

MEMORANDUM

TO: Burlington City Council

FROM: Ken Nolan, Manager of Power Resources

DATE: September 15, 2011

RE: **BED Smart Grid Project Vendor Selections and Costs**

cc. Barbara Grimes, BED General Manager

As the Council is aware, BED has been working with the other Vermont utilities for more than 2-years to obtain and implement a Department of Energy (DOE) Smart Grid Investment Grant (SGIG). The grant was approved by the DOE on April 19, 2010 and expires on April 18, 2013. The state as a whole received \$69.8 million, with BED's share being \$7.15 million. Since the DOE grant represented a 50% cost reimbursement, BED's total smart grid project was established at \$14.3 million. On June 28, 2011 Burlington voters approved issuance of a Revenue Bond to cover BED's 50% cost share (\$7.15 million). These bonds are scheduled to be issued in early October.

BED has been moving the grant project forward in small increments as operating funds allowed since the grant was received in April, 2010. To date roughly \$4.4 million has been expended on the project, with roughly one-half of that amount being spent on the East Avenue and McNeil substation switchgear that was previously approved as part of the East Avenue Loop Project. The remainder of costs to-date have represented a combination of BED staff time, computer and field hardware, contractor costs to begin deployment of the BED fiber loop, and construction costs for creation of a backup operations center.

With the approval of the bond BED is now reaching the stage where significant deployment efforts will commence and large scale contracts will be awarded. In order to keep the balance between transparency in the actions BED is taking, and the need to move expeditiously to meet the grant timelines, BED is requesting that the Council approve the major project vendor expenditures as a package. A detailed listing of vendors, and their contributions to the project is contained below, and BED will be prepared to answer any questions councilors may have at your meeting:

Itron Inc. – (Budget estimate \$3,496,743)

Itron is the meter vendor providing the AMI system. BED will be utilizing Itron’s “Openway” AMI system which includes the advanced meters themselves, “gateway” data collector points which will collect data from up to 1,200 individual meters and pass that data back to BED, the “collection engine” software that controls communication to the meters, the “security appliances” that encrypt data being passed from BED’s offices to the meters, and associated project management, system design, engineering, and other services. The vast majority of costs associated with Itron are for the meters themselves (roughly \$2.76 million).

Siemens Energy Inc and eMeter Corporation – (Budget Estimate \$1,058,100)

Siemens and eMeter will be providing the central core of BED’s new advanced meter system called the “Meter Data Management System”, or MDMS. THE MDMS is the database and associated control software that collects, stores, and processes the 15-minute usage data being collected by the Itron meters. This is an extremely complex software tool that allows BED to validate the incoming data, parse it as necessary to create bills, and provide it in a usable fashion to web presentment tools.

eMeter Corporation is the software company that developed the MDMS, so BED will be paying them a license fee for use of their software. The initial license is estimated at \$258,100, with an ongoing annual maintenance fee equal to 20% of that amount (roughly \$51,000/year).

Siemens is the system integrator that will be installing the software and customizing it to work with BED’s other computer systems. The eMeter software both needs to have various settings established to fit BED’s business processes, and needs to have links created to allow it to communicate with BED’s existing Customer Information System (CIS), the Itron meter Collection Engine, BED’s Geographic Information System (GIS) and Outage Management System (OMS), and with a to be established web portal to allow customers to see their usage data. Siemens will be managing the overall integration effort. Their fees are estimated to be roughly \$800,000.

Telvent Utilities Group, Inc. – (Budget Estimate \$877,215)

In addition to the advanced meter deployment BED will also be upgrading its existing Supervisor Control and Data Acquisition system, known as SCADA. This is the software that acts as the brains of the BED distribution system allowing our dispatchers to open and close switches, monitor loads and generation, and react to power outages. BED presently utilizes a SCADA system created by Telvent Utilities Group but this software is several versions old and is designed to communicate utilizing radio technology. The existing SCADA system also relies on a manual “push-pin” based mapping system that requires operators to physically change the status of switches on a wall-mounted diagram. The grant will allow BED to upgrade to the latest software version, convert the communications systems to utilize fiber-optics to a larger degree, and will institute a “video wall” distribution map eliminating the manual push-pin approach and allowing the software itself to update switch status on a video screen. Telvent will be providing the SCADA software itself, new Remote Terminal Units (RTU’s) which allow the SCADA

software to speak with equipment on the distribution system, and the installation and integration services.

SunGard Public Sector – (Budget Projection \$200,000 – Cost estimate due on 9/19)

Sungard Public Sector provides BED's existing Customer Information and Billing System. While BED intends to retain this system, it will require some modification to communicate with the newly installed MDMS and web presentment software. SunGard will be providing an advanced metering module for its existing software plus providing some customization of its existing interfaces to pass the data BED requires from the CIS to the MDMS.

Rugged.com, Inc. – (Budget Estimate \$165,167)

Both the Itron gateway collectors and the Telvent Remote Terminal Units require electronic switches to connect them to BED's fiber-optic network. Rugged.com is a leading vendor of fiber-optic switching technology, and was chosen by BED as its vendor after an RFP process. Rugged.com will be providing individual switches to connect all of the meter gateway points and RTU's to the fiber-optic system as well as design and engineering services to ensure that the switching system installed allows for optimal use of the fiber-optic system from a reliability and cyber security standpoint.

Oracle Systems Inc. – (Budget Projection \$150,000 – cost estimate due on 9/16)

Both the Itron Collection Engine software and the eMeter MDMS utilize Oracle Enterprise Edition database software as their base platform. This database software is not included in the packages sold by Itron or eMeter and is assumed to be installed at the buyer's expense. BED does not presently utilize Oracle, and therefore will need to install two instances of the database for use by the new systems. Oracle will only be providing the software license for use of its database product. BED will be utilizing either in-house staff or contractors to perform the database installation.

Aclara, Inc. – (Budget Estimate \$142,000)

Aclara is a leading vendor of advanced meter technology providing everything from meters, to MDMS, to web presentment. They were included on BED's bidder list for both AMI meters and MDMS, but chose not to bid. For web presentment BED joined with the other Vermont utilities to conduct a joint procurement, and included Aclara in that bidder list as well. Aclara chose to respond to the web presentment RFP and was ultimately chosen as the preferred vendor by BED and CVPS. Aclara will be providing a hosted software service for BED customers to view their usage data as well as the integration services to accept data from BED's MDMS.

Other vendors

In addition to the major vendors detailed above BED will be both making minor equipment purchases and utilizing contractors for other small components of the project. In each case the vendor or equipment cost is estimated to be below \$50,000. Vendors identified in this category

so far include:

- C2 Computer Consulting – network design assistance
- All-Links Communication – fiber optic installation within BED’s office locations
- EarthLogic – modifications to BED’s existing website
- Marketing Partners – assistance with consumer education
- DBS Solutions – Project management and administrative/reporting assistance
- McNeil, Leddy & Sheahan – legal/regulatory assistance

Future Approvals

While the Resolution being brought forward at this time is designed to allow BED to move forward with the major components of the smart grid effort, not all vendors have been identified at this point. It is likely that additional contracts in excess of \$50,000 will be required as the project moves forward. Two are known at this point:

Marketing Partners – Marketing Partners has been contracted to develop a consumer education program for BED. It is likely that the results of that plan will result in a follow on contract to actually implement the educational program, which could easily exceed \$50,000.

VoIP/IVR Vendor – BED is in the process of evaluating options for upgrading its existing phone system and adding a voice recognition option. Initial vendor inquiries indicate this portion of the project could cost as much as \$250,000 (including replacement of all phone cradles).

Conclusion

In total the proposed Resolution seeks approval of equipment, software, and contractor purchases totaling \$6,089,225.

Roughly \$4.4 million has been expended to date on the grant effort. One-half of those funds were expended on the East Avenue and McNeil substation switchgear approved as part of the East Avenue Loop Project. The remaining funds were utilized for construction efforts at BED’s Lake Street backup operational center, consulting and design services to identify the best smart grid structure for BED, upgrade of BED’s LAN wiring to facilitate the upgraded computer systems, hardware purchases around BED’s fiber-optic loop installation, initial costs around the BED fiber-optic system, and allocations of BED staff labor and overheads.

Although there will be a few additional decisions at the Council level particularly around future efforts surrounding customer education and phone replacement, the majority of costs beyond those described here are related to BED staff efforts. In particular, more than \$700,000 will be associated with BED meter staff installing the new meters on customer homes.

BED ARRA SGIG Grant Project Budget Status as of September 15, 2011

For City Council Review in Approving Major project purchases

Budget as Submitted to the Department of Energy (DOE)		\$ 14,340,422
less Funds Expended as of 9/15/11		\$ 4,377,490
Funds Remaining as of 9/15/11		\$ 9,962,932

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less Anticipated BED Labor/Overhead for remainder of effort		\$ 1,243,684
less Anticipated BED "Indirect" allocations for remainder of effort		\$ 1,121,951
Funds Remaining for Purchases other than BED labor/overhead as of 9/15/11		\$ 7,597,297

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Itron	\$ 3,496,743	
Siemens/eMeter	\$ 1,058,100	
Telvent	\$ 877,215	
SunGard Public Sector	\$ 200,000	
Rugged.com	\$ 165,167	
Oracle Systems	\$ 150,000	
Aclara	\$ 142,000	
less Total Purchases presented for Council Approval on 9/26/11		\$ 6,089,225
Funds remaining for purchases other than BED labor/overhead after Council Action on 9/26/11		\$ 1,508,072

These purchases represent the requested vendors/contracts before the Council for approval

Funds remaining for purchases other than BED labor/overhead after Council Action on 9/26/11		\$ 1,508,072
Less Marketing efforts that may require future council approval	\$ 200,218	
Less VoIP phone system that may require future council approval	\$ 250,045	
Less other vendors (not requiring council approval) to be utilized on the project	\$ 300,000	
Total Future (non-BED Labor/Overhead) expenditures		\$ 750,263
Latest Projection of Funds Remaining at Close of Project		\$ 757,809