American Transmission Company

Access Initiative Update
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http://www.atcllc.com/oasis/Customer_Notices/Access.html

Overview

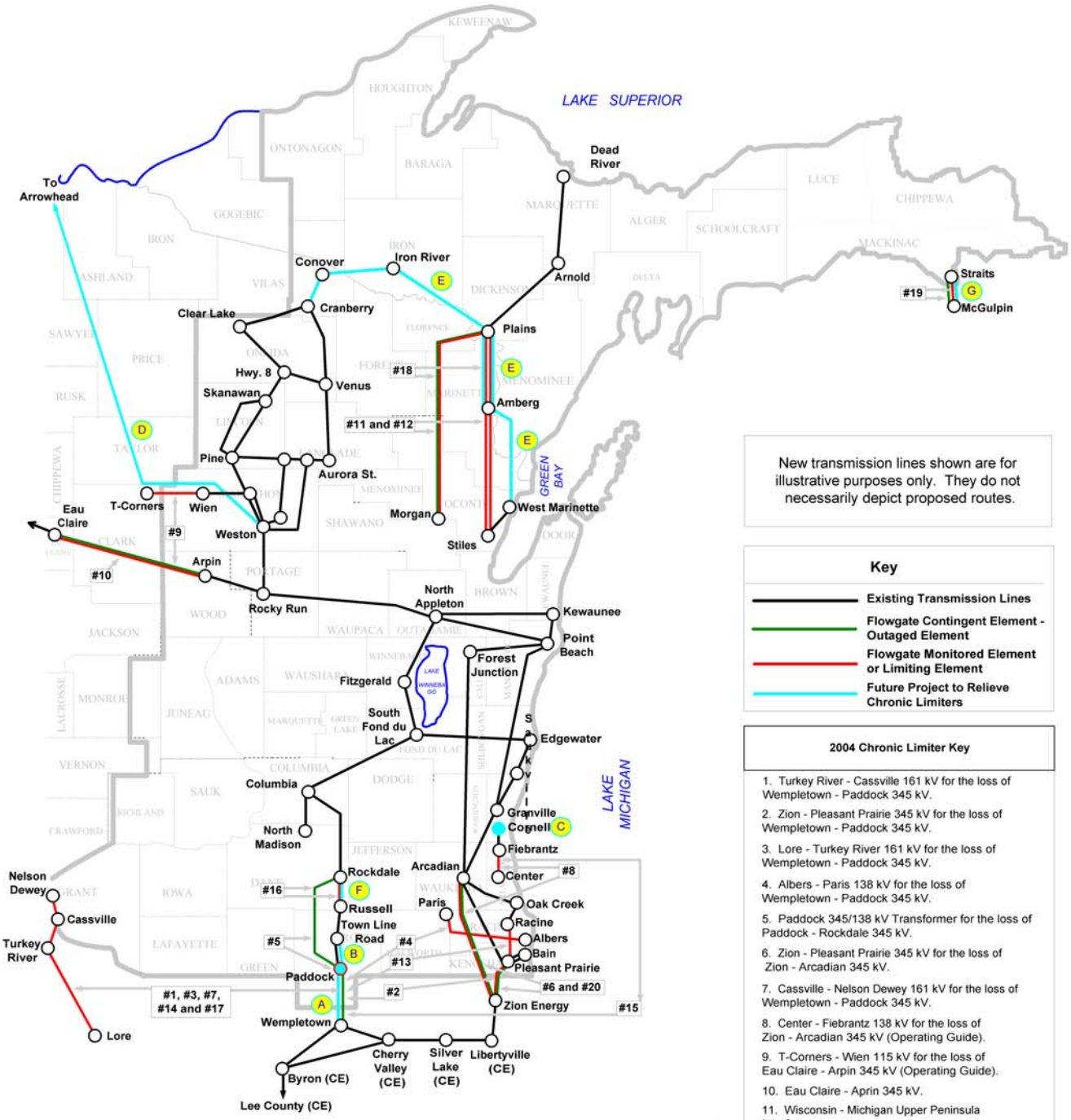
- 2004 Access Initiative
- Value
- Chronic Limits
- PROMOD
  - What is LMP?
  - What is PROMOD?
  - Economic analysis / results
- Decision Matrix
- 2005 Direction

ATC Access Initiative

- ATC operational Jan. 1st, 2001
- 2001, 2002 Ten Year Assessments focused on ATC infrastructure required for load-serving
- 2003, 2004 Ten Year Assessments also looking at the value to our customers of increased access to the transmission system
- WUMS and northern WUMS are the only two "Narrowly Constrained Areas" in Midwest ISO
  - Allows temporary "relief" for next five years
- ATC hosted monthly meetings in 2004 to discuss access value and methodology to assess value

Access Value

- Savings
  - Capacity (reduced losses & potentially lower reserve margin)
  - Energy (production cost)
- Comparability of access to “the market”
- Enhanced reliability from stronger ties
- Enhancement of existing plans
- Operating flexibility
- Costs
  - Construction
  - Environmental
  - Societal
- Chronic Limits (next slide)



New transmission lines shown are for illustrative purposes only. They do not necessarily depict proposed routes.

Key

- Existing Transmission Lines
- Flowgate Contingent Element - Outaged Element
- Flowgate Monitored Element or Limiting Element
- Future Project to Relieve Chronic Limiters

2004 Chronic Limiter Key

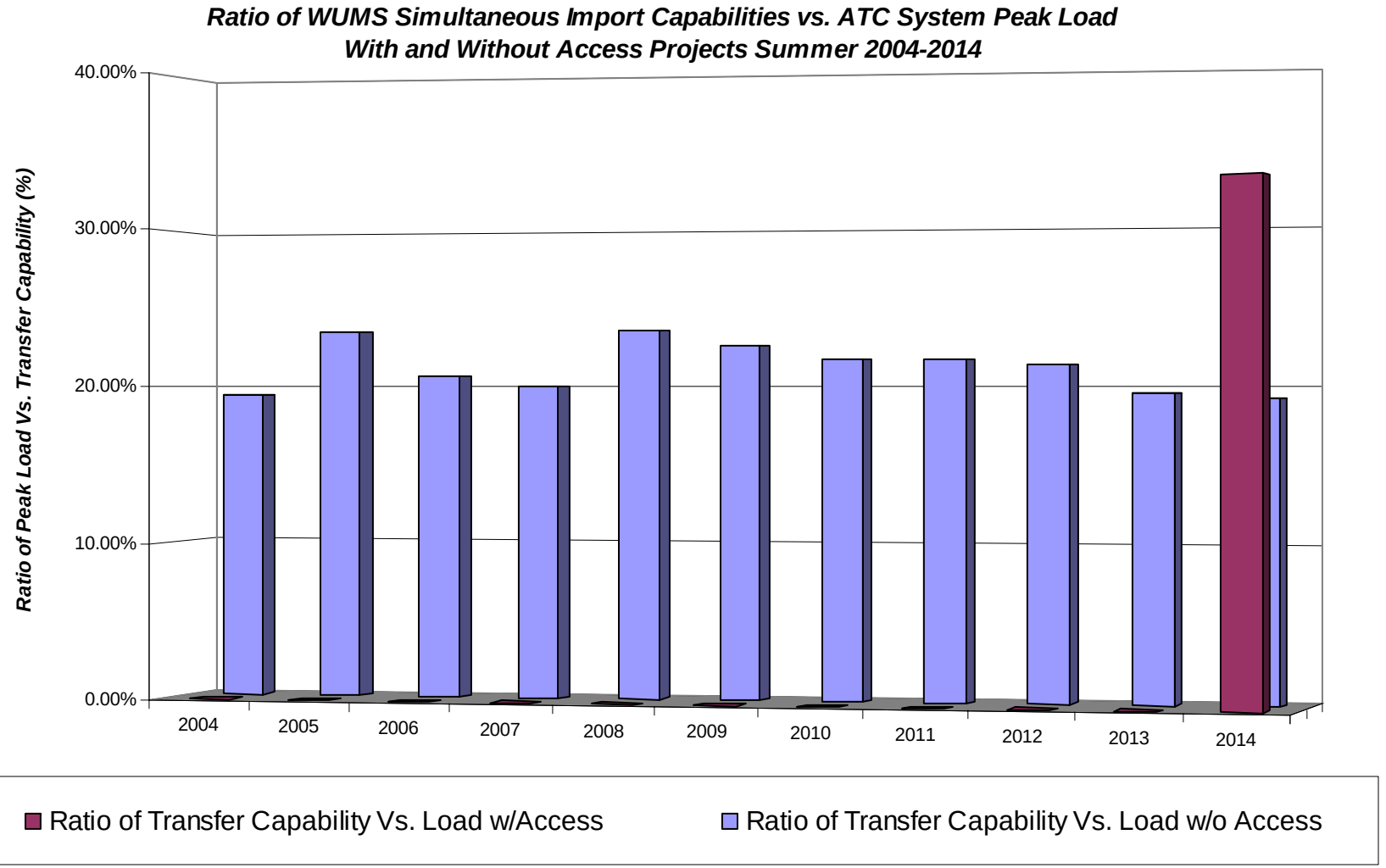
1. Turkey River - Cassville 161 kV for the loss of Wempletown - Paddock 345 kV.
2. Zion - Pleasant Prairie 345 kV for the loss of Wempletown - Paddock 345 kV.
3. Lore - Turkey River 161 kV for the loss of Wempletown - Paddock 345 kV.
4. Albers - Paris 138 kV for the loss of Wempletown - Paddock 345 kV.
5. Paddock 345/138 kV Transformer for the loss of Paddock - Rockdale 345 kV.
6. Zion - Pleasant Prairie 345 kV for the loss of Zion - Arcadian 345 kV.
7. Cassville - Nelson Dewey 161 kV for the loss of Wempletown - Paddock 345 kV.
8. Center - Fiebrantz 138 kV for the loss of Zion - Arcadian 345 kV (Operating Guide).
9. T-Corners - Wien 115 kV for the loss of Eau Claire - Arpin 345 kV (Operating Guide).
10. Eau Claire - Aprin 345 kV.
11. Wisconsin - Michigan Upper Peninsula Interface.
12. Wisconsin - Michigan Upper Peninsula Interface.
13. Pleasant Prairie - Racine 345 kV for the loss of Wempletown - Paddock 345 kV.
14. Lore - Turkey River 161 kV for the loss of Wempletown - Paddock 345 kV (Operating Guide).
15. Center - Fiebrantz 138 kV for the loss of Wempletown - Paddock 345 kV (Operating Guide).
16. Russell - Rockdale 138 kV for the loss of Paddock - Rockdale 345 kV.
17. Turkey River - Cassville 161 kV for the loss of Wempletown - Paddock 345 kV (Operating Guide).
18. Amberg - Plains 138 kV for the loss of Morgan - Plains 345 kV.
19. McGulpin - Straits 138 kV Circuit #1 for the loss of McGulpin - Straits 138 kV Circuit #3.
20. Zion - Arcadian 345 kV for the loss of Zion - Pleasant Prairie 345 kV.

Chronic Limter Solution Key

Project to be Constructed to Alleviate Chronic Limters	Estimated In-Service Year and Cost	Chronic Limiter to be Relieved
A. Construct second Wempletown - Paddock 345 kV Circuit.	2005 - $5.4 Million	#1, #2, #3, #4, #7, #13, #14, #15 and #17
B. Install a second Paddock 345/138 kV Transformer and construct a second Paddock - Town Line Road 138 kV Circuit.	Strategic Project - 2010 $10.8 Million	#5
C. Install a 4.5 Ohm reactor in series with the Cornell - Fiebrantz - Center 138 kV line.	Strategic Project - 2005-06 $1 Million	#8 and #15
D. Construct the Arrowhead - Gardner Park 345 kV line.	2008 - $420.3 Million	#9 and #10
E. Rebuild Cranberry - Conover - Plains to 138 kV. Rebuild the Stiles - Amberg - Plains 138 kV circuits and rebuild West Marinette - Amberg to 138 kV.	2008 - $35.5 Million 2005-06 - $47.9 Million	#11, #12 and #18
F. Reconductor Russell - Rockdale 138 kV.	Completed in February, 2004.	#16
G. Install a third Staits - McGulpin 138 kV UG Cable.	Stragetic Project - 2011 No Cost Estimate is available at this time.	#19
H. MISO Flowgate Methodology Change.	2005 - No Associated Cost	#6 and #20

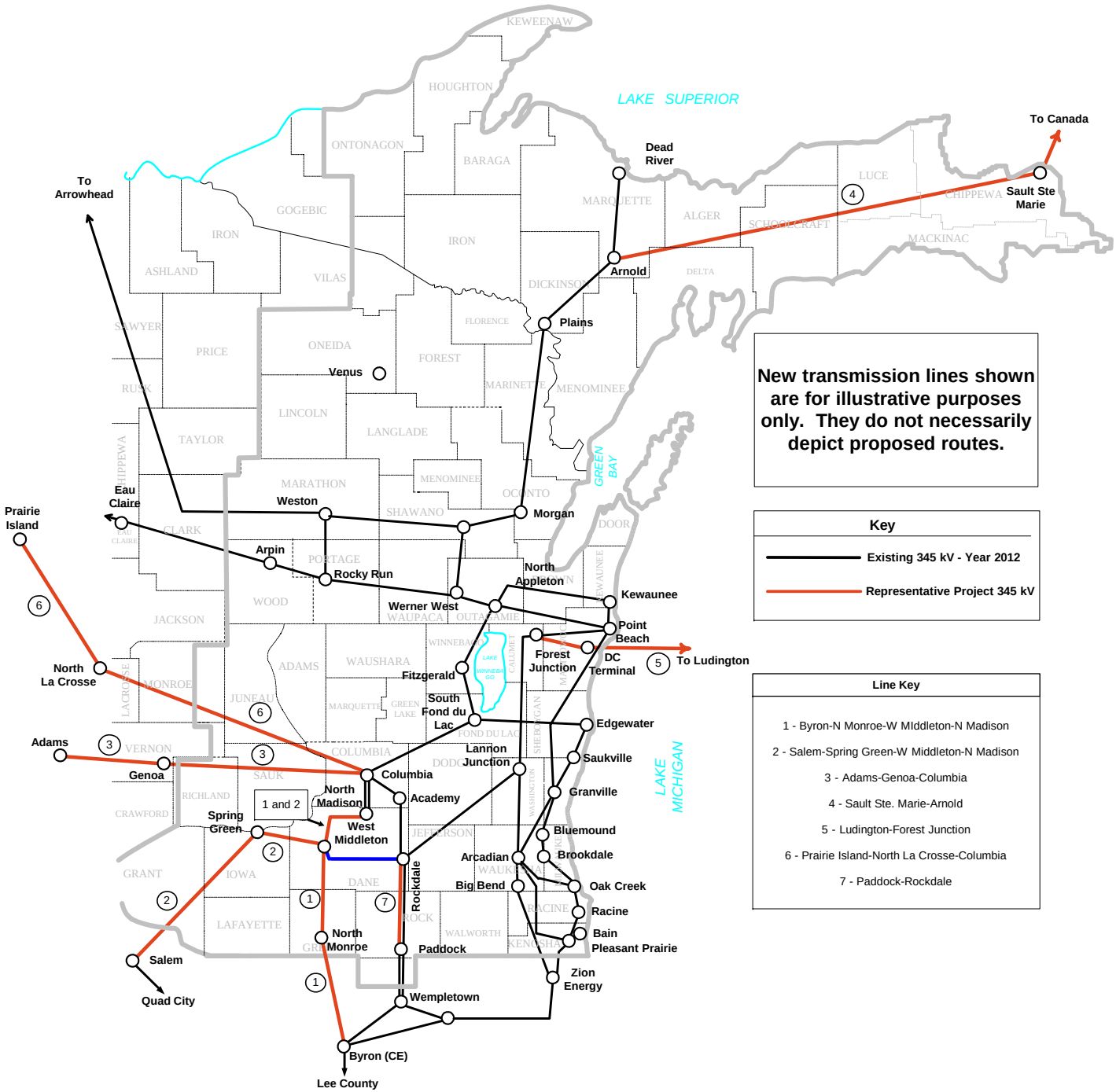
11/30/04

Future Transfer Capability



Energy Cost Savings

- Traditionally, very difficult to quantify
  - Need to forecast future hourly energy markets
- Our "future" now includes MISO Day 2 market
  - LMP – Locational Marginal Pricing
  - Security Constrained Economic Dispatch algorithm
    - Calculates least cost dispatch of generation combined with requirement to respect all transmission line constraints
- PROMOD
  - New tool – emulates LMP markets
    - Faster computers – still 30-40 hours per scenario
  - Key assumption is cost-based bidding
    - Conservative estimate of savings from reducing congestion, since bids will be higher than cost in a constrained market
  - Compare production cost to serve load for various transmission scenarios



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Key

- Existing 345 kV - Year 2012
- Representative Project 345 kV

Line Key

1 - Byron-N Monroe-W MIddleton-N Madison

2 - Salem-Spring Green-W Middleton-N Madison

3 - Adams-Genoa-Columbia

4 - Sault Ste. Marie-Arnold

5 - Ludington-Forest Junction

6 - Prairie Island-North La Crosse-Columbia

7 - Paddock-Rockdale

Economic Results

- Compare the carrying costs for each alternative to the "production cost" savings from PROMOD.

Costs for each Representative Project–Baseline Results

Project	Total Capital Costs (2003$ Mil.)	Approximate Annual Carrying Cost (2003$ Mil.)	"Production Cost" Savings Relative to the Base Case (2003$ Mil.)	Rough Market Savings Estimate (3 X Production Cost Savings)[2] (2003$ Mil.)
Base Case	$0	N/A	0	0
Base Case Plus 2 Fixes	$20	$1.8	$10.0	$29.9
South: Byron–NMA	$221	$19.9	$14.6	$43.9
South: Paddock–Rockdale	$59	$5.3	$10.2	$30.5
Southwest: Salem–NMA[1]	$342	$30.7	$14.6	$43.9

[1] Salem-NMA includes a fix for Salem to Maquoketa.

[2] Using a model similar to PROMOD, the California ISO found that modeling actual bidding behavior (rather than just production costs) increased cost savings for major transmission upgrades by 2 to 3 times.

- California ISO found that modeling actual bidding behavior (rather than just production costs) increased costs savings by 2 to 3 times
- Incorporate results into the Decision Matrix (next slide)

		Base Case + two fixes	S Byron - N Madison	S Paddock - Rockdale	SW Salem - N Madison	SW plus Salem - Maquoketa 161 kV fix (Iowa)	SW plus Hazleton - Salem 345 kV fix (Iowa)	W Prairie Isl - Columbia	E Luddington - Forrest Jct	N Sault Ste Marie - Arnold
Mileage										
345 kV (or EHV DC) Miles		0	94	35	153	153+	153+	174+	93	185
Economic Factors										
Estimated Cost ($M)		$19.50	$221.30	$59.30	$341.50	$348.88	$491.50			
Annualized ($M/yr)		$1.76	$19.92	$5.34	$30.74	$31.40	$44.24	$22.00	$29.90	$23.60
Market Savings ($M/yr)		$9.96	$14.64	$10.16	$6.15	$14.64	$13.20	$10.66	($13.30)	($4.00)
Net Savings ($M/yr)		$8.21	($5.28)	$4.82	($24.59)	($16.76)	($31.04)	($11.34)	($43.20)	($27.60)
3x Market Savings		**29.9**	**43.9**	**30.5**	**18.5**	**43.9**	**39.6**	**32.0**	**(39.9)**	**(12.0)**
3x Net Savings		**28.1**	**24.0**	**25.1**	**(12.3)**	**12.5**	**(4.6)**	**10.0**	**(69.8)**	**(35.6)**
Other Factors										
Transfer Capability (MW)	16%	3648	4787	4756	4766	4766	4835	4085	3734	4059
LMP Comparability (w/ UP)	10%	8.0	9.0	9.0	5.0	9.0	10.0	0.0	0.0	0.0
Reliability (LOLE)	5%	4.0	10.0		10.0			7.0	1.0	1.0
Reliability (EUE)	5%	0.0	10.0		9.0			2.0	0.0	0.0
Strategic Benefits	24%	1.7	7.2		8.8			7.7	6.0	7.8
System Performance	5%	9.0	9.0		10.0			10.0	0.0	0.0
Operating Flexibility	5%	1.0	8.0		7.0			9.0	5.0	10.0
Societal Impacts	15%	10.0	5.0		7.0			1.0	4.0	7.0
Environmental Impacts	15%	10.0	4.0		3.0			2.0	5.0	3.0
NET SCORE	**100%**	**5.4**	**7.3**		**7.5**			**4.8**	**3.4**	**4.2**

2005 Direction

- Continue evaluation of access alternatives with customer/stakeholder input
  - Focus on South and Southwest directions
  - Coordinate with MISO and neighboring utilities
    - Also – cost/benefit split with neighbors? MISO RECB
  - Refine several packages to optimize value
  - Select a preferred package and determine ultimate termination points for lines
  - Compile analysis so ATC can begin pre-certification efforts by EOY 2005