Board of Public Utilities

Prepared Testimony of

William A. Johnson

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Q: **Please state your name and your business address.**

A: My name is William A. Johnson, 6742 Riverview Ave., Kansas City, Kansas.

Q: **What is your position at the BPU?**

A: I am the Manager of Electric Operations & Technology.

Q: **Did you previously provide testimony in this matter.**

A: Yes, I testified during the rate hearing on May 3 and 4, 2010, and also filed a certified copy of a summary of my testimony.

Q. **What is the purpose of the testimony you are now providing?**

A: The purpose of my testimony is two-fold, first, to address issues raised by interveners in this proceeding, and second, to provide updates on matters to which I previously testified.

Q. **You testified as to the responsibility of your position for numerous departments and activities within the Utility, and the capital plan which you were recommending. Please provide an update as to the recommended capital plan for the departments and activities which you manage.**

A. Electric Operations and Technology has proposed increasing our capital improvement plan (CIP) budgets between 2010 and 2015 to improve service reliability from electric transmission and distribution systems across our service area. We have put together a five-year recovery plan to replace aging infrastructure in the central business core, in the Fairfax industrial district, and in some of our older residential communities. We are also responding to new service extensions throughout Kansas City, Kansas.

The CIP expenditures also include dollars to build new infrastructure to serve new growth projects in western Wyandotte County. While there appears to be a flat line growth projection for the city, a shift towards western expansion is quite obvious. New retail growth, appearing in rural like areas, require new T&D service extensions that are not available today. To help minimize the impact on rates, I have already mentioned a change in larger scale electric service policies the Board adopted in 2009. Developers will now bear more of the cost for installing infrastructure for large scale residential and commercial developments.

The annual CIP expenditures are higher than our past 3-year and 10-year periods because we have deferred much needed improvements over that same time period. Continuing to defer such improvements is not an option at this point since in many cases we have surpassed our tolerance for risk in many areas as we try to maintain reliable service to many key account customers.

The Utility simply cannot continue to forgo replacing system components knowing that forced outages and increased loading will continue to occur. In the central business district, we have battled major underground cable failure serving downtown businesses causing them prolonged service interruptions at an increasing pace. In our central business districts, we continue to patch 60 to 80 year old lead cable that has surpassed normal life expectancy.

In my public testimonies, I also discussed the age of our substation transformers where approximately 74% of our 69kV units over 30 years old. This risk category will only worsen without a commitment to install a funding program to begin addressing such concerns.

Without any success, we have made several attempts to secure federal funding to address the potential failure of our two-way radio communications system. This is a system that BPU, Police, Fire, Sheriff, and Emergency Management use for mass communication and emergency routing across the county. The system is over 16 years old and part of it is no longer supported by the manufacturer. The system is prone to loss of coverage and has had major component failures that have impacted coverage over the past two years. It is important that we secure funding through BPU rates to upgrade this system to mitigate public safety risks and integrates with other metropolitan Kansas City emergency management agencies.

We have also sought federal funding to build a smart grid system that included Advanced Metering Infrastructure (AMI), Distribution Automation, Demand Response, and Information Technology improvements. Our application was submitted to the Department of Energy under the ARRA (Stimulus) Smart Grid Cross-Cutting Technologies funding program in 2009. Unfortunately, the BPU application was not approved, as only 100 of 400 applications were approved nationally.

Q. **What budget cuts have you made in order to balance the budget within the constraints of the BPU's financial condition?**

A. Over the past five years, we have cut budgets and deferred projects that include replacing major infrastructure systems and Operations & Maintenance programs.

- 69kV substation conversion projects
- 161kV transmission reconductoring projects

- 15kV distribution system upgrades
- Work equipment and vehicles
- Vegetation Management
- Pole and grounding system inspections & restoration
- GIS/Mapping system improvements
- Information Technology improvements
- Communications systems improvements
- Facilities Improvements

Q. **Please provide your views, as a BPU manager, of the BPU's financial condition and failure to meet financial guidelines and how this has impacted your ability to complete multi-year projects and the recovery plan which the BPU staff has proposed.**

A. The fact that BPU has not meet its financial guidelines for some time puts the utility at risk in not being able to deliver the services needed to support this community. In addition, there is very little room to address major component failures due to having limited inventory replacement parts. Insufficient funding means the utility has been forced to keep aging T&D systems online well past its expected lifecycle, thereby driving up the risk of catastrophic system failure should this practice continues.

Many of our CIP projects cannot be finished in a single calendar year. Major infrastructure projects require extensive planning and construction periods that overlap multiple years and require multi-year budgets to support them. For example, the Wolcott Substation project began as a 161kV switching intertie substation connected by a Kansas City Power & Light transmission line. The project was later changed as new development surrounding the project required us to provide distribution service to WaterOne and relocate other transmission structures.

Over the course of changing the design of this project, insufficient funds were available to complete construction while issuing the 2009 bond package. We also could not satisfy our cash flow statements with the final project design during budget preparation. Our plan was then to complete the project with a new bond series and stagger construction over a longer period. For future reference, it is irresponsible to continue to partially finance much needed capital projects without securing adequate funding during the inception of project design.

Knowing that western Kansas City, Kansas is still experiencing tremendous growth, we have numerous line extension projects underway. Because we must constantly react to various service applications, our CIP planning at best is a forecast of known projects that sometimes exclude

major shifts in priorities that may follow later. When many of these unplanned projects suddenly appear, our budgets become overburdened in its ability to adjust to those sudden changes.

Not having sufficient funding to make system improvements also means we are keeping more antiquated systems online for years that is without manufacturers' support. We have tried to standardize our design using fewer manufacturers with less makes/models to reduce the O&M costs it takes to support such an array of scattered system designs.

Q. **What costs have you included in the 2011 budget and future years CIP?**

A. The major expenditures in the 2011 budget and future years CIP include:

- Wolcott Substation
- Piper to Wolcott transmission line
- East Fairfax Substation
- Muncie Substation
- Advanced Metering Infrastructure
- 15kV distribution upgrades
- Overhead distribution projects
- Underground distribution projects
- Telecommunications system improvements

Q. **What operational improvements are needed for the departments and activities which you manage to provide reliable utility service?**

A. Many of the programs outlined in our CIP projects are designed to improve operational efficiencies and will have a positive impact on how operations will be reshaped through the introduction of automated systems.

Without establishing an adequate funding program, BPU will continue to perform certain business functions at substandard levels as compared to utility industry standards. We still rely too heavily upon aging infrastructure, outdated work methods, too many truck rolls, and have yet to develop a means for securing working knowledge as employees retire.

We are making gradual improvements in other areas; however, we still need to fully commit toward building information systems that will improve business processes such as ad hoc reporting, design concepts, project management, maintenance management, and customer services. Building integrated analytical tools into existing applications could enable decision makers across the utility to become more responsive and better equipped to handle daily

challenges. Creating business intelligence will tie operational activities closer to finance and customer information closer to operations.

There is a need to collect further mapping data and improve system design using our Geographic Information System. Included in our budget are dollars to improve electric system connectivity from substations to each customer. This will improve the data fed into our outage management system, shorten the time to design service extensions, and give up a repository of accurate electronic mapping data for all electric systems.

Improving substation automation and security will enable the utility to secure remote sites and protect critical infrastructure as regulatory agencies seek to roll out stricter federal and regional policies and operating procedures. Agencies like the National American Electric Reliability Corporation (NERC), Federal Energy Regulatory Commission (FERC), and Southwest Power Pool (SPP) periodically change Critical Infrastructure Protection standards and reporting requirements.

Refunding our vegetation management program will reduce some of the wide-spread outages to a more reasonable level. There has been a steady erosion in how effective our tree trimming budget has worked due to budget cuts and not keeping pace with inflation. Our distribution system line clearance program was also reduced because of NERC regulation. As we seek to fund our recovery plan, it is important that we address efforts that reduce system outages.

We have sought to maintain our fleet of vehicles and work equipment to the point where replacement of some units, especially work equipment is needed. Safety and reliability are concerns as we continue to ask our garage staff and construction crews to prolong using aging work equipment when so much of our work has been tied to the existing fleet.

Q. **It has been suggested by representatives of the large power group that the BPU defer the planned AMR-AMI program. Please describe this program, its benefits for the BPU and its customers and the possible cost reductions which BPU will be able to attain when the program is implemented.**

A. The Utility has included $13.75 million in the CIP to install an electric Advanced Metering Infrastructure (AMI) system. The intervening group has identified deferring this project by simply referring to it as discretionary spending. They contend that the only reason other utilities are installing AMI systems is because of federal stimulus funding. I could not disagree more. The investments the Department of Energy rolled out as part of the Federal Stimulus (ARRA) plan did in fact peak everyone's interest and caused Investor Owned Utilities (IOU) to advance their

projects faster. However, many other Co-ops, IOUs, and Municipal utilities started and completed their AMI projects without federal funding. Several other utilities, like BPU, that did not receive federal funding have began deploying or are close to deploying smart meters.

The overall AMR/AMI project will include electric and water smart meters, a RF communications network, back office software and integration points, and customer presentment web services.

The AMI project will serve as a foundation for advancing demand response programs (time based rates, home area networks, and programmable thermostats) and distribution automation (intelligent switching, monitoring, and VAR controls).

By making AMI investments, we will be taking evolutionary (not revolutionary) steps toward improving customer service and system reliability. We envision using near real-time data to optimize asset and load management decisions between the utility and consumers of energy and water. Integrated software systems will enable customer service representatives to view and exchange usage and billing data to all customer classes. Customers will also have access to usage/billing data and analytics tools designed to allow them to alter usage patterns. A web portal for commercial and industrial customers will load profile data, power quality, water quality, and price signals that can be used to improve production or operations.

Other benefits for advancing this project will include the opportunity to improve meter-to-cash operations. Revenue assurance benefits will include tamper/theft notification, leak detection, and other loss revenue analytics designed to protect revenue and identify suspicious accounts. A load research/forecasting/settlement is used to compute load profiles for all customer classes. The system provides load aggregation and analysis, segmentation, profiling, forecasting and settlement functionality.

Brubaker and Associates have repeatedly used the argument that our cost of service study is flawed because it lacked load research data or customer profiles to properly determine rate allocation. This seems to suggest that they would like for BPU to produce load research data for all customer classes but they are also aware that for BPU to collect such data we would have to invest in technology designed to do so. Load research data would help simplify our preparation for cost of service class allocation and would remove the argument surrounding load estimation.

AMI meters automatically report power outages and most Outage Management Systems use these outage notification signals as another flag for distribution system disturbances. The project

will allow us to monitor net-metering endpoints and also remote charging stations for plug-in hybrid electric vehicles (PHEV) once customers begin purchasing cars like the Chevy Volt.

Q. **Are other utilities implementing AMR-AMI programs?**

A. Yes, other utilities are quickly ramping up their efforts to fully deploy AMI programs across the nation. According to the Department of Energy, AMI projects are expected to grow from 8.3 million meters to 18 million meters deployed over the next 3 years thanks in part to Investor Owned Utilities (IOU) participation. By the way, IOUs received 71% of the funding to advance their smart grid programs.

Many municipal and Co-op utilities make up the majority of systems already deployed. KEMA, an international utility consulting firm, is projecting deployment to grow from 76 to 250 meters worldwide. Smart grid projects have the support of American Public Power Association, American Water Works Association, Edison Electric Institute, National Rural Electric Cooperative Association, Kansas Municipal Utilities, and Kansas Municipal Energy Agency all member associations for public and private utilities.

The private sector is also supporting smart grid programs as venture-capital funding is bringing new products and services to market. According to the Cleantech Group, funding for smart grid start-ups grew at an annual rate of 27% between 2002 and 2007. GE and four of its partners topped $200 million the first two quarters in 2010 alone.

Local utilities that have completed or are at various stages deploying AMI systems include: Kansas City Power & Light, Kansas City Water Works, Westar, WaterOne, and City of Olathe Water. Other notable utilities that either began mass deployment or completed at least 1/2 of their systems without federal funding include: Austin Energy, Salt River Project, PPL, Ameren, PG&E, and Colorado Springs.

Q. **Do you recommend that BPU defer the AMR-AMI program?**

A. No I do not recommend deferring any part of what we are proposing to do with this project. BPU has performed extensive research, learned from a pilot system for five years, hired consultants to evaluate existing technologies, performed an internal and external cost/benefit analysis, and collected competitive bids from qualified vendors.

Many experts are promoting smart grid investments as an enabling infrastructure that will deliver benefits through operational and energy usage savings. A two-way communications link between

utilities and consumers will open the door to future customer driven benefits and could dovetail energy efficiency and weatherization programs already underway.

Investing in smart grid technologies could enable load curtailment programs should BPU select to go down that path. Many utilities are investing in demand response/management programs in the face of stiffer regulation confronting future generation. Others have developed programs like time of use and critical peak rebates to reshape summer peaking events. In a 2008 survey, there were 503 utilities nationwide offering some form of dynamic pricing tariff, utilities investing in smart grid saw system reliability indices improve, and distributed renewable generation and storage is trending upwards according to DOE.

We have stated on several occasions that designing a time of use rate for a pilot year study is something worth pursuing. Following final rate approval, we would like to begin that phase of rate design and engage key account customers that may benefit from using rates of this type.

Q. **Please describe your staffing needs, and the challenges which you have faced in retaining staff and filling vacancies?**

A. The Utility has postponed replacing retired workers and filling vacancies for the past several years. During my 30 years of employment, this is currently our lowest staffing level at BPU. Early retirements have caused the majority of turnover in staffing. Introducing various system improvements has reduced staffing in other areas.

Reducing staffing levels across the organization has meant increasing the workload of existing employees while driving up overtime. Employee safety and accidents are risk areas as well as quality of work. Maintaining a reduced workforce reinforces the need to hire the highest quality candidates available and introduce additional technology at a faster pace. That being said, we simply could not sustain current business practices and provide quality electric services in light of the competing forces that work against us.

Attracting experienced engineering candidates has proven to be our toughest challenge. Most area colleges and universities have stopped making power system design part of their engineering curriculum. The competition in the Kansas City market means larger firms (e.g., Black & Veatch, Burns & McDonnell, KCPL) offer compensation packages that are better than BPU's. The residency requirement also impedes our ability to attract quality candidates.

We have concluded that future employment in professional and skilled areas mean hiring college graduates and committing to training, continuing apprentice programs, and targeting employees

that are willing to participate in the educational reimbursement program. As the utility moves forward, system improvements will require a more educated workforce with better people skills across the board.

I would like to see the utility expand creative incentive programs, partner with local schools to attract our brightest students, and participate in additional internships as a way of securing future employment. Working with organized labor to find ways to end some of their distrust will be key to achieving these goals.

Q. **Is there anything else to which you wish to testify in this matter?**

A. The proposed five-year recovery plan was our best attempt to forecast operational needs and capture the revenue needed to improve system performance and mitigate risk. We took a conservative approach to preparing our recovery plan, not to overstate our needs or fund projects beyond our ability to complete them. Because we have deferred CIP projects for years, a case could have been made that more is needed. However, staff has been sensitive to how a more aggressive recovery plan would impact rates and inhibit our customers ability to pay. We are also sensitive to future price escalations and our ability to complete projects forecasted beyond this rate period.

Investing in proven technologies will ensure that our customers will continue to receive quality electric and water service and keep us on par with other utilities in the surrounding communities. BPU and Kansas City Kansas should not accept any further erosion in utility services. As seen, BPU has also demonstrated its commitment toward keeping competitive electric and water rates despite addressing many of the challenges we face.