Example of Use of Economic Studies

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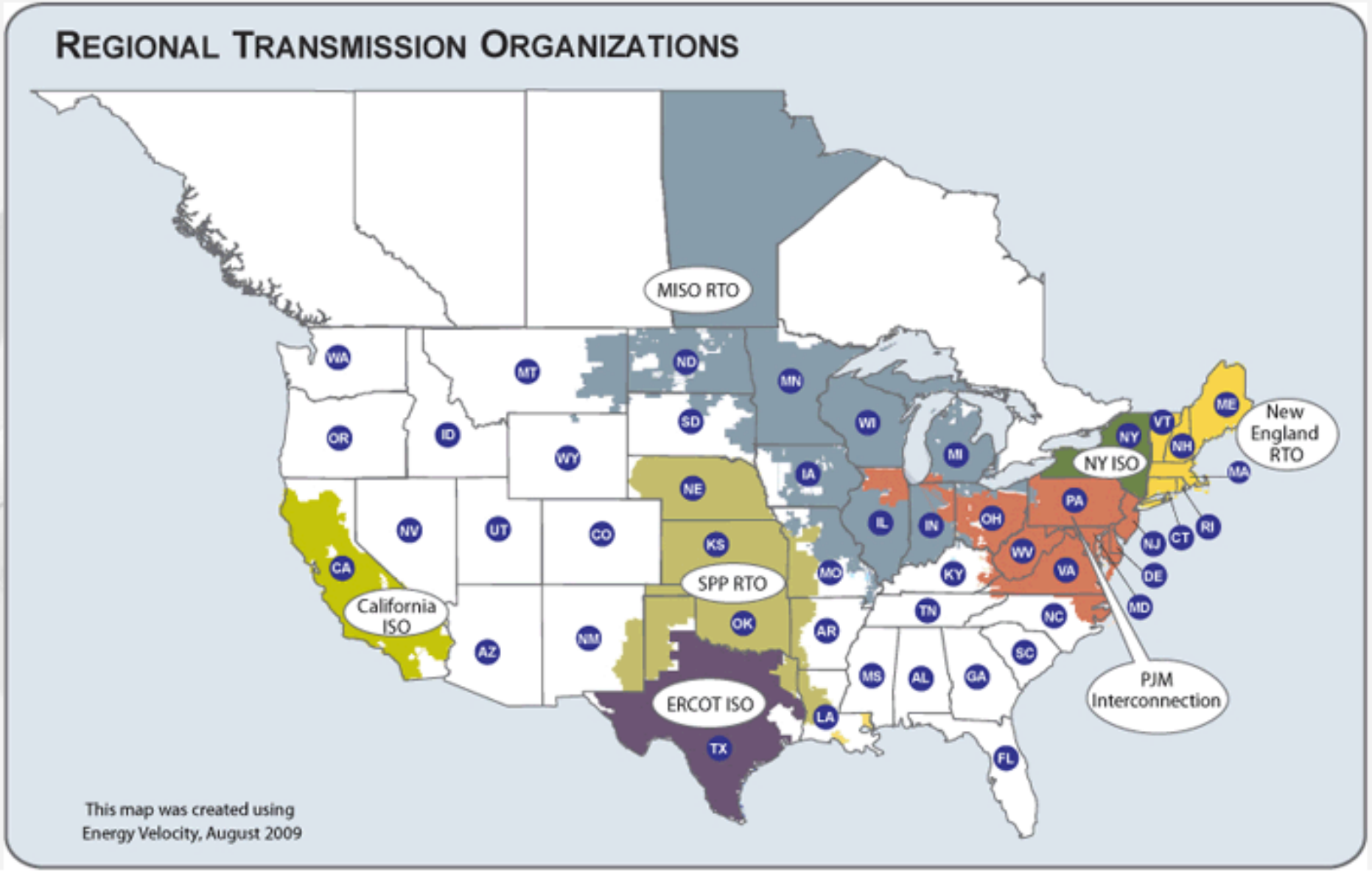
REGIONAL TRANSMISSION ORGANIZATIONS
MISO RTO
New England RTO
NY ISO
SPP RTO
California ISO
ERCOT ISO
PJM Interconnection
WA
OR
CA
ID
NV
MT
WY
UT
AZ
CO
NM
ND
SD
NE
KS
OK
TX
MN
IA
MO
AR
LA
WI
IL
MS
MI
IN
KY
TN
AL
OH
WV
GA
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VT
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ME
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RI
CT
NJ
DE
MD
This map was created using
Energy Velocity, August 2009

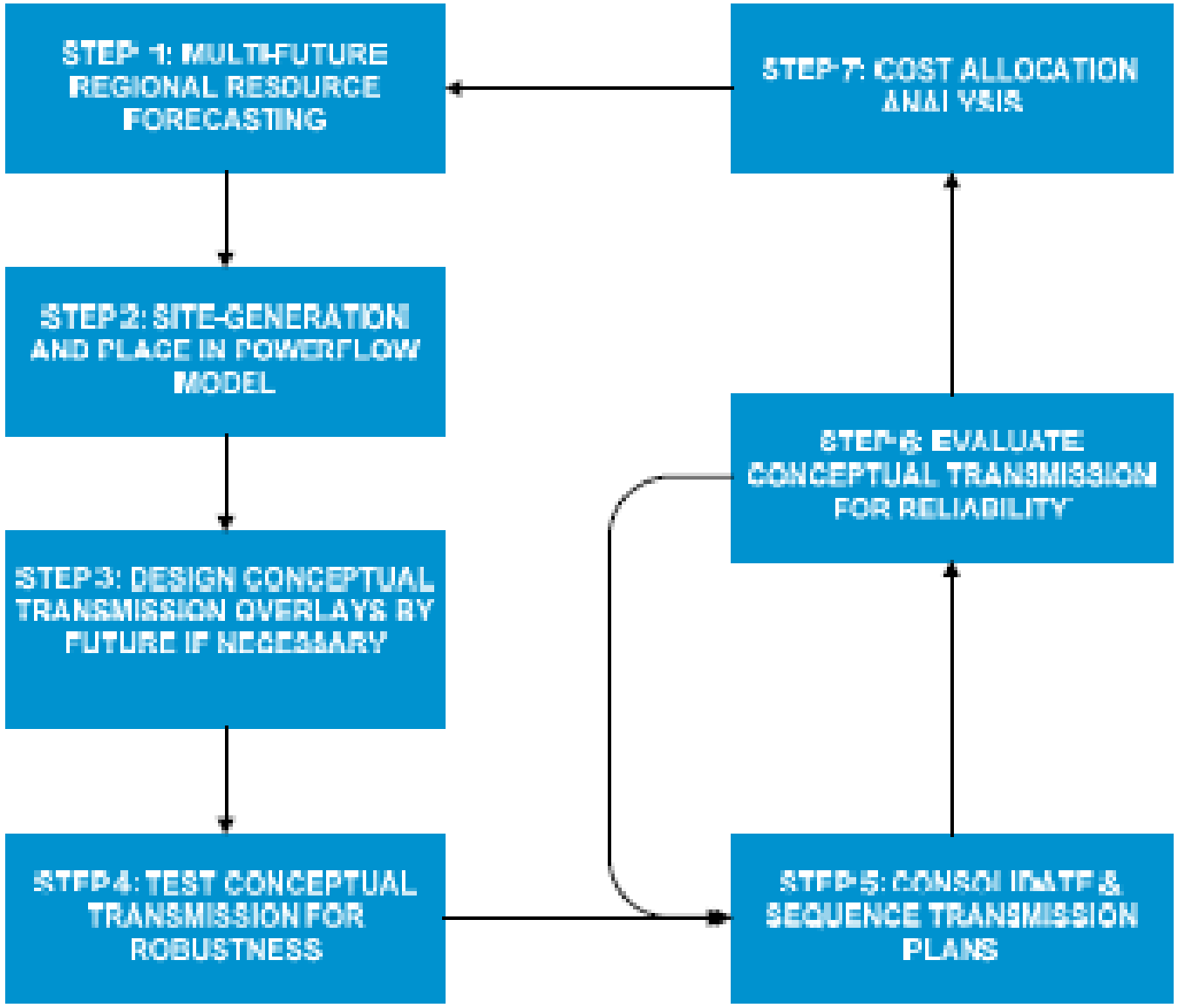
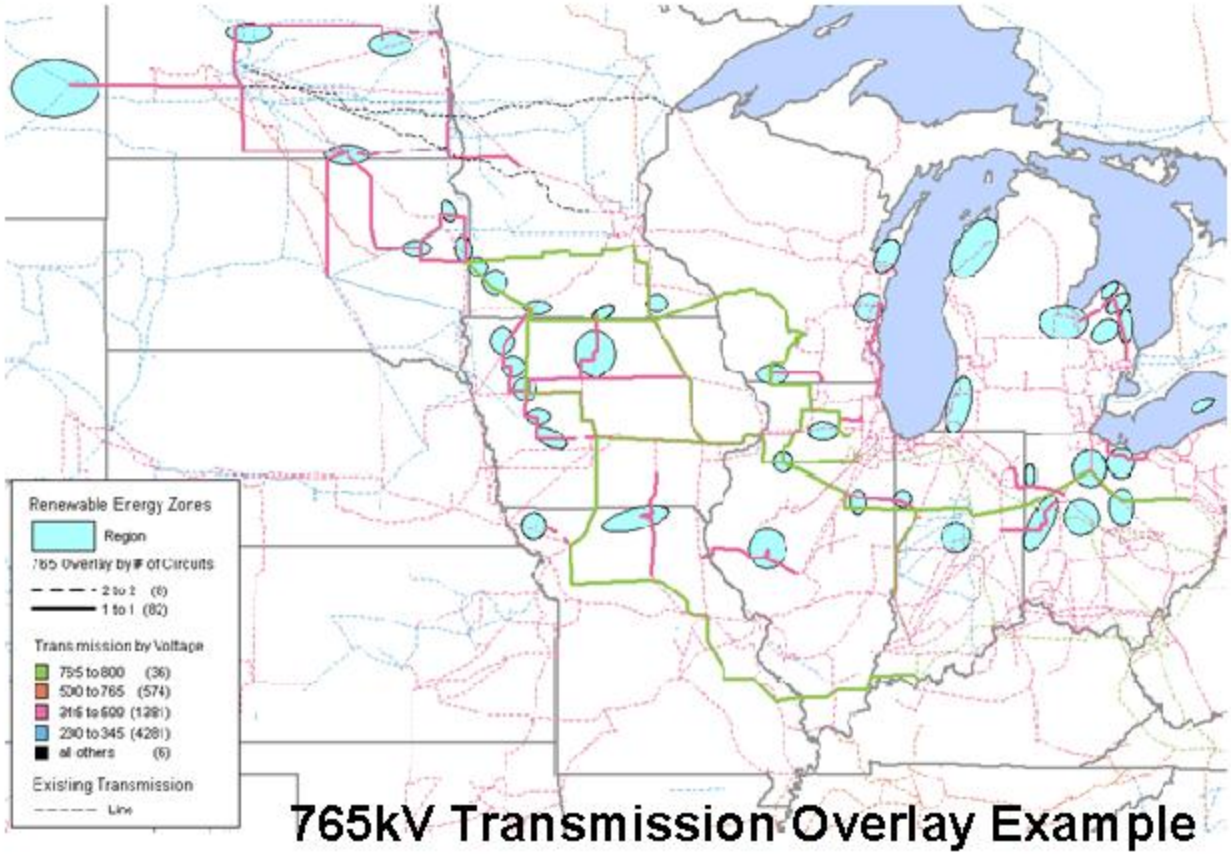


Figure 4.4-1: MTEP10 Process – Economic Transmission Planning

MISO Regional Planning Example

Step 3: Transmission Overlay Development



765kV Transmission Overlay Example

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MISO

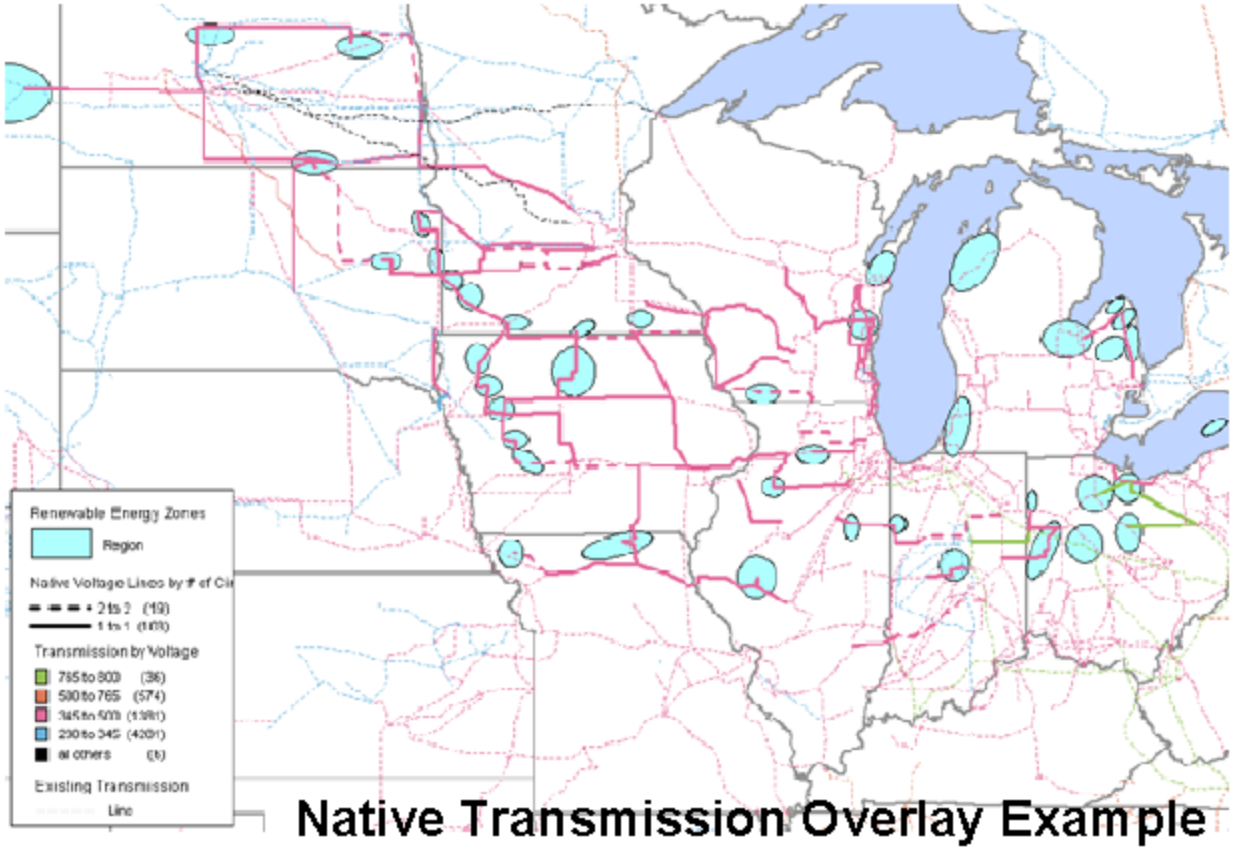
$23.3B MISO $18B PJM 5.4 B

765 kV Option, Value per year, Potential Value per Year, Potential Value Capi

			Capitalized Capturable Benefit
RGOS 765 kV	Constrained - Overlay	Overlay - Full Copper	Overlay - Full Copper
	$B	$B	$B
PJM	$ (0.2)	$ 1.5	$ 6.2
MISO	$ 1.0	$ 1.6	$ 6.6
SPP	$ 0.2	$ 2.7	$ 10.8
TVAALL	$ (0.0)	$ 0.3	$ 1.1
SERC	$ (0.0)	$ 1.7	$ 6.7
WAPA	$ 0.3	$ 0.7	$ 3.0
MHEB	$ 0.1	$ 0.2	$ 0.8
IESO	$ 0.0	$ 0.7	$ 2.9
NYISO	$ 0.0	$ 1.0	$ 3.8
Total	$ 1.4	$ 10.5	**$ 41.8**

MISO

MISO Regional Planning Example
Step 3: Transmission Overlay Development



Native Transmission Overlay Example

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MISO

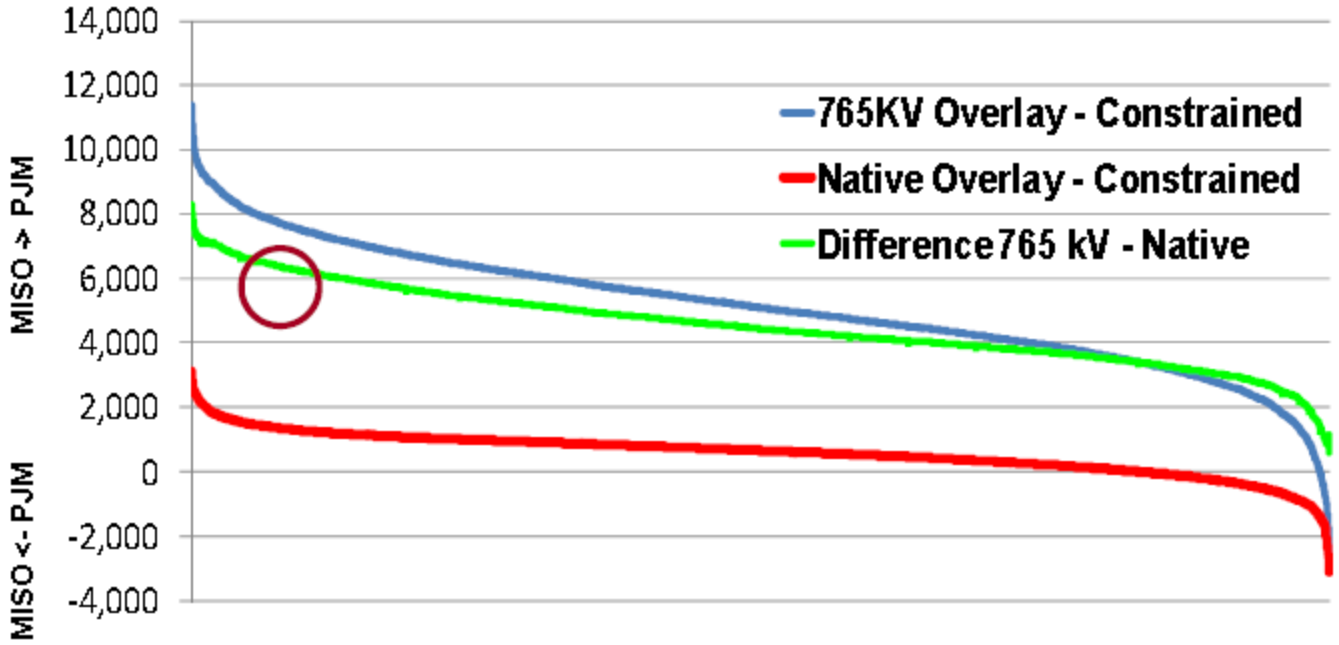
$19B MISO $16.3B PJM 2.7B

Native Voltage Option, Value per year, Potential Value per Year, Potential Value Capitalized

			Capitalized Capturable Benefit
RGOS Native	Constrained - Overlay	Overlay - Full Copper	Overlay - Full Copper
PJM	$ (0.2)	$ 1.5	$ 7.0
MISO	$ 0.7	$ 1.9	$ 8.8
SPP	$ 0.1	$ 2.8	$ 13.0
TVAALL	$ (0.0)	$ 0.3	$ 1.2
SERC	$ 0.0	$ 1.6	$ 7.5
WAPA	$ 0.2	$ 0.8	$ 3.9
MHEB	$ 0.1	$ 0.2	$ 1.1
IESO	$ 0.0	$ 0.7	$ 3.4
NYISO	$ 0.0	$ 1.0	$ 4.5
Total	$ 0.9	$ 10.8	$ 50.6

MISO Inter-Regional Planning Example
Flow Duration Curve

- Inter-Regional transmission is likely to require economic justification
- 765kV Overlay provides 6,000 MW more transfer capability at 80% CF



Capacity factor (CF) versus MW transfers, MISO->PJM interface in year 2025.

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MISO

Incremental Cost of 765 kV Decision Optio

Benefit Difference	Cost Difference 2	B/C	Decision Parties	Resulting Decision
$ 0.85	$ 2.7	0.3	PJM	No
$ 2.24	$ 1.7	1.3	MISO	Yes
$ 3.09	$ 4.4	0.7	MISO+PJM	No
$ 8.7	$ 4.4	2.0	Total	Yes

MISO

Pay Proportional to Benefit			
Region	Benefit	Cost	B/C
PJM	$ 0.8	0.4	2.0
MISO	$ 2.2	1.1	2.0
SPP	$ 2.2	1.1	2.0
TVAALL	$ 0.1	0.1	2.0
SERC	$ 0.8	0.4	2.0
WAPA	$ 1.0	0.5	2.0
MHEB	$ 0.4	0.2	2.0
IESO	$ 0.5	0.3	2.0
NYISO	$ 0.6	0.3	2.0
Total	$ 8.7	4.4	2.0

Conclusion

- **Economic information can be used to efficiently design transmission systems**
- **Economic information can be used to make decisions concerning the feasibility of transmission design choices**
- **Global solutions can provide justifiable options that two party studies would not if there is cost allocation.**
- **The example shows that “pay according to benefits” works for global cost allocation**