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6/21/2017

Daniel P. Wolf
Executive Secretary
Minnesota Public Utilities Commission
121 7th Place East, Suite 350
St. Paul, MN 55101

RE:	**In the Matter of the Commission Investigation into Grid Modernization: Focus on Distribution System Planning**	**DOCKET NO.:**	**No. E999/CI-15-556**
		Date:	**6/21/2017**

Dear Mr. Wolf:

The Minnesota Rural Electric Association (MREA) respectfully submits the attached comments in response to the request for comments from the Minnesota Public Utilities Commission (Commission) issued by the Commission in the above-referenced docket.

MREA represents the interests of the state's 45 electric distribution cooperatives and the six generation and transmission cooperatives that supply them with power. Our member cooperatives are not-for-profit electric utility businesses that are locally owned and governed by the member-consumers they serve.

The Minnesota Rural Electric Association appreciates the opportunity to submit comments in this matter on behalf of the member-owned electric cooperatives across Minnesota.

Sincerely,

/s/ Jim Horan

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Jim Horan
Director of Government Affairs and Counsel
Minnesota Rural Electric Association

State of Minnesota
before the
Minnesota Public Utilities Commission

Nancy Lange Chair
Dan Lipschultz Commissioner
Matt Schuerger Commissioner
Katie Sieben Commissioner
John Tuma Commissioner

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INTRODUCTION

The Minnesota Rural Electric Association (MREA) has been involved with the Minnesota Public Utilities Commission's (MPUC) Grid Modernization discussions since the beginning of this proceeding. MREA appreciates the opportunity for information sharing that is occurring within the proceeding and looks forward to staying involved with the process. Grid modernization is a significant focus for electric cooperatives across Minnesota. Cooperative innovation in smart grid technology, programs that reduce energy emissions, and continual grid efficiency serve the needs of our member-owners.

MREA believes that everyone involved in this proceeding benefits from the sharing of experiences, challenges and concerns with grid modernization. MREA and MREA member cooperatives participate in the proceeding in order to benefit our fellow utilities, the State of Minnesota, and interested stakeholders. However, MREA cautions that the proceeding should not be used to regulate cooperative distribution system planning in Minnesota.

Particularly as it relates the Minnesota's consumer-owned utilities, MREA respectfully asks the MPUC to carefully avoid any attempt to suggest or require a uniform approach to grid modernization. Every electric cooperative utility is different because the membership of electric cooperative utility has different wants and needs. A one-sized-fits-all approach to distribution system planning is impractical. Even the broadest of one-sized-fits-all approaches would place undue burdens on electric cooperative utilities and increase the cost of service to their member-owners. MREA respectfully asks that great caution be taken to ensure this proceeding does not result in a suggested approach for any electric cooperative utility on how to do any portion of distribution system planning.

Electric Cooperative Distribution Planning

While every electric cooperative utility approaches distribution system planning differently there is a general approach that MREA felt would be helpful to outline for this proceeding. Many electric cooperatives have a staff of fewer than 20 employees, which includes all operations, engineering, finance, member-services, and administrative employees. Most of the staff members perform a few different roles, often outside their main department, at their electric cooperative. The following description of the general approach to electric cooperative distribution planning should be read with those staffing challenges in mind. Electric cooperatives across Minnesota are successfully focusing on their primary responsibility of keeping electric reliability high and costs low for the member-owners they serve.

Cooperatives in Minnesota routinely utilize and update construction planning documents including long and short term construction work plans. Long-term work plans will forecast distribution infrastructure changes in the next 10 -25 years. This planning document is based on load forecasts, age of infrastructure, and engineering growth models and regularly includes the plans for updates in technology, (AMI, demand-side management, SCADA, etc.) The long-term work plan is usually updated every 5 - 10 years depending on the growth of load and condition of the distribution facilities. The construction work plan specifically identifies projects the cooperative will address within the work plan term including distribution infrastructure additions, modifications and technology deployments. As the majority of the cooperatives are Rural Utilities Service[1] borrowers the engineering standards followed in the construction work plan include RUS engineering standards that meet or exceed the latest version of the National Electric Safety Code.[2]

The short and long term construction work plans are approved by the cooperative board as these plans drive the construction budget process for the utility. For cooperatives that borrow from RUS an additional level of engineering and environmental approval is needed from RUS's engineering and environmental departments.

During the duration of the short term work plan new loads or situations may occur with little warning. As the short term construction work plan is used to create the yearly construction work plan and construction budget, the cooperative has the flexibility to modify the schedule of the current short term work plan or add a new project to that year's construction work plan. Cooperative's manage the operation budget accordingly to ensure members' needs are met without a financial strain on the utility.

Technology and Data Used in Cooperative Distribution Planning

The creation of the short and long term construction work plan begins with a compilation of historical data including yearly line condition observation reports, loading and outage information from AMI systems, loading and power quality information from SCADA systems, reliability data from outage management systems, load growth forecasts, technology plans and budgetary constraints. The majority of cooperatives have interactive maps of their distribution system within a geographic information system, (GIS), and in engineering models, such as Milsoft Windmil, which provides the visual and modeling backbone of a construction work plan. Most cooperatives also have SCADA deployed down to the feeder level at each substation and/or have AMI deployed throughout their system. The load data is taken from these sources and is used in the engineering models to evaluate the current capabilities of the distribution system and also forecast the future capabilities of the distribution system with forecasted load growth.[3] As engineering models are used on a regular basis and not just for construction work plans, the model predictions of voltage are often checked against actual measurements of voltage taken as specific points on the distribution line. These spot checks of real time voltage are used to continually improve the accuracy of the engineering model.

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[1] Rural Utilities Service, (RUS), is a department of USDA. RUS provides low interest funding to cooperatives provided certain engineering and financial standards are met.

[2] Cooperatives whom do not received funding from RUS utilize other financial firms such as National Rural Utilities Cooperative Finance Corporation, (CFC), or CoBank which also have conditions that engineering standards are comparable to RUS construction standards.

[3] Depending on the system and vintage, AMI data is normally available either on a 15 minute, 30 minute, 60 minute or daily interval. SCADA data is normally available on 2 minute, 5 minute or 15 minute intervals.

Other modeling software such as Milsoft Light Table assists with correctly identifying sizing and setting of distribution devices that protect utility personnel and the public from the threat of prolonged exposure of an electrical contact, reduces the number of members out of power in an outage, and protects the distribution system from damage during an electric fault. This modeling software is also used in sectionalizing reports that are performed on a regular basis to ensure proper coordination of distribution devices.

Short-term construct work plans also include plans for the deployment of the next evolution of technology for the distribution system. Many cooperatives are on their second iteration of the AMI, SCADA, and load management technologies as the technology continues to evolve. Due to the sparse accounts per mile, cooperatives often look to technology to drive down labor costs. AMI was first utilized as a cost effective way to gather meter readings for monthly invoice billings. Today cooperatives utilize AMI for outage detection and restoration, identifying areas with voltage quality issues and smarter demand side management controls.

As more devices requiring routine and robust communications are deployed on the distribution system, cooperatives are beginning to see the need for a more robust communication network to accommodate data flow. A few Minnesota cooperatives have included fiber deployment plans in their work plans to address these communication needs. These distribution system technologies and communication networks are a significant investment by the cooperative, therefore deployments are included in the construction work plan.

System Modeling

The engineering modeling for a construction work plan will examine power quality, contingency reliability and capacity capabilities for 2 -3 seasons in the year. As Minnesota has distinct weather seasons cooperatives routinely model peak winter load, (driven by electric heating), peak summer load, (driven by electric cooling), and peak fall load (driven by agricultural crop drying). Different areas of the system may also be analyzed for different growth scenarios for different times of the year. These multiple models identify weakness in the distribution system that can lead to construction projects that are included in the construction work plan process.

Drafting the construction work plan often involves investigating multiple scenarios to address known or suspected weakness of the distribution system. Cooperative distribution systems often are designed with multiple substation sources due to the rural nature of the service territory. In some case shifting load from one circuit to another, or from one substation to another can address system weakness. In other cases, rebuilding line that has reached the end of it useful life to a larger capacity is the better solution as it addresses degraded line conditions and the known weakness of the distribution system. All scenarios are evaluated with reliability and future demands and cost in mind.

In addition to identifying areas of the distribution system that need to be addressed, construction work plans often include loading tables used for contingency purposes. These tables not only include the maximum load of a substation by season but also include the minimum load on each substation. The minimum load of each substation is helpful when screening distributed energy resource application.

Distributed Energy Resources

At this point in time forecasted growth of distributed energy resources, (DER), is normally not included in construction work plan design. Primarily this is due to the unpredictability of the location of future DER, the low penetration of DER, and the uncertainty associated with DER

generation levels at any particular time. The maximum load a distribution feeder must accommodate would normally not be reduced by DER, because capacity planning must achieve accommodating instantaneous peak situations, during which DER could not be relied upon to be generating. Additionally, the planned purchase of line devices that is included in the construction work plan has changed in many cases due to the presence of DER. Major line devices are now specified to be purchased with bi-directional sensing and operations which requires additional capital to be itemized in the construction work plan.

Cooperation and Coordination with the G&T

Information sharing between the cooperative's generation and transmission (G&T) owner and the distribution cooperative occurs during the cooperative planning process. Most cooperatives and the G&T share their short and long term construction projects with each other. Cooperatives utilize the information from the G&Ts to determine timing and location of planned distribution construction projects. The G&T takes into account projected cooperative load growth on a locational basis, demand side management program roll outs and distributed generation behind the member's meter that flows back onto the distribution and transmission grid. This open communication ensures both entities are aware of the full picture when determining how best to solve a system inadequacy issues.

Conclusion

MREA appreciates the opportunity to participate in this proceeding through the sharing of information and the opportunity to learn from other entities about the opportunities, challenges and concerns with grid modernization. As this proceeding continues MREA encourages more opportunities to share information while respectfully requesting the MPUC resist any attempt to place requirements or a one-sized-fits all approach to grid modernization at electric cooperatives within Minnesota. The grid modernization occurring within electric cooperatives is due to the needs and wants of the member-owners of the individual electric cooperatives. The ability to respond to those needs and wants in a timely, cost effective manner is due to local regulation by a democratically elected cooperative board. Even the broadest of one-sized-fits-all suggestions undermines local innovation and can needlessly increase the costs to the member-owner of an electric cooperative.

CERTIFICATE OF SERVICE

I, Jim Horan, hereby certify that I have this day, served copies of the following document on the attached list of persons by electronic filing, certified mail, e-mail, or by depositing a true and correct copy thereof properly enveloped with postage paid in the United States Mail at Maple Grove, Minnesota.

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/s/Jim Horan

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Jim Horan
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