

400 North Fourth Street  
Bismarck, ND 58501  
(701) 222-7900

July 7, 2011

**RECEIVED**

JUL 07 2011

**PUBLIC SERVICE COMMISSION**

Executive Secretary  
North Dakota Public Service Commission  
State Capitol Building  
Bismarck, ND 58505-0480

Re: Case No. PU-11-\_\_\_\_  
Application for an Advance  
Determination of Prudence and a  
Certificate of Public Convenience and  
Necessity for an 88 MW Simple Cycle  
Combustion Turbine

Montana-Dakota Utilities Co., a Division of MDU Resources Group, Inc., herewith files an original and seven (7) copies of its Application for an Advance Determination of Prudence pursuant to N.D.C.C. §49-05-16 and a Certificate of Public Convenience and Necessity pursuant to N.D.C.C. Chapters 49-03 and 49-03.1, to construct, own and operate an 88 MW simple cycle combustion turbine, the necessary transmission interconnection facilities for the turbine, and the natural gas pipeline to supply the turbine, collectively hereinafter referred to as the "Project". The turbine will be located adjacent to Montana-Dakota's Heskett Generating Station near Mandan, North Dakota and is required to meet the capacity requirements of Montana-Dakota's electric service customers served by its integrated electric system.

As more fully described in the attached Application, the construction and operation of the Project is the least cost alternative available to meet the capacity requirements of Montana-Dakota electric service customers. The Project is required to be in-service by March 1, 2015 in order to be available as a qualifying resource for the 2015 summer season. Montana-Dakota will apply for the Certificate of Site Compatibility required pursuant to NDCC Chapter 49-22 for the combustion turbine and the required natural gas pipeline in separate Applications with the Commission.

Please refer all inquiries regarding this filing to:

Tamie A. Aberle  
Regulatory Affairs Manager  
Montana-Dakota Utilities Co.  
400 North Fourth Street  
Bismarck, ND 58501

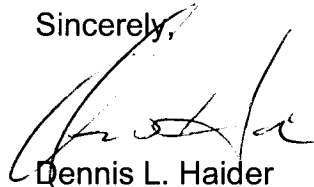
Also, please send copies of all written inquiries, correspondence and pleadings to:

Daniel S. Kuntz  
Associate General Counsel  
MDU Resources Group, Inc.  
P.O. Box 5650  
Bismarck, ND 58506-5650

Montana-Dakota also submits a check in the amount of \$125,000.00 in accordance with NDCC Chapter 49-05-16. Montana-Dakota respectfully requests that this filing be accepted as being in full compliance with the filing requirements of this Commission.

Please acknowledge receipt by stamping or initialing the duplicate copy of this letter attached hereto and returning the same in the enclosed self-addressed, stamped envelope.

Sincerely,



Dennis L. Haider  
Vice President Regulatory, Gas Supply &  
Business Development

Attachments  
cc: Daniel S. Kuntz

**STATE OF NORTH DAKOTA  
PUBLIC SERVICE COMMISSION**

In the Matter of the Application of )  
MONTANA-DAKOTA UTILITIES CO., a )  
Division of MDU Resources Group, Inc. )  
for an Advance Determination of ) Case No. PU-11-\_\_\_\_  
Prudence and a Certificate of Public )  
Convenience and Necessity for an 88 )  
MW Simple Cycle Combustion Turbine )

**I. Summary of Application**

Montana-Dakota Utilities Co. (Montana-Dakota or Applicant) is the Applicant in the above-entitled proceeding, and makes application pursuant to N.D.C.C. §49-05-16 for an Advance Determination of Prudence and N.D.C.C. Chapters 49-03 and 49-03.1 for a Certificate of Public Convenience and Necessity to own and operate an 88 MW frame type simple cycle combustion turbine and associated facilities. The Project will be located on currently owned property that is adjacent to Montana-Dakota's Heskett Generating Station near Mandan, North Dakota. The Project is required to meet the capacity requirements of Montana-Dakota's electric service customers served by its integrated electric system. The 2011 Integrated Resource Plan (2011 IRP) filed with the Commission on May 12, 2011(Case No. PU-11-158) describes the need for the resource addition and justification that the addition of this resource is the least cost option for meeting a portion of the identified need.

Montana-Dakota will show in this Application that public convenience and necessity will be served by the construction and operation of the proposed facilities, that Montana-Dakota is fit, willing and able to provide such service and that the Project is a prudent and reasonable resource for its North Dakota electric customers.

## **II. Description of Applicant**

Montana-Dakota is a Division of MDU Resources Group, Inc., a Delaware corporation duly authorized to do business in the State of North Dakota as a foreign corporation, and doing business in the State of North Dakota as a public utility subject to the jurisdiction of and regulation by the North Dakota Public Service Commission (Commission) under Title 49, NDCC, as amended. Montana-Dakota's Certificate of Incorporation and amendments thereto have been previously filed with the Commission under Case No. PU-08-710 and such Certificate and Amendments are hereby incorporated by reference as though fully set forth herein. Montana-Dakota provides electric service to approximately 125,000 customers with approximately 77,000 of those customers located in North Dakota. Exhibits 1 and 2 provided in support of this Application have been verified by Alan Welte, Generation Manager for Montana-Dakota and Rita A. Mulkern, Regulatory Affairs Manager for Montana-Dakota. The Verifications are attached hereto.

## **III. Description of the Project**

Montana-Dakota seeks authorization to own and operate an 88 MW Simple Cycle Combustion Turbine (SCCT) and associated facilities necessary to interconnect with Montana-Dakota's existing electric system. The Project also includes a 10-inch natural gas pipeline, approximately 24 miles in length, interconnecting with Northern Border Pipeline Company (Northern Border) to supply the gas requirements for the turbine.

The Project is proposed to be located near Mandan, North Dakota adjacent to Montana-Dakota's Heskett Station. This site was chosen based on the results of a thorough site evaluation that is documented and provided in Attachment F in the 2011 IRP. The criteria considered in the analysis leading to the Mandan site selection included; selection of the combustion turbine type, natural gas supply requirements, electric transmission interconnection, water supply, environmental permitting and other factors.

Following is a summary of the results from the evaluation process regarding the type of combustion turbine and site selection detailed in Attachment F of the 2011 IRP:

***Combustion Turbine Type*** – SCCT resources were evaluated as part of the supply-side analysis. SCCTs are primarily used for peaking service, generally have lower capital costs and can be installed within shorter time periods than the other resource types. The two primary SCCT types analyzed were: 1) heavy-duty (Frame) type designed to drive stationary generation resources and process plant equipment, and 2) aero-derivative (Aero) type designs derived from engines used in the aircraft industry. A list of suppliers considered is provided in Appendix B of Attachment F in the 2011 IRP. The results indicated that lower capital costs, lower operation and maintenance costs, better emission control, ability to perform on-site maintenance, lower inlet natural gas pressure requirements, less susceptibility to cold weather operational issues and Montana-Dakota's operating experience associated with the Frame type SCCT outweighed the benefits of lower fuel costs and shorter on-site construction time associated with an Aero type SCCT. With the conclusion that the Frame type SCCT was most appropriate and cost

effective an evaluation of the criteria affecting site selection was conducted. Site locations near the communities of Baker, Montana; Mobridge, South Dakota; Mandan, Linton, Richardton, Tioga and Williston, North Dakota were originally screened with the Richardton, Linton and Mandan, North Dakota sites selected for final consideration based on natural gas supply, electric transmission interconnection and water supply considerations.

***Natural Gas Supply*** - The Frame type SCCT requires a minimum natural gas inlet pressure of 385 psi in order to achieve full output. This requirement resulted in sites selected where the new SCCT could be supplied with natural gas delivered through the Northern Border pipeline system. This pipeline system provides the necessary high pressure deliveries along with the option of firm transportation contracts, eliminating the need for additional on-site gas compression equipment and dual fuel capabilities. Several pipeline delivery scenarios were considered with a company-owned pipeline dedicated to the electric utility determined to be the best option.

The natural gas supply comparison for the Richardton, Linton and Mandan sites is provided in the 2011 IRP in Table 3 (Attachment F, page 7). As shown, the Linton site resulted in the lowest estimated capital cost at \$1 million versus Richardton at \$3 million and Mandan at approximately \$15 million<sup>1</sup>. The Linton site provides the closest point of interconnection with Northern Border and the option of utilizing an existing pipeline tap.

---

<sup>1</sup> An 8-inch natural gas supply pipeline was the basis for the estimated cost used in this comparison. Based on revised design criteria a 10-inch pipeline is now required resulting in an increase in capital costs for all three sites.

***Electric Transmission Interconnection*** – As a member of the Midwest Independent Transmission System Operator (MISO), Montana-Dakota evaluated sites within the MISO transmission footprint where the point of generator interconnection would be to Company-owned transmission facilities. Other consideration was given to sites where an SCCT addition would strengthen the Company's transmission system and where future transmission upgrades were planned. Preliminary capital cost estimates were developed for interconnecting the SCCT to the transmission system and to address potential transmission network system impacts at Richardton, Linton and Mandan. As indicated by Table 4 in the 2011 IRP (Attachment F, page 8), the Mandan site resulted in a much lower estimated capital cost for interconnection at \$2.0 million versus Richardton at \$14.5 million and Linton at approximately \$18.0 million. It is anticipated that the Mandan site will require fewer transmission system upgrades and provide the potential for enhancing system reliability in the area.

**Water Supply** - The estimated water requirements for the SCCT are up to 40 gallons per minute (gpm) for evaporative inlet air cooling and up to 90 gpm for NO<sub>x</sub> control with sources of water identified during the study as wells, river, regional pipelines, and municipal systems. As shown in the 2011 IRP Table 5 (Attachment F, page 9), the Mandan site resulted in a much lower estimated capital cost for water supply at \$50,000 versus Linton at \$310,000 and Richardton at approximately \$420,000. The Mandan site provides the opportunity to share the Heskett Station water intake system.

**Environmental Permitting and Other Factors** - Preliminary indications are that there are no significant concerns foreseen in permitting the SCCT at any of the study sites. Synergies and cost reductions from sharing facilities, equipment, supervision, and labor can be achieved by locating a new SCCT near an existing electric generating unit as offered by the Mandan site and identified in the 2011 IRP in Table 6 (Attachment F, page 10). The Mandan site offers the potential for sharing of facilities, equipment, supervision, and labor with the Heskett Station resulting in reduced operating costs, and would not require the purchase of additional land.

In summary, the Mandan site has the lowest estimated total capital cost, the highest projected capacity, and the lowest potential operational cost if integrated with the Heskett Station. The higher natural gas pipeline costs are offset by reduced electric transmission interconnection and upgrade costs and the ability to share the existing Heskett Station water intake. The Mandan site also provides the potential for sharing of facilities, equipment, supervision, and labor with the Heskett Station that will result in reduced operating costs and use of existing land rights for the station site. A summary of total estimated capital costs and estimated capacity to be produced at each site is as follows:<sup>2</sup>

---

<sup>2</sup> 2011 IRP, Attachment F, page 12, Table 7.

	<b>Richardton</b>	<b>Linton</b>	<b>Mandan</b>	<b>Mandan (conservative)</b>
<b>Capital Cost Estimate (2010\$ million)</b>	\$73.47	\$74.61	\$71.59	\$75.42
<b>Base Load (kW)</b>	86,279	87,388	88,054	88,054
<b>Base Load (\$ per kW)</b>	\$851	\$854	\$813	\$857
<b>Peak Load (kW)</b>	93,525	94,707	95,418	95,418
<b>Peak Load (\$ per kW)</b>	\$786	\$788	\$750	\$790

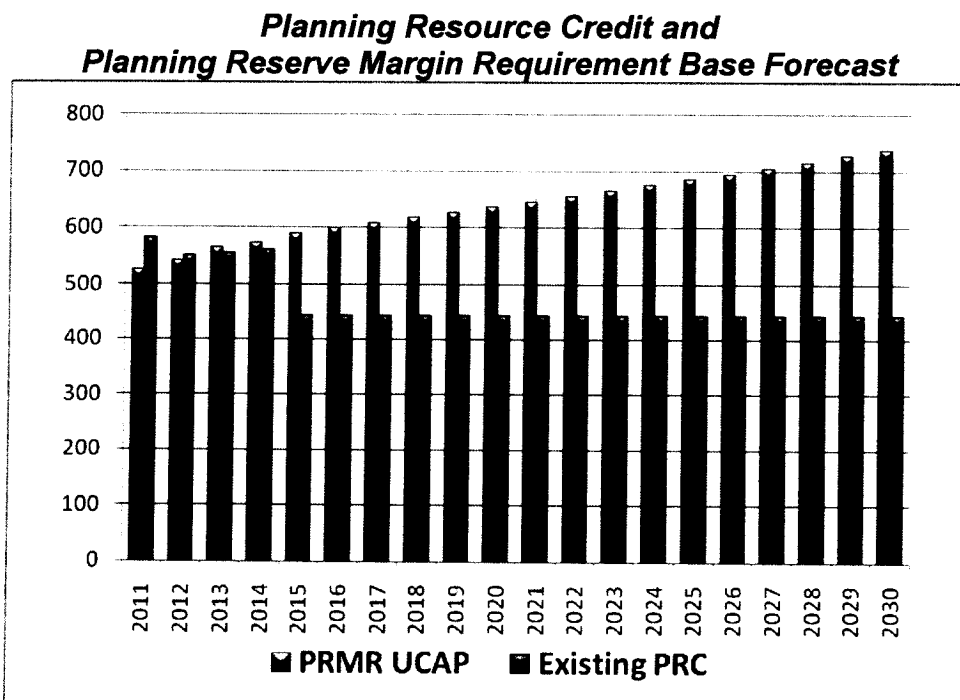
As shown, the Mandan site provides the lowest cost per base load kW at a cost of \$813 kW. The column entitled "Mandan (conservative)" was a cost estimate prepared to address potential environmental permitting complexities associated with siting the turbine near the Heskett Station. A recent environmental screening analysis conducted for the Mandan site shows the assumptions behind the "conservative" cost estimate will no longer be required and will not be considered during detailed design. However, this cost estimate (approximately \$850 per base load kW) was utilized in the expansion analysis modeling described in further detail in Paragraph III below. While the costs of the other sites are comparable, the Mandan site was chosen as the preferred site location because of the synergies associated with locating the SCCT near the existing Heskett Station.

A 10-inch natural gas pipeline to be constructed, owned and operated by Montana-Dakota is proposed to be initiated at a tap on the Northern Border Pipeline near St. Anthony, North Dakota and traverse approximately 24 miles in a northerly and easterly direction to the turbine site. The pipeline has been sized to meet the needs of the proposed turbine along with the capacity to serve possible future needs at this site. The 10-inch pipeline capital cost is estimated at \$15.9 million plus approximately \$2.5 million for the tap and border station at the interconnection with Northern Border.

A preliminary estimate of \$2.2 million has been included for the transmission interconnection costs. Montana-Dakota has submitted an application to MISO for this Project to be included in the MISO generator interconnection queue study process. This study is expected to be part of MISO's definitive planning phase scheduled to start in October 2011.

### III. Need and Justification for the Project

The need for the 88 MW SCCT has been determined and documented through the 2011 IRP process. As shown below, Montana-Dakota is forecasting a capacity deficit to occur beginning in 2015 with the expiration of a capacity purchase agreement occurring in May 2015. Under the base forecast the deficit is predicted to be 149.5 planning resource credits (PRC) by the summer of 2015. The 88 MW turbine will provide approximately 82 PRC.



The 88 MW SCCT is shown to be a least cost resource as part of the resource plan additions required in the 2011-2015 period under each of the scenarios analyzed. In fact, the resource expansion analysis results providing the least cost plan in the 2011 IRP calls for the addition of two 88 MW combustion turbines along with 49.5 MW of demand response by 2015. Montana-Dakota proposes to construct only one turbine at this time, and will seek bids and alternatives for additional capacity to meet identified needs at a later date. The Supply-Side Resource Analysis provided in Chapter 4 and Attachment C of the 2011 IRP offers a complete description of capacity resources and supply-side alternatives considered in the study. The Electric Generation Expansion Analysis System (EGEAS), a computer model developed by the Electric Power Research Institute, was used to perform the resource expansion analysis and to develop the least-cost integrated resource expansion plan. Resource alternatives considered included a simple cycle combustion turbine, combined cycle combustion turbine, coal generation, self-built wind generation, purchased capacity, purchased wind energy, a demand response program, and the Big Stone Air Quality Control System (AQCS).<sup>3</sup> A Request for Proposal was issued on June 1, 2010 to solicit proposals for capacity, energy and demand response resources that could also be considered as part of Montana-Dakota's resource evaluation<sup>4</sup>. Demand-side management (DSM) programs described in Chapter 3 of the 2011 IRP were also considered as part of the resource expansion analysis. Eleven planning scenarios, including a base case, a base case with a new DSM package and nine sensitivity runs were considered. The sensitivity scenarios consisted of various assumptions regarding the following:

- A carbon tax was added to every ton of CO<sub>2</sub> emitted from Montana-Dakota's coal fired units and natural gas fired combustion turbines, MISO energy purchases

---

<sup>3</sup> Refer to Table 2-7 provided in Attachment C of the 2011 IRP for the capital cost, fixed and variable O&M costs, fuel costs and operating characteristics of each resource analyzed.

<sup>4</sup> The RFP is provided in Attachment E of the 2011 IRP.

and new generating units added in 2015. A tax at \$30 per ton and a tax at \$50 per ton were analyzed.

- Natural gas prices for deliveries to Montana-Dakota's existing turbines, future combustion turbines and future combined cycle plants. The delivered price of \$5.05 per dk was inflated by \$3.00 per dk in the high gas price scenario and decreased by \$1.00 per dk in the low natural gas price scenario.
- A high environmental cost consisting of \$30 per ton carbon tax, \$1.25 per MWh for mercury control on coal-fired units and \$3.00 per MWh for solid waste regulation for coal-fired units.
- Forecasted requirements assuming low growth at 0.5 percent per year over the 20-year forecast.
- Forecasted requirements assuming high growth at 4.4 percent per year over the 20-year forecast.
- A twenty percent increase in capital and O&M costs for future combustion turbines was analyzed to determine the sensitivity of the base case to increases in combustion turbine costs.
- The cost of the Big Stone AQCS project (pending in an advance determination of prudence application before this Commission in Case No. PU-11-163) was increased to determine the breakeven point between the retrofit and alternative resources.

While the total cost of the generation portfolio changed with each scenario, the addition of a SCCT remained part of the least cost resource mix in each of the scenarios studied.<sup>5</sup>

---

<sup>5</sup> A comparison of the Net Present Value of the total revenue requirement for each scenario is provided in the 2011 IRP - Table 3-1 (Attachment C, page 18).

#### **IV. Cost Estimates**

The Project cost is estimated to be \$75.0 million in total (\$851 per base load kW) at the time the combustion turbine is on-line and available to serve customers in March 2015, excluding the Allowance for Funds used in Construction (AFUDC). The total cost of the Project, including AFUDC is estimated to be \$85.6 million with North Dakota's allocated share of the estimated cost of the Project approximately \$58.2 million.

As described above, the Project consists of the following major components (in millions):

88 MW SCCT	\$54.4
24-mile natural gas pipeline and tap	18.4
Transmission interconnection costs	<u>2.2</u>
Total	\$75.0

Exhibit 1 provides the breakdown of the cost estimates and estimated annual expenditures through the expected on-line date of the SCCT. A construction time line is also provided in Exhibit 1.

North Dakota's retail customers will see an estimated increase of \$4.00 per month in their electric service bill assuming the use of 750 Kwh per month. The estimated annual revenue requirement is provided in Exhibit 2.

#### **VI. Reasonableness and Prudence of the Project**

Montana-Dakota requests an advance determination of prudence for the construction and operation of an 88 MW SCCT at a site located near the Heskett Generating Station provided with natural gas through a ten inch natural gas pipeline interconnected to Northern Border at a location approximately 24 miles south of the

turbine site. A finding that this investment will be deemed reasonable and prudent and recoverable through rates at a point in the future is necessary in order to facilitate the approximate \$85.6 million investment associated with this resource addition. As provided in 49-05-16 the Commission may issue an order approving the prudence of an electric resource addition if the following conditions are met:

- a. The public utility files with its application a projection of costs to the date of the anticipated commercial operation of the resource addition;
- b. The public utility files with its application a fee in the amount of one hundred twenty-five thousand dollars.
- c. The commission provides notice and holds a hearing, if appropriate, in accordance with section 49-02-02; and
- d. The commission determines that the resource addition is prudent. For facilities located or to be located in this state the commission, in determining whether the resource addition is prudent, shall consider the benefits of having the resource addition located in this state.

Montana-Dakota has met the above conditions and requests that the Project be deemed a reasonable and prudent investment for Montana-Dakota's North Dakota electric customers.

## **VII. Conclusion**

Applicant respectfully requests that the Commission:

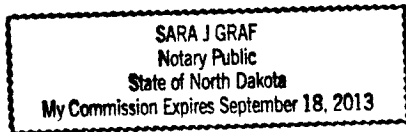
1. Give Notice of Opportunity to request a hearing to interested parties and, if no hearing is requested within twenty days, to waive the hearing in accordance with §49-03.1-05, NDCC;
2. Enter an Order making a determination that the Project is prudent pursuant to the requirements of to N.D.C.C. §49-05-16e.
3. Enter an Order and issue a Certificate of Public Convenience and Necessity authorizing the Applicant to construct, own and operate an 88 MW simple cycle combustion turbine, associated interconnection facilities and natural gas pipeline.

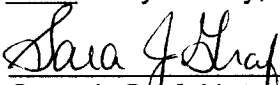
3. Grant such other relief as the Commission shall deem appropriate.

Dated this 7<sup>th</sup> day of July, 2011.

  
Dennis L. Haider  
Vice President Regulatory, Gas Supply &  
Business Development

Subscribed and sworn to before me this 7<sup>th</sup> day of July, 2011.



  
Sara J. Graf, Notary Public  
Burleigh County, North Dakota  
My Commission Expires: 09/18/2013

Of Counsel:

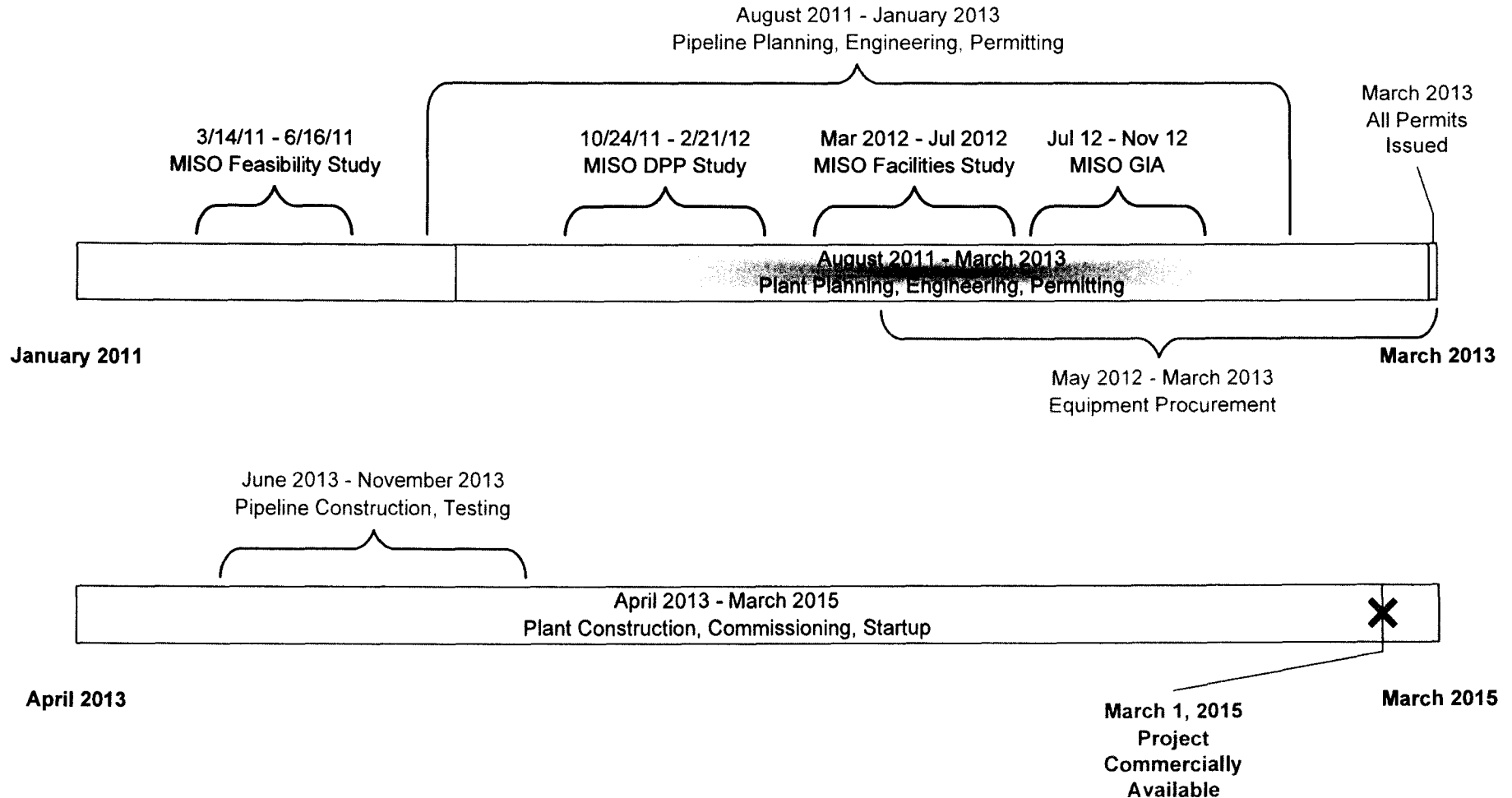
Daniel S. Kuntz  
Associate General Counsel  
MDU Resources Group, Inc.  
P.O. Box 5650  
Bismarck, ND 58506-5650

**MONTANA-DAKOTA UTILITIES CO.**  
**88 MW COMBUSTION TURBINE**  
**ESTIMATED EXPENDITURES**  
**(000s)**

	<u>Total</u>	<u>2011</u>	<u>2012</u>	<u>2013</u>	<u>2014</u>	<u>2015</u>
Combustion Turbine	\$54,440					
Transmission Interconnection	2,153					
Pipeline	18,407					
Total before AFUDC	\$75,000	\$1,766	\$19,276	\$37,663	\$10,670	\$5,625
AFUDC	10,629	23	650	3,261	4,899	1,796
Total	<u>\$85,629</u>	<u>\$1,789</u>	<u>\$19,926</u>	<u>\$40,924</u>	<u>\$15,569</u>	<u>\$7,421</u>

# Timeline & Milestones

Future Unit near R.M. Heskett Station  
88 MW Simple Cycle Combustion Turbine



The timeline and milestones are preliminary and subject to change during detailed engineering.



**MONTANA-DAKOTA UTILITIES CO.  
COMBUSTION TURBINE REVENUE REQUIREMENT  
INTEGRATED SYSTEM - NORTH DAKOTA  
(000s)**

	<u>Integrated System</u>	<u>North Dakota</u>
Operating Revenues	\$0	\$0
Operating Expenses		
Cost of gas	\$916	\$569
O&M	1,217	828
Depreciation	2,141	1,456
Taxes Other Than Income	428	291
Total Exp.	<u>4,702</u>	<u>3,144</u>
Income before Taxes	(4,702)	(3,144)
Interest Expense	<u>2,472</u>	<u>1,681</u>
Taxable income	(7,174)	(4,825)
Income Taxes	<u>(2,751)</u>	<u>(1,850)</u>
Operating Income	<u>(\$1,951)</u>	<u>(\$1,294)</u>
Rate Base	\$82,667	\$56,216
Revenue Requirement 1/	<u>\$14,415</u>	<u>\$9,749</u>
Projected Mwh	2,926,266	1,817,659
Increase per Kwh	<u>\$0.00493</u>	<u>\$0.00536</u>
 <b><u>Rate Base</u></b>		
Plant in Service	\$85,629	\$58,230
Acc. Reserve	(2,141)	(1,456)
DIT	<u>(821)</u>	<u>(558)</u>
Rate Base	<u>\$82,667</u>	<u>\$56,216</u>

1/ Inclusive of a 10.75 percent return on equity.

BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF NORTH DAKOTA

In the Matter of the Application of )  
MONTANA-DAKOTA UTILITIES CO., a )  
Division of MDU Resources Group, Inc. )  
for an Advance Determination of ) Case No. PU-11-\_\_\_\_  
Prudence and a Certificate of Public )  
Convenience and Necessity for an 88 )  
MW Simple Cycle Combustion Turbine )

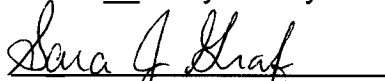
**VERIFICATION**

Alan Welte, being first duly sworn on oath, deposes and says that he is the Generation Manager for Montana-Dakota Utilities Co., the Applicant in the above captioned matter, and that Exhibit No. 1 submitted in the above captioned matter was prepared under his direction, that he knows the contents thereof, and that the same is true and correct to the best of his knowledge dated this 7<sup>th</sup> day of July 2011.

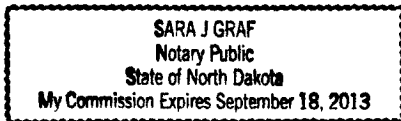


Alan Welte

Subscribed and sworn to before me this 7<sup>th</sup> day of July 2011.



Sara J. Graf, Notary Public  
Burleigh County, North Dakota  
My Commission Expires: 09/18/2013



OF COUNSEL:  
Daniel S. Kuntz  
Associate General Counsel  
MDU Resources Group, Inc.  
P. O. Box 5650  
Bismarck, ND 58506-5650

BEFORE THE PUBLIC SERVICE COMMISSION  
OF THE STATE OF NORTH DAKOTA

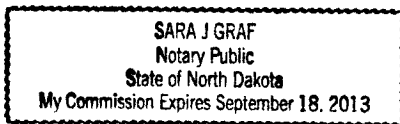
In the Matter of the Application of )  
MONTANA-DAKOTA UTILITIES CO., a )  
Division of MDU Resources Group, Inc. )  
for an Advance Determination of ) Case No. PU-11-\_\_\_\_  
Prudence and a Certificate of Public )  
Convenience and Necessity for an 88 )  
MW Simple Cycle Combustion Turbine )

**VERIFICATION**

Rita A. Mulkern, being first duly sworn on oath, deposes and says that she is the Regulatory Affairs Manager for Montana-Dakota Utilities Co., the Applicant in the above captioned matter, and that Exhibit No. 2 submitted in the above captioned matter was prepared under her direction, that she knows the contents thereof, and that the same is true and correct to the best of her knowledge dated this 7<sup>th</sup> day of July 2011.

Rita A. Mulkern  
Rita A. Mulkern

Subscribed and sworn to before me this 7<sup>th</sup> day of July 2011.



Sara J. Graf  
Sara J. Graf, Notary Public  
Burleigh County, North Dakota  
My Commission Expires: 09/18/2013

OF COUNSEL:  
Daniel S. Kuntz  
Associate General Counsel  
MDU Resources Group, Inc.  
P. O. Box 5650  
Bismarck, ND 58506-5650