

MONTANA-DAKOTA UTILITIES CO.

ND Public Service Commission

Generation Resource Recovery Rider

February 4, 2016



*In the Community
to Serve*



Tamie Aberle
Director Regulatory Affairs

Overview of the Company's Application and the Settlement Agreement



Montana-Dakota's Application

- October 26, 2015 – Montana-Dakota filed to update the Heskett III costs and proposed to include recovery of the RICE units located near the Lewis & Clark Station in the GRRR.
- Two proposed revisions to the Rate 56 tariff
 - Change the allocator to be consistent with allocation of generation costs included in rates (average & excess demand)
 - Changed the return component to reflect the current capital structure in order to pass the benefits of lower debt costs on to customers.

Calculation of the GRRR Rates

- Revenue Requirement for Each Project
 - Return, depreciation, taxes and operation & maintenance expenses included for each project.
 - The Heskett III turbine has been recovered through the GRRR since rates were implemented on 1/9/15, The project was placed into service in August 2014.
 - North Dakota's allocated share of the Heskett III investment is \$38.4 million.
 - The Lewis & Clark RICE units was placed into service in December 2015,
 - North Dakota's allocated share of the Lewis & Clark RICE units is \$31.2 million

Settlement Agreement with Advocacy Staff

1. GRRR rates implemented on an interim basis subject to refund pending the outcome of an electric rate case to be filed by September 30, 2015
2. ROE of 10.5%
3. Investment amount to be recovered in final rates and ROE are subject to change as a result of the rate case. Any amounts collected in excess of final determination to be refunded
4. Investments will be rolled into rates as part of the rate case.

Generation Resource Recovery Rider Rate 56

- Proposed GRRR reflects revenue requirement through end of 2016 equating to \$9,669,944 an increase of \$4,399,936.
- Charges per KWh by customer class:
 - Residential: \$0.00500 per kWh
 - Small General: \$0.00349 per kWh
 - Large General: \$1.44 per Kw
- Increase to Residential customer = \$1.94 per month

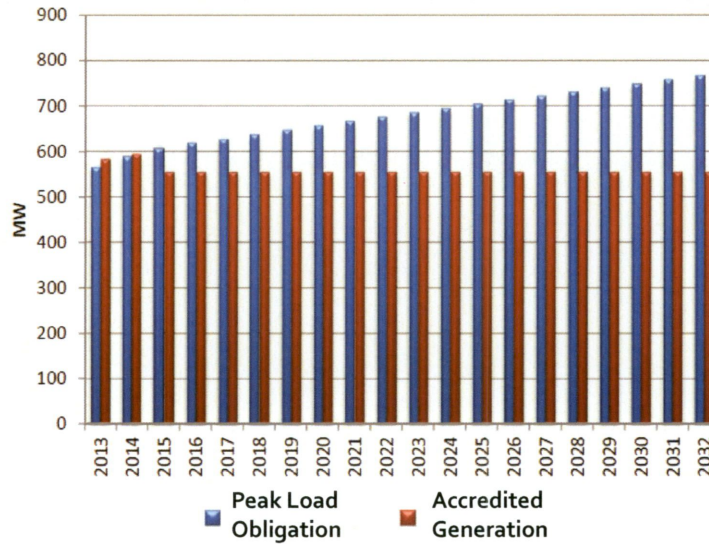
Darcy Neigum
Director System Operations and Planning

Need and Timing of Lewis & Clark RICE Units

Need for Lewis & Clark RICE Project

- Resource Adequacy Needs
 - 2013 Integrated Resource plan
- Reliability Concerns
 - Transmission dependent on Western Area Power Administration and Basin Electric in Bakken area
 - Continued increasing REC load forecasts
 - Lack of adequate transmission for Winter 2015-2016
 - Potential for load curtailments

2013 IRP Supply-Side Overview



2013 IRP Modeling Results

Year	Base Case: L&C Retired in 2015	Optimal Resource Case	Current MISO Resource Adequacy
2014			
2015	4-ICE (146 MW) Wind PPA (50 MW)	L&C Baghouse Wind PPA (50 MW) 2-ICE (73 MW)	L&C Baghouse Wind PPA (50 MW)
2016		1-ICE (37 MW)	
2017	1-SCCT (72 MW)		1-ICE (37 MW)
2018			
2019			
2020		1-CCCT (200 MW)	1-CCCT (200 MW)
2021+	1-CCCT (129 MW) 1-ICE (36 MW) 1-Wind (20 MW)	1-Wind (20 MW)	
NPV (\$Mil)	3,640	3,525	3,412

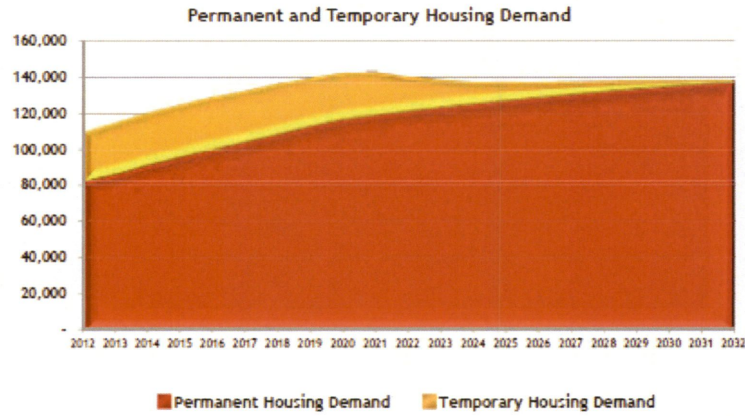
ND PSC PIE Meeting - February 21, 2013 Transmission System Impacts

- Growth in Bakken has consumed flexibility and margin on electric transmission system
- Less flexibility to schedule outages and maintenance
- “System Intact” load serving capability
- Majority of Montana-Dakota served communities in Western North Dakota will double their electric consumption in next 2-3 years
- Montana-Dakota is getting 10 percent or less of all growth in Western North Dakota

KLJ Bakken Load Growth Study August 2012 – Final Report



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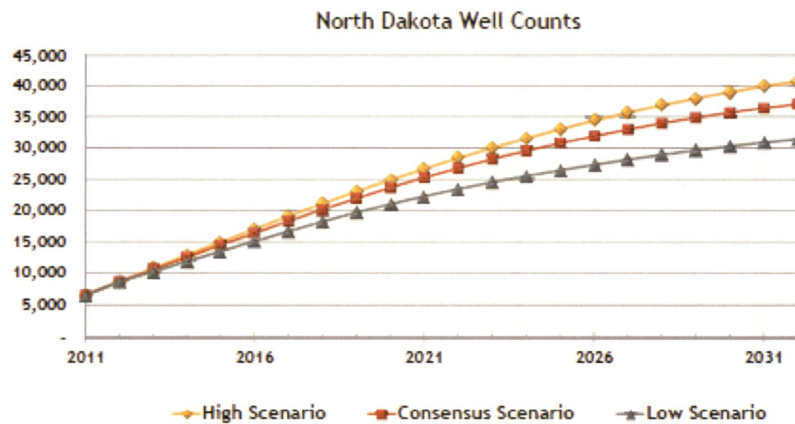
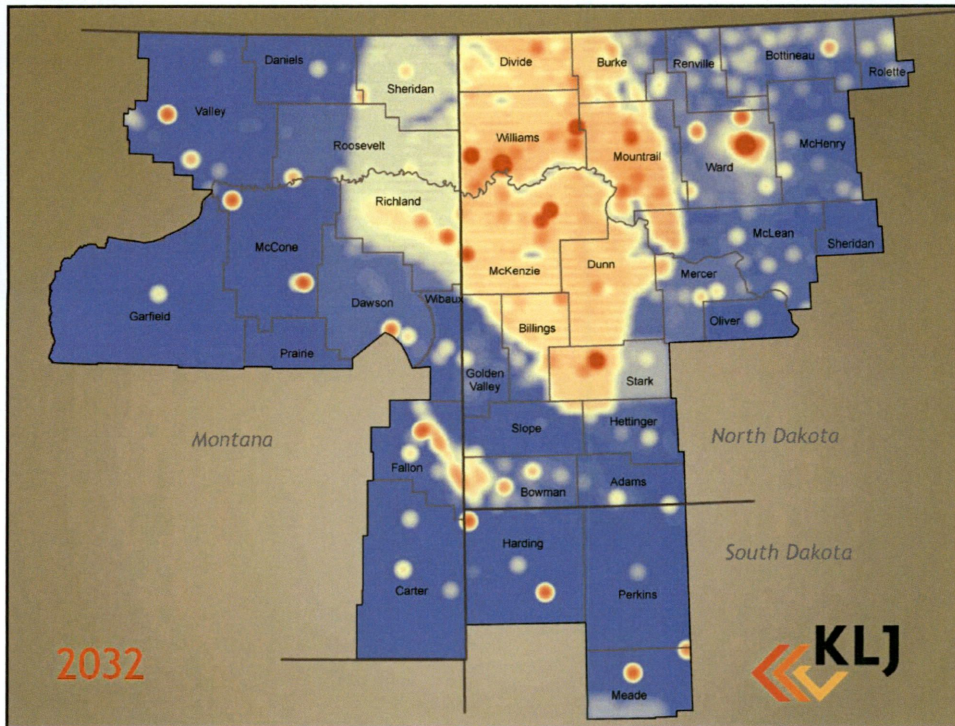


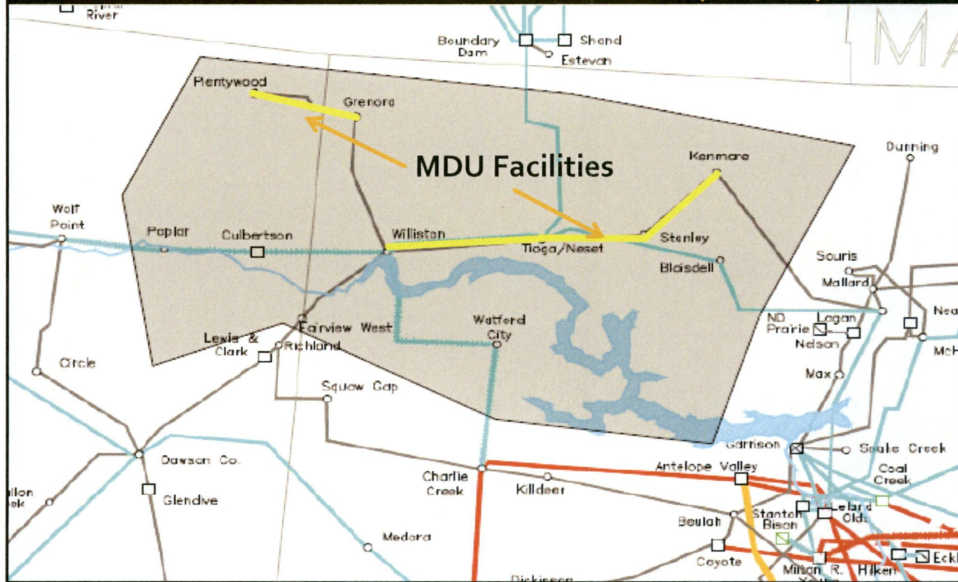
Figure 5: North Dakota Well Counts
Source: University of North Dakota

KLJ Bakken Load Growth Study August 2012 – Final Report

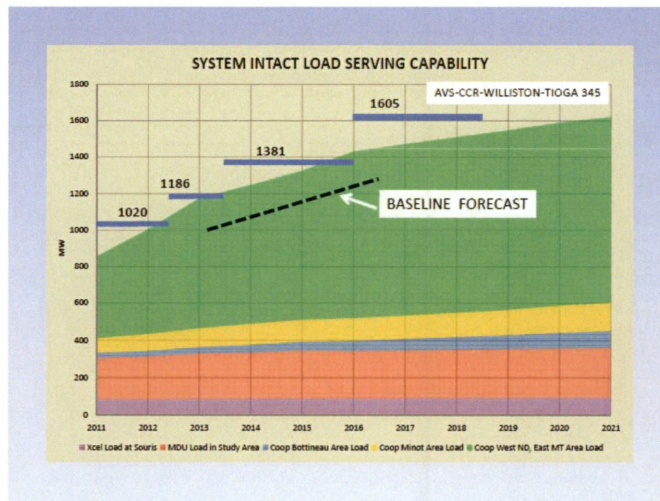
MW Demand			
	2012	2032	Additional
North Dakota	974	3,030	2,057
Montana	204	608	404
South Dakota	31	83	52
Total	1,209	3,721	2,512



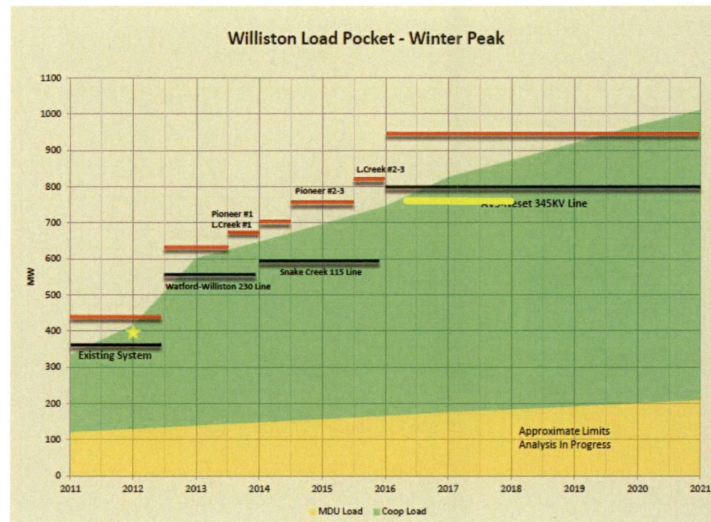
MDU Transmission System Williston Area Load Pocket (2012)



Bakken Load Forecasts and Impacts December 2011



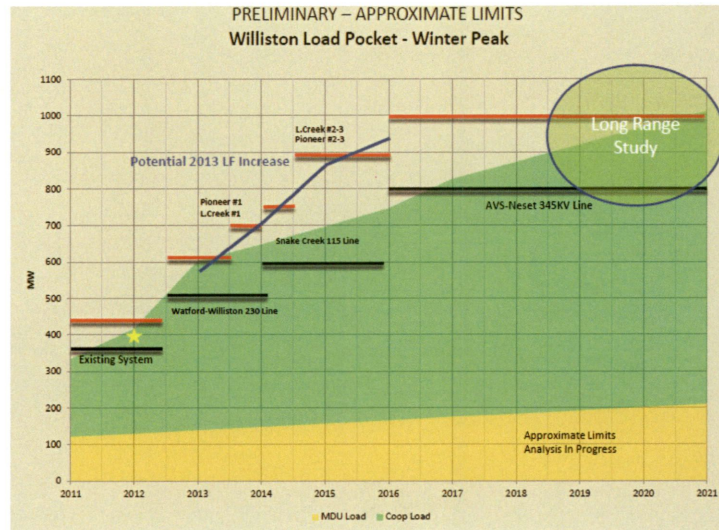
Bakken Load Forecasts and Impacts November 2012



Less than Firm Transmission Service Mitigation Efforts

- Manitoba Hydro Import Services
- Demand Response Programs
- Mobile Generation (3 x 2 MW diesel units)
- Redispatch Services (Basin Electric)
 - Transmission congestion service
 - Dependent on available generation
 - Last to be served and first to be curtailed
- Build own transmission or generation
- Need for Basin 345kV transmission line
 - AVS to Williston

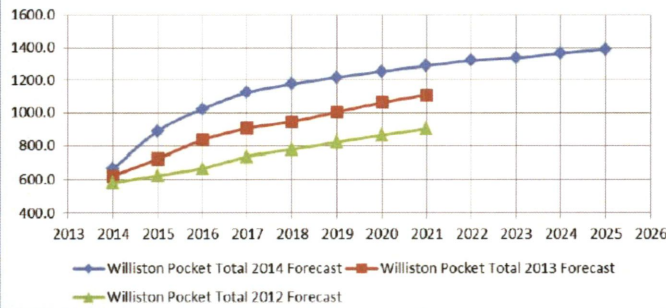
Bakken Load Forecasts and Impacts April 2013



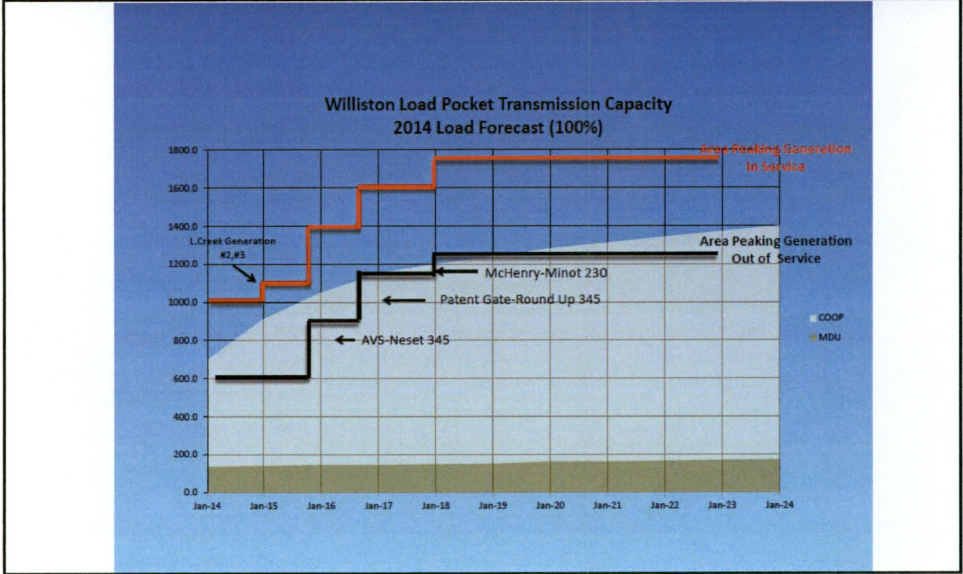
Bakken Load Forecasts and Impacts July 2014

Comparison of Recent Load Forecasts

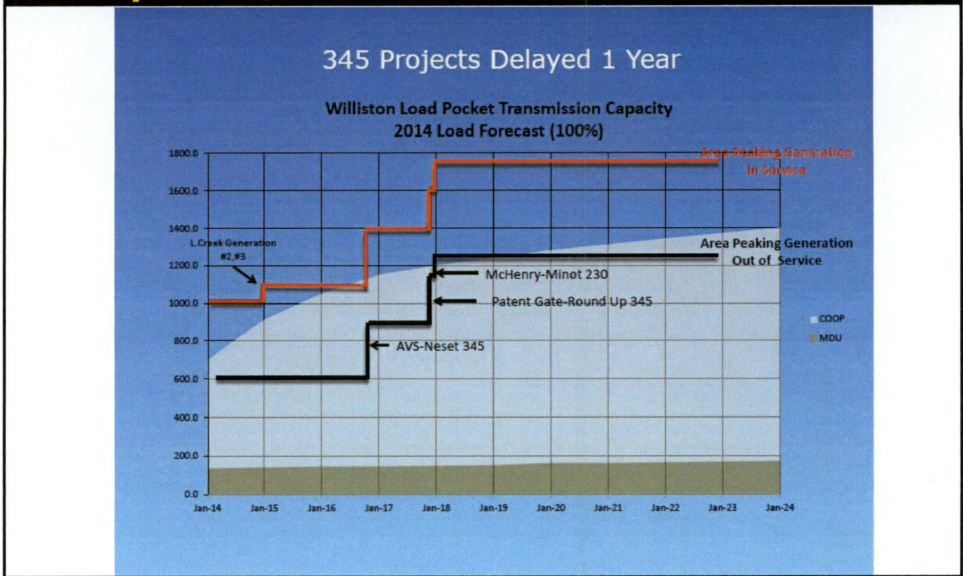
Williston Load Pocket Winter Peak Forecasts
50-50 Weather Normalized



Bakken Load Forecasts and Impacts July 2014



Bakken Load Forecasts and Impacts July 2014



Potential Transmission Shortfalls for Winter 2015-2016 Season

- Build transmission into Bakken area
 - Line from Beulah or Dickinson
 - Too expensive (>\$100 million) and not enough time to construct
- Partnership opportunities in new generation
 - Project timing issues
 - Lack of access to some sites
- Build own generation
- Unknowns with SPP seams issues including redispatch in Bakken area

Lewis & Clark RICE Units – 18.6 MW

- Reviewed other potential sites
- Brownfield site at Lewis & Clark was optimal
 - Land, natural gas, water, transmission, labor
- 18.6 MW project size plus demand response with mobile generators met MDU's 'Less Than Firm Requirements'
- Capable of being in-service to meet 2015-2016 Winter Season

Summary – Lewis & Clark RICE

- Needed to meet customer peak demands
- Transmission dependent on Western & Basin in Bakken area
- Needed to provide reliability support in Bakken area and mitigate customer load curtailments due to inadequate transmission
- Continued increases in REC load forecasts and concerns with in-service date for Basin's 345kV transmission line
- Able to be constructed and online for the Winter of 2015-2016

Alan Welte
Director Generation

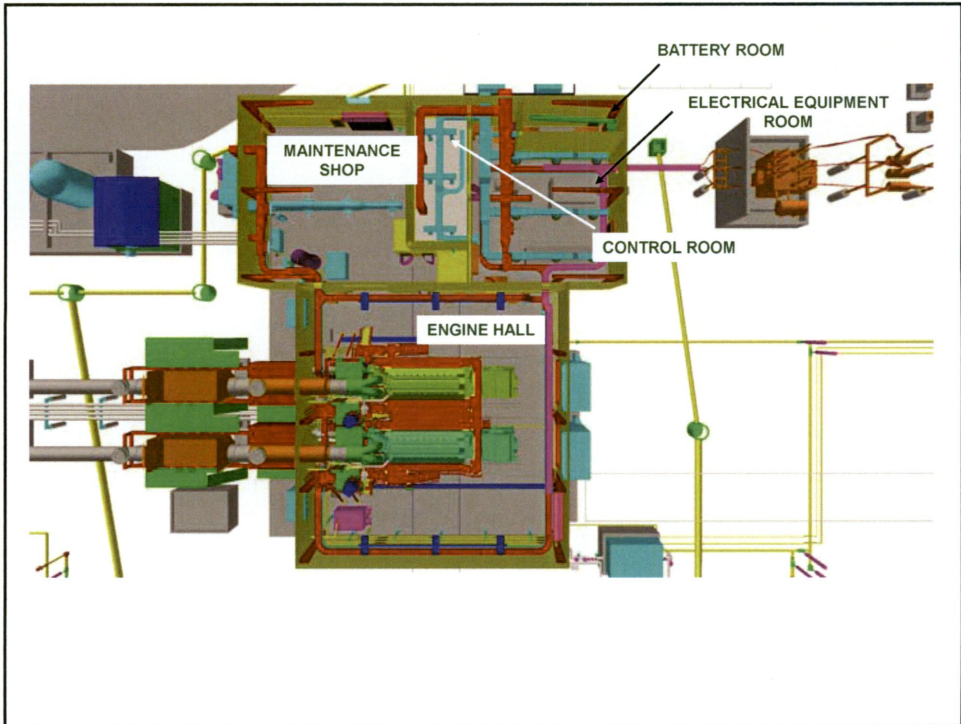
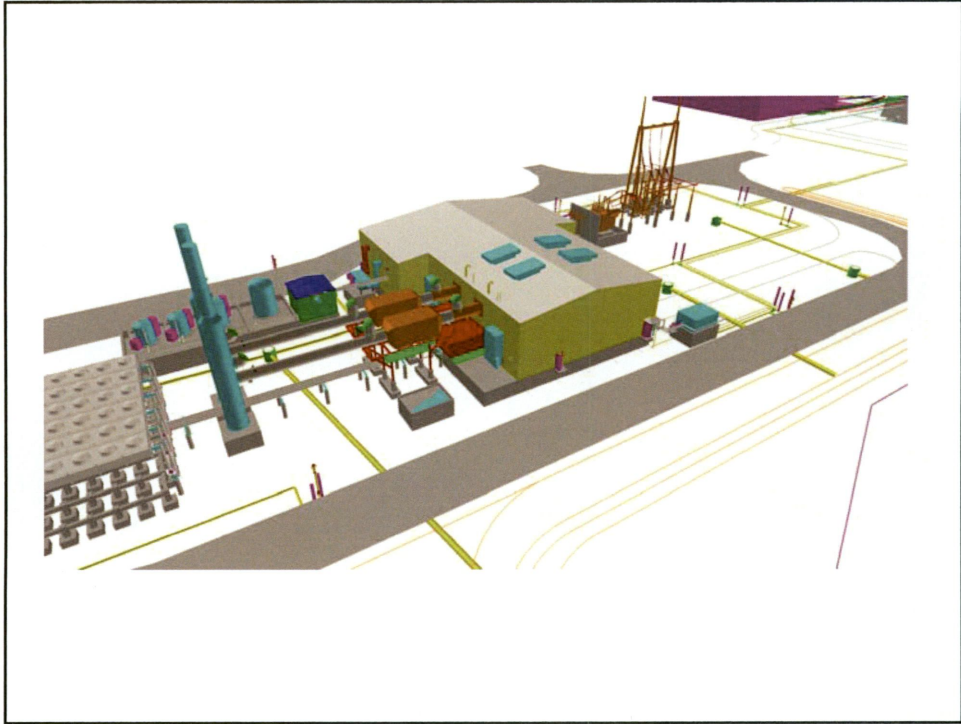
Lewis & Clark RICE Units Technology, Schedule & Cost

ND PIE Meeting - February 5, 2014

- Two Wärtsilä Model 20V34SG Gas Engines
- 18.6 MW total gross output
- Estimated Cost \$40 million
- Very Low emissions
 - Natural gas fired
 - Spark Ignited Lean Burn Combustion System
 - Equipped with the best available emissions control technologies
 - Catalytic Oxidization (CatOX)
 - Selective Catalytic Reduction (SCR)

ND PIE Meeting - February 5, 2014

- High Efficiency (>45%)
- Minimal Water Consumption (~1 gal/wk per engine at full load)
- Wide range of operation
 - Not de-rated unless facility is above 5000 ft. AMSL and/or temperature >104° F
 - Facility maintains efficiency even at low Loads
 - Engines can be turned on/shut off 1 at a time
 - Each engine maintains 41% efficiency at 80% load
- Low gas pressure requirement
 - 75-125 psi
- Maintenance is Hours Based Only
 - Not Affected by Number of Start-ups
 - >15,000 Hours Before Major Overhaul



Fast Track Schedule

- To meet the previously discussed needs for the winter 2015-16, the project required a fast track schedule
 - Montana-Dakota pursued partnership opportunities and performed preliminary project development activities in parallel
 - Construction had to begin before detailed design was substantially completed
 - GWC subcontracts needed to be expedited

Fast Track Schedule

Bison began work on air permit	May 29, 2014	↑
Engaged S&L for engineering	June 12, 2014	
Completed RICE technology evaluation	July 11, 2014	1
Executed equipment supply contract	October 10, 2014	9
Filed air permit application	November 7, 2014	
Received & evaluated GWC bids	Nov. - Dec., 2014	
Air Permit Issued	January 22, 2015	m
Executed GWC LNTF	February 19, 2015	o
Executed GWC contract FNTF	March 19, 2015	n
GWC mobilized to begin construction	March 23, 2015	t
Engine & generator equipment arrival	July 3, 2015	h
Backfeed established	October 13, 2015	s
First fire & bearing runs completed	December 14, 2015	
First generator synchronization	December 15, 2015	
Achieve full load operation	December 17, 2015	
Units available for commercial operation	December 31, 2015	↓

Costs

- Wartsila was selected as the equipment supplier from an evaluation of five RICE OEMs and offered the lowest cost
- Corval was selected as the GWC with the lowest cost from a field of five contractors bidding.

Costs

- Higher cost per kW with smaller units & timing of the project
 - Smaller units avoided transmission upgrade to interconnect & best fit the need
 - Lower total cost for the units offset by higher balance of plant, construction and engineering costs
- Cost remains less than transmission investments necessary to avoid potential customer curtailments

Lewis & Clark RICE Units



Lewis & Clark RICE Units

