

Wind VIII Update March 2, 2020

A. Background

This is MidAmerican Energy Company's ("MidAmerican") status update for the Iowa Utilities Board ("Board") in response to the Board's August 9, 2013, *Order Approving Settlement and Requiring Reports*, in Docket No. RPU-2013-0003. This document is offered in fulfillment of the requirements established in the said Board order. Pursuant to the Board's April 19, 2019 *Order Consolidating Semi-Annual Reports*, the updates for the Wind VIII through Wind XII projects, and the Repowering project, are now filed in Docket No. 2018-0003.

B. Status for Wind VIII Iowa Project (Docket No. RPU-2013-0003)

Between 2013 and 2015, MidAmerican installed 1,051 MW of wind-powered generation as part of the Wind VIII Iowa Project. Total costs for construction, including allowance for funds used during construction are approximately \$1,703.0 million. Based on costs to date, the per kW cost of the Wind VIII Iowa Project are approximately \$1,620/kW, as compared to MidAmerican's cost cap of \$1,825/kW.

Actual Operating and Capital Costs of Wind VIII

Operating costs, through December 31, 2019, totaled \$[REDACTED] million. (An unredacted copy of this page has been provided pursuant to a Request for Confidential Treatment.)

Operating capital costs associated with Wind VIII during this period have been \$[REDACTED] million. The credit in capital relates to timing of security equipment installation where the equipment purchased in 2017 and 2018 has been returned to inventory to be installed at a later date. (An unredacted copy of this page has been provided pursuant to a Request for Confidential Treatment.)

Amount of Customer Rate Relief Flowed Through the EAC or Returned to Ratepayers in Some Other Manner

Through December 31, 2019, customer rate relief flowed through the EAC totaled \$10.0 million.

Retail Fuel Cost Reduction Attributable to Wind VIII

Through December 31, 2019, the retail fuel cost reduction attributable to Wind VIII totaled \$21.9 million.

Income from PTCs, REC Sales, Capacity Sales, and Net System Benefits Attributed to Wind VIII

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Through December 31, 2019, PTC's generated from Wind VIII totaled \$75.5 million. REC sales totaled \$3.0 million. There were no capacity sales associated with these wind assets, and net system benefits totaled \$50.1 million. Capacity accreditations are determined annually through MISO's new Annual ERIS Evaluation and Annual Interim Deliverability Study (AID Study) for all sites with Conditional Generator Interconnection Agreements. Project sites are deemed conditional until all identified network upgrades are commissioned.

C. Transmission Studies and Off-site transmission

Below is a summary, by wind farm site, of the status of the transmission studies and off-site system upgrades associated with the various Wind VIII sites. These sites in the aggregate will host 1,051 MW.

Note: Due to the final contracted turbine nameplate capacity of 2.346 MW/turbine, and the fact that fractions of turbines cannot be installed, it is important to note that the final turbine layout at each of the Project sites resulted in a total nameplate capacity, for Wind VIII, of 1,051 MW, not 1,050 MW as initially proposed in MidAmerican's ratemaking principles filing.

Status for the 1,051 MW Wind VIII Iowa Project (Docket No. RPU-2013-0003)

MidAmerican completed 44.6 MW of Wind VIII nameplate capacity in 2013, 511.4 MW in 2014, and the final increment of 495 MW in 2015. All of the Wind VIII sites are covered below and result in a total of 1,051 MW.

44.6 MW Vienna II Site

No added transmission studies were required beyond what was completed for the pre-existing Vienna wind farm as part of the Vienna I project which was part of the Wind VII Project.

251 MW Lundgren Site

The Lundgren Site, located in Webster County, is a wind farm acquired from EDF Renewable Development, Inc. that interconnects to the 345 kV system at the Lehigh Substation that is jointly owned by MidAmerican Energy Company and several other parties. Construction activities began in Fall 2013. Work continued in 2014 and all 251 MW of the wind farm's wind turbine nameplate capacity were placed in-service by November 20, 2014.

MISO queue project R42 was studied in the August 2012 West Definitive Planning Phase (DPP) System Impact Study (SIS) which is now complete. MISO completed a restudy of the prior transmission studies, and the restudy is available at the following MISO link:

https://www.misoenergy.org/planning/generator-interconnection/GI_Studies

Once on the MISO site, select the desired documents. (The size of some of these documents is prohibitively large to provide in hard copy.) All MISO studies are completed; no new restudies are likely.

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A Conditional Generation Interconnection Agreement (Conditional GIA) was executed on May 29, 2015. Operation of the site is guided by the Conditional GIA until the identified network upgrades and contingent facilities are completed. However, the site is no longer subject to the MISO Annual ERIS Evaluations or the MISO Quarterly Operating Limit reviews.

The transmission off-site project to increase the rating of MidAmerican's section of the Substation T Fort Dodge-Boone Junction 161 kV line was completed in July 2016. The project consisted of replacing line structures to increase the operating temperature of the line, which results in an increased line rating, and replacement of a switch at Substation T. This project was a result of MISO's DPP study involving the Lundgren site.

140.8 MW Wellsburg Site

This site is a 140.8 MW wind farm in Grundy County that was acquired from RPM Access, LLC. The project interconnects into the 161 kV system at the Wellsburg Substation owned by ITC-Midwest. Civil work commenced in Fall 2013, and all 140.8 MW of the wind farm's wind turbine nameplate capacity were placed in-service by December 10, 2014.

MISO queue project H021 was studied in the August 2012 West Definitive Planning Phase (DPP) System Impact Study (SIS) which is now complete. MISO completed a restudy of the prior transmission studies, and the restudy is available at the following MISO link:

https://www.misoenergy.org/planning/generator-interconnection/GI_Studies

Once on the MISO site, select the desired documents. (The size of some of these documents is prohibitively large to provide in hard copy.) All MISO studies are completed; no new restudies are likely.

A Conditional GIA was executed on May 6, 2015.

Operation of the site is guided by the Conditional GIA. Until the identified upgrades and contingent facilities are completed, output may be limited on an annual basis through the MISO Annual ERIS Evaluation or on a quarterly basis through the MISO Quarterly Operating Limit (QOL) review that could reduce output by as much as it's fully requested output. As reported previously, MISO has reviewed its QOL review process. MISO's revised process reduces, but does not eliminate, the possibility of any future limitations at the site while the site is part of the QOL review.

In MISO's Annual ERIS Evaluation, it was determined that 138.6 MW of the 138.6 MW (the GIA injection limit) is subject to curtailment in the QOL process for MISO's 2019-2020 planning year (June 1, 2019 through May 31, 2020). To date, this site has not been limited in any of the QOL studies. MISO's forward-looking results of the next two seasons do not show the site being limited.

495 MW Highland Site

The Highland Site, located in O'Brien County, is a wind farm acquired from Invenergy, LLC. The site interconnects to the 345 kV line at a new substation between the Raun Substation and the Lakefield Junction Substation. Construction activities commenced in Fall 2013 and wind turbine deliveries and erection work began in May 2015. All 495 MW of the wind farm's Wind VIII nameplate capacity were placed in-service by December 3, 2015. The full 502 MW Highland wind farm consists of 495 MW installed as part of Wind VIII and 7 MW installed as part of Wind IX.

MISO queue project R39 transmission studies have been completed for 500 MW of wind generation interconnection at the Highland Site and were previously provided as part of the Wind IX ratemaking principles filing (Docket No. RPU-2014-0002).

A Conditional GIA was executed on July 22, 2014.

This Conditional GIA limits total injection to 475 MW until all identified network upgrades are completed. All MISO studies are completed; no new restudies are likely.

Operation of the site is guided by the Conditional GIA until the identified network upgrades and contingent facilities are completed. However, the site is no longer subject to the MISO Annual ERS Evaluations or the MISO Quarterly Operating Limit reviews.

119.6 MW Macksburg Site

This site is a 119.6 MW wind farm in Madison County acquired from RPM Access, LLC. The site interconnects into the 161 kV line at a new substation between the Winterset Junction Substation and Creston Substation via two distinct provisions in the same generator interconnection agreement. All 119.6 MW of the wind farm's nameplate capacity were placed in-service by December 13, 2014.

MISO queue project J274 for 100 MW was studied in the August 2013 West Definitive Planning Phase (DPP) System Impact Study (SIS), which is now complete. MISO completed a restudy of the prior transmission studies, and the restudy is available at the following MISO link:

https://www.misoenergy.org/planning/generator-interconnection/GI_Studies

Once on the MISO site, select the desired DPP West documents. (The size of the main document is prohibitively large to provide in hard copy.) All MISO studies are completed; no new restudies are likely.

MISO queue J289 for 20 MW was studied in the August 2014 West Definitive Planning Phase (DPP) System Impact Study (SIS) which is now complete. MISO's completed transmission study is available at the following MISO link:

https://www.misoenergy.org/planning/generator-interconnection/GI_Studies

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Once on the MISO site, select the desired documents. (The size of the main document is prohibitively large to provide in hard copy.) All MISO studies are completed; no new restudies are likely.

A Conditional GIA was executed on March 14, 2016.

Operation of the site is guided by the Conditional GIA until the identified network upgrades and contingent facilities are completed. However, this site is no longer subject to the MISO Annual ERIS Evaluation or the MISO Quarterly Operating Limit reviews.

The transmission off-site project to increase the rating of the Macksburg-Creston 161 kV line was completed in December 2016. The project consisted of replacing line structures to increase the operating temperature of the line, which results in an increased line rating. This project was a result of MISO's DPP study involving the Macksburg site.

Next Report

MidAmerican's next update is due September 1, 2020.