Badger Coulee Transmission Line Project

Preliminary Economic Analysis Results

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2011

Preliminary

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We are presenting only ATC benefits in this presentation. There are also economic benefits to other entities in MISO.

2020 Futures Assumptions

Future	Internal Demand Growth	Internal Energy Growth	External Demand Growth	External Energy Growth
Robust Economy	2.50%	2.20%	1.60%	2.19%
Green Economy	1.40%	2.20%	0.75%	2.19%
Slow Growth	0.20%	0.10%	0.30%	0.30%
Regional Wind	1.70%	1.40%	1.60%	1.32%
Limited Investment	1.00%	0.70%	0.75%	1.00%
Carbon Constrained	0.20%	0.10%	0.30%	0.30%

Future	Total MISO-Wide Wind	MISO Regional Generation Outlet Study (RGOS) Phase 1 Transmission Overlay
Robust Economy	~13.7 GW	765 kV - UMTDI Local
Green Economy	~25.2 GW	345 kV - Intra Regional Transfer
Slow Growth	~7.7 GW	Overlay Light
Regional Wind	~22.0 GW	765 kV - Intra Regional Transfer
Limited Investment	~8.3 GW	Overlay Light
Carbon Constrained	~11.8 GW	345 kV - UMTDI Local

Full 2020 Futures Matrix and Assumptions available at: http://atc10yearplan.com/A8.shtml

2026 Futures Assumptions

Future	Internal Demand Growth	Internal Energy Growth	External Demand Growth	External Energy Growth
Robust Economy	2.50%	2.20%	1.60%	2.19%
Green Economy	1.40%	2.20%	0.75%	2.19%
Slow Growth	0.20%	0.10%	0.30%	0.30%
Regional Wind	1.70%	1.40%	1.60%	1.32%
Limited Investment	1.00%	0.70%	0.75%	1.00%
Carbon Constrained	0.20%	0.10%	0.30%	0.30%

Future	Total MISO-Wide Wind	MISO Regional Generation Outlet Study (RGOS) Phase 1 Transmission Overlay
Robust Economy	~19.6 GW	765 kV - UMTDI Local
Green Economy	~31.6 GW	345 kV - Intra Regional Transfer + Latest RGOS (East)
Slow Growth	~11.9 GW	Overlay Light
Regional Wind	~27.3 GW	765 kV - Intra Regional Transfer + Latest RGOS (East)
Limited Investment	~13.3 GW	Overlay Light
Carbon Constrained	~14.1 GW	345 kV - UMTDI Local

Full 2026 Futures Matrix and Assumptions available at: http://atc10yearplan.com/A8.shtml

Preliminary Results: PROMOD Benefits

- PROMOD used to analyze 2020 and 2026 study years
- Difference analysis performed to determine project savings
- All Futures analyzed using ATC Customer Benefit (CB) Metric:

Settlements Format for CB Metric

Load Pays local Locational Marginal Price (LMP)
- Generator Revenues Received at local Gen LMP
+ Cost of Utility Generation (Production Cost)
- FTR Revenue to the Utility
- Loss Refund Revenues for over-collection
= Impact to Ratepayers

Preliminary Results: Loss Savings

- Loss evaluation is a valuable component of economic project analysis
- PROMOD difference analysis performed to determine system loss savings ($)
  - Loss savings (MWHrs) calculated from PROMOD
  - Economic value of loss savings determined by pricing losses (MWHrs) at PROMOD area LMPs ($/MWHrs)

Preliminary Results: Insurance Value

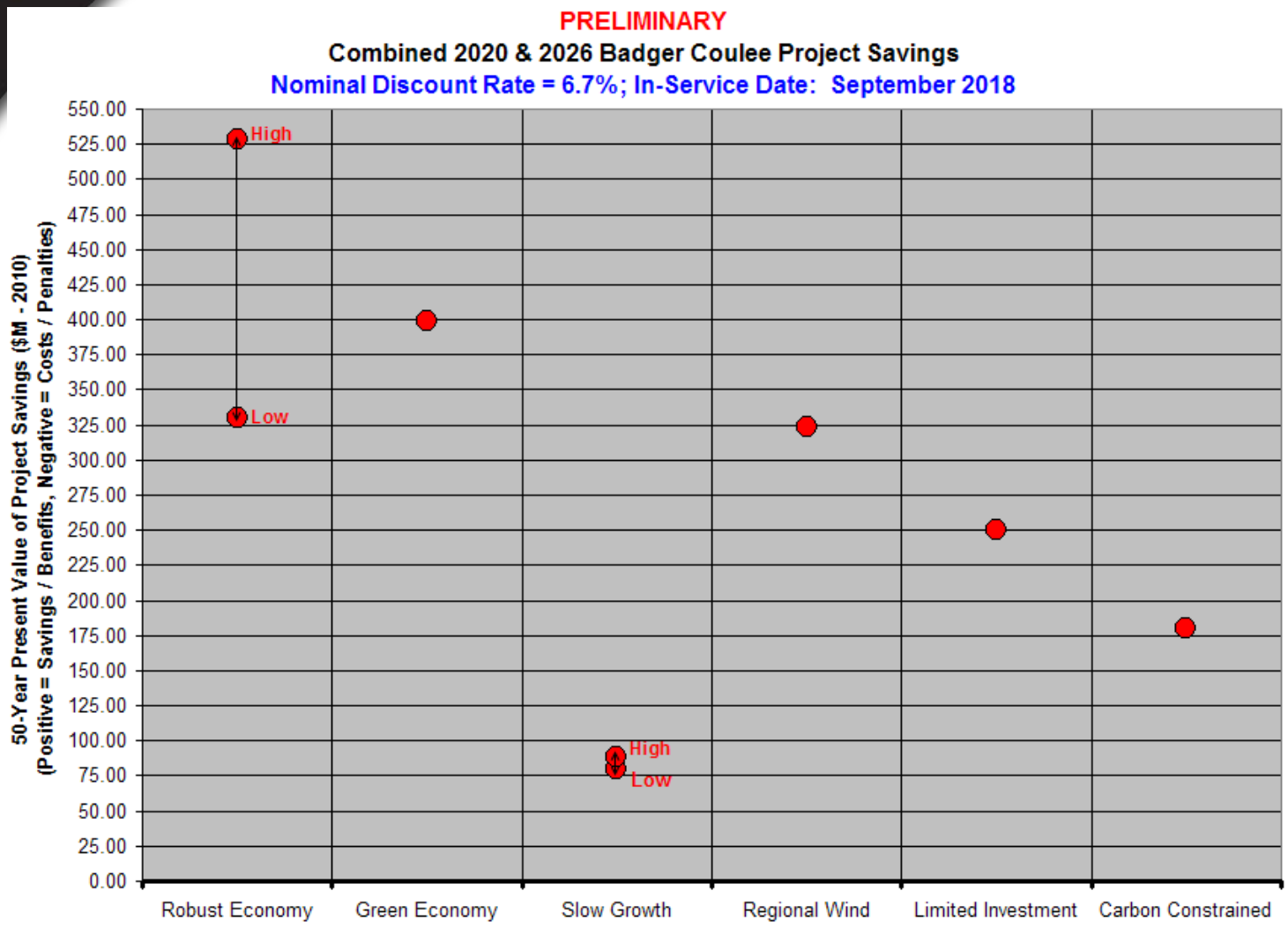
- Insurance Value analysis provides value of project to insure against system failure
- PROMOD Difference Analysis Performed to determine Adjusted Production Cost (APC) savings ($)

Outage Scenarios		Bad	Worse	Worst
Transmission Outages	Outage Type	Double Circuit 138kV and 345kV Line or Corridor	Two or More 345kV Lines	Category D Substation Outage with Multiple Lines
	Frequency	Once in Ten Years (10%)	Once in Twenty Years (5%)	Once in 40 Years (2.5%)
	Duration	Two Weeks	Four Weeks	Six Months
Generation Outages	Outage Type	Single Unit Generation Outage (Monte Carlo Outage)	Multi Unit Generation Campus Outage	Point Beach and Kewaunee Out for Regulatory Reasons
	Frequency	N/A	Once in 20 Years (5%)	Once in 40 Years (2.5%)
	Duration	N/A	Three weeks	One Year

Badger Coulee 345 kV
Economic and Energy Benefits

Preliminary ATC Customer Benefit Metric Savings ($M - 2010)	Robust Economy	Green Economy	Slow Growth	Regional Wind	Limited Investment	Carbon Constrained
50-Year PV Savings Including: -6.7% Nominal Discount Rate -2020 and 2026 PROMOD Analysis -Energy Loss Valuation -Insurance Value Benefit -In-Service Date: September 2018	**$528.76 (High)** **$330.42 (Low)**	**$398.81**	**$88.69 (High)** **$79.38 (Low)**	**$324.03**	**$249.69**	**$179.90**

Badger Coulee 345 kV Economic and Energy Benefits



Includes PROMOD Economic Benefits (CB Metric), Loss Savings, and Insurance Value

(2026 Multiplier used for Robust Economy and Slow Growth)

Next Steps: Preliminary Results

- 2026 has not been analyzed for
  - Robust Economy Future
  - Slow Growth Future
- Full Value will be attained with addition of 2026 Analysis
  - Multipliers currently used to estimate expected 2026 results
  - Analysis will be performed at a later date (TBD)
- These are preliminary results as of the date of this presentation. ATC's planning analysis is a continuing process, and ATC will provide updated results for this project as appropriate. ATC may also change its planning assumptions or methodology with respect to this project, and any such change may alter the results of its analysis. ATC's definitive planning analysis will be set forth in its CPCN Application for this project.

Questions?

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