BEFORE THE STATE CORPORATION COMMISSION

OF THE STATE OF KANSAS

DIRECT TESTIMONY

OF

JEFFREY W. CUMMINGS

WESTAR ENERGY

DOCKET NO. 15-WSEE-115-RTS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. Jeff Cummings. I am employed by UMS Group Inc. ("UMS") of Morris Corporate Center, 300 Interpace Parkway, Suite C380, Parsippany, New Jersey, 07054. I am a Senior Vice President and Managing Director of the Americas for UMS, a consultancy that specializes in performance and asset management and business transformation for electric, gas and water utilities.

Q. ON WHOSE BEHALF ARE YOU TESTIFYING IN THIS PROCEEDING?

A. Westar Energy, Inc. (Westar).

Q. WHAT IS YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE?

A. I have over 34 years of professional consulting experience, with an extensive background in both engineering and strategic and operational

planning for the large investor-owned utilities and municipalities in North America and Australia; most recently Westar Energy, FirstEnergy (Ohio, West Virginia, Maryland, New Jersey and Pennsylvania), AES (Dayton Power and Light and Indianapolis Power and Light), ATCO Electric, Lansing Board of Water and Light, Saskatchewan Power, BC Hydro, Ameren (Illinois and Missouri), Entergy, Ergon Energy, and Public Service Electric and Gas Company. I support these clients in addressing key strategic and operational challenges and have most recently focused on T&D network modernization, distribution reliability, energy efficiency, and fleet optimization, capital investment planning and prioritization, asset strategy and plan development, organizational transformation, and regulatory strategy.

Prior to joining UMS Group, I operated an independent consulting practice for nearly a decade where I supported utilities in the areas of strategic and operational planning, organizational development, technical and commercial management, and merger and acquisition assessment and implementation. Earlier in my career I held a series of engineering leadership positions at Vectra Technologies (formerly Pacific Nuclear and a publicly traded nuclear services company) and ultimately became Vice President of Nuclear Engineering. In that capacity, I served as the manager for over 425 professional engineers across 5 regional offices in the U.S. In performing this role, I actively engaged in formulating strategies for customer development, product/service expansion, business consolidation, and oversaw the management of over 500 projects annually for approximately 75 percent of the U.S. nuclear utilities. And, prior to my tenure with Vectra Technologies, I was employed by

Stone and Webster Engineering Corporation where I assumed increasing levels of responsibility in the management of large Lignite and Nuclear Power engineering and construction projects.

I hold an M.S. degree in Operations Research from the U.S. Naval Postgraduate School and a B.S. degree from the U.S. Naval Academy at Annapolis, Maryland.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE KANSAS CORPORATION COMMISSION?

A. No.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of my testimony is to support the Electric Distribution Grid Resiliency Program – Presentation of Results – dated August February 9, 2015 prepared by UMS for Westar (the "Grid Resiliency Report").

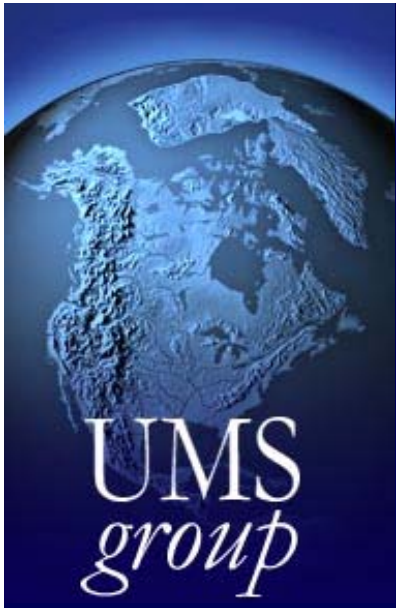
Q. CAN YOU IDENTIFY WHAT IS ATTACHED TO YOUR TESTIMONY AS EXHIBIT JC-1?

A. Yes. Exhibit JC-1 is the Grid Resiliency Report UMS prepared for Westar.

Q. WAS THE GRID RESILIENCY REPORT PREPARED BY YOU OR UNDER YOUR SUPERVISION?

A. Yes.

Q. THANK YOU.



Americas
Asia Pacific
Europe

Electric Distribution Grid Resiliency Program

Presentation of Results

February 9, 2015

Westar Energy

Contents

General Discussion

Westar Energy (hereinafter referred to as “Westar”) remains committed to providing safe and reliable service to its customers on a consistent and sustainable basis, and is keenly aware of the ever-increasing expectations of its customers with respect to reliability, the critical role electricity plays in the economy, and opportunities provided by recent technological advancements. With these points in mind, Westar proposes an Electric Distribution Grid Resiliency (EDGR) Program, comprised of prudent and well-targeted capital investments to address the following challenges relating to its electric distribution infrastructure:

- Aging Electric Distribution Infrastructure and legacy assets that need refurbishment or replacement,
- Heavily Loaded Substation Transformers resulting in shortened asset life and limited operational flexibility
- Lack of Remote Monitoring and Operation equipment results in limited visibility into asset/system operating parameters and, in the event of an unplanned outage, lengthens service restoration.

Consisting of 41 actions across five capital initiatives (refer to Appendix A), the EDGR Program spans a 15-year time frame, requiring capital investments (“CAPEX”) of $886.8 million. Fully acknowledging that technological developments and ever-increasing customer expectations can change over such an extended time period, Westar’s request is limited to the initial five year time frame, allowing Westar’s customers to immediately enjoy the substantial benefits of a revitalized electric delivery system, solidifying and improving upon the system reliability performance gains captured in the ReliabiliTree® Program, and the establishment of a proactive asset management strategy geared towards improving overall system resiliency. Recognizing that sustainable system improvement will require implementation of the entire program, this phased approach supports a proposed funding strategy that will provide maximum benefits while minimizing the impact this program will have on customers by, in the short term, continuing with the ReliabiliTree® program and establishing a trackable and time-constrained Grid Resiliency Recovery Rider for the capital investment portion of the plan. Specifically, Westar is requesting the following for years one through five of the program:

- Establishment of a Grid Resiliency Recovery Rider that allows total capital investment of up to $216.7 million over a five year period (2016 to 2020) to solidify the gains achieved through ReliabiliTree® and mitigate the most urgent risks related to aging electric system infrastructure.

General Discussion *(Continued)*

Westar's EDGR Program Summary

	5-Year View	15-Year View
Capital Investment (Note 1)	$216.7 million	$886.8 million
SAIFI Target	1.056	0.974
SAIDI Target	116.4 minutes	90.2 minutes
Annual Reduced Cost of Outages to Customers (Note 2)	$9.0 million	$25.3 million

NOTES:

1. **The actions that comprise the 5-Year view were weighted towards those that will provide the most significant benefit in system reliability. Many of the later actions (planned for years 6 through 15) deal with the longer-term benefits related to sustaining reliable performance.**
2. **The annual reduced cost of outages to customers reflect a translation of the reduction / avoidance of customer interruptions to potential customer savings predicated on DOE's ICE or Berkley models (source: "Estimated Value of Service Reliability for Electric Utility Customers in the United States" Research Project Final Report dated June 2009); and the reductions indicated in the 5-Year and 15-Year views ($9.0 million and $25.3 million) reflect those to be realized by Westar's customers during Years 5 and 15.**

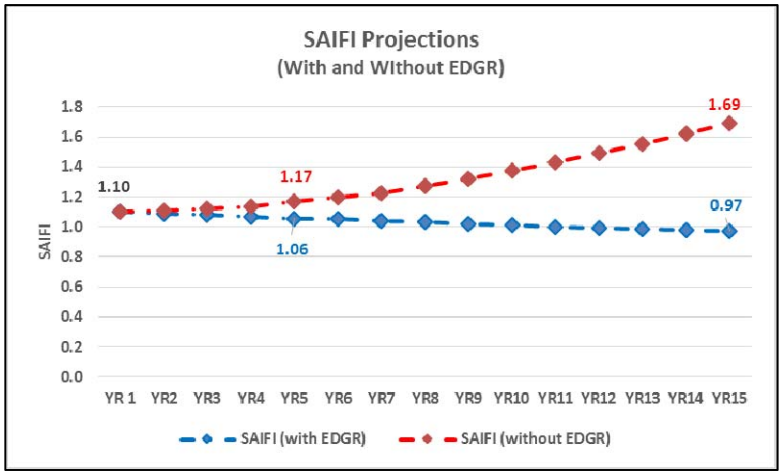
As the previous table illustrates, there are tangible benefits to be realized in implementing this program, and failure to embark on this type of effort not only precludes the capture of these benefits; it presents Westar and its customers with a number of risks:

System Performance (Reliability): The ability to sustain the improvement (reduction) in the number of customer interruptions being achieved through the ReliabiliTree® Program (tracking towards a SAIFI of 1.10 by 2018) will be compromised. As stated in Caroline A. Williams' 2008 Direct Testimony regarding power restoration in the wake of the December 2007 Ice Storm, "we face the challenge of aging infrastructure. The first course of action to tackle this issue is to have a robust vegetation management program….Once we are on a more robust vegetation management program, the 'true'infrastructure issues will be more identifiable and repairable. With this information, we can plan a systematic strategy to address the remaining reliability challenges." The EDGR Program and its Grid Resiliency Recovery Rider component represents this "systematic strategy." The level of reliability attained via the ReliabiliTree® Program is not only sustained, but improved. Absent such a program, customers will experience, over time, *an additional 250,000 to 500,000 interruptions per year (increase in annual SAIFI of 0.33 to 0.66) and commercial and residential customers will experience annual economic losses related to these interruptions in the range of $20.0 to $40.0 million (based on results calculated from the DOE ICE or Berkley models)*

General Discussion *(Continued)*

This projected impact is conservative in our view as it does not include exposures related to the aging downtown networks (Wichita and Topeka), where the design of the systems can mask single-event equipment failures until a catastrophic event occurs that will result in large and extended power outages. Due to the nature of the customers (e.g.; Government, Public Utilities, and Commercial Enterprises), served by these assets, these outages could have dramatic economic and public safety consequences. Also, the projected impact does not reflect the exposure that overloaded transformers can have on overall system capacity and flexibility. Both of these exposures are addressed in this proposed program.

As the following graph illustrates, though the full impact of aging infrastructure (in the form of increased customer interruptions) has not yet been realized, the effect of failed equipment when compared to other outage causes is substantially higher (e.g., according to Westar's actual outage data, a Failed Equipment caused outage is approximately twice the size and 50 percent longer in duration than a Vegetation caused outage); and if left unchecked, will more than offset the improvement gains captured through the ReliabiliTree® Program.



NOTES:

1. **The Year 1 starting point is defined by Westar's commitment to meet the ReliabiliTree® SAIFI target of 1.10 (not a prerequisite for starting the EDGR Program).**
2. **Our experience in working with similar electric utilities is that a modest increase in Failed Equipment caused customer interruptions like that experienced at Westar (the impact of which can be initially masked by more aggressive tree trimming and circuit protection interventions) is a precursor to an acceleration in the number of these types of failures, at which point both outage durations (customer minutes) and the time required to reverse this adverse trend are significantly extended. The precise timing may not be known, but the final outcome is certain.**

General Discussion *(Continued)*

Safety and Related Liabilities: Acknowledging that safety is always a factor in Westar's capital investment decisions, as a point of reference, approximately one-third of the proposed capital investment represent projects and programs, in addition to improving the grid, enhance safety. Specific programs related to wood poles, replacement of substation ground mats, and poles / equipment grounds, and addressing neutral conductors on existing ungrounded circuits illustrate the balance this program conveys in improving system performance yet remaining mindful of public and employee safety.

The EDGR Program is a capital investment program, comprised of five initiatives, addresses the remaining actions referenced during the discussions and testimony following the December 2007 Ice Storm, and aligns with the points outlined in the recently published Executive Office of the President report entitled "Economic Benefits of Increasing Electric Grid Resilience to Weather Outages." It has been designed to address the less reliable, high risk assets for replacement in accordance with current design and construction standards, by:

– Re-configuring the existing electric distribution circuit designs to reduce the impact of asset failure on Westar's customers,

– Installing new electric distribution assets and infrastructure to mitigate operational constraints (e.g., reduce substation transformer loading),

– Removing / replacing electric distribution assets that further enhances safety of the public and our employees, and

– Including new technologies to improve electric distribution system monitoring and restoration.

Contents

Initial 5-Year Snapshot

Focusing on the initial 5-year portion of the program, Westar has outlined five capital initiatives that we propose to fund using a $216.7 million Grid Resiliency Recovery Rider.

Initial 5-Year CAPEX PLAN and BENEFIT CAPTURE PROFILE

	PROPOSED CAPEX RIDER	SAIFI Reduction	SAIDI Reduction	Annual Reduced Cost of Outages to Customers (Note 1)
Replace Aging Assets	$64.9 million	.012	3.9	$2.6 million
Harden Overhead Assets	$49.5 million	.016	5.1	$3.4 million
Harden Underground Assets	$6.8 million	.004	0.9	$0.1 million
Improve System Resiliency	$36.4 million	.011	5.4	$2.6 million
Upgrade the Substation Infrastructure	$59.1 million	.001	0.2	$0.3 million
TOTAL	**$216.7 million**	**.044**	**15.5**	**$9.0 million**

NOTE:

1. **The annual reduced cost of outages to customers reflect a translation of the reduction / avoidance of customer interruptions to potential customer savings predicated on DOE's ICE or Berkley models (source: "Estimated Value of Service Reliability for Electric Utility Customers in the United States" Research Project Final Report dated June 2009); and the reductions indicated in the initial 5-Year view (totaling $9.0 million) reflect those to be realized by Westar's customers during Year 5.**

As the above Table indicates, the staging of the initiatives and associated actions has a heavy bias towards solidifying and further leveraging the improvements in reliability resulting from Westar's ReliabiliTree® Program. It is important to note that the hardening of Overhead and Underground Assets and Upgrades to the Substation Infrastructure, the benefits of which are largely deferred to the last 10 years of the EDGR Program, are important from a long-term sustainability perspective; and that the majority of utility and customer risk reductions hinge upon completion of all initiatives over a 15 year period.

Contents

15-Year Snapshot

The following information is provided to establish context and allow for comparisons with the results achieved during the initial five years of the program.

15-Year CAPEX PLAN and BENEFIT CAPTURE PROFILE

CAPEX Initiative	CAPEX	SAIFI Reduction	SAIDI Reduction	Annual Reduced Cost of Outages to Customers (Note 1)
Replace Aging Assets	$257.1 million	.041	14.2	$9.1 million
Harden Overhead Assets	$139.7 million	.056	18.2	$12.1 million
Harden Underground Assets	$24.6 million	.013	3.0	$0.1 million
Improve System Resiliency	$197.0 million	.012	5.5	$2.8 million
Upgrade the Substation Infrastructure	$268.4 million	.004	0.7	$1.2 million
TOTAL	**$886.8 million**	**.126**	**41.6**	**$25.3 million**

NOTE:

1. **The annual reduced cost of outages to customers reflect a translation of the reduction / avoidance of customer interruptions to potential customer savings predicated on DOE's ICE or Berkley models (source: "Estimated Value of Service Reliability for Electric Utility Customers in the United States" Research Project Final Report dated June 2009); and the reductions indicated in the 15-Year views (totaling $25.3 million) reflect those to be realized by Westar's customers during Year 15.**

Further expounding upon the point made in conjunction with the 5-Year Snapshot (slide 8), the staging of the initiatives and associated actions within the initial five year period assured the solidification and leveraging of improvements in reliability resulting from Westar's ReliabiliTree® Program. In addition to deferring the benefits of long-term sustainability related to the hardening of Overhead and Underground Assets and upgrades to the Substation Infrastructure to years 6 through 15, there are a number of actions included in the "Improve System Resiliency" initiative (e.g., System Improvements to Reduce Transformer Peak Load to < 90 percent and Purchase Spare Transformers), whose benefits are also not linked to near-term SAIFI or SAIDI reduction, but are vitally important to assuring sufficient system-wide capacity, extending the lives of Transformers, and providing for operational flexibility during unplanned outages and in support of routine or emergency repair or replacement actions.

Appendix A – EDGR Program Summary

The following slides summarize the five capital initiatives (listed below) and 41 actions that define the EDGR Program, currently planned for a 15-year time frame. Depending on the priority and projected value per dollar, varying amounts of the 41 actions will be performed during the initial five years of the program.

- Replace Aging Assets
- Harden Overhead Assets
- Harden Underground Assets
- Improve System Resiliency
- Upgrade Substation Infrastructure

Replace Aging Assets

- Replace Mainline CSP Transformers with Conventional
- Aged Conductor Replacement Program
- Replace Single Phase Reclosers (hydraulic)
- Repair and Replace Single Phase Reclosers (non-hydraulic)
- Replace Deteriorated Open-wire Secondary
- Replace Switches and GOABs
- Repair and Replace Capacitors
- Replace Two and Three Phase Reclosers (hydraulic)
- Repair and Replace Three Phase Reclosers
- Repair and Replace Regulators
- Complete Downtown Network Repairs and Upgrades
- Replace Deteriorated and Failed Vault Transformers and Protectors
- PILC Cable Replacement Program
- Replace Non-Restorable Wood Poles

Harden Overhead Assets

- Install Lightning Arrestors and Replace Missing Ground Wires
- Add Neutral Conductors to Ungrounded Circuits
- Implement Engineering Grounding Requirements
- Truss or Fiber Wrap Restorable Wood Pole "Rejects"
- OH Line Urgent Repairs

Harden Underground Assets

- Install URD Riser Lightning Arrestors
- Test and Replace URD Cable and Terminations
- Replace or Repair Elbows and Lightning Arrestors
- UG Pad Mounted Equipment Replacements and Repairs
- Install Topeka and Wichita Downtown Secondary Network Monitoring Equipment

Improve System Resiliency

- System Improvements to Reduce Transformer Peak Load to < 90%
- Replace Failed Visual Fault Indicator Batteries
- Install New Mid-Circuit and Open Point Reclosers
- Purchase Spare Transformers
- Install Mainline Equipment Wildlife Protection Guards and Insulated Wire
- Install Substation Wildlife Protection on Distribution Buses and Breakers
- Install New Visual Fault Indicators
- ATO Monitoring and Control Package

Upgrade the Substation Infrastructure

- Replace Direct Buried Substation Getaways
- Replace/Rebuild Deteriorated 34kV Substations
- Install or Replace Failed Substation UG Getaway Risers Arrestors and Install Arrestor on Getaways
- Substation Ground Mat Improvement Program
- Add Monitoring Equipment on High Critical Sub Equipment
- Replace Substation Lightning Arrestors
- Replace Poor Performing Breakers
- Install SCADA on Distribution Substations - Partial SCADA
- Install SCADA on Distribution Substations - Full SCADA