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AGENDA ITEM SUMMARY
FORT COLLINS CITY COUNCIL

21

SUBJECT

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First Reading of Ordinance No. 043, 2010, Appropriating Unanticipated Revenue and Electric Revenue Bond Proceeds for the Smart Grid Investment Grant Project in the Light and Power Fund and for Bond Issuance Costs.

EXECUTIVE SUMMARY

Fort Collins Utilities (FCU) has been selected by the Department of Energy (DOE) for a Smart Grid Investment Grant (SGIG) award. The proposal and award included participation from the Cities of Loveland, Longmont and Fountain for a total award of \$36,202,527. The collaboration with the other cities was done to improve the chances of being selected by DOE – FCU was advised DOE wanted collaborative projects that included larger geographic areas and integrated funding.

FCU projects proposed to the DOE totaled \$31,483,001. The DOE has offered to fund 50% of the proposed projects (\$15,741,500). The largest of the proposed projects was for the installation of an Advanced Metering Infrastructure (AMI) system. In addition to the AMI project, components of the Utilities Information Technology (IT) Long Range Strategic Plan related to the implementation of AMI and smart grid technology were included in the proposal. Expansion of the FCU fiber optic system and grid automation equipment was also included in the proposed projects.

The Ordinance appropriates \$18,101,264 in unanticipated grant revenues and \$15,741,501 in proceeds from the sale of Electric Revenue Bonds proposed to be issued in Ordinance No. 001 of the Board of the Electric Utility Enterprise, for the purpose of funding the Smart Grid project. It appropriates \$258,499 for bond issuance costs. These appropriations are all in the Light and Power Fund.

If this Ordinance is approved on First Reading, staff will bring a resolution to the Council on Second Reading, authorizing the City Manager to execute the contract with the DOE related to the SGIG and authorizing the City Manager to enter into partner agreements with each of the project partners: the Cities of Loveland, Longmont and Fountain, Colorado.

BACKGROUND / DISCUSSION

The DOE grant provides Fort Collins Utilities with an opportunity to install an AMI system, accelerate the implementation of its long range IT needs and to begin the modernization of its electrical distribution system.

Construction, design and operation of the electrical system are fundamentally the same as they were 50 years ago. Today though, the electric industry, the country and the world are faced with significant issues that are the direct result of the use and production of energy. Measures to address these issues are creating momentum for change. Specifically, in relation to the electric utility industry, the issues of greenhouse gases produced through the production of electricity, the changing expectations of customers and the need to address and insure both the physical and cyber security of the electrical infrastructure must be addressed. Each of these elements - customer expectations, use of energy, security and the ability to reduce greenhouse gases - are elements of a smart grid as defined by DOE.

The Department of Energy (DOE) has defined seven principal characteristics as focal points for the modernization of the existing electrical grid. These key elements are becoming recognized as the definition of a smart grid. The characteristics are:

1. Anticipates and responds to system disturbances
2. Enables active consumer participation
3. Operates resiliently against attack and natural disaster
4. Provides power quality for the digital economy
5. Accommodates all generation and storage options
6. Enables new products, services and markets
7. Optimizes asset utilization and operates efficiently



The paragraphs below discuss each of these smart grid elements as defined by DOE. Descriptions of "Today's Grid" and the ideal "Modern Grid" are defined by the National Energy Technology Laboratory, a section of the DOE. Light & Power (L&P) staff is providing two additional descriptions: a third descriptive element that presents the current status of "Today's Fort Collins Grid" and a descriptive element that elaborates on "What the SGIG will do for FCU". The intent is to describe how the Smart Grid Investment Grant will help Fort Collins move towards each of the defined elements of a smart grid.

1. Anticipates and responds to system disturbances

Today's Grid: Responds to prevent further damage. Focus is on protection of assets following system faults.

Modern Grid: It will self heal by performing continuous self-assessments to detect and analyze issues, take corrective action to mitigate them and, if needed, rapidly restore grid components or network sections. It will also handle problems too large or too fast-moving for human intervention.

Today's Fort Collins Grid: FCU's electrical system has an outstanding record of reliability. The almost all underground system is the envy of other utilities. However, as infrastructure ages, it will become more important to be able to monitor the health of the system components and predict failures before they happen. Investment in technology that predicts future failure and reconfigures the grid will need to be made in the future.

What the SGIG will do for FCU: The transition to a self-healing grid will take years. Technology is currently under development that will provide the necessary physical control along with the analysis software necessary to solve how the system should be reconfigured safely and quickly during an event. The SGIG will allow FCU to install approximately 10 remotely controlled switches on the distribution system. The switches will have the capability to be controlled from the Light and Power Systems Control and Operations Center (SCO). Control will be manual by system operators. This will give staff the opportunity to gain experience in the use of remote switching and eventually automated controls that reconfigure the system automatically. Prior to the award of the grant, L&P placed \$125,000 per year in both the 2010 and 2011 budgets for remote switching. The grant will add an additional \$125,000 of funding to the project (DOE: \$125,000, FCU: \$250,000). Additionally, the grant application included \$31,800 (DOE: \$15,900, FCU: \$15,900) for integration of outage communications from the AMI meters into the existing Outage Management System (OMS). The project proposal also included funding for additional fault detection equipment on the system to help identify event locations. (DOE: \$50,000, FCU: \$50,000)

2. Enables active consumer participation

Today's Grid: Consumers are uninformed and non-participative with the power system.

Modern Grid: The smart grid will give consumers information, control, and options that enable them to engage in new "electricity markets." Grid operators will treat willing consumers as resources in the day-to-day operation of the grid. Well-informed consumers will modify consumption based on the balancing of their demands and resources with the electric system's capability to meet those demands.

Today's Fort Collins Grid: FCU has a robust customer education program. Additionally, the implementation of the Opower program provides significant information to customers that allows them to better manage their electrical usage if they choose to do so. FCU also provides several demand response programs for customers to choose to use. Automated hot water heater control and air conditioning control are offered. A peak demand signal is also provided to customers to help them choose to control costs.

What the SGIG will do for FCU: In addition to the AMI system, which will provide the foundational technology for providing information to customers, the SGIG proposal includes two elements that will provide significant support for the provision of additional information to customers and more demand response program choices for customers.

The grant application included the implementation of a Meter Data Management System (MDMS). A MDMS is a software package that is designed to help manage and analyze the data collected by smart meters. During the original cost benefit analysis performed on the AMI system the size of the FCU system and the total cost of a MDMS made it impractical. However, the funding through the SGIG along with the implementation of smaller lower cost MDMS systems makes installation more attractive. The total amount included in the application for MDMS was \$3,000,000 (DOE: \$1,500,000, FCU: \$1,500,000).

The SGIG also includes a budgeted amount of \$5,314,830 (DOE: \$2,657,415, FCU: \$2,657,415) for an enhanced demand response program. The long range IT plan identified the need to upgrade or replace the demand response software currently used by FCU to send the signal to participating customers' water heaters and air conditioners. In the near future, FCU's existing software will no longer be supported and the devices used to signal and cycle the water heater and air conditioning units for customers will become obsolete. The project includes the upgrade of the software along with an additional 21,000 control devices. However, as staff has worked to refine the projects associated with the SGIG it has become evident that recruiting new participants in programs with the installation of an additional 21,000 devices over a three year period will be a challenge. The overall intent of the enhanced demand response programs is to meet the demand response goal of a 5% reduction in peak demand by 2015 and 10% by 2020 as detailed in the 2009 Energy Policy. Staff is currently reviewing other technologies and customer options to help achieve the demand reduction goal. Technologies under consideration are thermal storage and system voltage reduction utilizing the AMI technology for feedback on system performance. Staff estimates that through peak reduction gained with demand response programs, peak demand charges from Platte River to FCU will be reduced by approximately \$1,260,000 per year.

Recently, several citizens expressed concern in reference to the data Utilities will be gathering with the AMI system and Utilities control of devices through customers participating in the enhanced demand response programs. FCU recognizes the importance of customer confidentiality and the level of trust customers expect when providing information to secure their utility service. Customer records are protected by the FCU Customer Records Policy and FCU takes measures to ensure its compliance with federal and state regulatory standards. The Customer Records Policy is attached. The information FCU will be gathering through the AMI system is similar to the data currently collected for billing purposes. The primary difference is the frequency of the collection. Rather than monthly, the utility will be capable of reading meters every few minutes. The intent is to have the data available for the customer to help them better monitor their costs and usage and to enable customers to make better decisions about their usage. The existing demand response system has been in place since 1982 for electric water heater control and since 2007 for air conditioner control and has only been installed for customers who have volunteered for the program. Load control through the enhanced demand response programs in the SGIG will be voluntary programs just as they are today. It is expected that air conditioner control will be accomplished through an in-home thermostat (IHT) that will allow the customer to cancel a load-control request, should they wish to do so.

AMI meters will also lay the path to allow consideration of dynamic rate structures such as Time-of-Use (TOU), Critical Peak Pricing (CPP) and other rates. A cost of service study is currently underway in Light and Power. Once the cost of service study is completed, the utility will begin rate conversations with Council, the Electric Board and the community. Any changes in rate design will include a transition period appropriate for the change being considered.

3. Operates resiliently against attack and natural disaster

Today's Grid: Vulnerable to malicious acts of terror or natural disasters.

Modern Grid: The Smart Grid will incorporate a system-wide solution that reduces physical and cyber vulnerabilities and enables a rapid recovery from disruptions. Its resilience will create an image that intimidates would-be attackers. It will also be less vulnerable to natural disasters.

Today's Fort Collins Grid: As noted, the reliability of the FCU electrical system is well above national standards. The high reliability is due to the responsiveness of electrical crews when a problem occurs, the design standards used, and the Council direction that all lines should be underground.

The other arena where security is of significant concern is cyber security. The control systems and communication infrastructure that is used throughout the system must be secure from hackers. FCU is not required to comply with North American Electric Reliability Corporation (NERC) Critical Infrastructure Protection (CIP) standards. However, FCU's goal is to comply with those design standards. FCU currently does not completely meet all of the NERC-CIP standards and had planned and budgeted for several projects in the 2010-11 budget to help move toward compliance.

What the SGIG will do for FCU: The SGIG provides \$208,820 towards the implementation of cyber security enhancements. Security enhancements were budgeted at \$385,000 in the 2010-11 budgets. The SGIG will provide funding at 35% (\$208, 820) of the total project cost. The intent is to bring the Utilities smart grid infrastructure into compliance with NERC-CIP design standards. Although FCU is not required to comply, it is prudent to adopt the standards as they apply to a distribution system. FCU is not required to, and will not, report to the NERC, which is the most onerous component of the CIP standards.

4. Provides power quality for the digital economy

Today's Grid: Focused on outages rather than power quality problems. Slow response in resolving power quality issues.

Modern Grid: It will monitor, diagnose, and respond to power quality deficiencies resulting in a dramatic reduction in the business losses currently experienced by consumers due to insufficient power quality.

Today's Fort Collins Grid: FCU currently receives relatively few power quality complaints from customers. Typically, power quality problems are associated with either internal issues within a facility, or interference from adjacent properties.

What the SGIG will do for FCU: As Fort Collins moves forward and larger numbers of distributed generation units are connected to the FCU system, it will become more critical to monitor power quality. The SGIG proposal included a project to install waveform recording equipment to monitor high speed events on the system and to install meters capable of recording high speed electrical events at our largest customer sites. The proposed project is \$400,000 (DOE: \$200,000, FCU: \$200,000)

5. Accommodates all generation and storage options

Today's Grid: Relatively small number of large generating plants. Numerous obstacles exist for interconnecting Distributed Energy Resources (DER)

Modern Grid: It will seamlessly integrate all types and sizes of electrical generation and storage systems using simplified interconnection processes and universal interoperability standards to support a "plug-and-play" level of convenience. Large central power plants including environmentally friendly sources, such as wind and solar farms and advanced nuclear plants, will continue to play a major role even as large numbers of smaller distributed resources, including Plug-in Electric Vehicles, are deployed.

Today's Fort Collins Grid: As with most electrical distribution systems the FCU electrical distribution system was designed to be a one-way power delivery system. Small generation resources such as solar panels and small wind turbines can feed electricity back into the grid. At current levels these distributed generation resources have not created any issues. However, as we look to the future and envision solar panels becoming cost competitive or lower than the cost of energy supplied by the local utilities, it becomes evident that the electrical distribution infrastructure could serve a role for which it was never designed. The grid could become a two-way channel for electrical delivery and sales. Additionally, the use of the energy stored in plug-in-hybrid-electric-vehicles to stabilize the intermittent generation from some resources will also tax the existing system.

What the SGIG will do for FCU: Installation of the AMI system will provide feedback to the Utility on current system conditions. This Information can then be used to analyze the system and in some cases help manage how and when distributed energy resources feed into the system. With customer consent, plug-in-hybrid-electric-vehicles could be used as stored energy devices. When the energy stored in a vehicle is needed to supplement the grid or level the production from intermittent resources, the utility could contract with customers to purchase the power from their vehicles.

6. Enables new products and markets

Today's Grid: Limited wholesale markets still working to find the best operating models. Not well integrated with each other. Transmission congestion separates buyers and sellers.

Modern Grid: The Smart Grid will link buyers and sellers together – from the consumer to the Regional Transmission Organization (RTO). It will support the creation of new electricity markets from the home energy management system at the consumer's premise to technologies that allow consumers and third parties to bid their energy resources into the electricity market. The Smart Grid will be transactive and will support consistent market operation across regions.

Today's Fort Collins Grid: Utilities within the state of Colorado do not currently trade through an RTO or Independent System Operator (ISO) model for wholesale electricity sales today. The DOE's intent with this smart grid

component is to insure that information from either an RTO or ISO (if developed) is flowing to the retail customer and that they then have a choice on their cost of wholesale electricity.

What the SGIG will do for FCU: The installation of a communication infrastructure including the optional home area networks proposed in the FCU AMI system will support the development of new product and service options that can be delivered via the system to consumers.

7. Optimizes assets and operates efficiently

Today's Grid: Minimal integration of limited operational data with Asset Management processes and technologies. Siloed business processes. Time based maintenance.

Modern Grid: Operationally, the Smart Grid will improve load factors, lower system losses, and dramatically improve outage management performance. The availability of additional grid intelligence will give planners and engineers the knowledge to build what is needed when it is needed, extend the life of assets, repair equipment before it fails unexpectedly, and more effectively manage the work force. Operational, maintenance and capital costs will be reduced thereby keeping downward pressure on prices.

Today's Fort Collins Grid: FCU is currently in the process of implementing an Asset Management program. The intent of the program is to help inventory utility assets, assess infrastructure condition and plan for maintenance and replacement through risk-based modeling.

What the SGIG will do for FCU: The AMI system will be a communication system that provides information on the operation and health of components on the system. The enhanced information will allow FCU to manage and schedule maintenance of the system more efficiently and respond to outages more quickly. Workforce efficiency will also improve if outages can be avoided and problems addressed through scheduled maintenance.

PROJECT EXECUTION PLAN

During the interim period between the announcement of the intent to award the grant and now, a team of City staff has been working to refine the tasks proposed in the original grant application. The table below provides a general summary of the tasks associated with the project.

Staff is currently developing Request-for-Proposal (RFP) documents for a Project Manager / Integrator to assist with the project. The intent is to hire a consulting agency with experience tying the different components of the project together in order to insure a seamless integration between our existing systems and the new.

Staff is also in the process of preparing RFP's for the AMI system, the MDMS system and for a Cyber security evaluation.

FINANCIAL IMPACT

It is estimated the following annual operational savings can be achieved by Light and Power through the installation of an AMI system:

• Labor and operational expenses for meter reading	\$495,755
• Meter accuracy and registration	\$347,944
• Theft from manipulation of meters	\$268,225
• Load control (avoided demand during PRPA peaks)	\$185,760
• Labor dedicated to move-in / move-out and meter changes	\$ 28,410
• Purchase of Xcel data for rate design	<u>\$ 35,574</u>
TOTAL	\$1,361,668

In addition to the annual savings above FCU also sees a significant one-time savings related to improved cash flow achieved by reducing the lag time between meter reads and billing. The one-time benefit is approximately \$1,600,000.

As noted above, staff did anticipate some additional load control benefit in the original AMI project benefits. However, in the SGIG grant proposal a considerable expansion of the program is anticipated. The operational savings from the enhanced demand response projects will reduce utility and customer costs by approximately an additional \$1,074,240 annually.

Calculating the payback period using the values above and a 3.5% interest rate the entire \$31.5 million investment has a pay-back of just over 13 years. The pay-back is just over 7 years for the \$15.7 M cost to the City.

It is more difficult to apply a cost recovery model to the remaining smart grid elements proposed in the SGIG. Many of the benefits gained will enhance operational reliability and performance and improve customer interactions with the utility.

As detailed above, the total project cost submitted to DOE was \$36,202,527. The project cost of the City of Fort Collins is \$31,483,001; Fountain's project cost is \$4,247,000; Loveland's project cost is \$300,000; and Longmont's project cost is \$172,526. The DOE will provide 50% funding for each of the projects. In order to process the grant funds, the DOE matching funds provided to each of the other cities along with the total Fort Collins project cost must be appropriated by City Council. Staff and the Electric Board are recommending the Council approve an appropriation for the project totaling \$33,842,764. This will be offset with SGIG grant revenue of \$18,101,264. A Fort Collins Utilities match is proposed to be funded through the issuance and sale of Electric Revenue Bonds, which will be considered on First Reading by the Electric Enterprise Board on April 6, 2010. In addition to the appropriation for the SGIG project, the proposed appropriation ordinance appropriates \$258,500 in the Light and Power Fund for bond issuance costs.

A table summarizing the appropriations follows:

	SGIG Grant Project	50% DOE Grant Unanticipated Revenue for Fort Collins)	Estimated Bond Proceeds	Appropriation Required
Fort Collins	\$ 31,483,001	\$ 15,741,501	\$ 15,741,501	\$ 31,483,002
Fountain*	\$ 4,247,000	\$ 2,123,500		\$ 2,123,500
Loveland*	\$ 300,000	\$ 150,000		\$ 150,000
Longmont*	\$ 172,526	\$ 86,263		\$ 86,263
Total	\$ 36,202,527	\$ 18,101,264	\$ 15,741,501	\$ 33,842,765
Estimated Bond Issuance Costs			\$ 258,499	\$ 258,499
Total Estimated Bond Proceeds			<u>\$ 16,000,000</u>	
Total Appropriation				<u>\$ 34,101,264</u>

*The expense and revenue will offset each other for the Loveland, Longmont and Fountain's portions of the grant project. Since Fort Collins will administer the grant for the three other cities, the funds will flow into and out of the Light and Power Fund.

SUSTAINABILITY: ECONOMIC, ENVIRONMENTAL AND SOCIAL IMPACTS

The SGIG supports a future where customers can choose the option of being engaged in the management of their energy usage and cost. Distributed generation (such as solar panels) is prevalent throughout the electrical system and customers can choose to contribute to the reduction of the use of fossil fuels in electrical generation. In addition, a future where Fort Collins' electric grid better supports customers having plug-in hybrid electric vehicles or electric vehicles can also help further reduce greenhouse gas emissions. More efficient operation and maintenance of the electric grid, as well as the ability for Utilities to reduce or eliminate the fleet of meter reader vehicles through automated meter reading will reduce emissions.

In order to deliver the services and provide the support that our customers deserve and will require in the future, it is critical that FCU begin modernizing the electrical system. Modernization begins with the implementation of AMI. Prior to the SGIG, AMI provided a positive business case because of its inherent operational savings in the meter reading operation. The SGIG funding enhances the scope and scale of the projects Utilities can accomplish as we begin to implement smart grid technology.

One of the primary social impacts, as described in some of the items above, will be the opportunity for Utilities to improve on its relationship with customers. Many of the primary interactions that customers currently have with Utilities' staff will be enhanced with information available from, and operating flexibility provided by, the SGIG. A customer calling in to request electrical service at an existing location can be provided electrical service immediately (using computerized control of the meter) by the customer service representative receiving the call without the need to dispatch a technician, saving the customer time and the Utilities labor and transportation expenses.

Since the electrical grid will be able to identify problems as they occur and then dispatch a repair crew if necessary, a customer calling in to notify Utilities about an outage can be given the status of the problem and an approximate time for repair. If a customer calls to report an outage in an area that has not been identified by the system as having a problem, the customer service representative can "test" the customer's meter remotely in a matter of seconds to determine if the problem is on the Utilities' system or is a problem on the customer's side of the meter. These enhanced abilities to address customers' issues in a more timely fashion should enhance customers' trust in their Utilities.

Currently, Utilities uses a staff of meter readers and a group of vehicles to collect information necessary to bill customers for utility service. A significant portion of the savings in this project justification is the reduction in force, and related support expenses, related to automating the meter readings. The positions affected by this project have been identified and the individuals in these positions notified that their positions will be affected by the implementation. Efforts are underway to work with these individuals to find alternative positions in Utilities and/or to retrain these individuals for other careers. Any vacancies that occur in the affected positions prior to the completion of the project will only be filled on a contract basis as necessary.

This project will not add a significant number of new positions to Utilities staff or directly provide additional employment in the community. However, as more customers learn about their options for energy savings, it is anticipated that the demand for additional weatherization contractors and energy efficiency consultants may increase.

STAFF RECOMMENDATION

Staff recommends adoption of the Ordinances on First Reading.

BOARD / COMMISSION RECOMMENDATION

At its February 3, 2010 meeting, the Electric Board voted unanimously to recommend that City Council approve the appropriation of funds.

PUBLIC OUTREACH

The proposed project includes extensive customer education and engagement. The intent of the project is to make information and data available to customers to allow them to make informed decisions related to their energy usage. Critical to the success of the program is making the customers aware of the information and tools that will be available. The excerpts below were the elements proposed in the original grant application

"Information Availability to Customers

The Utilities' Smart Grid Web sites will provide the means for customers to track energy usage by logging onto the "AMI Meter" Web page. This information will be linked to tips regarding how to conserve and information about efficiency programs, rebates and incentives. Customers who participate in the load management program will be provided with useful information through their in-home displays, in-home thermostats, water heater control switches, and other preferred communications media such as text messages, online accounts or e-mails.

A Fort Collins Smart Grid project Web site will provide for information sharing between all utilities in Colorado. Online information regarding Fort Collins, Loveland, Longmont and Fountain's projects will enable others to see the benefits of the Smart Grid.

Customer Outreach and Operations

Customer outreach and education are two of the utilities' fundamental operational principals. Fort Collins' outreach program will inform customers of progress toward sustainability goals and offer transparency for utility decisions. Fort Collins will provide information and education on Smart Grid technologies as well as their impacts on customers and the distribution system. The utilities' organizational messaging will emphasize the importance of the technology to support great service and the customer's role in demand side management, load control and energy conservation.

The utilities have robust marketing, communications and education programs in place to support the success of Smart Grid. All communications, including call center functions are managed in-house, providing a continuum of customer-facing services. Customer communications can be coordinated through a variety of tools including:

- Bill inserts
- Web site (including City Web sites)
- Weekly electronic newsletters and city newsletters
- News releases to local print media
- Coordinated residential, commercial and key accounts support
- Targeted communications for specific areas of program implementation such as meter installation, deployment of in-home displays, efficiency and renewable energy, etc.
- Well-established education programs (Q&A sessions/seminars) including fact sheets distributed at city facilities

Many business process changes will be required prior to the deployment of the Smart Grid. The following are a few of the key processes the Utilities will review: new cyber security standards and procedures, service switch procedures, service restoration, reliability reporting, power system operational status reporting and posting, customer outage notification methods, real time operation of the T&D system, asset management strategies with the availability of more accurate and timely data on the status of the system will all need to be redesigned. The Utilities will establish a change management plan to drive results in each deployment stage."

ATTACHMENTS

1. Customer Records Policy
2. Electric Board minutes, February 3, 2010
3. Powerpoint presentation

*Customer Records Policy – December 15, 2009***I. Purpose**

Fort Collins Utilities is subject to the Colorado Open Records Act and Fort Collins Municipal Code §26-26, which governs the accessibility of public records.

The purpose of this policy is to provide guidelines for Utilities' staff when deciding: (1) when public inspection of customer records is allowed; (2) who is entitled to have access to these records; and (3) how and when to respond to a records inspection request.

II. Restricted Records

Except as provided in Sections III. and IV. below, the Utilities shall not permit any person to inspect any of the following records of its customers:

1. customer's name if in disclosing such name the customer's address, telephone number, e-mail address, personal information or personal habits can be linked to the customer;
2. customer's address;
3. customer's telephone number(s);
4. customer's e-mail address(es);
5. customer's personal financial information, such as billing amounts, credit information, and usage statistics; and

III. Unrestricted Records

The following records of the Utilities' customers shall be subject to inspection by any person:

1. customer's name, provided giving such name does not link the customer to the customer's address, telephone number, personal financial information or personal habits; and
2. any of the customer's records when provided for inspection in an aggregate or statistical form that prevents the customer from being linked to the customer's address, telephone number, e-mail address, personal financial information or personal habits.

IV. Persons Permitted Access

Only the following persons shall be permitted to inspect a customer's restricted records, which are described in Section II. above:

1. the customer;
2. any person designated by the customer in the Utilities' Release of Records form as having the right to inspect the customer's records;
3. if the customer is a tenant, the customer's landlord, any property manager hired by the landlord and any other person acting on behalf of the landlord (if designated by the landlord in the Utilities' Release of Records form) may have access to the customer's restricted records; however, access is limited only to those records related to the rented premises that pertain to the billed utility charges (paid or unpaid) or which pertain to the level of electric usage (if such information is needed for electrical repairs or improvements to such premises) and does not include any of the tenant's personal credit, financial information or social security number;
4. a customer's parent if the customer is under the age of eighteen (18) or under any kind of legal disability, such as mental incompetence;
5. any legal representative of the customer duly appointed by a court, such as a legal guardian or conservator;
6. if the customer is deceased, the personal representative of the customer's estate; and
7. any of the following peace officers acting within the scope of their authority and in furtherance of their duties as peace officers and who provide satisfactory evidence that the requested inspection is reasonably related to their authority and duties as peace officers:
 - a. level I peace officers, as defined by State law (see, C.R.S. Section 18-1-901[3][I][I]), which include the following peace officers who have "basic peace office certification" from the Colorado Peace Officers Standards and Training Board: (1) police officers of any Colorado town, city, or city and county; (2) undersheriffs and deputy sheriffs of any Colorado county or city and county; (3) Colorado State Patrol officers; (4) marshals of any Colorado town; and (5) security officers of Colorado institutions of higher education, such as Colorado State University;
 - b. level Ia peace officers, as defined by State law (see, C.R.S. Section 18-1-901[3][I][II][A]), which include the following peace officers; (1) the sheriff of any Colorado county or city and county; (2) the district attorney, assistant district attorney, deputy district attorney and special deputy district attorney of any Colorado judicial district; (3) the Colorado Attorney General and Deputy Attorney General, and any

deputy or assistant attorney general assigned a law enforcement function in the Attorney General's Office; (4) an authorized investigator of any county attorney of a Colorado judicial district, of the Colorado Attorney General, or of the executive director of the Colorado Department of Public Safety; (5) agents of the Colorado Bureau of Investigation; (6) parole officers and community program agents of the Colorado Department of Corrections' Division of Adult Services (7) the inspector general of the Colorado Department of Corrections and any authorized investigator of the inspection general; and (8) officers of the Southern Ute Indian and Ute Mountain Indian police forces who have "basic peace officer certification: from the Colorado Peace Officers Standards and Training Board; and

- c. level II peace officers, and defined by State law (see, C.R.S. Section 18-1-901[3][I][III], which include the following peace officers: (1) inspectors of the Colorado Department of Revenue's Liquor Enforcement Division; (2) investigators of the Colorado Department of Revenue's State Lottery Division (3) investigators of the Colorado Department of Revenue's Division of Gaming; (4) the director of the Colorado Department of Revenue's Division of Gaming; (5) the executive director of the Colorado Department of Revenue when conducting an investigation related to gaming; (6) any fire arson investigator appointed by the chief of any fire department if approved by the sheriff or chief of police of the jurisdiction in which the fire investigator performs duties; (7) any officer, guard or supervisory employee of the Colorado Department of Corrections; (8) a security guard employed by the State of Colorado; (9) security officers of the State of Colorado; (10) district wildlife managers and special district wildlife managers of the Colorado Division of Wildlife; (11) parks and recreation officers of the Colorado Department of Parks and Outdoor Recreation; (12) investigators of the Colorado Department of Racing Events and their supervisors, including the director of the Colorado Division of Racing Events; and (13) railroad peace officers employed by a railroad corporation to investigate offenses against the railroad corporation.

V. Responding to Record Inspection Request

Except for verbal requests for routine and clearly identified records that can be quickly and efficiently produced for immediate inspection or copying, all requests for inspection or copying of public records must be in writing and must be specific as to the record requested. When a request is received to inspect a customer's records, it shall be responded to in one of the following ways.

1. If the record requested is *not* in the Utilities' custody or control, the person making the request shall be promptly notified verbally of this fact, and in writing if requested by the person, which notification shall state, if known, the reason for the absence of the record, the location of the record, and what person has custody or control of the requested record;
2. If the record requested is in the Utilities' custody or control, but the person requesting the records is *not* entitled under Section II of this policy to inspect the record, the person shall be promptly notified verbally of this fact, and, if the request was made in writing, the response shall be made in writing. The notification shall state that the person is not entitled to inspect the record under C.R.S. Section 24-72-204(3)(a)(IX);
3. If the record requested is in the Utilities' custody or control, readily available, and not subject to other confidentiality restrictions, and the requesting person is entitled under this policy to inspect the record, the record shall be promptly given to the person; or
4. If the record requested is in the Utilities' custody or control, is *not* readily available, and the requesting person is entitled under this policy to inspect the record, the record shall be given to the person within three (3) working days after the request, unless there are "extenuating circumstances." If there are "extenuating circumstances," the record shall then be given to the person within a total of ten (10) working days after the request. "Extenuating circumstances" cannot be applied to a single, specifically identified document, but apply *only* if:
 - a. The request is broadly stated encompassing all or substantially all of a large category of records and the request is not specific enough for Utilities staff to prepare or gather such records within three (3) working days; or
 - b. The request is broadly stated encompassing all or substantially all of a large category of records and Utilities staff is unable to prepare or gather such records within three (3) working days because Utilities staff needs to devote all or substantially all of its resources to meet an impending deadline or period of peak demand either unique or not predicted to recur more frequently than once a month.

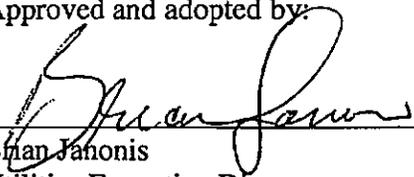
VI. Fees and Charges

Fees and charges for making copies, searching and retrieving records, certifying records shall be consistent with the Fort Collins City Clerk's Public Record Policy, as amended.

VII. Inspection Request Not Addressed by Policy

When an inspection request is received relating to a customer's records and the request does not appear to be addressed by this policy, the City Attorney's office should be contacted for advice concerning how to respond to the request.

Approved and adopted by:



Brian Jahonis
Utilities Executive Director

17 December 2009

Date of Approval and Adoption

Smart Grid Investment Grant Project and Appropriation

Excerpt from approved Electric Board Minutes, February 3, 2010

Mr. Catanach presented information on the appropriation of funds for the Smart Grid Investment Grant Project. The State has allocated \$5 million in Qualified Energy Conservation (QEC) bonds. Staff anticipates moving forward with revenue bonds to raise the remaining \$10.7 million in matching funds. A significant component of the project has been dedicated to the enhanced demand response program at a total cost of \$5,478,197, including installation of 21,000 load control elements across three years. This is an aggressive goal to manage such a large number of installations over this time frame, so staff is currently exploring other opportunities for demand response programs.

The water component is not part of the Smart Grid Investment Grant or meter project, but the Water Utility will derive a great benefit in security and communications.

Staff will seek an appropriation from Council for the entire project. The funds will pass through the City of Fort Collins as administrator of the Department of Energy (DOE) grant. Staff will seek \$33,842,764 in the appropriation, which is the figure without the matches from the cities of Loveland, Longmont and Fountain.

Motion: In light of the \$15.7 million DOE matching grant, Board Member Wolley moved the Electric Board recommends that City Council approve the appropriation of funds in the sum of approximately \$33,842,764 for the Smart Grid Investment Grant project. Board Member Bihn seconded the motion.

Vote on the motion: It passed unanimously.

Smart Grid Investment Grant

April 20, 2010

Steve Catanach, PE
Light & Power Manager



1

SGIG Executive Team



Kraig Bader



Steve Catanach



Angel Anderson



Dennis Sumner



2

Management Team

Paul Folger
 Lori Clemens-Gre
 Bill Hamilton
 Dan Coldiron
 Eric Dahlgren
 Phil Ladd
 Quentin Antrim

Not Pictured:
 Bill Freeman
 Mary Evans
 Jon Haukaas

City of
Fort Collins

3

Background

- Light and Power has been offered a Smart Grid Investment Grant for \$15.7 M (total project \$31.4M)
 - Advanced Metering Infrastructure (“AMI”)
 - Enhanced Demand Response Systems
 - Meter Data Management System (“MDMS”)
 - CIS Billing System
 - Cyber Security
 - Other Minor Items in Grant Application

City of
Fort Collins

4

Smart Grid Investment Grant Components

Grant Line Items ++:

• AMI Smart Meters	\$19.0M #
• Demand Response Systems	5.5M
• Meter Data Mgmt System	2.0M
• CIS Billing System	0.9M
• Cyber Security	<u>0.5M</u>
• Subtotal	\$27.9M
Other Items	<u>3.5M **</u>
Total Grant Proposal	\$31.4M



5

Financial Benefits

Annual operational savings from AMI

Labor and operation expenses for meter reading	\$495,755
Meter accuracy and registration	\$347,944
Theft from manipulation of meters	\$268,225
Load Control (avoided demand during PRPA peaks	\$185,760
Labor dedicated to move-in / move-out and meter changes	\$28,410
Purchase of Xcel data for rate design	<u>\$35,574</u>
Subtotal	\$1,361,668



6

Financial Benefits

Annual operation savings through SGIG

Enhanced Demand response program \$1,074,240

One time benefit

One time savings related to improved cash flow. Reduced lag between meter reads and billing. \$1,600,000

Using a 3.5% interest rate the payback is just over 7 years after grant assistance



7

Appropriation structure

	City of Fort Collins Matching Funds	DOE Funds	Appropriation Ordinance
Fort Collins	\$15,741,501	\$15,741,501	\$31,483,002
Fountain		\$2,123,500	\$2,123,500
Loveland		\$150,000	\$150,000
Longmont		\$86,263	\$86,263
Totals	\$15,741,501	\$18,101,264	\$33,842,765



8

DOE Definition of a Smart Grid

1. Anticipates and responds to system disturbances
2. Enables active consumer participation
3. Operates resiliently against attack and natural disaster
4. Provides power quality for the digital economy
5. Accommodates all generation and storage options
6. Enables new products services and markets
7. Optimizes asset utilization and operates efficiently



9

Major Project Areas

1. Advanced Metering Infrastructure and Meter Data Management Systems
2. Distribution Automation
3. Cyber Security
4. Enhanced Demand Response Programs and Customer Engagement



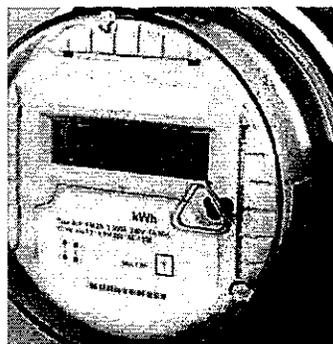
10

Advanced Metering and Meter Data Management

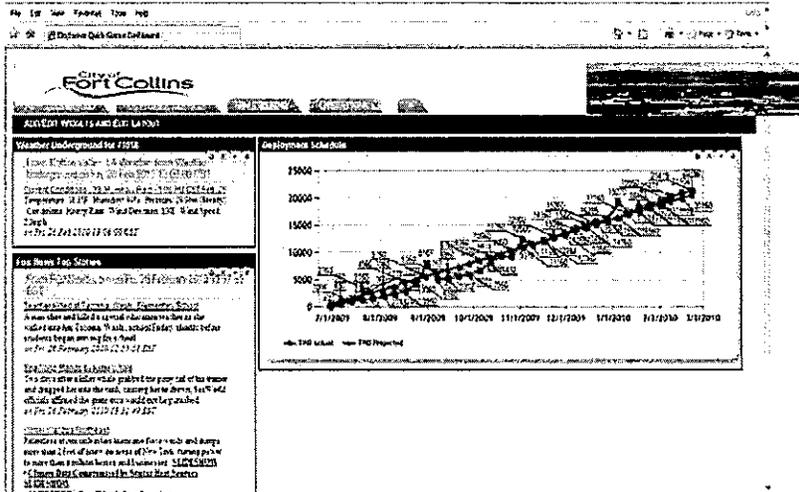


Electromechanical meter

Fort Collins Light & Power currently has 55,000+ in service



New "Smart Meter"



City of Fort Collins

C:\inetpub\wwwroot\cityofcollins\logon.asp

Home Readings AMI Analysis Import/Export

Active Accounts / Meters

Type # Active

AMI Imported -> MDM 11539

AMI Electric 487

AMI Water 325

Collectors/Deployed Nodes 13

Most recent 5 alerts

Subject	Date/Time

Cap Report

Account	From	To	Day #
15315	12/14/09	02/10/10	57
15272	12/23/09	02/10/10	50
13164	12/23/09	02/10/10	48
15440	12/10/09	02/10/10	46
15389	12/23/09	02/10/10	43
10668	12/23/09	02/10/10	41
14630	01/06/10	02/10/10	39
15373	12/23/09	02/10/10	33
15340	01/23/10	02/10/10	26
22026	01/26/10	02/10/10	29

Customer Types

SQL Job Status

Job Name	Last Run	Outcome
SYSTEM_BACKUP_HISTORY	2/10/2010 2:06:03 AM	Successful
MDM Import	2/10/2010 2:30:00 PM	Successful
Evnc Oskpoints (Stipped)	not run	Unknown

Estimated Billing Reads

Date	Cycle	Count

Daily AMI Exceptions

Date	Water	Electric
1/23/10	25	15
1/24/10	34	20
1/25/10	35	22
1/26/10	37	25
1/27/10	31	20
1/28/10	18	12
1/29/10	20	15
1/30/10	27	18

City of Fort Collins

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Vantage Portal – Dashboard Tab

TENDRIL 2/10/2010 web portal

DASHBOARD ACCOUNTS READINGS ANALYSIS IMPORT/EXPORT

Pit's Home

1006 St.

30° F

Program: GA Energy Pricing Plan

Rate: 10¢/kWh

8.00¢/kWh

A Few Clouds

MESSAGES

- Monday, January 11, 2010 1:38 AM [Unsubscribe]
- Monday, January 11, 2010 1:23 AM [Unsubscribe]
- Monday, January 11, 2010 1:23 AM [Unsubscribe]
- Monday, January 11, 2010 1:23 AM [Unsubscribe]

ACCOUNTS

1006 St.

1006 St.

1006 St.

1006 St.

1006 St.

ACCOUNTS

Today's Cost: \$4.79 Tomorrow's Cost: \$4.76

OFF-PEAK Night Peak

93 Cents January 28 to February 21, 2010

OFF-PEAK 50¢/kWh \$23.58

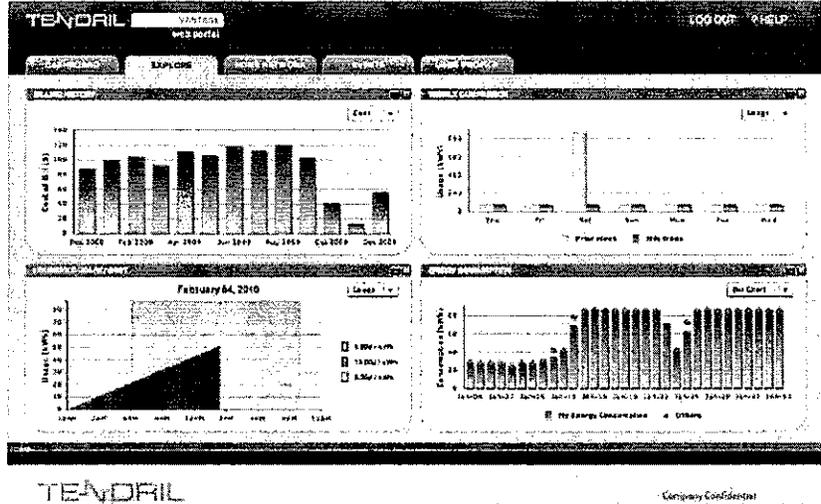
PEAK 8.00¢/kWh \$1.5075

TENDRIL Company: City of Fort Collins

City of Fort Collins

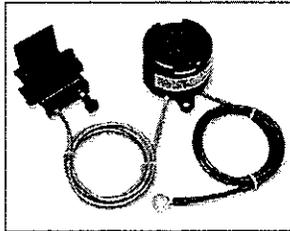
14

Explore Tab

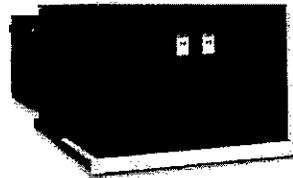


15

Grid Automation



Fault indicator



Remotely operated
Pad mounted Switchgear

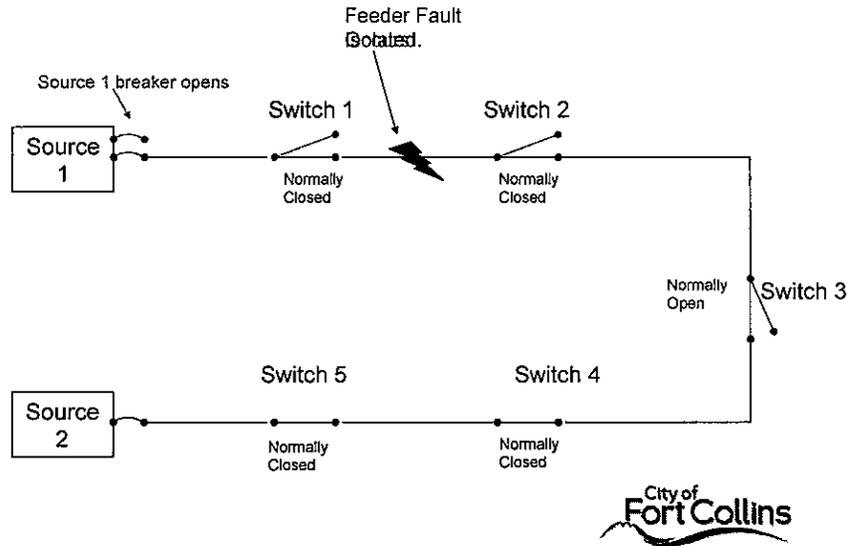


Power Quality
monitoring



16

Grid Automation



17

Cyber Security

•Objectives

- Review Security policies & practices
- Review standards
- ID internal and external threats
- Equipment vulnerabilities
- Insure customer privacy
- Comply with Industry Standards
 - National Institute of Standards and Technology (NIST)
 - North American Reliability Corporation (NERC)
 - Critical Infrastructure Protection (CIP)

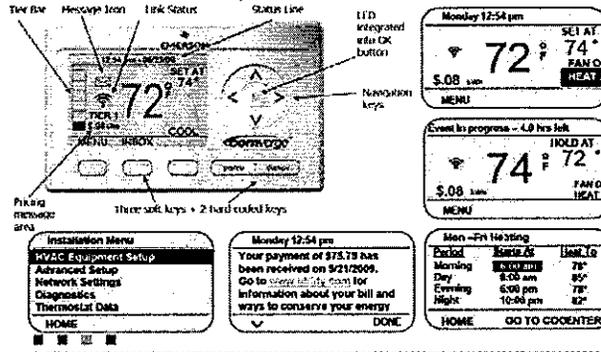


18

Enhanced Demand Response and Customer Engagement

Product Innovation Answering the needs of the utility 

Next Generation Superstat Screen



19

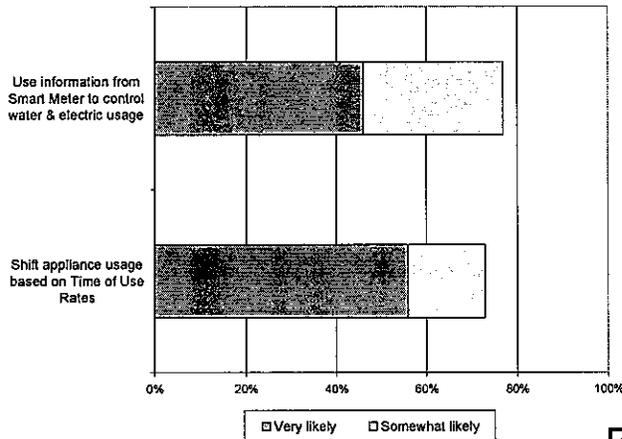
Enhanced Demand Response Programs

- Demand Response (started in 1982)
 - Voluntary customer participation
 - Automatically cycles Air Conditioner & Water Heaters (Hot Shot)
 - Reduces customer's and Fort Collins Utilities costs
 - Peak Demand Reduction towards Energy Policy goal of 5% by 2015
- Usage reduction through enhanced customer information
 - Federal Energy Regulatory Commission (FERC) study indicated
 - High potential for energy / carbon reduction
 - Every 1% of energy reduction is equivalent to 11,000 tons of CO₂

20



Conservation: Advanced Metering Infrastructure



About half of consumers indicate a strong inclination to change behavior based on time-of-use rates or having access to more water and electric usage information via an in-home display or website.

Base: Residential n=400



Enhanced Demand Response and Customer Engagement

Product Innovation *Answering the needs of the utility* 

PowerPortal Home IHD Features

- Simple to use & low cost
- 128x64 pixel graphic LCD
- Real-time IHD using ZigBee wireless (SEP) communication with meter
- 3 color LEDs used for alerts or price tier
- 128 character text messaging or alerts from utility
- Ni-MH rechargeable battery operation
- Signal strength and battery indicators
- Magnetic back and support foot
- **Remote** firmware upgrade



Thermostat – Heating Rule

Control Set Point

Heating Cooling Manual

Enabled

When price of electricity is equal to or above 17 GWH Set Point to 62°F

When price of electricity is below 11 GWH Set Point to 64°F

SAVE RULE

CLOSE

TENDRIL

Security Certified

City of
Fort Collins

23

Thermostat – Cooling Rule

Control Set Point

Heating Cooling Manual

Enabled

When price of electricity is equal to or above 18 GWH Set Point to 74°F

When price of electricity is below 8 GWH Set Point to 70°F

SAVE RULE

CLOSE

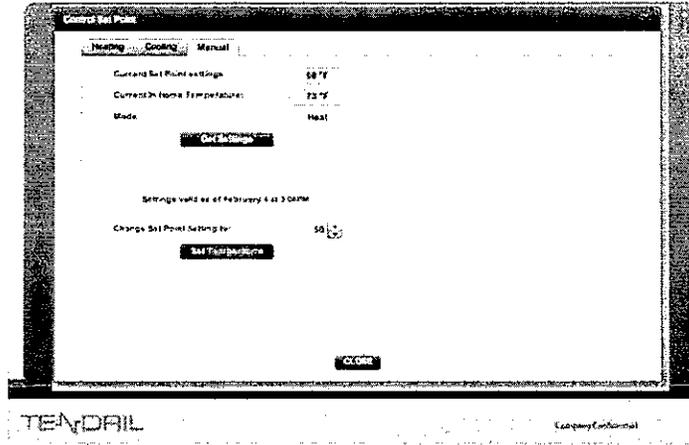
TENDRIL

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City of
Fort Collins

24

Thermostat – Manual Control



25

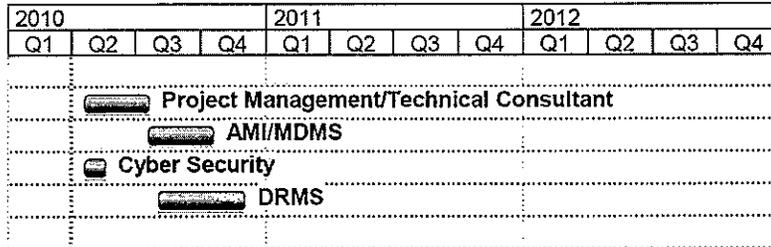
Timeline – Council / DOE

		2010				2011				2012	
Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	
		DoE Contract / IGA									
		Appropriation Ordinance									
		Project Execution Plan									
		Cyber Security Plan									
		Customer Response Plan									
		Metrics, Benefits and Risk Plan									
		Rate Discussion									



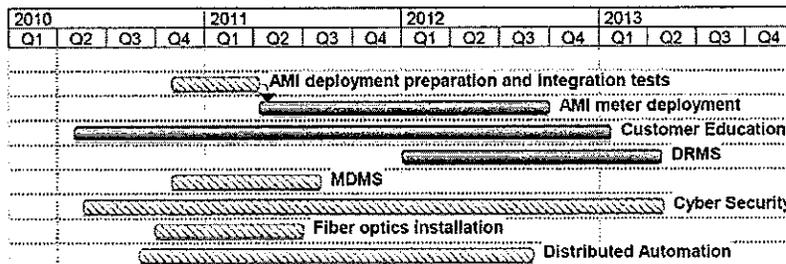
26

Timeline – Request for Proposals



27

Timeline – Major Project components



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Thank you.



City of
Fort Collins



CITY COUNCIL VOTING RESULTS

April 20, 2010

ITEM	ACTION
6. Postponement of Second Reading of Ordinance No. 020, 2010, Amending Chapter 26 of the City Code Relating to Industrial Pretreatment Local Limits and Requirements to July 20, 2010.	Adopted on Consent 7-0
7. Second Reading of Ordinance No. 035, 2010 Appropriating Unanticipated Grant Revenue and Appropriating Additional Unanticipated Revenues in the Light and Power Fund for the Northern Colorado ENERGY STAR New Homes Program and Authorizing the Transfer of Matching Funds Previously Appropriated in the Light and Power Operating Budget.	Adopted on Consent 7-0
8. Second Reading of Ordinance No. 036, 2010, Amending Section 26-283 of the City Code to Authorize the Utilities General Manager to Establish Temporary Arrangements for Use of City Wastewater System Capacity.	Adopted on Consent 7-0
9. Second Reading of Ordinance No. 037, 2010, Amending Section 10-80 of the City Code to Prohibit Certain Residential and Mixed-use Construction on Properties Removed from the Poudre River Floodplain Through the LOMR-fill Process.	Adopted on Consent 7-0
10. Items Relating to the Authorization of Utility Enterprises to Have and Exercise Certain Powers.	
A. Second Reading of Ordinance No. 038, 2010, Amending Section 26-392 of the City Code Regarding the City's Electric Utility Enterprise.	Adopted on Consent 7-0
B. Second Reading of Ordinance No. 039, 2010, Amending Section 26-209 of the City Code Regarding the City's Wastewater Utility Enterprise.	Adopted on Consent 7-0

April 20, 2010

ITEM	ACTION
11. Second Reading of Ordinance No. 040, 2010, Amending Section 2-582 of the City Code Pertaining to the Creation and Elimination of Deputy and Assistant City Attorney Positions.	Adopted on Consent 7-0
12. First Reading of Ordinance No. 044, 2010, Appropriating Unanticipated Revenue in the General Fund for the Restoration and Rehabilitation of Paramount Cottage Camp.	Adopted on Consent 7-0
13. Resolution 2010- 020 Authorizing the City Manager to Execute Two Grant Agreements with the State of Colorado for Funding Pertaining to the Fort Collins-Loveland Municipal Airport.	Adopted on Consent 7-0
14. Resolution 2010-021 Approving an Interim Agreement Among the City, the Downtown Development Authority, the Downtown Business Association, and Progressive Old Town Square Limited Liability Company, Regarding the Maintenance and Management of Old Town Plaza.	Adopted on Consent 7-0
15. Resolution 2010-022 Making Appointments to Various Boards and Commissions.	Adopted on Consent 7-0

*****END CONSENT*****

April 20, 2010

ITEM

ACTION

ITEMS NEEDING INDIVIDUAL CONSIDERATION

19. Items Relating to Medical Marijuana.
- A. First Reading of Ordinance No. 045, 2010, Amending the City's Land Use Code by Adding Medical Marijuana Cultivation Facilities as Permitted Uses in Various Zone Districts. Adopted 6-1 (Nays: Troxell)
- B. First Reading of Ordinance No. 046, 2010, Amending Article XVI, Chapter 15 of the City Code Relating to Medical Marijuana. Adopted 6-1 (Nays: Troxell)
- C. First Reading of Ordinance No. 047, 2010, Amending Ordinance No. 025, 2010, to Clarify the Application of Chapter 15, Article XVI of the City Code to Existing Medical Marijuana Businesses. Adopted 7-0
20. Second Reading of Ordinance No. 041, 2010, Amending Sections of the Land Use Code Relating to Occupancy Limits. Adopted 5-2 (Nays: Kottwitz, Troxell)
21. First Reading of Ordinance No. 043, 2010, Appropriating Unanticipated Revenue and Electric Revenue Bond Proceeds for the Smart Grid Investment Grant Project in the Light and Power Fund and for Bond Issuance Costs. Adopted 6-1 (Nays: Kottwitz)
22. Resolution No. 2010-023 Approving the North College Infrastructure Funding Plan. Postponed to May 4, 2010

April 20, 2010

ITEM

ACTION

ELECTRIC UTILITY ENTERPRISE

- | | | |
|----|--|---------------------------------|
| 3. | Public Hearing and First Reading of Ordinance No. 001, Authorizing the Issuance and Sale of its Tax-exempt Revenue Bonds, Series 2010A and its Taxable Revenue Bonds (Direct Pay Build America Bonds), Series 2010B, Providing for the Sources of Payment of the Bonds, and Providing Other Details Concerning the Bonds and the Enterprise's Electric Utility System. | Adopted 6-1
(Nays: Kottwitz) |
|----|--|---------------------------------|

URBAN RENEWAL AUTHORITY

- | | | |
|----|---|----------------------------|
| 3. | Resolution No. 024 Adopting Policies and Procedures for the Fort Collins Urban Renewal Authority. | Postponed to May 4, 2010 |
| 4. | Resolution No. 025 Approving a Financial Agreement Between the Fort Collins Urban Renewal Authority and Jax, Inc. for an Addition to an Existing Building at 1200 North College Avenue. | Postponed to May 4, 2010 |
| 5. | Resolution No.026 Approving an Amendment to the Financial Agreement Between the Fort Collins Urban Renewal Authority and Union Place, LLC for Union Place. | Postponed to July 20, 2010 |
| 6. | Resolution No. 027 Approving a Financial Agreement Between the Fort Collins Urban Renewal Authority and Fort Collins Habitat for Humanity, Inc. | Postponed to May 4, 2010 |