

MONTANA-DAKOTA UTILITIES CO.

North Dakota Public Service Commission

Application for TSW II ADP and Amended CPCN

Case No. PU-17-268

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November 3, 2017

*In the Community
to Serve®*



16 PU-17-269 Filed 11/03/2017 Pages: 18
Power Point presentation from Informal Hearing
Montana-Dakota Utilities Co., a Division of MDU Resources Group, Inc.

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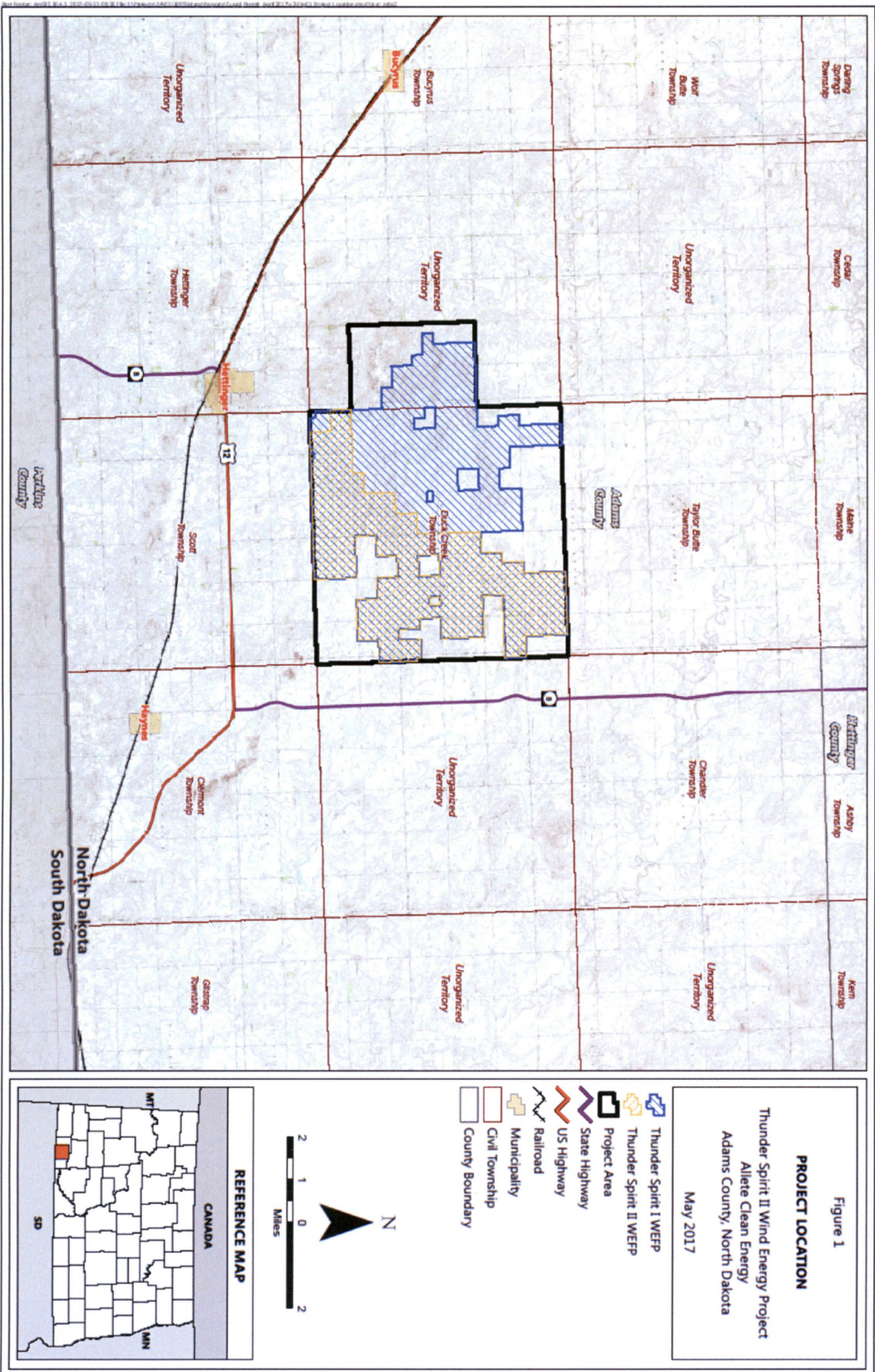
Advance Determination of Prudence & Amended CPCN

- PSC Issued a Notice of Opportunity for Consolidated Hearing on August 16, 2017
 - Three Issues Identified:
 1. Is MDU's proposed Thunder Spirit Wind Project expansion investment prudent?
 2. Whether public convenience and necessity will be served by the expansion?
 3. Whether the applicant is fit, willing, and able to provide service?

Thunder Spirit Wind (TSW)

- Originally sited and fully permitted as 150 MW wind project located near Hettinger, ND in Adams County
- First phase (TSW I) of the project was 107.5 MW and completed in December 2015. Purchased by Montana-Dakota at COD
- Along with the purchase of TSW Phase I, Montana-Dakota purchased the development rights for the full 150 MW project

TSW Project Location



TSW Phase I Turbines



TSW Phase I

- Consists of 43 Nordex 2.5 MW turbines with 107.5 MW of total output
- First year net capacity factor of 45.3%
- Total project costs of \$214 million or \$1,990 per kW
- Project substation designed and built for 150 MW total project size connecting to Montana-Dakota's 230kV Hettinger Jct Substation
- 20.6 MW of accredited capacity in 2017

2016 Request for Proposals

- Issued August 1, 2016 in development of the Company's 2017 IRP
 - TSW Expansion Project (TSW II) was submitted by Allete Clean Energy (ACE) who was the original developer of the TSW I project
 - 25 year PPA with purchase option(s)
 - Up to 50 MW project size with Nordex 3.0 or 3.6 MW turbines
 - Signed PPA with ACE in December 2016

TSW II PPA

- 25 year PPA with pricing adjustments for:
 - Final owner tax equity rates
 - Changes in Federal corporate income tax rates
 - Changes in project scope requested by Company
- 20 year long-term maintenance agreement with turbine supplier including major maintenance costs
- Qualifies for full Federal Production Tax Credit (PTC)
- To be completed by December 31, 2018

2017 Integrated Resource Plan (2017 IRP)

- 2017 IRP identified TSW II PPA as a least cost unit with the Purchase Option providing \$4.8 million in benefits over the PPA
- TSW II resource was selected in all sensitivities including the low growth case

2017 Integrated Resource Plan (2017 IRP) Update

- Change in forecast from 1.65% annual energy growth to 1.23% annual growth over next 5 years
- Reduction in 5-year average peak demand increase from 1.36% to 1.17%
- Addition of interruptible loads under the Commercial Demand Response – 25 MW by end of 2017
- Commercial Air Conditioning Cycling Program no longer justified in the base case

2017 IRP

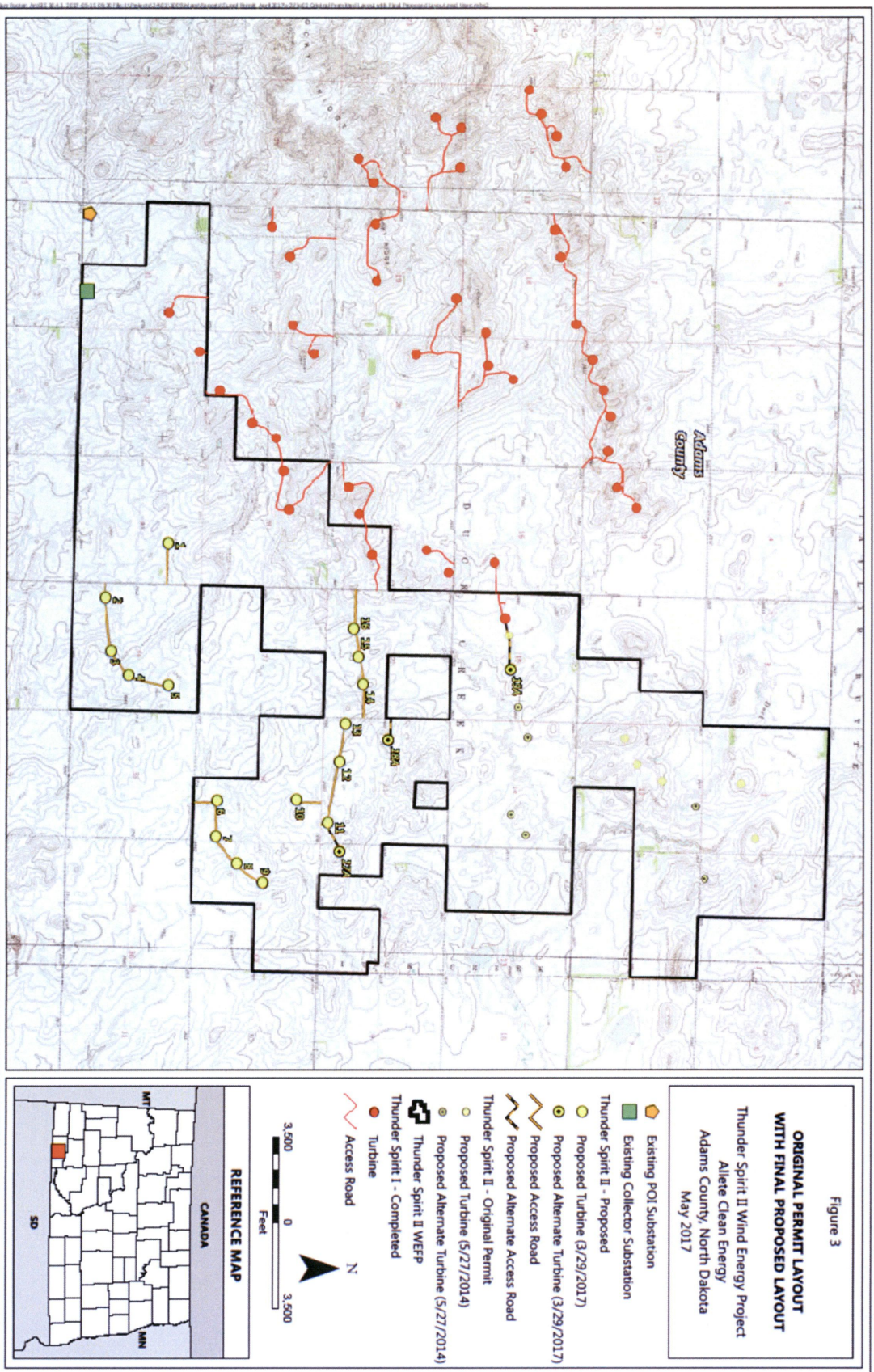
2 Year Action Plan As Updated

- Construction of 48 MW Thunder Spirit Wind Expansion Project (2018)
- Pursue design and development of a combined cycle natural gas-fired facility to be online in or after 2025
- Meet short-term capacity deficits via the MISO Capacity Auction or through bi-lateral capacity purchase agreements

TSW II Ownership Option

- \$85 million total ownership cost (48 MWs)
 - \$1,750 per kW plus \$1 million in owner costs
- Propose to purchase project at COD
- Levelized ownership cost of \$22.40 per MWh
- Historic 5 year MISO annual average energy purchase price of \$24.95 per MWh
- In 2016, MISO energy market purchases were 24% of all Montana-Dakota customer energy up from 10% in 2007.

TSW II - 16 Turbine Locations Plus 3 Alternate Sites



TSW II Ownership Option

- Ownership option provides \$19.1 million in net present value savings over the 25 year MISO forecasted energy prices used in the 2017 IRP
- Ownership option provides \$5.9 million in net present value savings over the 2017 IRP Low Market Price forecast
- Ownership option provides \$7.3 million in net present value savings when comparing the difference between the first 20 year annual revenue requirements of the 2017 IRP Base Case model and the purchase TSW sensitivity case

TSW II ND PSC Siting Certificate

- Amended TSW total project size to 155 MW
 - Matches MISO net generator interconnection of 150 MW net generation
 - Allows greater economies of scale associated with Phase II project
 - Utilize 3.0 MW Nordex N117/3000 turbines
 - Amended Adams County Condition Use Permit to 155 MW total project size approved Aug. 8, 2017
- Amendment approved Aug. 16, 2017
- Finalized TSW II project size at 48 MW

TSW II Amended CPCN Application

- Filed to Amend Certificate originally issued on June 30, 2015
- Public convenience and necessity will be served by Montana-Dakota's ownership of the 48 MW Thunder Spirit Wind Expansion Project; standards continue to be met
- Montana-Dakota is fit, willing and able to own and operate the 48 MW addition

Conclusion

- Company requests approval of the TSW II ADP and amended CPCN applications
 - Meets all of the requirements for a CPCN
 - Prudent investment
 - Low cost generating resource as demonstrated through Company's 2017 IRP
 - Helps Company meet future energy needs of its customers
- Provides future market energy price protection

Thunder Spirit Wind

