as described below. The Transaction shall be governed by this Day-Ahead Confirmation Agreement and the EEI Master Power Purchase & Sale Agreement, including the Cover Sheet and accompanying amendments entered into between the Parties, as of __, 20__ (as so amended, "Master Agreement"); provided, however, if this Day-Ahead Confirmation Agreement is inconsistent with any term or provision of the Master Agreement, the terms and provisions of this Day-Ahead Confirmation Agreement shall control.

The Parties hereby agree as follows:

- Capitalized Terms:** Capitalized terms used in this Day-Ahead Confirmation Agreement shall have the meaning given to such terms herein or in the Master Agreement.
- Delivery Term:** In accordance with the Exercise Notice (as defined below), deliveries under this Day-Ahead Confirmation Agreement may commence on the January 1, 20__ and continue through December 31, 20__ ("Delivery Term").
- Time Periods:** As used in this Day-Ahead Confirmation Agreement, "On-Peak Hours" shall mean Hours Ending ("HE") 0700 through HE 2300 MPT Mondays through Saturdays excluding NERC Holidays, as defined below. "Off-Peak Hours" shall mean HE 0100 through HE 0600 MPT and HE 2300 through HE 2400 MPT Mondays through Saturdays and all hours on Sundays and NERC Holidays, as defined below. "NERC Holidays" for each year shall be the holidays for such year set forth or described on the North American Electric Reliability Council ("NERC") website at www.nerc.com
- Products:** The Products provided under this Day-Ahead Confirmation Agreement consist of (a) a day-ahead Call Option entitling, but not obligating, YYY to purchase and receive from XXX ISO Energy in Quantities designated by YYY for either or both the On-Peak Hours and the Off-Peak Hours, and (b) a day-ahead Put Option entitling, but not obligating, YYY to sell and deliver to XXX ISO Energy in Quantities designated by YYY for either or both the On-Peak Hours and the Off-Peak Hours. Article Four of the Master Agreement shall apply if either YYY or XXX fails to deliver or receive, as the case may be, ISO Energy as scheduled by the Parties.
- Quantity:** During the Delivery Term, the Call Option shall entitle YYY to purchase and receive up to 15 megawatts ("MW s") per hour of ISO Energy from XXX, and the Put Option shall entitle YYY to sell and deliver up to 15 MWs per hour of ISO Energy to XXX; provided, however, if YYY exercises the Put Option or the Call Option, the actual Quantity to be delivered or received by XXX, as the case may be, in any given day-ahead schedule (a) may range from 1 MWs to 250 MWs per hour in 1 MW increments, as designated by YYY, (b) shall be a uniform amount within each of the two time periods (i.e., On-Peak Hours and Off-Peak Hours), and (c) may be different amounts for the two time periods.
- Delivery Periods:** The Delivery Point for ISO Energy under this Day-Ahead Confirmation Agreement shall be _____.

Exercise Provision: YYY may exercise either or both the Call Option and the Put Option by providing notice (each an "Exercise Notice") to XXX no later than 5:30 a.m. MPT on the day before the Trading Day (as defined in the ISO Tariff), or such other time as the Parties may agree, and including within such notice (a) whether its exercise relates to the Call Option or the Put Option (or both) and (b) the Quantity of ISO Energy for delivery and/or receipt during the On-Peak Hours and the Off-Peak Hours. In the exercise of its Option, applicable scheduling timelines and protocol may require YYY to exercise its Option on more than a day-ahead basis for certain Trading Days (e.g., Saturday); provided, however, in such instances YYY may nevertheless designate distinct Quantities for each such combined Trading Day. If YYY exercises its Call Option, YYY shall purchase and receive, and XXX shall sell and deliver the Quantity of ISO Energy designated in ESP A's Exercise Notice for that period. If YYY exercises its Put Option, YYY shall sell and deliver, and XXX shall purchase and receive, the Quantity of ISO Energy designated in YYY's Exercise Notice for that period.

Scheduling and Delivery: ISO Energy shall be scheduled and delivered as a Scheduling Coordinator ("SC") to SC trade pursuant to and in compliance with the ISO Tariff and Western Electricity Coordinating Council ("WECC") practices for day-ahead ISO Energy.

Strike Price: The price for ISO Energy delivered in accordance with YYY's Exercise Notice shall be as follows:

Deliveries to YYY: Energy Index plus the Option Premium, as described below.

Deliveries to XXX: Energy Index minus the Option Premium, as described below.

Energy Index: The Energy Index means, with respect to each delivery period as specified in an Exercise Notice, the average of the hourly peak day-ahead locational marginal pricing and/or the hourly off peak day-ahead locational marginal pricing, as applicable, per MWh of electricity for delivery during each peak hour and/or off-peak hour, as applicable, in such delivery period as specified in an Exercise Notice, stated in U.S. Dollars, published by the Open Access Same Time Information System (OASIS).

Option Premium: \$ ___ per MWh, which reflects a pricing premium for sales by XXX and which reflects a pricing offset for purchases by XXX; provided, however, for combined Trading Days in which YYY has designated distinct Quantities for each such combined Trading Day (as described above), the Option Premium shall be as agreed by the Parties prior to ESP A's Exercise Notice and described in a Recording.

Additional Allocation of XXX shall be responsible for all charges related to transmission of ISO Energy to the Delivery Point(s). YYY shall be responsible for all charges related to

Charges transmission of ISO Energy at and from the applicable Delivery Point(s). Without limiting the general applicability of Article Four of the Master Agreement, failure by a Party ("Non-Performing Party") to deliver or receive ISO Energy as scheduled, unless such failure is excused, shall result in the Non-Performing Party being liable for all resulting charges and penalties including but not limited to imbalance energy and penalties assessed by the ISO or other applicable control area operator.

Payment: Unless otherwise specified, payments for amounts billed under this Day-Ahead Confirmation Agreement shall be paid by the later of (a) the 20th day of the month in which the bill was received or (b) 10 days after receipt of the bill. If the due date falls on a non-Business Day, then the payment shall be due on the next following Business Day. Payments shall be made by electronic transfer of funds.

Notes: In addition to the information provided in the Cover Sheet governing this Day-Ahead Confirmation Agreement, either party may, by notice to the other Party, change or provide additional contact information as may be necessary to effectuate the notice, scheduling, billing and payment provisions of this Day-Ahead Confirmation Agreement.

Effectiveness of this Day-Ahead Confirmation Agreement: Notwithstanding anything contained in the Master Agreement to the contrary, this Day-Ahead Confirmation Agreement shall only be effective when executed by both Parties.

IN WITNESS WHEREOF, the Parties have entered into this Day-Ahead Confirmation Agreement effective as of the Effective Date.

XXX
By: _____
Name: _____
Title: _____

YYY POWER AUTHORITY
By: _____
Name: _____
Title: _____

**EEl MASTER POWER PURCHASE & SALE AGREEMENT
- CONFIRMATION AGREEMENT -**

***Day-Ahead Power
Supplier (US), L.P.***

This agreement ("Day-Ahead Confirmation Agreement"), dated as of _____ ("Effective Date"), confirms the terms and provisions of a Transaction between **Supplier** ("Supplier") and the **Customer** ("CUSTOMER"), each individually a "Party" and collectively the "Parties," regarding the sale and purchase of the Products, as described below. The Transaction shall be governed by this Day-Ahead Confirmation Agreement and the EEl Master Power Purchase & Sale Agreement, including the Cover Sheet and accompanying amendments entered into between the Parties, as of _____, 20__ (as so amended, "Master Agreement"); provided, however, if this Day-Ahead Confirmation Agreement is inconsistent with any term or provision of the Master Agreement, the terms and provisions of this Day-Ahead Confirmation Agreement shall control.

The Parties hereby agree as follows:

Capitalized Terms: Capitalized terms used in this Day-Ahead Confirmation Agreement shall have the meaning given to such terms herein or in the Master Agreement.

Delivery Term: In accordance with the Exercise Notice (as defined below), deliveries under this Day-Ahead Confirmation Agreement may commence on the January 1, 20__ and continue through December 31, 20__ ("Delivery Term").

Time Periods: As used in this Day-Ahead Confirmation Agreement, "On-Peak Hours" shall mean Hours Ending ("HE") 0700 through HE 2200 MPT Mondays through Saturdays excluding NERC Holidays, as defined below. "Off- Peak Hours" shall mean HE 0100 through HE 0600 MPT and HE 2300 through HE 2400 MPT Mondays through Saturdays and all hours on Sundays and NERC Holidays, as defined below. "NERC Holidays" for each year shall be the holidays for such year set forth or described on the North American Electric Reliability Council ("NERC") website at www.nerc.com.

Products: The Products provided under this Day-Ahead Confirmation Agreement consist of (a) a day-ahead Call Option entitling, but not obligating, CUSTOMER to purchase and receive from Supplier ISO Energy in Quantities designated by CUSTOMER for either or both the On-Peak Hours and the Off- Peak Hours, and (b) a day-ahead Put Option entitling, but not obligating, CUSTOMER to sell and

deliver to Supplier ISO Energy in Quantities designated by CUSTOMER for either or both the On-Peak Hours and the Off-Peak Hours. Article Four of the Master Agreement shall apply if either CUSTOMER or Supplier fails to deliver or receive, as the case may be, ISO Energy as scheduled by the Parties.

Quantity: During the Delivery Term, the Call Option shall entitle CUSTOMER to purchase and receive up to xx megawatts ("MWs") per hour of ISO Energy from Supplier, and the Put Option shall entitle CUSTOMER to sell and deliver up to xx MWs per hour of ISO Energy to Supplier; provided, however, if CUSTOMER exercises the Put Option or the Call Option, the actual Quantity to be delivered or received by Supplier, as the case may be, in any given day-ahead schedule (a) may range from 1 MWs to xx MWs per hour in 1 MW increments, as designated by CUSTOMER, (b) shall be a uniform amount within each of the two time periods (*i.e.*, On-Peak Hours and Off-Peak Hours), and (c) may be different amounts for the two time periods.

Delivery Points: The Delivery Point for ISO Energy under this Day-Ahead Confirmation Agreement shall be the _____; provided, however, if the Independent System Operator ("ISO") or its successor implements trading hubs under a locational marginal pricing design during the Delivery Term, the Delivery Point shall be the Existing Zone Generation _____ Trading Hub ("Gen Hub"), provided further, if the Gen Hub (under any name) is not established as part of a market redesign that is implemented during the Delivery Term, the parties agree to promptly work together in good faith to designate an alternate Delivery Point to reasonably approximate the characteristics of the ___ Zone.

Exercise Provision: CUSTOMER may exercise either or both the Call Option and the Put Option by providing notice (each an "Exercise Notice") to Supplier no later than 5:30 a.m. MPT on the day before the Trading Day (as defined in the ISO Tariff), or such other time as the Parties may agree, and including within such notice (a) whether its exercise relates to the Call Option or the Put Option (or both) and (b) the Quantity of ISO Energy for delivery and/or receipt during the On-Peak Hours and the Off-Peak Hours. In the exercise of its Option, applicable scheduling timelines and protocol may require CUSTOMER to exercise its Option on more than a day-ahead basis for certain Trading Days (*e.g.*, Saturday); provided, however, in such instances CUSTOMER may nevertheless designate distinct Quantities for each such combined Trading Day. If CUSTOMER exercises its Call Option, CUSTOMER shall purchase and receive, and Supplier shall sell and deliver the Quantity of ISO Energy designated in CUSTOMER's Exercise Notice for that period. If CUSTOMER exercises its Put Option, CUSTOMER shall sell and deliver, and Supplier shall purchase and receive, the Quantity of ISO Energy designated in CUSTOMER's Exercise Notice for that period.

Scheduling and Delivery: ISO Energy shall be scheduled and delivered as a Scheduling Coordinator ("SC") to SC trade pursuant to and in compliance with the ISO Tariff and Western Electricity Coordinating Council ("WECC") practices for day ahead ISO Energy.

Strike Price: The price for ISO Energy delivered in accordance with CUSTOMER's Exercise Notice shall be as follows:

Deliveries to CUSTOMER: Energy Index plus the Option Premium, as described below.

Deliveries to Supplier: Energy Index minus the Option Premium, as described below.

Energy Index: The applicable Energy Index shall be the Intercontinental Exchange ("ICE") WECC_E_CO On-Peak Daily Index, for deliveries scheduled during On-Peak Hours or the ICE WECC_E_CO Off-Peak Daily Index, for deliveries scheduled during Off-Peak Hours.

The daily pricing used for both On-Peak Hours and Off-Peak Hours shall be the price listed on ICE under "weighted average."

If the ICE does not publish any or all of the foregoing indices, then the Dow Jones Index ("DJI"), if available, shall be substituted as the Energy Index for such index or indices no longer published. If neither the ICE nor DJI indices are available for use for a particular period, then the Parties shall agree on three independent brokers and the average of their respective calculations shall be substituted as the Energy Index.

Option Premium: \$0.xx per MWh, which reflects a pricing premium for sales by Supplier and which reflects a pricing offset for purchases by Supplier; provided, however, for combined Trading Days in which CUSTOMER has designated distinct Quantities for each such combined Trading Day (as described above), the Option Premium shall be as agreed by the Parties prior to CUSTOMER's Exercise Notice and described in a Recording.

Additional Allocation of Charges: Supplier shall be responsible for all charges related to transmission of ISO Energy to the Delivery Point(s). CUSTOMER shall be responsible for all charges related to transmission of ISO Energy at and from the applicable Delivery Point(s). Without limiting the general applicability of Article Four of the Master Agreement, failure by a Party ("Non Performing Party") to deliver or receive ISO Energy as scheduled, unless such failure is excused, shall result in the Non-Performing Party being liable for all resulting charges and penalties including but not limited to imbalance energy and penalties assessed by the ISO or other applicable control area operator.

Payment: Unless otherwise specified, payments for amounts billed under this Day Ahead Confirmation Agreement shall be paid by the later of (a) the 20th day of the month in which the bill was received or (b) 10 days after receipt of the bill. If the due date falls on a non-Business Day, then the payment shall be due on the next following Business Day. Payments shall be made by electronic transfer of funds.

Notices: In addition to the information provided in the Cover Sheet governing this Day Ahead Confirmation Agreement, either Party may, by notice to the other Party, change or provide additional contact information as may be necessary to effectuate the notice, scheduling, billing and payment provisions of this Day-Ahead Confirmation Agreement.

Effectiveness of this Day-Ahead Confirmation Agreement:

Notwithstanding anything contained in the Master Agreement to the contrary, this Day-Ahead Confirmation Agreement shall only be effective when executed by both Parties.

IN WITNESS WHEREOF, the Parties have entered into this Day-Ahead Confirmation Agreement effective as of the Effective Date.

SUPPLIER

CUSTOMER

By: _____

By: _____

Name: _____

Name: _____

Title: _____

Title: _____

Sample Purchase Agreement for Liquidated Damage Contract

Via Facsimile

SELL xxxxxxxxxx

Date: _____, 20__

Fax Number: _____

This Confirmation Agreement confirms the oral agreement between XXX, Inc. ("Seller") and XXX ("Purchaser") regarding the sale and purchase of ISO Energy pursuant to the Edison Electric Institute Master Power Purchase & Sale ("EEI") Agreement, under the following terms and conditions:

Trade Date: 12/23/2008
Seller: XXXXX
Purchaser: XXXXX
Term: 10/1/2011 through 10/31/2011
Schedule: Mondays through Saturdays, excluding NERC holidays, HE 07:00 MPT through HE 23:00 MPT
Delivery Point: WECC_E_CO
Contract Price: USD 57.00 per MWh
Delivery Rate: 5 MW per hour
Contract Quantity: 2,160 MWh
Type of Service: EEI Schedule C
Level of Service: FIRM
Broker: None

Scheduling: Power deliveries shall be scheduled with the Independent System Operator ("ISO") as a Schedule Coordinator to Schedule Coordinator transaction. Scheduling timelines shall be consistent with ISO tariffs, protocols, operating procedures, and scheduling practices.

Special Provisions: "ISO Energy" means with respect to a transaction, a product under which the Seller shall sell and the Purchaser shall purchase a quantity of energy equal to the hourly quantity without Ancillary Services (as defined in the Tariff) that is or will be scheduled as schedule coordinator to schedule coordinator transaction pursuant to the applicable tariff and protocol provisions of the Independent System Operator ("ISO") (as amended from time to time, the "Tariff") for which the only excuse for failure to deliver or receive is an "Uncontrollable Force" (as defined in the Tariff). An ISO "Schedule Adjustment" (defined as a schedule change implemented by the ISO that is neither caused by, or within the control of, either Party) shall not constitute an Uncontrollable Force (as defined by the Tariff).

Attachment E57

Other: In the event of a conflict between the Netting Agreement (if applicable), the EEI Agreement, the oral agreement, or this Confirmation Agreement, any such conflict shall be resolved by reference to the terms contained in such agreements in descending order of importance as follows: the Netting Agreement, the EEI Agreement, the taped oral agreement, and this Confirmation Agreement.

Please indicate your acceptance of the terms stated herein by returning an executed copy of this Confirmation by facsimile to XXXXX. at _____ within three Business Days. Failure to respond within three Business Days will not affect the validity or enforceability of this Transaction, and shall be deemed to be an affirmation of the terms and conditions contained herein, absent manifest error. Please contact XXXX Confirmation Administration at _____ if you have any questions.

XXXXXXXXXX

Authorized Signature

Name: _____

Title: _____

Date: _____

XXXXXXXXXX

Authorized Signature

Name: _____

Title: _____

Date: _____

Attachment E58