INFORMATION PACKET
MEMORANDUM

To: Members of City Council

From: Jane S. Brautigam, City Manager
Tom Carr, City Attorney
Heather Bailey, Executive Director of Energy Strategy and Electric Utility Development
Energy Future Executive and Project Teams

Date: Aug. 19, 2014

Subject: **Information Item:** Energy Future Transition Work Plan

---

EXECUTIVE SUMMARY

A transition work plan ("Plan") has been developed that will guide the change from an Xcel-run system to a city-operated local electric utility, should the City acquire the utility as defined in the condemnation petition filed in Boulder District Court. PowerServices, Inc. was hired to create the Plan and identify the various tasks, interrelationships and schedule for transition work activities. The step-by-step work plan addresses multiple components such as power supply acquisition, system operations and maintenance, software development and integration, customer interface, and financing. The Plan includes recommendations for staffing and outsourcing, along with estimates of key costs to implement. The Interconnection Plan developed by Exponential Engineering Company has been integrated with the overall Plan.

The Plan will serve as a working tool for the city that will continue to be updated on a regular basis as legal issues are addressed, tasks are refined, and work is completed. It is designed to manage the risks of acquisition while prioritizing the fundamentals of an electric utility: safety and reliability. For a more complete description of the transition work planning, please refer to the Report of Transition Planning for New Electric Utility by PowerServices, Inc. presented as **Attachment A**. Accompanying the report is the Transition Work Plan Schedule Overview presented as **Attachment B**.

FISCAL IMPACT

The transition work plan activities will require additional resources that will be identified as part of the 2015 budget process. Although critical activities have already been initiated, work must be accelerated through the 2015 to 2016 time period and will require additional resource allocations. Initial information regarding these resources will be presented as part of the Sept. 9 budget study session.

BACKGROUND
Earlier this year, the city adopted an ordinance creating a municipal electric utility and filed a condemnation petition in Boulder District Court seeking to acquire portions of the electric system owned by Xcel Energy. Although dependent on the District Court schedule, this action starts the countdown to startup of a city-owned electric utility. In anticipation of these steps, city staff initiated the development of a transition work plan ("Plan") in early 2014. PowerServices, Inc. was hired to create the Plan and an update was provided to City Council on May 13, 2014. For a more complete description of the transition work planning, please refer to the Report of Transition Planning for New Electric Utility by Power Services, Inc. presented as **Attachment A**. The Plan will serve as a working tool to be updated during the acquisition process.

ANALYSIS
The Plan will guide the change from an Xcel-run system to a city-operated local electric utility. It identifies the steps, or tasks, required for the City to secure power supply, operate and maintain equipment used to deliver electricity to retail customers, and implement support services, interrelationships and schedule for the transition work activities. The plan accounts for the city's key objectives including:

1. Providing safe & reliable system operations
2. Securing cost effective & reliable wholesale power
3. Minimizing customer impacts
4. Managing costs, especially during transition
5. Expanding the power supply renewable portfolio

Two critical dates are defined as follows:

- Day 1 – the date on which the city takes ownership of the electric system and begins customer billing (approximately third quarter 2016)
- Day 2 – completion of interconnection construction (approximately third quarter 2018)

The plan also identifies and evaluates two scenarios:

- Scenario A - contemplates coordination with Xcel Energy to provide wholesale power and services at acquisition (Day 1) until interconnection construction is completed.
- Scenario B considers a situation where Boulder will take over all aspects of utility operations immediately upon acquisition and prior to completion of interconnection construction.

The steps to form a utility are nearly identical in both Scenarios A and B, with the major difference being that Scenario B accelerates implementation to prepare the city for full operation on Day 1. The Transition Work Plan Schedule Overview based on Scenario B is presented as **Attachment B**.

The Plan is built around the basic functions necessary to operate an electric utility. Each function contains a series of steps that the city must implement to ensure that appropriate staffing, workspace, skill sets, equipment and materials, and processes are in place by key target dates. The eight functional areas are:

1. Construction, Operations & Maintenance
2. Customer Service
3. Energy Services
4. Finance & Accounting
5. Planning & Engineering
6. Power Supply & Delivery

7. Legal/Regulatory
8. Support Services

In addition, the Interconnection Plan developed by Exponential Engineering Company has been integrated with the overall Transition Work Plan.

The most significant prerequisite for transition is flexibility in the sequencing and scheduling of activities. The path towards electric municipalization is not one-dimensional. Uncertainties are amplified if the owner of the system to be acquired does not cooperate and acts as an impediment to the acquisition process. This Plan recognizes Boulder's endeavors to create the "Utility of the Future," but the city must first manage the risks of acquisition while prioritizing the fundamentals of an electric utility: safety and reliability. The Plan anticipates building on this groundwork to accomplish the community's goals of increasing electric services and renewable energy resources in a cost effective manner.

Staff plans to have a public outreach process and establish new working groups to assist in the implementation phase. It is anticipated the working groups will be organized during the third and fourth quarters of 2014.

NEXT STEPS
City staff has already begun implementing critical transition work activities, including integrating and leveraging existing city resources, and will continue these activities as guided by the transition work plan. Staff will identify the resources needed to implement the entire transition work plan as part of the 2015 budget process. Initial information regarding these resources will be presented as part of the Sept. 9 budget study session.

Staff also plans to have a public outreach process and establish new working groups to assist in the implementation phase. It is anticipated the working groups will be organized during the third and fourth quarters of 2014.

ATTACHMENTS:
A: Report of Transition Planning for New Electric Utility, Power Services, Inc.
B: Transition Work Plan Schedule Overview

City of Boulder, Colorado

Report of Transition Planning for New Electric Utility

PROVIDED BY:

PowerServices, Inc.

Power Services
Engineering & Management Services®

1616 East Millbrook Road, Suite 210
Raleigh, North Carolina 27609
Phone: (919) 256-5900

August 12, 2014

CITY OF BOULDER, COLORADO

REPORT OF

TRANSITION PLANNING FOR NEW ELECTRIC UTILITY

TABLE OF CONTENTS

CITY OF BOULDER, COLORADO

REPORT OF

TRANSITION PLANNING FOR NEW ELECTRIC UTILITY

1. Introduction and Background

The City of Boulder, Colorado ("City") engaged PowerServices, Inc. ("PowerServices") on January 27, 2014 to assist in the development of a Transition Work Plan ("Plan") for a new electric utility, in a manner consistent with the November 27, 2013 Request for Proposals ("RFP No. 68-2013"). The objective of the Plan is to position the City to safely, reliably, and cost-effectively operate the electrical system in Boulder's proposed acquisition area. The Plan is a functional roadmap consisting of multiple tasks necessary to seamlessly integrate the electric utility within an expanded City organization and interface with customers that the utility would serve. It is a dynamic document influenced by the outcome of legal and regulatory proceedings anticipated to occur during the acquisition process.

PowerServices' work commenced with a kick-off meeting with the Boulder Energy Future team and staff members on February 3, 2014. Regularly scheduled conference calls, data requests, and iterations of draft plans in Microsoft Project followed. The Plan's critical dates and assumptions were evaluated in detail, and it was determined that the path toward electric municipalization must not only account for optimal outcomes, but also include alternatives to prepare for uncertainties. The most effective outcome would be a gradual transition of energy supply and operations from the incumbent utility to the City. However, the City also has to plan for the contingency that it would be unable to coordinate efforts with the incumbent utility.

PowerServices developed the Plan consisting of two scenarios to account for uncertainties that may arise in the acquisition process. PowerServices presented an overview of the scenarios to Boulder's City Council on May 13, 2014. The Plan is a dynamic work in progress that continues to be updated as information is clarified, options are refined, uncertainties are eliminated, and dates are adjusted. It is intended to serve as a tool for the City to document and track transition activities over several years.

2. Executive Summary

The City of Boulder's formation of a municipal electric utility is a complex process highly influenced by acquisition legal and regulatory proceedings. To manage multiple uncertainties and create a path forward, the City requires a Plan that outlines the steps necessary to seamlessly integrate an electric utility while meeting key objectives, including:

- Providing safe & reliable system operations
- Securing cost effective & reliable wholesale power

- Minimizing customer impacts
- Managing costs, particularly during transition
- Expanding the power supply renewable portfolio

The Plan is comprised of two scenarios. The first, or Scenario A, contemplates coordination with Xcel Energy to provide wholesale power and services at acquisition ("Day 1") until interconnection construction is completed ("Day 2"). This will maintain stable power supply and system operations during a gradual transition period lasting approximately two years after acquisition. The alternate Scenario B considers a situation where Boulder will take over all aspects of utility operations immediately upon acquisition (Day 1) and prior to completion of interconnection construction. Under this scenario, any contracts for power supply and services, which will have to be secured from third-party providers prior to the City having the verdict on the cost of electric facilities from the court, will need to include termination options if the City decides not to pursue formation of a utility.

The Plan is built around the basic functions necessary to operate an electric utility. Each function contains a series of steps that the City must implement to ensure that appropriate staffing, workspace, skill sets, equipment and materials, and processes are in place by key target dates. The Plan identifies numerous requirements, such as systems, standards, policies, agreements, customer programs, budgets, and contracting needs. Every component is assigned a timeframe for completion so the City can successfully launch operations over a range of dates in either scenario. The steps to form a utility are nearly identical in both Scenarios A and B, with the major difference being that Scenario B accelerates implementation to prepare the City for full operation on Day 1.

The Plan is a work in progress and developed using Microsoft Project software for effective linkage of the tasks and ease of tracking changes and adjustments throughout the process. It is segmented by major functions, and comprises a multitude of interrelated tasks required to meet Day 1 and Day 2 requirements. It is anticipated the Plan will be updated on a regular basis to account for completed work as well as newly identified developments, tasks and requirements.

The most significant prerequisite for transition is flexibility in the sequencing and scheduling of activities. The path toward electric municipalization is not one-dimensional. Uncertainties are amplified if the owner of the system to be acquired does not cooperate and acts as an impediment to the acquisition process. This Plan recognizes Boulder's endeavors to create the "Utility of the Future," but the City must first manage the risks of acquisition while prioritizing the fundamentals of an electric utility: safety and reliability.

3. Transition Plan Development

A. System Characteristics & Interconnection Plan

The first step in developing a transition plan is identifying the size, extent and characteristics of the portion of the electric system that will be owned and operated by Boulder. No severing or rerouting of existing lines is required. The separation of Boulder's system for operational purposes is accomplished through the installation of equipment on existing lines at strategic interconnected locations to allow metering of the energy flowing in and out of the system owned and operated by Boulder as well as mutual support in the case of a problem with the interconnected Xcel Energy and Boulder owned circuits. The anticipated locations of those interconnections, and how the existing equipment at substations will be utilized to serve Boulder and Xcel service areas are described in the February 26, 2013, and July 24, 2013 materials presented to City Council, and in the affidavit of Thomas A. Ghidossi, P.E. of Exponential Engineering Company prepared on August 15, 2013 for presentation to the Public Utilities Commission staff ("Interconnection Plan"). This affidavit is included as Appendix 1. The Interconnection Plan comprises the engineering and construction to install meters and protective devices at multiple locations, or delivery points, where power would exchange between the City and Xcel. The Interconnection Plan necessitates agreements governing the delivery points that create a clear demarcation for ownership, operation, and power supply responsibilities. Once implemented, the high voltage lines, substations or portions of substations, and distribution network acquired by the City establish Boulder's proposed electric system. The City system characteristics are shown below in Chart 1.

City of Boulder-Electric Utility General System Characteristics		
Acquisition Area Population	111,000	
Acquisition Area Employment	96,800	
Total Acquisition Area	44.4 square miles	
Residential Customers	56,000	approximate
Commercial Customers	6,800	approximate
Industrial Customers	20	approximate
Distribution System Voltage	13.2 kV	
Number of Substations	6	
Number of Transformers (115 kV to 13.2 kV)	10	
Number of Transformers (230 kV to 13.2 kV)	2	
Transmission System Voltage	115 kV	
Transmission Circuit Miles	29	
Total Number of Substations fed by Transmission System	9	
Distribution Circuit Miles	569	
Distribution Circuit % Overhead	38%	
Distribution Circuit % Underground	62%	
Overhead Transformers	2,600	approximate
Underground (Padmounted) Transformers	1,200	approximate
SAIDI goal	85 minutes	
SAIFI goal	<85	

Chart 1 – City of Boulder- Electric Utility General System Characteristics

The plan for separation of the system Boulder will operate has been called an "Interconnection Plan" because of the unique nature of the electrical system serving Boulder. Terms such as "separation," "reintegration," "reconnection," or "sever" imply physical separation. However here, both the City's and Xcel's electric grids remain interconnected to facilitate the flow of electricity. Where the two systems are connected, additional equipment for metering, monitoring, protection and control must be installed. This creates points of delivery for Boulder to receive wholesale power and to serve its future retail customers while remaining integrated with Xcel's system from a functional and operational perspective. The delivery points also measure power flow at locations where, as necessary, another utility may utilize the City's electric system to transmit power. The Interconnection Plan system modifications are one-time physical and technical changes to be performed in close coordination with Xcel, and according to FERC-approved standards, and will commence after Boulder acquires the system.

B. Functional Organizational Chart

Once system characteristics were derived, PowerServices utilized in-depth knowledge of electric utilities, including municipal, operations to form the basis of the Transition Plan: a sample functional organization that operates an electric utility with system attributes and customer accounts similar to those proposed by the City (Chart 2). The functional organization drives staffing requirements and processes necessary for the City to obtain wholesale power supply (the product), deliver power to the customer (distribution services), read meters and bill the customer (collect revenue), and provide all accompanying services, including, but not limited to, operation, maintenance, and system upgrades and expansion.

Boulder Electric Utility

Sample Functional Organizational Chart

Director - Electric Utility							
Management Level -to be designated							
Construction, Operations & Maintenance	**Customer Service**	**Energy Services**	**Planning & Engineering**	**Power Supply & Delivery**	**Legal/ Regulatory**	**Support Services**	**Finance & Accounting**
Substation, Transmission & Distribution	Billing	End use programs (EE, DSM, Renewables)	System Planning & Design	Portfolio Planning and Optimization (load forecast)	NERC, FERC, Environmental compliance	Human Resources	Rates & Revenue Requirements
Vegetation Management	Call center	Marketing & Communications	Engineering Design & Specification (Substation, Transmission & Distribution)	Resource acquisition (Power Purchase Agreements) and contract administration	Permitting	Information Technology & Telecommunications	Accounting
Materials Management	Commercial, Industrial & Governmental account management (Key Accounts)		Metering Specifications	Transmission Agreement administration	Real Estate/ROW/ Easements	Facilities Management	Purchasing
Emergency Response				Generation ownership	Joint Use Agreements	Fleet Management	Budget & Financial Modeling
Dispatch						Safety & Environmental	
note: some functions may utilize shared or contracted resources							

Chart 2 – Sample Functional Organizational Chart

The Plan follows the sample organizational structure, which is segmented into eight functional areas that include transitional as well as ongoing requirements for electric utility operations:

1. Construction, Operations & Maintenance
2. Customer Service
3. Energy Services
4. Finance & Accounting
5. Planning & Engineering
6. Power Supply & Delivery
7. Legal/Regulatory
8. Support Services

For each function, the Plan identifies critical components, including but not limited to:

- Recommended Staffing with functional titles
- Workspace & Facilities
- Policies, Procedures & Standards
- System Studies & Plans

- Contracts & Agreements
- Legal & Regulatory Filings
- Equipment & Tools
- Systems Development & Integration

For each component, the Plan identifies elements that must be in place in order to meet the City's objective for a seamless transition. The elements are defined as tasks in Microsoft Project and assigned a start date, end date, and task duration in order to meet the desired implementation date. Precedent tasks, or activities that must occur before another task may start, are also identified. The precedent tasks may be within the same function or part of an alternate function. The Plan also links to major engineering and construction steps for separation and integration.

C. Critical Milestones

The major influence on the Plan is the timing of critical milestones. These reflect dates of legal and regulatory proceedings, financing requirements, the City's acquisition of assets, and the completion of construction at points of connection with Xcel's electric grid (Interconnection Plan). Based on available information and with guidance from Boulder staff, PowerServices applied definitions and durations to the milestones as shown below in Chart 3.

Critical Milestone	Anticipated Date or Timeline*	Description
Condemnation	June 2014 – July 2016	The period of time starting with the filing of condemnation and ending with trial completion, estimated at approximately 24 months.
Regulatory	October 2014 – July 2016	The period of time encompassing regulatory activities or filings; estimated at approximately 18 months.
Financing	January 2016 – August 2016	The time period required for permanent financing; estimated at 8 months and ending with bond issuance 60 days after completion of the condemnation trial.
Day 1	September 1, 2016	The date that Boulder funds the local electric system and takes ownership of assets, or 60 days after completion of the condemnation trial.
Day 2	August 9, 2018	The date that separation and reintegration is complete at wholesale delivery points and Boulder assumes full operation, or approximately 24 months after Day 1.
**Dates and durations are estimates and subject to change based on legal and regulatory proceedings*		

Chart 3 – Boulder Microsoft Project Schedule of Anticipated Milestones

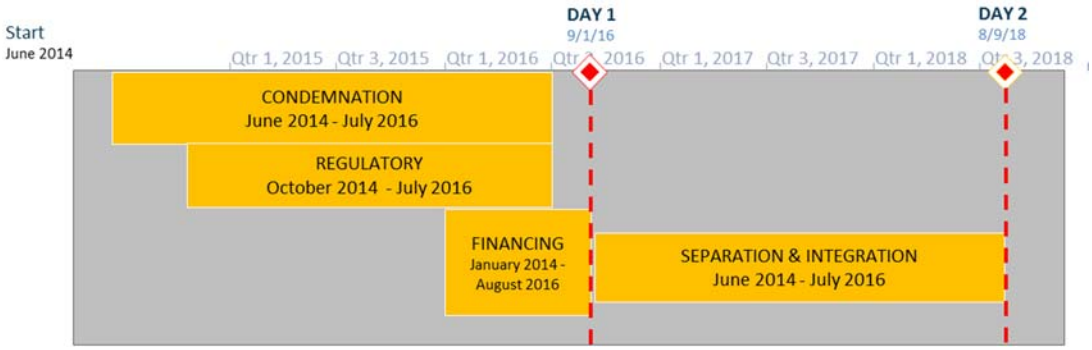


Chart 3 (Continued) – Boulder Microsoft Project Schedule of Anticipated Milestones

The milestones set targets for tasks to be substantially complete or fully implemented. *It must be emphasized that the dates and duration of critical activities are estimated. These dates will change as the legal and regulatory process proceeds.* As such, the Plan is designed in a way that any tasks benchmarked to a critical milestone will be rescheduled should the target date change. Microsoft Project functionality provides notices if the resulting change creates scheduling conflicts with associated tasks, and the City can use this information to address alternate courses of action.

D. Scenario Analysis & Comparison

Once the critical milestones were defined, PowerServices next analyzed the major functions that the City must prepare to implement on either Day 1 or Day 2 under each scenario. Specifically, the Plan prioritized needs related to two key areas: securing wholesale power supply and operating the electric system. Power supply includes contracting for firm generation resources that are transmitted to delivery points on the Boulder system. The City will need adequate time to assess load needs and generation options to procure power from reliable sources. Wholesale power supply is estimated to comprise the majority of the City's annual electric utility operating budget. Additionally, the City must have staff and resources to operate and maintain the electric system to safely and reliably deliver the power from the delivery points to the customers. This will include line crews, equipment, materials, and systems for planned and emergency work at multiple substations and over 550 circuit miles of line. System operations are logistically complex and resource intensive.

The evaluation yielded two scenarios to "bookend" the transition plan. The first, or Scenario A, is a coordinated transition on Day 1, which assumes that the incumbent utility (Xcel Energy) will continue to provide wholesale power supply and system operations under contract with the City until Day 2, when interconnection construction is completed. An alternative plan, or Scenario B, is designed such that Boulder has contracts and resources in place for power supply and system operations on Day 1, assuming that Xcel Energy is either unwilling to participate in transition activities or offers services that are uneconomical and ineffective compared to other alternatives. Scenario B must be able to adapt to a greater number of uncertainties and risks than Scenario A, most of which are driven by the timing and outcome of legal and regulatory proceedings. Under both scenarios, the City will be in a position to take ownership of assets and begin billing customers for energy usage on Day 1 under the newly formed

Boulder electric utility. The City would set retail rates and provide the required customer related services.

A summary of the party expected to provide major responsibilities on Day 1 under each scenario is provided in Chart 4.

Transition Plan DAY 1 Responsibility ⇨	Provide Wholesale Power	Perform system construction, operations and maintenance	Provide Outage Management and Emergency Response	Read Meters	Set retail rates and bill customer	Call center and Customer Services
Scenario A	Xcel	Xcel	Xcel in coordination with Boulder for customer communication	Xcel	Boulder	Boulder in coordination with Xcel for construction or operations
Scenario B	Third Party (other than Xcel)	Boulder	Boulder	Boulder	Boulder	Boulder

Chart 4 – Boulder Division of Day 1 Responsibilities

In Scenario A, the City's distribution, substation, and transmission assets would not be separated from Xcel Energy on Day 1 from a metering, monitoring, protection and control (operational) perspective. The City would continue to receive power supply, system and emergency operations, and meter reading services from Xcel under bi-lateral agreements. The agreements would need to accommodate non-traditional metering and billing arrangements for power supply and allow a phased construction period to implement the Interconnection Plan. Upon completion of the interconnection construction on Day 2, Boulder would take over all operational aspects of the system and receive power supply from either Xcel or an alternate source.

Scenario A should provide seamless customer interface, since system operations would be transferred in an orderly fashion between Boulder and Xcel. This plan prioritizes safety and reliability, minimizes economic impacts prior to Day 1, and provides Boulder with firm power supply options until full separation is complete. Scenario A will rely on effective coordination with Xcel to provide Boulder with adequate information for customer interface on Day 1 and during the structured transition of system operations. Investments and commitments for systems, studies, facilities and personnel will be limited to those needed for pre-acquisition tasks, with the remaining expenses occurring after the decision to acquire assets. Scenario A considers risks and costs expected from an acquisition process when two parties coordinate transition and the outcomes of legal and regulatory proceedings support transition activities.

In Scenario B, the City must be in a position to not only take ownership of assets on Day 1 and begin billing customers, but also to receive power supply from a third party (likely other than Xcel), operate the system, and read meters. The City would control retail rates and provide all customer related services. In short, Boulder would be prepared to own and operate the new electric utility in all respects on Day 1. All of this will need to occur under the assumption that Boulder will not be able to make system modifications prior to owning the system. Thus, just as in Scenario A, the construction anticipated in the Interconnection Plan would not be completed on Day 1.

Scenario B requires that the City complete most transition tasks prior to Day 1 in order to prepare for operations. The City will need to seek contract services for major functions in such a way that contractors will be ready to deploy on Day 1. Wholesale power supply will need to be secured and power delivery arranged with Xcel in a manner that will accommodate all necessary metering arrangements. All systems will need to be in place to manage power supply, construction, operations and maintenance, outages and emergencies, meter data, customer interface, and support functions.

Scenario B is designed to achieve the level of safety and reliability expected in Scenario A, but does not depend on Xcel's participation in facilitating the transition. However, receipt of timely and complete information from Xcel will be vital for Boulder to safely operate the system, receive firm power supply, and minimize customer disruptions. The Plan identifies the data required and proposes operational agreements to be executed. Scenario B will require the City's investment and commitment for systems, studies, facilities and personnel prior to the valuation trial. It incorporates options to minimize expenditures prior to Day 1 and will prepare the City to take over system operations in a condensed timeframe while managing multiple timeline uncertainties. Scenario B considers the higher risks and costs that result from an acquisition process when one party is unwilling to coordinate transition activities. The transition steps and timeline are compelled by legal and regulatory outcomes, rather than cooperative efforts between the parties.

The majority of tasks or steps to form a utility are the same in both scenarios, but the implementation date and amount of time provided to complete the task may be significantly different depending on cooperation between the parties. Scenario B must meet a more aggressive timeline that requires commitments for major components prior to the valuation trial. The likely scenario will not be either Scenario A or B, but will be some combination of both based on regulatory and legal proceedings. The Plan is dynamic and will demand continued oversight and adjustments to ensure that schedules remain realistic and are accomplished.

4. Functions

A. Construction, Operations & Maintenance

Construction, Operations and Maintenance ("COM") consists of resources and activities necessary to operate and maintain the transmission and distribution system. COM includes overhead and underground line crews that perform routine or planned work, such as new construction or maintenance and emergency work. This department also includes system monitoring and dispatchers, meter readers and technicians, warehousing functions, and vegetation management. Both Transition Plan scenarios prioritize tasks that enable crews to be up and running on the date that Boulder must operate the system, with the objective to "keep the lights on" while enhancing reliability. Overall, it is estimated that approximately 70% of proposed department positions reside in COM.

Electric utility construction, operations and maintenance require some skill sets not currently available within the City's organization. Reliable operations depend on comprehensive knowledge of electric systems and applicable safety and environmental codes and practices. PowerServices recommends that initially the City leverage experienced contract crews for the majority of COM positions rather than build these skill sets internally. Depending on the long-term cost effectiveness of this approach, the City may eventually decide to hire internal staff to implement some or all the required functions. This outsourcing scheme has been successfully implemented by large investor-owned utilities, electric cooperatives, and electric municipal utilities. This is particularly important due to the condensed timeframe for staffing should the City take over system operations on Day 1 in Scenario B. Under this scenario, it is recommended that the City issue Requests for Information and Requests for Proposals for contract crews in 2015 in order to refine budgets and execute retainers in 2016. The crews would begin permanent work upon the City's purchase of assets in the third quarter of 2016. Under Scenario A, Boulder will contract with Xcel to provide system operations between Day 1 and Day 2. Subsequently, the City can evaluate alternative contractors in preparation for taking over the system on Day 2, or may choose to extend contracts for Xcel services.

The Plan also outlines those positions that are Boulder staff rather than contractors, including a Construction Operations Manager. The operations manager brings a necessary skill set to the Boulder team in order to assist with Xcel operational data exchange, perform a system needs assessment, provide oversight of contractor selection and agreements, and oversee the contractor on-boarding process.

Boulder must also prepare adequate workspace for crews consisting of workshops, warehousing, storage/laydown yards, and shelters for equipment and fleet needs. A separate communications center is needed for 24-hour monitoring, control, dispatch and emergency response. The Plan assumes a process to identify and secure locations for crews and dispatch functions, which require commitments in advance of the decision to acquire in Scenario B. Primarily to ensure a smooth transition for customers, both Scenario A and B rely on timely information and coordination with Xcel for customer meter data access, outage management, and emergency response. Transition of these functions depends on knowledge of, and access to, Xcel's data or monitoring systems.

There are multiple operating procedures, standards and policies that must be in place prior to any crews working on the system. The majority of these are produced through the planning and engineering function that controls system design criteria, which is further augmented with maintenance procedures. Boulder may use or amend standards and procedures made available by Xcel, or adopt alternatives. In either case, the Plan provides tasks and timelines for Boulder to assess and implement appropriate procedures prior to contract crew deployment and system operations.

B. Customer Service

The Customer Service function encompasses billing and collections, call center representatives, and account management. The City's goal in both Scenarios A and B is to have the ability to bill customers and provide related services on Day 1 upon acquisition of assets. Therefore, the Plan tasks prioritize receipt of customer account information from Xcel,

implementation of a Customer Information System ("CIS"), and continuity in the administration of current and future end-use programs. Staffing consists of a Customer Service Manager with additional support positions for various functions. The Plan recommends hiring the Manager well in advance of Day 1 to oversee multiple and complex activities. Remaining hires are staged at later dates. It is anticipated that Boulder may utilize or expand existing water and sanitary sewer utility services for electric billing and collections, while the call center function may be outsourced.

A critical transitional task is CIS implementation. The City has the option to expand a current software system (Advanced Utility Systems CIS Infinity®) or develop a new system that is capable of handling the estimated 60,000+ customer accounts. However, it is imperative that the City receive accurate and complete account information from Xcel in a timely manner in order to meet the Day 1 milestone. Account information includes, but is not limited to, customer name, address, account number, GIS location, special medical needs, current rate, meter specifications, multipliers, meter read cycle, participation in customer programs and rebates, installed generation, and billing history. The Plan anticipates significant lead time will be needed to implement a CIS system, and at the point that it goes "live," Boulder must be prepared to read meters or import meter data, bill customers, and respond to general inquiries or requests for service. Customer account transition demands heavy coordination with Xcel to minimize service disruptions and to ensure that customers clearly understand when and how to contact the City rather than Xcel.

A cross-functional input critical to CIS implementation is retail rate design. On Day 1, Boulder anticipates applying retail rates under which customers will be billed. The rates may or may not reflect Xcel's current retail rate structures. Integral to rate design are budget information (driven by load forecasts, end-use programs and power supply costs), customer classifications, public processes and City Council action. Thus, there are multiple precedents that must be accomplished before the CIS system can be completed. The Plan identifies and sequences these requirements over a time period to meet Day 1 objectives.

C. Energy Services

An additional customer related function is Energy Services, which includes end-use program development, branding, marketing and communications. This section will not only be important in facilitating and communicating changes that directly affect customers during the transitional period, it will also drive local initiatives to meet the City's aggressive goals to reduce greenhouse gas emissions and evolve into the "Utility of the Future." Work will be led by an Energy Services Manager with additional support staff. Due to the City's extraordinary public engagement efforts in this area, positions associated with communications and marketing will initially be designated under Energy Services, although they will provide cross-functional support. Ultimately, Energy Services is expected to grow as the number of customer programs, such as energy efficiency, demand side management, and distributed (customer owned) renewables, increases over time.

The primary objective during transition in both Scenarios A and B will be evaluating existing Xcel programs that need support on Day 1. The Energy Services group must ensure that

programs requiring continued incentives or administration are identified and integrated into the new electric utility operation. Concurrently, this section will prepare for new offerings. This will involve research in the viability of innovative programs and pilots to include incentive amounts, customer adoption rate, contribution to carbon goals, cost-benefit analysis, and impacts on grid operations and power supply. The Energy Services group will work closely with Resource Planning, Finance, and Engineering to ensure that programs complement power supply requirements while meeting budget targets and technical standards for grid operations. Most importantly, Energy Services must coordinate with Customer Service such that the departments are unified in the communication, implementation and administration of programs, including measurement and verification of local impacts.

A key to successful program development will be thorough assessment across the organization, which will occur in multiple stages. Ample time must be provided to sufficiently evaluate, communicate, and implement end-use programs considering the importance to the City's customers and long-term effects on the system. The Plan provides a schedule to integrate Xcel offerings and launch new programs on Day 1. However, the requirements of ramping up for electric utility operations may demand resources that would otherwise be devoted to new customer programming. In order to not impact the success of the City's formation of an electric utility, new programs may be developed subsequent to Day 1.

D. Finance & Accounting

The majority of finance and accounting functions for the electric utility are similar to those in Boulder's current organization and will require incremental staff additions to manage additional workload. The Plan currently anticipates that a Finance and Accounting Supervisor and perhaps other support positions will be hired during the transition period to help implement this work. The City will require skill sets and systems to support budget and rate making activities that utilize the Governmental Accounting Standards Board ("GASB") for accounting and financial reporting, and also maintain books and records in accordance with the Federal Energy Regulatory Commission's Uniform System of Accounts ("FERC Accounting").

The finance and accounting group will be heavily involved in coordinating preliminary budgets, cost of service studies, and rate design to meet specific timeline targets. This requires expansion of current systems, which may be synchronized with the City's implementation of a new enterprise resource management solution (Tyler Technologies' Munis®). Concurrently, budget inputs must be obtained from other functional areas, including operations and power supply. Budget and customer classifications drive retail rate design, which Boulder may develop or may choose to adopt Xcel structures. In turn, the retail rate structures must be approved in advance of permanent financing and also in time to program a new customer information system for live testing prior to Day 1. Finance and accounting services are data intensive and time sensitive. Eventually, financial models must be refined to support ongoing integrated resource planning ("IRP") analysis and critical decisions for future power supply portfolios and innovative retail rate structures. The City must also expand or implement new asset management and work order systems capable of integrating with customer billing, accounting, and financial systems.

E. Planning & Engineering

The Planning and Engineering department of an electric utility is responsible for developing and managing engineering standards for construction, operations, and maintenance of the system. This includes adopting appropriate policies and procedures for day-to-day activities as well as long-range planning related to capital asset replacement. In all cases, safety and reliability are of paramount importance. Policies and procedures must adhere to codes and regulations, including the National Electrical Safety Code ("NESC"), Occupational Safety and Health Administration ("OSHA") Standards, and Environmental Protection Agency ("EPA"). It is expected that the Boulder electric utility will follow industry "good utility practice" and "best practices" in addition to those adopted by the City.

The Plan currently anticipates that a Lead Engineer will be hired during the transition period to help implement this work. This position will coordinate data exchange with Xcel, develop operating agreements, oversee engineering for separation and integration, and ensure that all appropriate standards and policies are in place prior to contractors working on the system. Support staff may be hired at later dates, recognizing that contractors may be utilized for some positions in Scenario B in lieu of permanent hires prior to the decision to acquire.

The initial transition activity is refining the system maps and the Geographic Information System ("GIS"), which includes verifying the accuracy of the existing mapped resources, as these are critical to the City in identifying assets and their corresponding field location, condition, and additional attributes. Many utility processes, such as facility design and construction, outage prediction and management, inventory systems, and asset accounting, depend on system maps and GIS. Next, system modeling and studies must be performed using a software tool to simulate and analyze loads and power flows under various operating conditions. This comprehensive analysis allows the City to assess the current performance of the system, ensuring that safety and reliability standards are achieved. Additionally, studies are used to evaluate alternatives for system improvements and expansion, serving as the basis for long-range planning and capital improvements.

Concurrent with maps and models, the planning and engineering group must adopt multiple standards including, but not limited to:

- Developer Standards
- Interconnection Standards
- Additional Facilities & Services
- Impact Fees & Charges
- Customer Rules & Regulations
- Service Contracts for Large Customers
- Substation, Transmission, Distribution Design Manuals
- Substation, Transmission, Distribution Materials & Construction Standards
- Substation, Transmission, Distribution System Planning Guidelines
- Comprehensive Utility Equipment Testing Procedures
- Right-of-Way Standards & Maintenance Procedures
- Meter Maintenance & Testing Standards

During transition, this work is coordinated by the Lead Engineer and may commence as early in the process as conceivable. The Plan provides the opportunity to base standards and procedures on Xcel's guidelines or adopt alternatives. Most importantly, all standards must be in place prior to Day 1.

F. Power Supply & Delivery

The major responsibilities of Power Supply and Delivery are integrated resource planning, wholesale power, transmission service contracting, and portfolio dispatch and optimization. A key position will be the Resource Planner, responsible for coordinating these tasks, which are highly interdependent with other functions. Power supply is the single highest operational cost and is critical during the transition process, since it drives the City's budget, retail rates, and estimated revenue stream. These components must be forecast in a timeframe and manner that meet permanent financing prerequisites. Additionally, firm power supply is critical to ongoing operations, and Boulder must seek a cost-effective and reliable supply to serve customers on Day 1 and for the near term.

Boulder faces several challenges in pursuing power supply and transmission service as a start-up utility. As part of its modeling process, the City created a 20-year load forecast using available data. Planning forecasts and models will be updated as necessary and must be estimated during the transition period. Also, the City is a new entrant in the wholesale market and must secure new wholesale power contracts to serve current and future load.

During the transition period, Boulder must engage the market to evaluate potential resources that have the capability and flexibility to serve the City on an uncertain date. Concurrently, the City will assess options to continue receiving power from Xcel (Scenario A). Lastly, the equipment for Boulder to receive wholesale power supply at proposed delivery points on Day 1, whether provided by Xcel or a third party, will not meet traditional infrastructure and metering requirements until the construction anticipated in the Interconnection Plan occurs. The City must coordinate closely with Xcel as the transmission provider to develop methodologies and agreements that accommodate a series of wholesale power supply arrangements.

To manage or mitigate the multiple challenges, the Transition Plan incorporates early and rigorous evaluation of integrated resource inputs, including generation market assessments, distributed generation potential, load impacts from energy efficiency and demand side management, and transmission studies. The Resource Planner must directly implement or facilitate evaluations, assemble results, and determine a reliable power supply path that meets the City's risk and budgetary thresholds. This work is complex, time sensitive, and is subject to influence by legal and regulatory proceedings. Power supply and delivery functions will require external consultation and legal assistance to execute and file documents with regulatory agencies.

Ultimately, the City must prioritize a power supply contract or commitment well in advance of Day 1 to meet financing obligations and to ensure that associated transmission service may

be obtained. Once firm supply is secured, Boulder may initiate a more robust IRP process to direct long-range commitments that start on Day 2 or later. The IRP process involves scenario modeling to derive a generation portfolio that meets Boulder's "Utility of the Future" carbon reduction goals. Key inputs include generation cost projections and their sensitivities to drivers such as technology innovation, environmental regulation, distributed generation potential, customer end-use program penetration, and varying carbon goals. The Electric Utility Director will be heavily engaged in ongoing resource planning efforts that will also involve numerous stakeholders and incorporate public input.

G. Legal/Regulatory

The Legal and Regulatory functions of the electric utility are expected to be managed by existing Boulder staff who will contract for assistance when necessary. During the transitional period, Boulder's legal department will oversee condemnation and regulatory matters. The Transition Plan does not identify the legal strategy or anticipated outcomes. Conversely, the Plan and its two distinct scenarios are created to account for the numerous uncertainties of the legal process. The plan identifies contracts, agreements or filings that are expected to be transferred from Xcel or developed by the City to support the proceedings and formation of the electric utility. Many of these are traditional utility filings, while others will be non-standard agreements such as system operations and coordination with Xcel between Day 1 and Day 2.

An additional area of oversight includes North American Electric Reliability Corporation ("NERC") compliance requirements that are triggered by Boulder's transmission line ownership. The Plan includes a NERC Compliance Officer to assess compliance needs, coordinate registrations, document filing requirements, and develop and oversee a compliance plan. Failure to meet reliability standards may result in federally imposed sanctions or stiff penalties.

H. Support Services

The Support Services function includes the City's traditional internal services, such as information technology and telecommunications, safety and environmental, facilities and fleet management, and human resources. Existing Boulder staff will manage transitional work with full-time or part-time incremental staff hired by Day 2 in Scenario A and Day 1 in Scenario B. The exception is the need for a human resources specialist to perform a staffing assessment early in the transition process. Boulder's projected electric utility staffing level is approximately 100 permanent and contract positions, with the majority requiring unique skill sets and knowledge. To prepare for efficient hiring, it is recommended that the City pre-define and approve position titles, responsibilities and pay grades. This will enable the City to expedite the hiring process for key personnel and to select candidates with industry experience who can immediately contribute to the organization while minimizing training.

For the transitional period, Support Services will expand or adopt City policies to include the needs of the electric utility. The most critical area is electrical safety, which is guided by the Occupational Safety and Health Administration and National Electrical Safety Code standards.

The City must adopt safety standards in time to train contractors before any system work is performed and engage a Safety Compliance Officer trained in the unique safety standards for electric utilities. Additionally, Support Services will engage external consultants to assist with global inter-department needs assessments. The timely evaluation of IT systems must be prioritized to determine those that require expansion, development, and possible integration with Xcel. Inter-department evaluations for customary items such as facility space, vehicles, standard software packages, phones, computers, radios, uniforms, and branded items must also be performed.

5. Implementation and Next Steps

The Transition Plan is dynamic and multidimensional, requiring robust management and oversight for implementation. Boulder's next step is to ensure that adequate resources are made available to advance the Plan. Several major items drive implementation costs, including staffing, software and systems integration, and engineering studies. The objective is to minimize expenses incurred during the period of time leading up to the valuation trial, in the event that Boulder decides to forgo purchase of the system. This is particularly important for Scenario B, where the majority of tasks require completion before Day 1 such that Boulder can operate the utility on the date of acquisition.

It is anticipated that the Plan's implementation will be managed by an interdepartmental project team under the guidance of the Executive Director of Energy Strategy and Electric Utility Development and the Energy Future Executive Team. Team members will lead specific functions with additional staffing needs filled through permanent or contract positions as needed. The functional leads will be responsible for determining the timing and most cost-effective method to implement tasks, while always maintaining awareness of inter-dependencies with other functional areas. It is important that staff not be overwhelmed by the size and complexity of the Plan; functions must have clear ownership and accountability and progress should be tracked. The keys to success are communication and adaptability to strategic outcomes of regulatory and legal proceedings. There are thousands of operating electric utilities in the United States, of which most are municipally owned. Therefore, the methods and practices for success exist and can be adapted to the Boulder model without re-inventing most of the processes, procedures and standards. This will expedite and enhance the transition and its success.

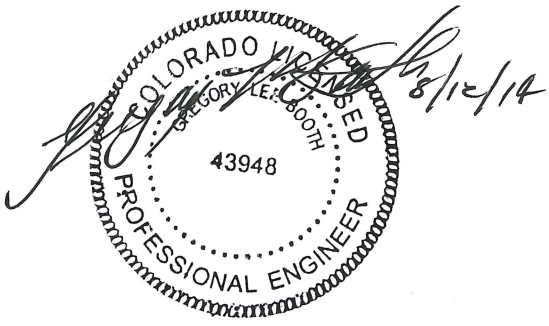
6. Signature and Seal Page

The foregoing report expresses my findings and opinions. I have reviewed the data provided for this project, and present herein the statement of my findings upon examination and analyses of the data and my engineering findings. I understand that data provided may be updated or modified, and I reserve the right to change or supplement the opinions and conclusions contained herein, as appropriate.

8/12/14

Gregory L. Booth, PE — Date

I hereby certify this document was prepared by me or under my direct supervision. I also certify I am a duly registered professional engineer under the laws of the State of Colorado, Registration No. 43948.



August 12, 2014

Gregory L. Booth, PE

Appendix 1
Exponential Engineering Company Interconnection Plan

STATE OF COLORADO)
) *ss.* **AFFIDAVIT**
COUNTY OF LARIMER)

I , Thomas A. Ghidossi, being first duly sworn, state as follows:

1. I am an electrical engineer, licensed as a Professional Engineer in the State of Colorado, in good standing, and have been licensed for 29 years. In addition I am licensed in Nebraska, Wyoming, Utah, New Mexico, Texas, Florida, California, Washington and Alaska. I received my Bachelor of Science degree in Electrical Engineering in 1979 and MBA in 1981 from the University of Colorado.

2. I have 34 years of experience in the electric utility industry. Specifically I have engineered and managed projects including distribution line design, municipal distribution planning, condition assessment and evaluation, generation and interconnection negotiations, substation design, protective relaying, and regional transmission system studies for electrical cooperatives, municipal utilities, investor owned utilities, government agencies and independent power producers. I have performed transmission interconnection studies for Western Area Power Administration and renewable energy developers using PSS/E WECC models.

3. I have provided expert testimony regarding transmission, distribution, and substation facilities in various proceedings. I provide a three and five-day seminar for engineers in several states regarding protective relaying theory, as well as a three-day transmission line design seminar. I have taught courses for senior electrical engineering students at both the University of Colorado and Colorado State University.

4. I am the founder and president of Exponential Engineering Company ("EEC"). For over 20 years Exponential Engineering Company has provided engineering services to rural electric cooperatives, municipalities, government agencies, investor-owned utilitites, independent power producers, and private corporations.

5. EEC was retained by the City of Boulder to conduct an analysis of the electrical system operated by Public Service to determine the optimal location for separation of the electric utility system, in the event the City acquires the system to provide electricity to customers in the City (the "Project"). I am the principal engineer for the Project, and have done or supervised all of the work performed by EEC on the Project. Separation of the electric utility system involves establishing ownership boundaries and points of interconnection/metering to enable reliable, operable and maintainable services to customers while minimizing the impact to or enhancing the performance of the electric grid.

6. The direction given to EEC by the City for the Project was to define a recommended service area for a new Boulder municipal electric utility that would:

a. Serve all properties within the municipal boundaries;
b. Serve City properties with electric needs, where feasible; and

c. Separate the systems at the technically optimum location to maintain reliability for the new electric utility as well as the Public Service system.

7. EEC reviewed the maps available to the City and the visible portions of the electrical system and discovered several factors that facilitated the recommendation for a separation boundary. Specifically,

a. Boulder is surrounded by open space resulting in Public Service's development of an electrical system that is technically and geographically isolated to a significant extent from surrounding areas.
b. The open space has also created areas around the periphery of the City that will have little or no development of additional electric load in the future.
c. Distribution of electricity to the City is via six substations (Boulder Terminal, Leggett, Niwot, Gunbarrel, Sunshine, and NCAR) connected to either a 115kV transmission loop or 230kV transmission lines.
d. The City owns a hydroelectric facility that can provide up to 4500 kW of electricity, which facility is outside of the City boundaries and connected to the 115kV transmission loop running through substations in Boulder.

8. EEC developed criteria as factors that were ideal in determining where the system should be separated. The factors desired were that the new electric utility and its separation boundary would:

- Serve all customers within the municipal boundaries;
- Serve City properties with electric needs where feasible;
- Define interconnection points at the municipal system boundaries and at the technically optimum locations to maintain or enhance quality of service, redundancy and capacity;
- Maintain the primary geographic areas that are presently served by the substations;
- Serve contiguous geographic areas;
- Utilize existing points of interconnection with other external substations as currently operated by Public Service;
- Maintain the ability to cross-feed between substations and to use substation capacity to maintain reliable service to customers;
- Establish logical service area boundaries utilizing existing parcel area boundaries;
- Minimize operational and maintenance conflicts;
- Eliminate the need for duplicate facilities.

9. For a presentation to the Boulder City Council on February 26, 2013, EEC prepared a conceptual boundary that met the criteria it developed described in the paragraph above (the "2/26 Concept"). The 2/26 Concept was prepared after a preliminary evaluation by EEC of the existing facilities serving Boulder, including the substations, transmission circuits, the current location of interconnections to feeders originating outside of the service boundaries, feeders inside service area boundaries, and service lines. The 2/26 Concept was supported by a peer review by Schneider Electric on January 18, 2013.

10. The 2/26 Concept was developed with conversations with several parties familiar with the system, particularly Warren Wendling, P.E.

11. When the Boulder City Council authorized proceeding with the exploration of creating its own utility, EEC took several steps to recommend a separation boundary from the 2/26 Concept. The work by EEC included:

a. field-verification of the facilities and equipment on the ground at each of the potential interconnection points between the proposed Boulder system and the remaining Public Service system;
b. field-verification of the substations, transmission circuits, the current location of interconnections to feeders originating outside of the service boundaries, feeders inside service area boundaries, and service lines;
c. investigation of the portions of the system at the potential service area boundaries; and
d. review of the maps showing the property owned by the City and the boundaries of properties around the perimeter of the 2/26 Concept, and how those properties are currently served by Public Service.

12. As a result of the field verification and review of other information, EEC prepared the map that is **Attachment A**. The Separation Map shows the recommended boundary. The major changes between the Separation Map and the 2/26 Concept are:

a. Properties owned by the City and served by one of the six substations are included;
b. The separation boundary line corresponds with property boundaries as currently described in the recorded ownership documents;
c. Inclusion of properties which the City owns or has a conservation easement over and drawing the boundaries along property lines. The change in service area does not add customers or load beyond the February 26th area but clarifies that certain customers would be included based on information determined during the field analysis. There are fewer than ten "additional" customers clarified to be in the service area in Attachment A than on the area shown February 26.

13. Much of Boulder is served by a 115kV transmission loop that is depicted as the black line on **Attachment B**. EEC recommends that the acquisition for municipalization include this loop. Acquiring the transmission loop will allow the City direct access to the hydro power from the Boulder Hydroelectric Plant owned by the City and allow the City to better manage the flow and distribution of electricity throughout much of the grid serving Boulder. EEC does not recommend that the acquisition by the City include any part of the 230kV transmission lines that run along the east side of the City through the Valmont Switchyard and the Leggett, Niwot and Gunbarrel substations, or any of the 115kV lines depicted in blue on **Attachment B**.

14. EEC's recommendation includes acquiring all or portions of several substations, the locations of which are shown on **Attachment B**. The four substations EEC recommends the City acquire entirely are depicted as white boxes with an "S" at the Sunshine, Boulder Canyon

Hydro, NCAR, and Boulder Terminal Substations (Boulder already owns a portion of the Boulder Canyon Hydro Substation). At the substations depicted as yellow boxes with an "S" on **Attachment B** EEC recommends that Boulder acquire 115kV line terminals including two bays in the Eldorado Substation and five bays in the Valmont Switchyard; as well as access to operate and maintain those facilities. For the Leggett, Niwot and Gunbarrel Substations depicted as green boxes with an "S" on **Attachment B** EEC recommends that the City acquire Xcel's 230/13.2kV transformers (including high side protection and low-side switchgear), and an easement for operating and maintaining those facilities. At the locations depicted as green and yellow boxes (the Eldorado, Leggett, Niwot and Gunbarrel substations and Valmont Switchyard), EEC's recommendation is that the land would remain owned by Xcel, as would the balance of equipment that Boulder is not acquiring.

15. EEC 's recommendation includes that the City acquire or install interconnection equipment generally consisting of meters, disconnect switches, protective devices and communications systems to interface with Public Service's system. Further, the City would take service at the high side of the 230kV transformers and Public Service would maintain the 230kV bus and connections to the 230kV transmission system. The City would own the switchgear and transformer. The locations of the interconnections were determined by:

a. The location of currently existing interconnections as Public Service operates the system,
b. Relocation of some interconnections several yards to meet the boundary conditions and provide easier access in inclement weather; or
c. Addition of (less than 10) interconnections to maintain service and reliability to the City utility and to Public Service customers outside of the City.

16. The separation plan includes four interconnection points where the City would wheel power to Public Service over the distribution system at 13.2kV as a distribution service provider under FERC:

1. US 36 going north from the service territory boundary
2. Along Mineral Road east of the Diagonal (119) feeding north to the town of Niwot
3. Linden Avenue west
4. Lee Hill Road west

17. There are five points in the separation plan where the City would interconnect with Public Service for mutual aid and support as a Distribution Service Provider under FERC:

1. 75th Street south of Valmont Road
2. Arapahoe Avenue east of 63rd Street
3. Baseline Road west of 75th Street
4. South Boulder Road east of South Cherryvale Road
5. South Broadway Road south of Gillaspie Drive

18. There are six interconnection points in the separation plan where the City would interface to the Public Service transmission network and be classified as a Transmission Service Provider under FERC as follows:

1. The 115kV bus at Valmont Switchyard – transmission interconnection
2. The 115kV bus at Eldorado Substation – transmission interconnection

3. The 115kV bus at Boulder Canyon Hydro Substation – transmission interconnection to connect to Public Service's Boulder Canyon Distribution Substation
4. The 230kV bus at Leggett Substation – transformer interconnection
5. The 230kV bus at Niwot Substation – transformer interconnection
6. The 230kV bus at Gunbarrel Substation – transformer interconnection

19. I believe that the separation concept and service boundary allows for orderly, reliable, operable, and maintainable interconnections with Public Service to maintain quality of service matching or exceeding the present system on both sides of the separation.

20. I believe that acquisition of the 115kV transmission loop allows the City to focus greater resources on this portion of the system than Public Service has done in the past and reduces Public Service's exposure for this aged equipment.

21. The EEC recommendation is based on extensive field work and research of publicly available documents and maps available to the City. However, Xcel did not make any of its records available to EEC. EEC may amend its recommendation, if facts unknown at this time are discovered and would require amendment to meet the criteria set forth herein.

This concludes my affidavit consisting of five pages, including this page.

Thomas A. Ghidossi

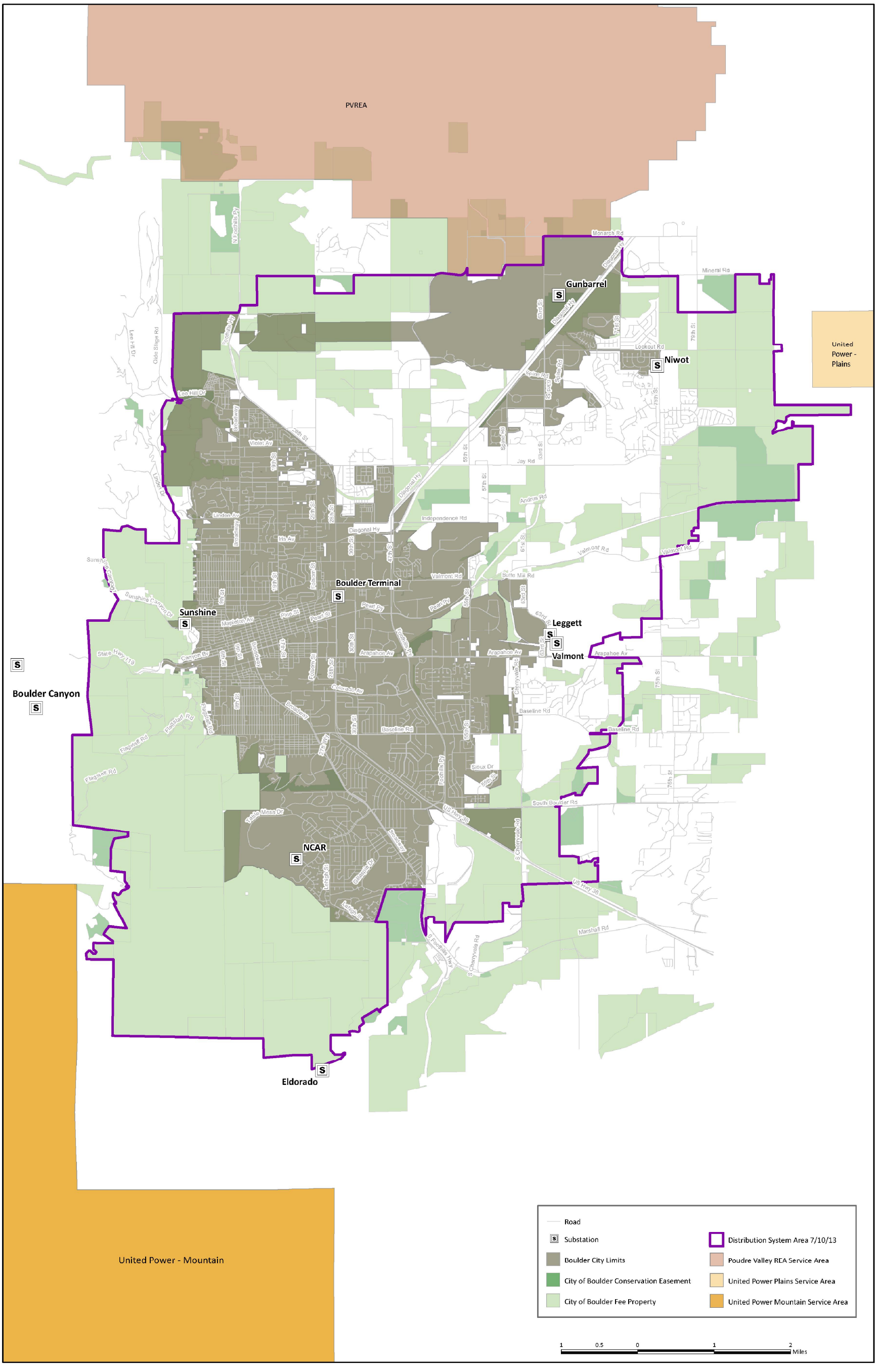
Subscribed and sworn to before me this 15TH day of August, 2013, by Thomas A. Ghidossi.

Witness my hand and official seal.

My commission expires: August 30, 2014

Dorothy M. DeSena
Notary Public

(seal)



Drawing No. DIST

Reference

Proj. No. BLDR-1201

Date Created 7-31-13

22x34 NTS

11x17 NTS

Scale:

Approved TAG

Checked TAG

Designed DMS

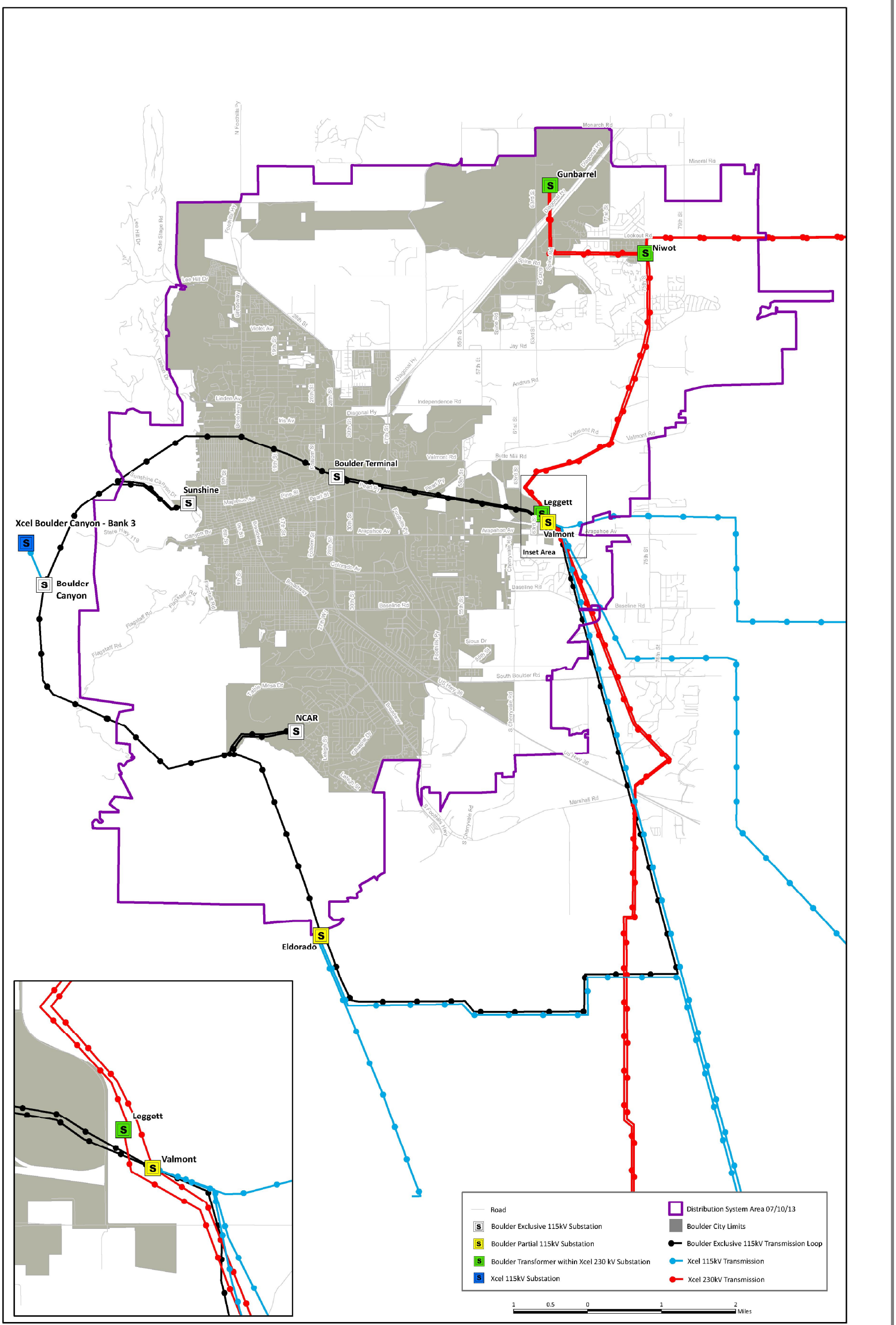
Drawn AG

Exponential Engineering Company
328 Airpark Drive
Fort Collins, Colorado 80524
Phone: (970) 207-0840
Fax: (970) 207-0857

CITY OF BOULDER

ACQUISITION AREA
DISTRIBUTION SYSTEM

No	Revisions	Date	By



Drawn	AG
Designed	DMS
Checked	TAG
Approved	TAG
Scale:	
11x17	NTS
22x34	NTS
Date Created	7-31-13
Proj. No.	BLDR-1201
Reference	
Drawing No.	TRANS

Exponential Engineering Company
326 Airpark Drive
Fort Collins, Colorado 80524
Phone: (970) 207-0948
Fax: (970) 207-0957

CITY OF BOULDER

ACQUISITION AREA

BOULDER 115KV TRANSMISSION LOOP

No	Revisions	Date	By

TRANSITION PLAN SCHEDULE OVERVIEW

August 12, 2014

TASK	2014		2015				2016				2017-2019		
	QTR3	QTR4	QTR1	QTR2	QTR3	QTR4	QTR1	QTR2	QTR3	QTR4			
DEFINITIONS													
DAY 1 - Boulder pays for system and has right to collect revenue													
DAY 2 - Full Separation/integration complete												→	2018 QTR3
PLANNING & ENGINEERING													
Systems													
GIS													
SCADA													
Review Xcel SCADA information													
Evaluate SCADA communication protocol											2017 QTR1	↔	2017 QTR3
Implement SCADA system											2017 QTR3	↔	2018 QTR3
Modeling													
Policies/Procedures/Standards													
National Electrical Safety Code (NESC), Occupational Safety and Health Administration (OSHA), Environmental Protection Agency (EPA), "good utility practice," and best practices													
Developer Standards													
Review Xcel Developer Standards													
Develop Boulder Developer Standards													
Interconnection Standards													
Review Xcel Interconnection Standards													
Develop Boulder Interconnection Standards													
Additional Facilities & Services													
Review Xcel Standards for Additional Facilities & Services													
Develop Boulder Standards for Additional Facilities & Services													
Impact Fees and Charges													
Review Xcel Impact Fees and Charges													
Develop Boulder Impact Fees and Charges													
Service Contracts for Large Customers													
Review Xcel Service Contracts for Large Customers													
Develop Boulder Service Contracts for Large Customers													
Substation, Transmission, Distribution Design Manuals													
Review Xcel Substation, Transmission, Distribution Design Manuals													
Develop Boulder Substation, Transmission, Distribution Design Manuals													
Substation, Transmission, Distribution Materials and Construction Standards													
Review Xcel Substation, Transmission, Distribution Materials and Construction Standards													
Develop Boulder Substation, Transmission, Distribution Materials and Construction Standards													
Substation, Transmission, Distribution System Planning Guidelines													
Review Xcel Substation, Transmission, Distribution System Planning Guidelines													
Develop Boulder Substation, Transmission, Distribution System Planning Guidelines													
Meter Maintenance & Testing Standards													
Review Xcel Meter Maintenance & Testing Standards													
Develop Boulder Meter Maintenance & Testing Standards													
Council approval of Engineering Policies (as needed)													
Planning & Engineering Studies													
System Map													
Review Xcel's System Map for Boulder system													
Issue RFP, Determine Contractor, Complete System Map and Inventory													
System Model													
Review Xcel's System Model for Boulder system													
Issue RFP, Determine Contractor, Update System Model consistent with mapping													
Protective Device Coordination													
Review Xcel's Device Protection schemes for Boulder system													
Issue RFP, Determine Contractor, Perform Coordination Study													
Arc Flash Analysis													
Review Xcel's Arc Flash study/incident energy levels for Boulder system													
Issue RFP, Determine Contractor, Perform Arc Flash Study													
Long Range Plan													

TRANSITION PLAN SCHEDULE OVERVIEW

August 12, 2014

TASK	2014		2015				2016				2017-2019		
	QTR3	QTR4	QTR1	QTR2	QTR3	QTR4	QTR1	QTR2	QTR3	QTR4			
Issue RFP, Determine Contractor, Complete Long Range Plan											2018 QTR3	↔	2019 QTR2
CONSTRUCTION, OPERATIONS & MAINTENANCE													
Evaluate construction & operations services to outsource (needs assessment)													
RFI for contract crews													
City/council approval as needed													
Issue RFPs and choose contractors for Construction Contract Crews													
Finalize contracts for Construction Contract Crews; contractor implementation period													
Meter Reading													
Expand water meter reading operations or sub-contract; implement													
Locate and lease 12-15 acres with building(s) for Construction Work Space											2017 QTR1	↔	2018 QTR3
Office Space/Printing/Mail Room/Meeting Room (Construction)													
Indoor Warehouse													
Outdoor Warehouse/ Laydown Yard													
Transformer & Equipment Shop													
Vehicle & Equipment Shelters/Storage													
Meter Shop													
Substation Shop													
Vehicle Service & Maintenance													
Dispatch Center													
SCADA Operations Center											2017 QTR1	↔	2018 QTR3
Emergency Operations Center													
Systems													
Outage Management System													
Evaluate Interim Outage Management Options in advance of Boulder implemented system and SCADA													
Implement Interim Outage Management Technology or coordinate with Xcel													
Meter Data Management													
Review Xcel meter reading technical requirements and communication protocols OR contract with Xcel for meter reading													
Implement Meter Data Collection/Management System OR develop meter data transfer and system testing plan with Xcel													
Inventory													
Warehouse Stock													
Obtain list of unique or critical equipment specific to Boulder territory													
Determine warehouse inventory levels and purchasing requirements to meet scheduled and emergency work													
Stock Warehouse													
Meters													
Determine required metering inventory levels and purchasing requirements to replace meters as part of ongoing maintenance													
Stock meter shop													
Needs assessment for future meter replacement program (input into LRP); compatibility, functionality, etc.)											2017 QTR1	↔	2017 QTR3
Equipment/Tools													
Contract Crew Equipment													
Service Crew Equipment													
Meter Tech Equipment													
Vehicles													
Rolling Stock													
Personal Protective Equipment													
Policies/Procedures/Standards (Construction & Operations)													
System Operations Procedures													
Review Xcel system operations standards													
Develop Boulder system operations procedures													
System Inspection, Maintenance, and Testing Procedures													
Review Xcel system inspection, maintenance, and testing standards and reports for 5 historical years													
Develop Boulder system inspection, maintenance, and testing procedures													
Vegetation Management Plan													
Review Xcel information on vegetation management requirements including clearing cycles and status of Boulder circuits.													
Evaluate existing City practices, determine expansion of City practices or develop separate plan, finalize Vegetation Management Plan													

TRANSITION PLAN SCHEDULE OVERVIEW

August 12, 2014

TASK	2014		2015				2016				2017-2019		
	QTR3	QTR4	QTR1	QTR2	QTR3	QTR4	QTR1	QTR2	QTR3	QTR4			
Outage Response & Emergency Operating Plan													
Obtain SAIDI and SAIFI for Boulder circuits for the most recent 5 historical years													
Evaluate synergies with other City operations and finalize Outage Response & Emergency Operating Plan													
Council Approval of Construction & Operations Policies (as needed)													
POWER SUPPLY													
Policies/Procedures/Standards													
Risk Management Protocols													
REC & Carbon tracking protocols (with sustainability office)													
Resource Planning													
Integrated Resource Planning													
Determine IRP process including: participants, required data, frequency, approval process, need for consultants, etc											**2017 QTR1**	↔	**2017 QTR3**
Potential IRP Working Groups											**2017 QTR1**	↔	**2017 QTR3**
Colorado Renewable Energy Resource (RES) Compliance Plan													
Develop and implement RES compliance plan based on state requirements											**2018 QTR4**	↔	**2019 QTR2**
Load Forecast													
Review 10 years of historical monthly retail load data, by customer class, from Xcel; adjust to delivery points													
Review 10 years of historical DSM & EE energy/capacity displacement from Xcel programs													
Review 10 years of historical generation from third-party owned generation (DG)													
Develop estimate of future generation/displacement from existing and anticipated city owned or third-party DSM/EE/DG for 10 year planning cycle													
Develop current and 10-year summer/winter energy and demand load profile by delivery point													
Evaluate Rocky Mountain Reserve Group participation													
Power Supply													
Power Supply Preliminary Evaluation (RFP Pre-Work)													
Form Power Supply Working Group													
Issue RFP for Power Supply and Transmission Service consultant; choose consultant													
Evaluate Boulder Distributed Generation Potential													
Perform local solar potential capacity analysis													
Create web based solar mapping platform utilizing Lidar or equivalent tool													
Perform Local generation potential capacity analysis (other generation resources, e.g. CHP, biomass, geothermal, etc)													
Establish Short and Long Term Power Supply RFP objectives that meet technical requirements for delivery, cost, environmental priorities and Utility of Future vision													
Contract for Power Supply													
Prepare and Issue RFP for Power Supply													
Receive responses and evaluate bids for Power Supply													
Negotiate Contract/Commit to Power Supply; contingent on trial outcome													
Council approval of Power Supply contract													
Transmission Agreements													
Determine appropriate transmission service													
Provide OATT Application													
Execute OATT agreements for transmission service													
Portfolio Dispatch and Optimization													
Issue RFI for Portfolio Management (Dispatch & Optimization) if required													
Issue RFP for Portfolio Dispatch and contract resources if required													
Implement system requirements for power supply dispatch and coordination with Transmission Owner if required													
CUSTOMER SERVICE													
Issue RFP for call center representative and outsource													
Billing/Collections Staff													
Expand current City operations for electric billing/collections													

TRANSITION PLAN SCHEDULE OVERVIEW

August 12, 2014

TASK	2014		2015				2016				2017-2019		
	QTR3	QTR4	QTR1	QTR2	QTR3	QTR4	QTR1	QTR2	QTR3	QTR4			
Output Services Inc. (OSI) - printing and mailing bills and notices													
e-Complish/Chase Paymentech - process phone and online credit payments													
JP Morgan Chase - process check payments													
Vanco Services - electronic payments													
Systems													
Customer Information (CIS/Billing)													
Assign Customer Service Manager for project manager of CIS system													
Internal evaluation for CIS system requirements													
Contract with Advanced Utility to configure software for electric billing													
CIS system - Software programming implementation													
Import Customer Account Information and CIS "live" testing with Call Center													
Review Customer Account Information													
Policies/Procedures/Standards													
Customer Service Policies													
Request Xcel's existing customer account policies and charges, deposits, credit checks, disconnection/reconnection, late payments, bill disputes, etc.													
Develop Customer Service policies													
Council approval of Customer Service Policies													
Key Accounts													
Establish criteria for Key Accounts													
Identify and Tag Key Accounts													
Develop Key Account Service Plan													
Customer Account Transition Communication													
Form Communication Working Group													
Develop/revise customer interface platforms and contact information (phone, email, website)													
Launch Customer Transition Communication													
ENERGY SERVICES													
Existing (Xcel) Customer Programs- Billing Transition													
Obtain list of current and anticipated City customers participating in existing Xcel sponsored programs.													
Determine legacy Xcel customers that require program support and ongoing bill credits/compensation (if necessary).													
Incorporate billing methodology to continue credits/compensation to legacy Xcel program participants if necessary.													
Energy Services Development - Day 1													
Form Energy Services working group (energy efficiency and solar)													
Determine Energy Services objectives and preliminary design													
Develop Energy Services budget for 10-year planning cycle													
Identify customer energy services needs													
Perform gap analysis from existing services													
Develop plan to institute energy services as of Day 1 and beyond													
Develop Energy Services													
Engage legal, marketing, customer service, operations, metering, billing, etc.													
Develop Rate Structures or Riders for input into rate development													
Establish Measurement and Verification Guidelines and Methodology													
Public process/Council approval													
Finalize Energy Services													
Market and Launch Day 1 Energy Services													
Branding, Marketing & Communications Plan													
Evaluate need for branding and logo; develop preliminary budget													
Branding design; preliminary marketing/communication plan													
Public Process/Council approval of branding and logo													
Finalize branding and communication plan and budget; identify audience, format, content, and timing													
Launch branding and communication plan													
LEGAL/REGULATORY													

TRANSITION PLAN SCHEDULE OVERVIEW

August 12, 2014

TASK	2014		2015				2016				2017-2019		
	QTR3	QTR4	QTR1	QTR2	QTR3	QTR4	QTR1	QTR2	QTR3	QTR4			
CONDEMNATION PROCESS													
PUC PROCESS													
FERC/NERC/WECC Compliance													
Perform NERC system compliance assessment; confirm proper registration, register with WECC													
Identify and document filing requirements													
Develop Boulder compliance plan													
FINANCE & ACCOUNTING													
Systems													
Resource (Capital) Planning and Financial Management													
Modify/expand Tyler Munis Financial system for electric operation													
Accounting													
Modify/expand Tyler Munis Accounting system for electric operation													
FERC Accounting													
GASB Accounting													
Purchasing													
Asset Management													
Insurance													
Personnel Related Insurance - evaluate current self-insurance coverage and adjust as needed													
Equipment Related Insurance - evaluate current self-insurance coverage and adjust as needed													
Budget													
10-20 year Budget (preliminary/pro forma)													
10-20 year Budget (final for bond issuance)													
Refresh Budget (using final retail rates) for Charter Metrics													
Rates													
Retail Rate Working Group													
Issue RFP and choose contractor for Rate Analysis													
Develop Boulder Rates													
Identify Rate Components and preliminary rate structure													
Cost of Service Study													
Develop Rates (final for bond issuance)													
Public process/Council approval of rates													
Finalize Rates													
FINANCING													
BRIDGE LOAN													
Solicitation													
Council Process													
Bridge Loan Prep													
Bridge Loan Duration													
BONDS													
Bond Prep													
Issue RFP for Bond Underwriter													
Development of official statement													
Rating agency presentations													
Investor presentations/Drafting of disclosure documents													
Issue Bonds													
SUPPORT SERVICES													
Fleet Service Management System													
Administrative Policies													
Human Resources													
HR Staffing Assessment													
Review/revise existing Personnel Policies following HR Staffing Assessment													
IT & Telephone													
Facilities Management													
Fleet Management													
Accident Investigation Procedures													
Incorporate electric operations requirements into current procedures													
Establish/Adopt Safety Policies & Training Programs for electric operations													
INTER-DEPARTMENT ASSESSMENTS											2017 QTR1	↔	2018 QTR3
Governance													
Governance Working Group													
Create Utility Advisory Board													
INTERCONNECTION											2017 QTR1	↔	2018 QTR3