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Xcel Energy

Docket No.: E002, ET2/CN-06-1115

Response To: Susan L. Peirce Information Request No. 58
MN Department of Commerce

Date Received: March 3, 2008

Question:

Please explain how the accredited capacity for a facility is determined.

- (a) If determined by other entities (i.e. MISO, MAPP), please provide information on the factors they consider and how they determine accredited capacity.
- (b) Does accredited capacity change over the life of the facility? If so, please explain how those changes are made, and the frequency of any updates.
- (c) A number of the hydro facilities listed in response to OES IR No. 34 show accredited capacity greater than the nameplate capacity. Please explain.
- (d) Do the utilities use standard rates to estimate accredited capacity for planning purposes? If so, please provide those rates along with an explanation of how those rate(s) were determined.

Response:

- (a) Accredited capacity for the facilities relevant to this proceeding is determined by Mid-Continent Area Power Pool (“MAPP”) or Mid-American Interconnected Network (“MAIN”).

MAPP

Accreditation of generation capacity in MAPP is governed by Section 4.2.2 of the MAPP Generation Reserve Sharing Pool Handbook (“MAPP GRSP Handbook”) (Revised January 16, 2007). Thermal generation is determined on a “before-the-fact” basis using the results of a performance test. Monthly output values are then determined from

this performance test. Variable generation capacity is done differently and is explained below.

Accreditation of variable generation capacity (wind, solar, and run-of-river hydro) is done on a monthly basis according to Section 4.2.2.7.2.7 of the MAPP GRSP Handbook, which is attached. In this case the generator is defined as the interconnected facility which may be made up of multiple wind generators.

To calculate the monthly accreditation of variable generation two sets of data are required. First, the hour that the system peak demand occurs for a given month is required (hour ending 18, for August, for example). The second set of required data is the historical hourly production for the generation facility for the given month (August in this example). A median generation output value is then determined using all metered hourly data occurring over a four-hour period, one of which must include the hour of system peak demand for that month. As a result, there are four possible accreditation values for August. In this example, the accredited capacity would be one of the four median values of generation for the periods: Hour ending 15-18, 16-19, 17-20 or 18-21.

Variable generation may be accredited on a “before-the-fact” or “after-the fact” basis, determined by whether there is three years of production data available. In either case, the determination of the accredited capacity is the same, but the timing of the submission of the accreditation value is different. If less than three years of operating history is available the “after-the-fact” accreditation is utilized where the accreditation is calculated after the month in question and then submitted to MAPP. When at least three years of data are available the utility may use historical operational data to apply towards its seasonal MAPP planning reserve requirement.

In addition to MAPP, another regional planning reserve sharing group was created in June 2007, the Midwest Planning Reserve Sharing Group. The reserve sharing group is administered by MISO which consists largely of MISO members and several MAPP members. The group has completed a loss of load expectation study and established reserve margins but no language has yet been approved on resource accreditation. If this group continues, the first planning year is set to begin on June 1, 2008.

MISO is anticipating an updated FERC filing to the Module E which has the potential to address requirements for the loss of load studies and resource qualifications. If this language change is approved by FERC it is possible that MISO would determine the resource accreditation for MISO members beginning on June 1, 2009.

MAIN

Wisconsin Public Power Inc. serves load in both MAPP and MAIN. Generation used to serve load in MAIN is accredited according to MAIN Guide 3A (Procedure For The Uniform Rating of Conventional Generating Equipment) and MAIN Guide 3B (Procedure for the Uniform Rating and Reporting of Non-Conventional Resource Capability). MAIN Guides 3A and 3B can be accessed at the following address:

http://www.nerc.com/~filez/regional_standards/regional_criteria_rfc.html

- (b) Because accreditation of thermal units is based on actual performance tests which are required on an annual basis, the resulting ratings may vary over time as a unit ages or as it has changes in efficiencies due to equipment replacements and upgrades.

Accredited capacity of variable generation is likely to change over the life of the facility according to the energy production of the facility. The accredited value for variable generation could also change as a result of a change in the hour of a utility's peak demand. The accreditation procedure described in response to part a. is used.

- (c) The nameplate capacity of a hydro facility is typically set at the time of construction and is usually based on the design of the facility. Depending on the type of hydro facility, the accredited capacity is determined either by using the monthly median of hourly recorded data for a 10 year period or by using a one hour URGE test, based on MAPP methodology for accrediting resources. Accredited capacity for a hydro facility can exceed nameplate capacity when the efficiency of hydro equipment such as motors, generators, and pumps is improved during replacement or repair. Because accreditation is based on actual performance rather than design ratings, accreditation values may vary from nameplate values.

- (d) The Applicants understand the Department to be asking for the standard rates used by the following utilities to estimate accredited capacity accreditation of wind generators. See responses below:

Participant Utility	Response
Dairyland Power Cooperative	13%. Dairyland used accreditation values generated from the MAPP procedures.
Otter Tail Power Company	Otter Tail Power uses an estimate of 20% of nameplate capacity on the winter peak and 15% of nameplate capacity on the summer peak. This is based on actual historical performance and accreditation levels of wind generation facilities located on the company's system.
Central Minnesota Municipal Power Agency	15%. CMMPA's estimated accredited capacity is generated using the MAPP procedures based on the accreditation rules set forth in the MAPP GRSP handbook.
Southern Minnesota Municipal Power Agency	The SMMPA estimates that the MAPP procedures yield an accreditation percentage somewhere in the mid teen's. However, not all wind projects are creditable due to insufficient transmission. As a result, SMMPA uses an accreditation value of only 10% for all future planned wind resources to account for some percentage of non-creditable wind projects.

Participant Utility	Response
Wisconsin Public Power, Inc.	<p>WPPI follows MAIN Guide 3B for wind accreditation. All WPPI wind projects are relatively new, or in the process of being built. Because WPPI lacks historic output values for its MISO deliverable wind resources, WPPI uses the provision of MAIN Guide 3B that provides for the assignment of a default value of 10% of the nameplate capacity as the monthly net capability value. For wind resources that are not deliverable, there is no capacity accredited for planning reserve purposes. For deliverable wind resources a value of 10% of nameplate capacity is used for planning reserve purposes.</p>
Rochester Public Utilities	<p>Rochester Public Utilities does not own or purchase any wind generated energy so it has not established standard rates to estimate accredited capacity for planning purposes.</p>

Participant Utility	Response
Missouri River Energy Services	<p>MRES has two kinds of wind resources included in the model. The first type is included for purposes of modeling compliance with the “25% by 2025” Minnesota RES. These resources include currently owned MRES wind generation as well as anticipated additions needed to meet the RES requirement.</p> <p>Currently MRES has approximately 40 MW of wind resources under construction at two sites, one near Marshall, Minnesota; and one near Odin, Minnesota; in addition to approximately 4 MW of existing wind resources at Worthington, Minnesota. None of these resources has firm transmission as required to accredit the capacity associated with the 15% MAPP reserve obligation. MRES also is pursuing the addition of 65 MW of wind resources at Watertown, South Dakota at a site that also does not have firm transmission for accrediting wind. Combined, these wind resources will total approximately 109 MW which represents the majority of the resources necessary to meet the RES. Thus, the model assigns a zero percent accreditation value to these resources.</p> <p>The second type of wind resource included in the model is large, accredited installations with firm transmission, for direct comparison against Big Stone II and other thermal resources in the model. Since these installations are accredited, they can help meet future capacity requirements. These resources were assigned 15% of nameplate as an assumed accreditation amount.</p>

Participant Utility	Response
Minnkota Power Cooperative	Minnkota Power Cooperative uses 36% as the estimated capacity accreditation percentage for its two wind projects: Valley City and Petersburg. Minnkota's estimated accredited capacity is generated using the MAPP procedures based on the accreditation rules set forth in the MAPP GRSP handbook.
Minnesota Power	Minnesota Power's estimated accredited capacity is based on generation type and the accreditation rules set forth in the MAPP GRSP handbook. The accreditation for wind is 20% in MAPP until three years of real time data can be gathered.
Great River Energy	Future wind additions are assumed to achieve summer accreditation of 15% of nameplate capacity.
Xcel Energy	For planning purposes, Xcel Energy uses 13.5% as the assumed capacity accreditation percentage for wind generation. The number was originally developed from averaging actual MAPP wind accreditation on the NSP system over several years prior to the 2004 Resource Plan filing in Minnesota. Subsequent review of accreditation for new wind generation on the NSP system has been in the same range.

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