



Paddock-Rockdale Need Analysis Results

Stakeholder Presentation

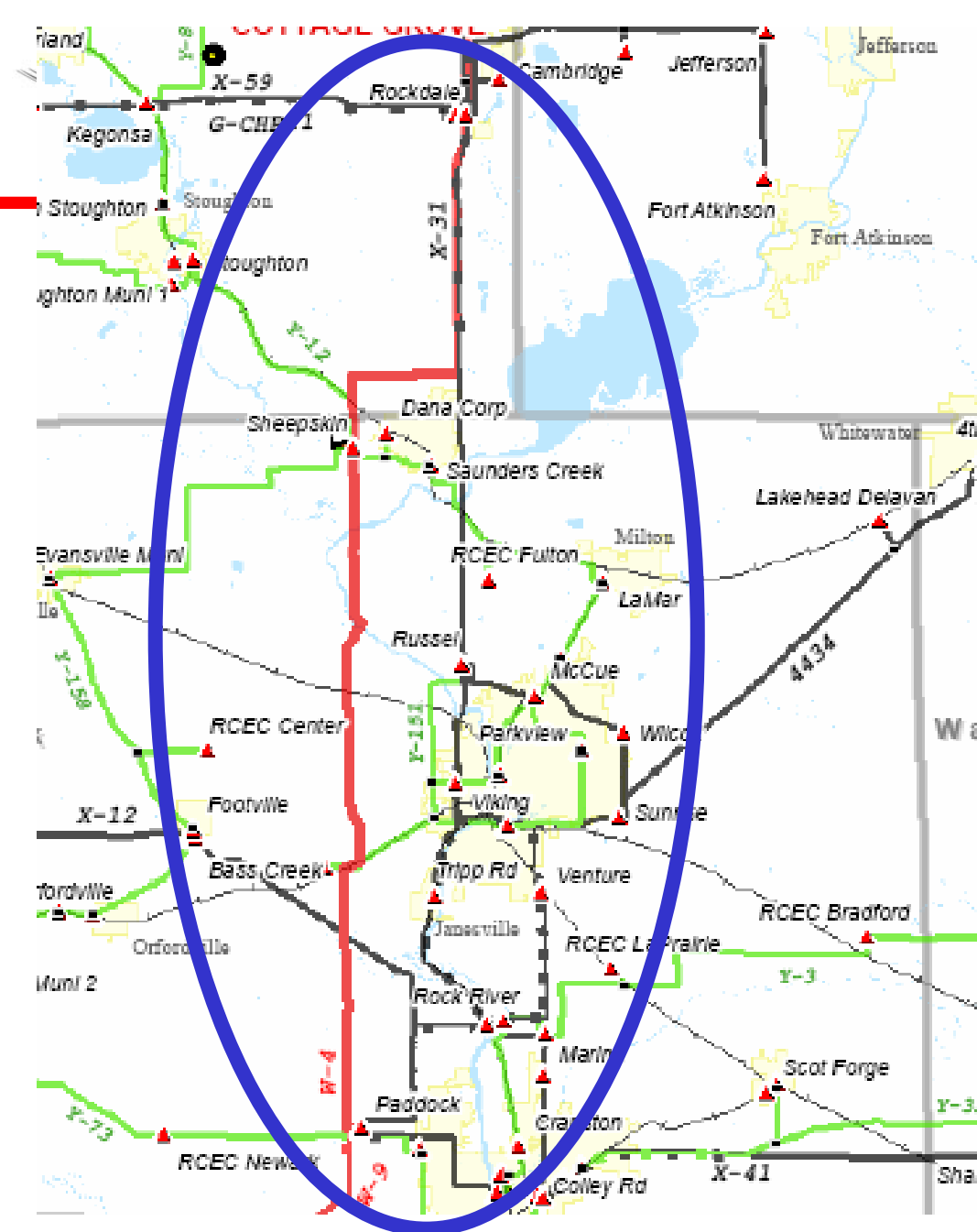
March 1, 2007

Agenda

- Progress Update
- Project Description
- Need Analysis and Results
- Economic Value Details
- Alternatives
- Appendix

- Filed DNR Project Plan February 15th
- Open Houses March 6th and 7th
- File CPCN application in April 2007
- Begin engineering in second quarter 2007
- Begin ROW acquisition in third quarter 2007
- Estimated Hearing Date in March 2008
- Receive CPCN order in second quarter 2008
- Begin construction in fourth quarter 2008
- In-service: June 1, 2010

Project Map Study Area



Project Package:

- Add 345 kV circuit to existing W4 345kV Paddock Rockdale line
- Replace the Rockdale transformer
- Upgrade the Portage-Trienda 138kV line to increase capacity



Existing Line Rating:

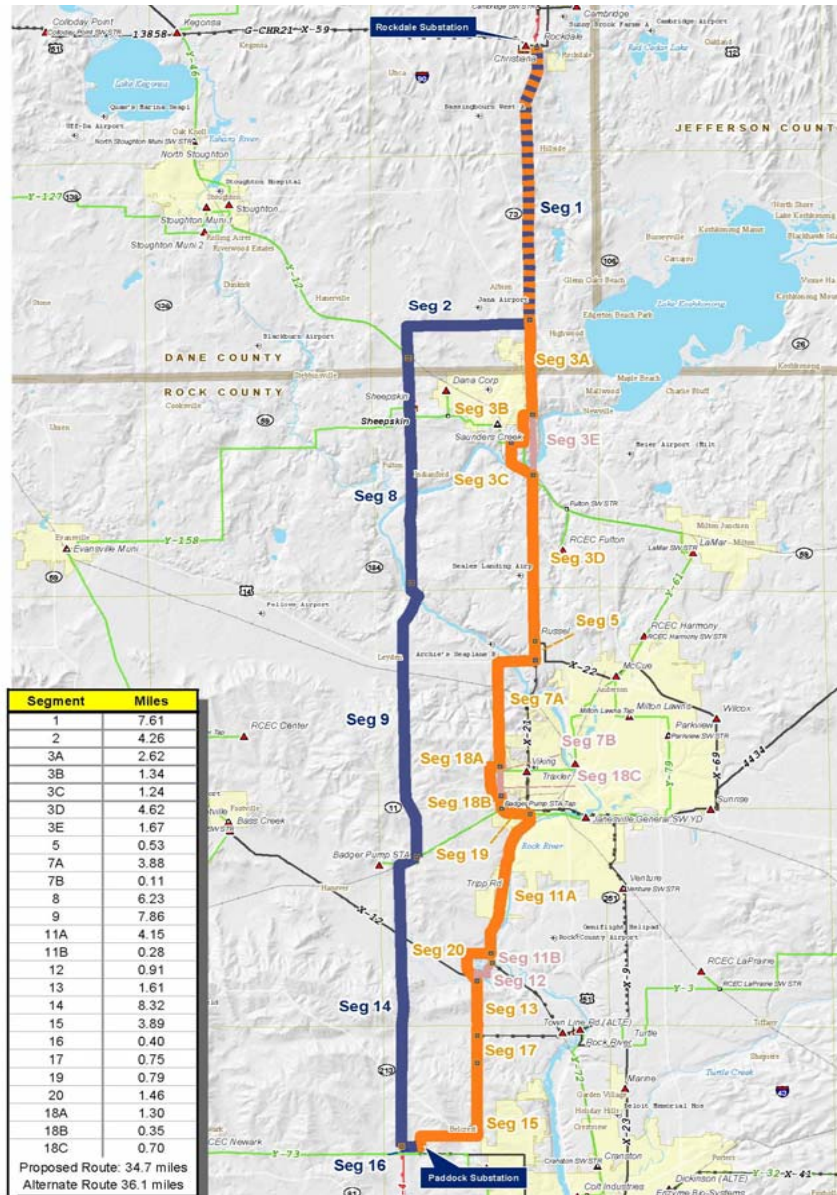
- 1214MVA, 181°F

Original Line Installed:

- 1975

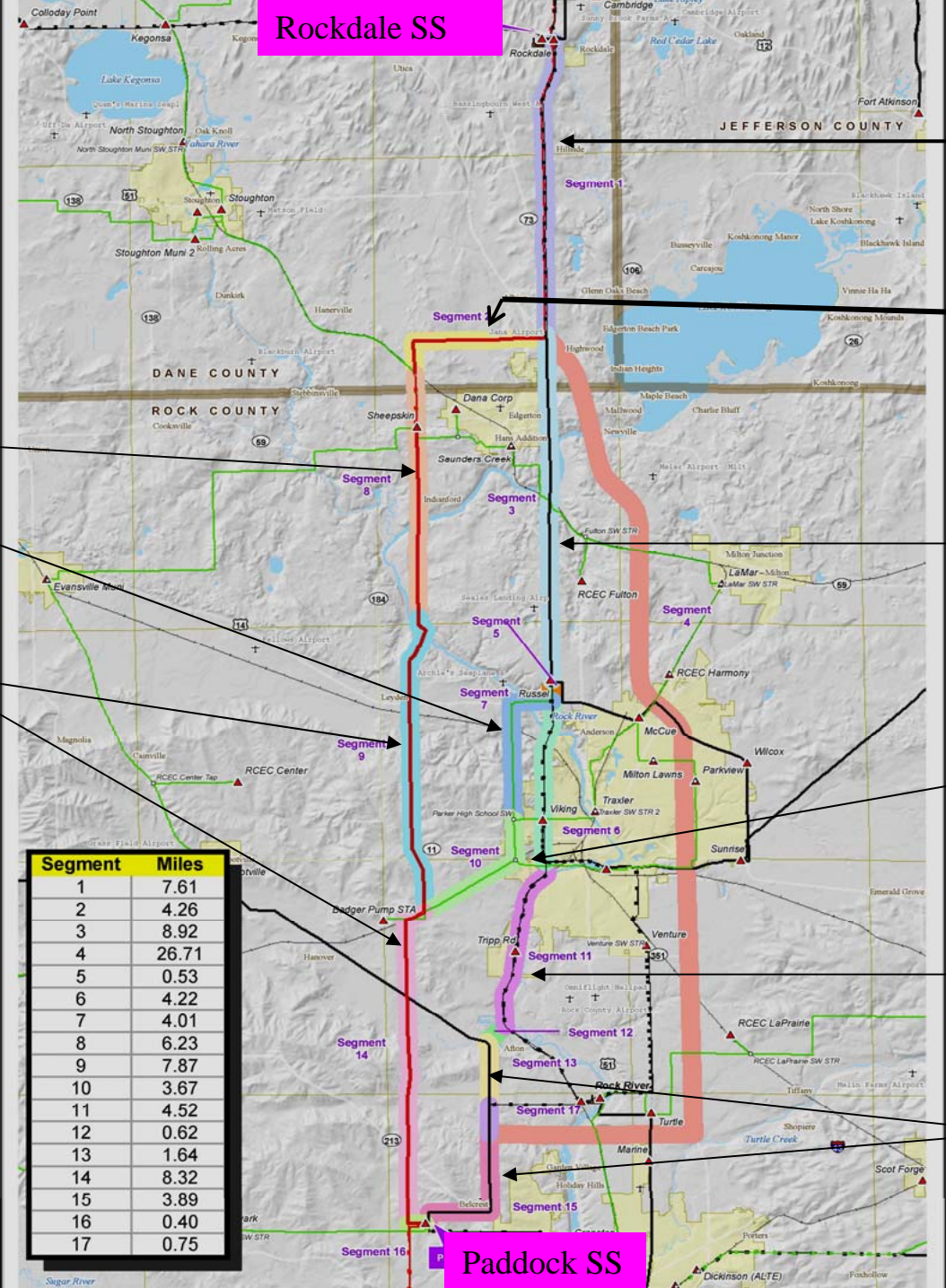
Proposed and Alternate Routes

-  Proposed Route
-  Alternate Route





Rockdale SS



Segment	Miles
1	7.61
2	4.26
3	8.92
4	26.71
5	0.53
6	4.22
7	4.01
8	6.23
9	7.87
10	3.67
11	4.52
12	0.62
13	1.64
14	8.32
15	3.89
16	0.40
17	0.75

Double circuit lattice

69kV Vertical Wood Poles

Single circuit steel H-frames

Double circuit
345/138kV Steel
monopoles

Jana Airport, single
circuit
lattice/modified
h-frames

Single circuit
138kV Steel Lattice

Single circuit 69kV
Steel Lattice

Double circuit
138kV Steel Lattice

Single circuit
138kV Wood Poles
Horiz Line Post



Project Cost and Related Projects

Project	2010 In-Service Optimized Energized PCO Estimate	2011 In-Service Optimized Energized PCO Estimate	2010 In-Service Alternate Route PCO Estimate	2011 In-Service Alternate Route PCO Estimate
Paddock - Rockdale 345 kV	91,727,398	96,313,768	162,643,766	170,775,954
Paddock Substation	502,379	502,379	502,379	502,379
Rockdale Sub Total	15,501,597	15,501,597	15,501,597	15,501,597
Christiana SS 138kV Breaker changes	1,613,911	1,613,911	1,613,911	1,613,911
Total Construction Cost	109,345,285	113,931,655	180,261,653	188,393,841
Congestion Costs	1,200,000	1,200,000	1,200,000	1,200,000
5% Environmental Impact Fee	5,545,446	5,788,523	8,873,007	9,282,463
Licensing	4,131,344	4,386,344	4,131,344	4,131,344
Risk Identified Contingency Capital	9,134,050	9,434,050	12,134,050	12,134,050
Risk Identified Contingency Expense	920,000	665,000	920,000	665,000
Adjusted totals	\$130,276,125	\$135,405,572	\$207,520,054	\$215,806,698
Project Cost Total (Minus Licensing, Congestion)	\$124,024,781	\$129,154,228	\$201,268,710	\$209,810,354

Optimized energized means heavy angle, dead end structures and Segment 2 are done de-energized

PCO estimates are adjusted to include environmental monitoring (\$650K)

Missed opportunity cost varies between \$3M and \$100M for a 2011 in-service

Paddock-Rockdale Brief Process Review

- Designed analysis to comply with PSCW Staff suggestions and serve as template
- Met with numerous stakeholders to test our analytical approach
- Used Strategic Flexibility approach
- Created and analyzed seven plausible futures
 - Robust Economy
 - With North LaCrosse to Columbia line
 - Without North LaCrosse to Columbia line
 - High Generation Retirements
 - High Environmental Regulations (CO2 tax)
 - Slow Growth
 - Fuel Supply Disruption
 - High Growth Wisconsin

Paddock-Rockdale

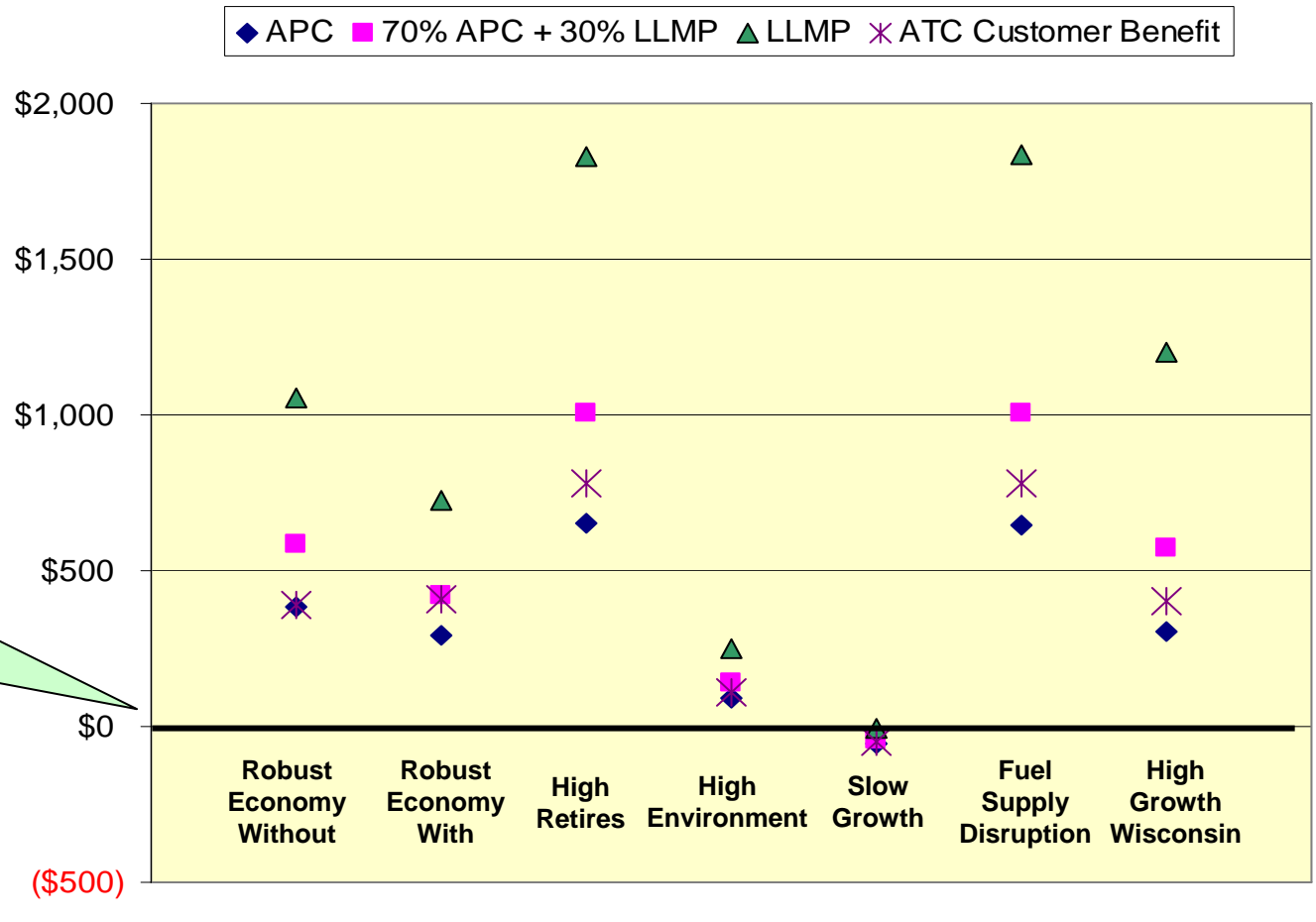
Brief Process Review (cont)

- Modeled energy cost savings starting with PROMOD model and adjusting for modeling inconsistencies
 - Analyzed two model years: 2011 and 2016
 - Each future run with and without Paddock-Rockdale
 - Calculated four metrics
 - Adjusted Production Cost (APC)
 - Load-weighted Locational Marginal Prices (LLMP)
 - RECB II metric (70/30) – 70% APC and 30% LLMP
 - ATC Customer Benefit
- Estimated benefits not determined by PROMOD using PROMOD results, First Contingency Total Transfer Capability (FCTTC) and MISO market information
- Examined three in-service dates and determined that 2010 was most cost-effective



Results - Net Present Value Benefits Less Project Costs, 2010 In-Service Date

Paddock-Rockdale Net Present Value (\$Millions)



Above \$0 means savings for ATC ratepayers



Results - Net Present Value Benefits less Project Costs

Paddock-Rockdale Analysis - NPV of Net Benefits (Costs)							
(\$ Millions)							
	Robust Economy No NALX - COL	Robust Economy	High Retirements	High Environmental	Slow Growth	Fuel Supply Disruption	High Growth Wisconsin
APC	\$383	\$292	\$653	\$90	(\$57)	\$649	\$306
70% APC + 30% LLMP	\$585	\$422	\$1,006	\$139	(\$42)	\$1,004	\$575
LLMP	\$1,055	\$727	\$1,830	\$251	(\$9)	\$1,832	\$1,202
ATC Customer Benefit	\$391	\$408	\$778	\$113	(\$51)	\$779	\$402

Positive numbers indicate net benefits; negative numbers indicate net costs.

Results - Break-Even and Payback Years

First Year of Annual Net Savings - Break-Even (\$ Millions)

	Robust Economy No NALX - COL	Robust Economy	High Retirements	High Environmental	Slow Growth	Fuel Supply Disruption	High Growth Wisconsin
APC	2011	2011	2011	2013	2026	2010	2012
70% APC + 30% LLMP	2011	2011	2011	2012	2024	2010	2011
LLMP	2010	2010	2011	2011	2019	2010	2011
ATC Customer Benefit	2011	2011	2011	2013	2025	2010	2011

First Year of Cumulative Net Savings on a Present Value Basis - Payback (\$ Millions)

	Robust Economy No NALX - COL	Robust Economy	High Retirements	High Environmental	Slow Growth	Fuel Supply Disruption	High Growth Wisconsin
APC	2012	2012	2013	2021	After 2050	2011	2014
70% APC + 30% LLMP	2012	2012	2013	2017	After 2050	2010	2013
LLMP	2011	2011	2012	2014	After 2050	2010	2012
ATC Customer Benefit	2012	2012	2013	2019	After 2050	2011	2014

- PROMOD Adjustment - Change in FTR value
 - Additional FTR Value on Imports from Illinois
 - Increase in Available FTRs * Hourly Outside-WUMS Congestion Price Differentials
 - Change in Existing Import FTR Value
 - Existing Import FTRs (MWs) * Hourly Congestion Price Differentials
 - Change in Existing WUMS Internal FTR Value
 - Existing Internal FTRs (MWs) * Hourly Congestion Price Differentials
- PROMOD Adjustment - Losses
 - Energy
 - Internal generation for internal load * Marginal Loss Differentials from PROMOD * 0.5 MISO adjustment
- Vary from scenario to scenario and metric to metric

- Increased Competitiveness
 - Reviewed changes in structural measurements of market power
 - Residual Supplier Index (RSI)
 - Pivotal supplier hours
 - Estimated economic value of increased competitiveness through three alternative approaches
 - Cal ISO
 - Tabors study
 - “Independent Market Monitor” approach
 - Estimated value under lower and higher levels of market-based generation
 - Including lower levels to reflect a cost-of-service environment

Economic Value Details

- Losses
 - Capacity
 - Reduction in capacity needed due to reduction in losses * MWs valued at CT price
 - Estimated capacity reduction approximately 8-17 MWs
- Long Term Resource Cost Advantage of Imports
 - Total cost advantage of being able to source supply from outside resources (including capital and fuel costs) net of import related congestion costs
 - Limited by amount of increased simultaneous import capability created by Paddock-Rockdale
 - 222 MWs in 2011, 405 MWs in 2016
 - Limited by constraints outside ATC in 2016
- Emissions
 - Emissions impacts across the MISO-PJM footprint are insignificant
- Reliability
 - In process - Estimating benefits using LOLE and EUE analysis

- Insurance Value
 - Paddock-Rockdale can partially insure against “the worst” occurrence on the system as well as different market-based futures
 - Developed “insurance sensitivities” based on prior experiences
 - Estimated the “severity” and “frequency” of these events

Economic Value Details

Table 22 Insurance Benefit Results
Generation Events

<u>Event Description and Duration</u>	<u>Frequency of Occurrence (Probability)</u>	<u>Severity</u>		<u>NPV</u>
		<u>Energy and Congestion (Cost per Occurrence)</u>	<u>Energy and Congestion (Annual Cost \$2006)</u>	
2 - 600MW Coal fired Units 3 Weeks	20 Years (5%)	\$5,326,152	\$266,308	\$3,652,870
3 - 500 MW Nuclear Units 1 Year	40 Years (2.5%)	\$33,711,923	\$842,798	\$11,560,435
Transmission Events				
<u>Event Description and Duration</u>				
1 - 138kV and 1 - 345kV Line 2 weeks	10 Years (10%)	-\$481,295	-\$48,130	-\$660,179
3 - 345kV Lines 4 - Weeks	20 Years (5%)	\$5,050,212	\$252,511	\$3,463,620
345 kV Substation 6 Months	40 Years (2.5%)	\$27,787,589	\$694,690	\$9,528,873
		<u>Total</u>	<u>\$2,008,177</u>	<u>\$27,545,619</u>

The annual benefit of \$2.0M in 2006 is escalated at an assumed 3% inflation rate resulting in benefits of \$2.3M in 2011 and \$2.7M in 2016.



Economic Value Details

Table C1: NPV of Net Benefits - Adjusted Production Costs
(\$ Millions)

	Robust Economy No NALX - COL	Robust Economy	High Retirements	High Environmental	Slow Growth	Fuel Supply Disruption	High Growth Wisconsin
ATC Revenue Requirement	(\$132)	(\$132)	(\$132)	(\$132)	(\$132)	(\$132)	(\$132)
Construction Congestion Costs	(\$1)	(\$1)	(\$1)	(\$1)	(\$1)	(\$1)	(\$1)
PROMOD Adjusted Production Costs	\$275	\$225	\$939	\$89	\$12	\$1,008	\$422
FTR and Congestion	\$117	\$74	(\$275)	\$5	(\$2)	(\$338)	(\$116)
Losses	\$38	\$43	\$55	\$39	\$9	\$31	\$50
Competitiveness Limited Market-Based Pricing (avg.)	\$45	\$44	\$30	\$48	\$16	\$39	\$42
Insurance Benefit During System Failure Events	\$28	\$28	\$28	\$28	\$28	\$28	\$28
Capacity Savings From Reduced Losses	\$15	\$12	\$11	\$15	\$14	\$15	\$14
Total NPV of Net Benefits	\$383	\$292	\$653	\$90	(\$57)	\$649	\$306

Economic Value Details

Table C2: NPV of Net Benefits - 70% Adjusted Production Costs and 30% Load Weighted LMP
(\$ Millions)

	Robust Economy No NALX - COL	Robust Economy	High Retirements	High Environmental	Slow Growth	Fuel Supply Disruption	High Growth Wisconsin
ATC Revenue Requirement	(\$132)	(\$132)	(\$132)	(\$132)	(\$132)	(\$132)	(\$132)
Construction Congestion Costs	(\$1)	(\$1)	(\$1)	(\$1)	(\$1)	(\$1)	(\$1)
PROMOD 70% Adjusted Production Costs and 30% Load Weighted LMP	\$500	\$400	\$1,388	\$165	\$28	\$1,519	\$763
FTR and Congestion	\$117	\$59	(\$318)	(\$2)	\$1	(\$445)	(\$153)
Losses	\$13	\$14	\$1	\$18	\$3	(\$18)	\$14
Competitiveness Limited Market-Based Pricing (avg.)	\$45	\$44	\$30	\$48	\$16	\$39	\$42
Insurance Benefit During System Failure Events	\$28	\$28	\$28	\$28	\$28	\$28	\$28
Capacity Savings From Reduced Losses	\$15	\$12	\$11	\$15	\$14	\$15	\$14
Total NPV of Net Benefits	\$585	\$422	\$1,006	\$139	(\$42)	\$1,004	\$575

Economic Value Details

Table C3: NPV of Net Benefits - Load Weighted LMP
(\$ Millions)

	Robust Economy No NALX - COL	Robust Economy	High Retirements	High Environmental	Slow Growth	Fuel Supply Disruption	High Growth Wisconsin
ATC Revenue Requirement	(\$132)	(\$132)	(\$132)	(\$132)	(\$132)	(\$132)	(\$132)
Construction Congestion Costs	(\$1)	(\$1)	(\$1)	(\$1)	(\$1)	(\$1)	(\$1)
PROMOD Load Weighted LMP	\$1,028	\$807	\$2,436	\$343	\$68	\$2,710	\$1,560
FTR and Congestion Losses	\$118	\$24	(\$416)	(\$19)	\$8	(\$693)	(\$238)
Losses	(\$45)	(\$54)	(\$125)	(\$32)	(\$9)	(\$133)	(\$71)
Competitiveness Limited Market-Based Pricing (avg.)	\$45	\$44	\$30	\$48	\$16	\$39	\$42
Insurance Benefit During System Failure Events	\$28	\$28	\$28	\$28	\$28	\$28	\$28
Capacity Savings From Reduced Losses	\$15	\$12	\$11	\$15	\$14	\$15	\$14
Total NPV of Net Benefits	\$1,055	\$727	\$1,830	\$251	(\$9)	\$1,832	\$1,202



Economic Value Details

Table C4: NPV of Net Benefits - ATC Customer Benefit
(\$ Millions)

	Robust Economy No NALX - COL	Robust Economy	High Retirements	High Environmental	Slow Growth	Fuel Supply Disruption	High Growth Wisconsin
ATC Revenue Requirement	(\$132)	(\$132)	(\$132)	(\$132)	(\$132)	(\$132)	(\$132)
Construction Congestion Costs	(\$1)	(\$1)	(\$1)	(\$1)	(\$1)	(\$1)	(\$1)
ATC Customer Benefit Including FTR, Congestion and Losses	\$436	\$459	\$843	\$155	\$24	\$831	\$452
Competitiveness Limited Market-Based Pricing (avg.)	\$45	\$44	\$30	\$48	\$16	\$39	\$42
Insurance Benefit During System Failure Events	\$28	\$28	\$28	\$28	\$28	\$28	\$28
Capacity Savings From Reduced Losses	\$15	\$12	\$11	\$15	\$14	\$15	\$14
Total NPV of Net Benefits	\$391	\$408	\$778	\$113	(\$51)	\$779	\$402

Table 35 Revised Construction Cost of Alternative Projects (\$ millions)

Alternative	Filed with Access Docket	Revised to 2010 ISD	Mileage	Cost per Mile	Difference	% Increase
#1 - Paddock- Rockdale	\$69	\$131	34	\$3.9	\$62	90%
#2 – Low-Voltage	\$33	\$66			\$33	99%
#3 - Prairie Island - North La Crosse – Columbia	\$639	\$847	251	\$3.4	\$208	32%
#3a - Prairie Island - North La Crosse		\$455	133	\$3.4		
#3b - North La Crosse - Columbia		\$392	118	\$3.3		
#4 - Byron - North Monroe - West Middleton - North Madison	\$186	\$323	97	\$3.3	\$137	74%
#5 - Salem – Spring Green - West Middleton - North Madison	\$352	\$631	149	\$4.2	\$279	79%

Notes:

1. Inflation is 5%.
2. Estimates include pre-certification, environmental impact fees as appropriate by state and environmental monitoring costs in addition to complete line and substation construction costs.
3. The 2010 date is for cost comparison and does not imply that in-service date is possible for any but the Paddock-Rockdale alternative.

- Low voltage option
 - Had high B/C ratio in original Access docket
 - Undertook complete analysis of low voltage option
 - Seven futures and four metrics
 - Results
 - On a Net Present Value Basis, Paddock-Rockdale provides more benefits than Low Voltage in 22 of 28 cases
 - Paddock-Rockdale provides a higher Benefit-Cost ratio than Low Voltage in 20 of 28 cases
 - Import capability of the alternative is limited by inability of system to maintain adequate post-contingency voltage at higher transfer levels

- Note: This presentation is in the form of a preliminary draft or status report for purposes of presentation to interested stakeholders.

ATC continues to review and evaluate this project, and reserves the right to add to, amend, or delete any of this information in subsequent presentations regarding this project. Some of the material in this presentation is based upon proprietary and confidential business information and upon data and analysis provided by expert consultants retained by ATC counsel. ATC reserves the right to claim that this information is confidential and/or subject to the attorney-client work-product privilege.

Questions?

Appendix

Futures Information Drivers

- Load growth inside and outside ATC footprint
- Availability of low-cost generation in Wisconsin
- Amount and source of renewable energy consumed in Wisconsin
- Nearby EHV transmission projects
- Natural gas, coal and fuel oil prices
- Availability of coal in Wisconsin
- Environmental regulations
- Availability of low cost-generation in MISO, ComEd

Futures Information

Assumptions in All Futures

2011

- Generation
 - 1200MW Oak Creek Expansion
 - 500MW Weston 4
 - 600MW Port Washington CC CT
- Transmission
 - Northern Umbrella Projects
 - Plains to Stiles
 - Cranberry Conover Plains
 - Arrowhead Weston
 - Gardner Park – Central Wisconsin
 - Morgan Werner West
 - Oak Creek Expansion Interconnection

2016

- Transmission
 - New Rockdale - West Middleton 345 kV line
 - New West Middleton -North Madison 345 kV line
 - New Huiskamp to Blount 138 kV and 69 kV lines
 - Spring Green to West Middleton 69 kV conversion to 138 kV

New Nelson Dewey Plant

- 2011 – Included in Robust Economy, High Environmental and Fuel Supply Disruption
- 2016 – Included in all futures except High Retirements

Futures Information Descriptions

- **Robust Economy With** – high economic and energy growth, high amount of low-cost generation in Wisconsin, medium environmental, mid-high fuel prices, LaCrosse to Columbia line is built, 4,000-6,000 MW mine-mouth coal campus built in central Illinois
- **Robust Economy Without** – LaCrosse to Columbia line is not built
- **High Retirements** – mid-level economy and energy growth, large number of retirements, mid-level environmental, fuel prices vary, mid-level generation built outside Wisconsin
- **High Environmental** – medium economic growth, low-mid energy growth, coal retirements replaced by Nelson Dewey plant, Kyoto environmental, varying fuel prices, generation scenario reflecting \$44/ton CO₂ tax

Futures Information Descriptions

- **Slow Growth** – low economic and energy growth, some coal retirements, low environmental, low-mid fuel prices, low level generation built outside Wisconsin
- **Fuel Supply Disruption** – natural gas supply disrupted, low-mid economic and energy growth, high level of new coal generation, additional use of coal generation creates coal availability problems, high fuel prices, mid-high environmental, 3,750 MW mine-mouth coal campus built in central Illinois
- **High Growth Wisconsin** – economic development creates high economic and energy growth in Wisconsin while surrounding areas are mid-low economic and energy growth, some coal retirements and Nelson Dewey is built, mid-level environmental, mid fuel prices, mid-level generation built outside Wisconsin