Michigan Energy Markets and Planning Program Roadmap

EXECUTIVE SUMMARY

As Michigan's new energy laws were implemented and work on the grant from the National Association of State Energy Officials (NASEO) Michigan Energy Office (MEO) proceeded, it became clear that all stakeholders would need a common understanding of Michigan's existing energy environment.

The following detailed roadmap presents a comprehensive description of Michigan's energy circumstances as of fall 2017, including a thorough review of current state, federal, and environmental regulatory frameworks; industry business models; and utility performance metrics. The baseline data and narrative information supplied by Public Sector Consultants (PSC) will be used as the foundation to inform and educate a larger integrated group of stakeholders, all with an interest or a financial stake in energy decisions in Michigan. A mix of regulatory agencies, nonprofits, politicians, utilities, businesses, and residents must all understand what motivates the policy direction of Michigan's new energy legislation, as well as the road map process.

In line with the roadmap and its description of Michigan's energy circumstances, a case study of Michigan's Upper Peninsula (U.P.) is also included. The U.P.'s energy infrastructure has historically faced difficulties providing reliable power at fair and affordable rates—problems that have become increasingly acute even through the period of the NASEO MEO grant. These problems are not unique to the U.P., and are becoming increasingly common nationwide. Across the country, utilities, regulators, government officials, and others are struggling with the complex questions of how to replace the energy, ancillary services, and capacity provided by retiring power plants.

Due to the need for fair and fast solutions to address pressing concerns over affordability and reliability, Michigan realized it would have to leverage existing processes and relationships to identify and implement necessary solutions. With a number of different providers servicing a largely rural geography and a few dispersed industrial energy loads, addressing the U.P.'s energy problems would require coordinating the provision of all energy, ancillary, capacity, and delivery services of gas and electricity providers. Solution design and implementation also had to integrate informed stakeholder input, and needed to be affordable as well as respectful of the environment and smaller-scale economies.

This process developed several potential solutions to the U.P.'s electric reliability challenges. As alternatives to large new baseload generation or high-voltage transmission lines, the development of modular natural gas generation, micro grids, local distributed resources, modest transmission upgrades, renewable energy resources, energy waste reduction and efficiency, demand response, and redispatch options can be more cost-effective ways to supply the U.P.'s modest energy needs. The use of more localized resources is a departure from the traditional centralized, expensive, and transmission-heavy system of today. Such solutions also have the benefits of increased self-reliance and economic development opportunities in Michigan's Upper Peninsula.

Addressing these issues in the U.P. involved stakeholders working together to identify both short- and long-term solutions to reduce the cost burden to U.P. customers. With recognition of the energy

environment in which they exist, this independent, integrated region of stakeholders took a bottom-up approach to solving their power problems and helping their communities. The experience Michigan gained working with U.P. energy stakeholders to craft solutions to some very tenacious problems could be useful to other states facing similar situations.

CASE STUDY

As part of the roadmap, this case study will review Michigan's experiences with ongoing power generation and transmission problems in its Upper Peninsula and the approach the state took to address these problems.

U.P. ENERGY INFRASTRUCTURE BACKGROUND

The unique energy infrastructure of the U.P. contributes to challenges related to affordability and reliability. The U.P.'s energy landscape was constructed by utilities to meet the energy needs of the rural region, and has long been dominated by a few widely dispersed large industrial loads. After the Northeast blackout in 2003, new mandatory federal reliability standards were established by the North American Energy Reliability Corporation. These standards were more stringent than before and required the U.P. to strengthen its energy infrastructure to be compliant. As a result, transmission was upgraded and expanded to maintain reliability and allow for power to move across the region. However, investments to replace aging infrastructure or add additional transmission lines would be costly to ratepayers in this primarily rural peninsula.

The reliability standards also affected generation. Power plants that wanted to retire had to continue operating to meet these standards. The Midcontinent Independent System Operator (MISO), as the reliability coordinator for Michigan, worked to keep several generation units open as system support resources (SSRs) in order to maintain compliance with reliability standards. These units maintained operations at a higher cost to consumers, and included those costs in a single instant year corresponding to the one-year SSR agreements rather than spread out over time as is typical.

U.P. ENERGY PROBLEMS

Beyond its sparse rural electrical load and few large population center and industrial electrical loads, the U.P. has had more recent problems with sustaining reliable energy supply and delivery at affordable rates for utility customers. Multiple power plants, including the coal-powered Presque Isle Power Plant (PIPP), which provides a large share of the U.P.'s energy, planned to retire. These aging generators, used primarily for voltage support to maintain the bulk power system's reliability, provide energy for the existing load in the U.P. To continue operating, extensive and expensive environmental upgrades would be required.

Of significant concern was that the retiring of several plants, notably the PIPP, would have led to MISO reliability issues; MISO tariff agreements approved at the federal level were needed to maintain compliance with federal reliability standards. The one-year MISO tariff terms for generation plants required for bulk electric system reliability did not allow the time needed to implement an effective solution. Maintaining these plants beyond the tariff terms also raised costs for the region's customers. These issues were dealt with on multiple fronts by various entities, requiring coordination of all energy, ancillary, capacity, and delivery services provided by utilities.

APPROACH TAKEN TO SOLVE THE PROBLEMS

To approach these issues of high utility prices and system reliability, the Michigan Agency for Energy (MAE) and Michigan Public Service Commission (MPSC) staff leveraged existing processes. These included the U.P. Energy Summit, the American Transmission Company, local and regional planning processes, MISO transmission planning processes, and MISO Zone 2 transmission studies.

MPSC staff used these processes alongside their own specialties to better understand where all the issues came together and work on identifying solutions. A MISO transmission expansion study looked at the possibility of connecting the transmission grid to Ontario's system; however, the costs were determined to be uneconomical compared to the expected benefits. The study also looked at locations in the U.P. that would be ideal for new generation and that would improve reliability without adding any additional transmission infrastructure. Using this research allowed MAE to take an informed and comprehensive look at the best possible solutions to the U.P.'s reliability issues.

Staff also reviewed more cost-effective alternatives to large generation plants or high-voltage transmission lines to meet reliability standards. Alternatives included modular natural gas generation, micro grids, local distributed resources, modest transmission upgrades, renewable energy resources, energy waste reduction (EWR) and efficiency, demand response, and redispatch options. Through its certificate of need process, the MPSC approved the construction of two smaller natural gas plants in October 2017, which are expected to be in service by 2019, adding 170 megawatts of generation to the U.P. This will allow the PIPP to retire in 2020 and will avoid investments in additional and unnecessary transmission lines. An added benefit to this solution is that the new natural gas generation will be environmentally cleaner than the coal generation from the aging PIPP. Additionally, EWR will lessen the strain on the grid, as using energy efficiently means that less energy needs to be generated. EWR also allows consumers to better manage their energy bills.

Michigan also strongly advocated for changes to MISO's handling of the tariffs for SSRs required to maintain operation for bulk electric system reliability purposes. Because the cost of an SSR generator was collected in one year, SSR plants added additional costs to U.P. ratepayers, which were negotiated without consultation with the state. MISO has since agreed to make their tariffs more transparent.

Public and local political involvement was also important during the process. Increased problem awareness and education activated this public involvement. MAE and MPSC staff worked to educate communities and local legislators on the U.P.'s reliability issues and established MAE as a credible and trusted leader during the stakeholder process.

ORGANIZATIONS INVOLVED

Many organizations were involved in the stakeholder meetings held to discuss short- and long-term solutions to the high energy costs ratepayers faced. The U.P. Energy Summit was well attended by utilities, municipalities, cooperatives, MPSC and MAE staff, MISO, and local legislators. Community and local political involvement was also important during the process, as working with all of these individuals allowed MAE and MPSC staff to take advantage of a broad planning process using the existing processes and expertise from all parts of the energy sector to respond to reliability issues.

VALUE OF BASELINE DATA

MPSC and MAE staff were able to use baseline data to their advantage, as it provided a background that staff were able to use to prioritize decision making. It also stimulated creative thinking to identify and implement solutions to the affordability and reliability issues in the U.P. This data helped MAE and MPSC staff identify several areas of immediate concern that required quick solutions. Data also allowed staff to educate the stakeholder groups on the problems, and informed discussions in the processes leading to Michigan's new 2016 energy legislation, including comprehensive integrated resource plans. Furthermore, the information inspired the Energy Market and Planning Program (E-MAP) case study on the U.P.'s reliability issue.

NEXT STEPS

Solving the U.P.'s energy crisis is an ongoing process, but the region is no longer in a triage situation. The steps outlined in this case study show significant progress toward reaching a more affordable and reliable energy environment for U.P. residents. The solutions already reached include:

- The two new natural gas plants will solve many of the reliability issues facing the U.P. and provide environmentally cleaner generation.
- Diversity of generation fuel and location will help strengthen reliability and adaptability in the region.
- Refunds will be given to Michigan PIPP ratepayers of excessive payments for the generation units that continued operating for reliability purposes.
- State law has been changed and will require utilities to notify the state when a utility files a proposal to retire a power plant.
- The certificate of need process, which requires utilities to establish a case for why a new generation plant is needed, has been updated in legislation and is being implemented by the MPSC.
- Changes to generation retirement and the SSR processes of MISO's tariff will make them more transparent.
- More robust EWR programs for the U.P. under MAE Energy Office grants will promote greater energy savings.
- A need for better interface between generation and transmission planning in the U.P. was identified.
- MAE and MPSC will continue to support a proactive approach to comprehensively planning for the U.P.'s energy needs to avoid further problems.

Going forward, there are several pending cases at the Federal Energy Regulatory Commission, as well as court cases that will address issues with the MISO tariff charges, processes, and negotiations. Additionally, Michigan will proceed with a focused resolution to the most urgent problems in the U.P. and the lessons learned will feed into the evolving road map processes to address Michigan's energy future. Since the challenges faced in the U.P. around how to address aging energy infrastructure in a way that addresses both reliability and affordability are increasingly common across the country, Michigan's experience addressing the U.P.'s energy problems may also be useful for other states facing similar problems, especially as a model for an integrated planning approach for issues the state may face in the future.