



# MTEP19 Market Congestion Planning Study (MCPS)

Screening Results for the North-South  
Constraint Focus Area

MCPS TSTF  
July 25, 2019

# Executive Summary



- Nine projects have passed the initial screening phase; HVDC projects are undergoing further analysis
- Analysis on the North-South interface to continue beyond December 2019
- MISO requests feedback on additional benefit metrics targeting North-South capacity

# Project Candidate Identification

## Project Candidate Identification

Transmission Development

Single-Year Screen

Present Value (PV) Screen

- Goal: Identify transmission solutions that meet screening criteria and address the North-South Constraint
- Base screening analysis to be performed assuming perpetual renewal of the Settlement Agreement
- Screening Criteria:
  - Evaluate the one-year (15-year out model - 2033) weighted screening index for all solution ideas
  - $$\text{Screening Index} = \frac{2033 \text{ APC Savings} + 2033 \text{ Settlement Agreement Savings}}{\text{Solution Cost} \times \text{MISO Aggregate Annual Charge Rate}}$$
  - $$\text{Weighted Screening Index} = \sum(\text{Future Weight} \times \text{Screening Index in that future})$$
- Solution ideas with a weighted screening index  $\geq 0.9$  will be considered in the present value (PV) analysis

# Screening Results – Settlement Agreement Savings included; assuming Settlement Agreement is renewed perpetually

Transmission Solution	Submitted Cost (2019-\$M)	2033 Year Screening Index					New Line Rating (MVA)	Passed Screening?
		AFC	CFC	DET	LFC	Weighted		
Richland - Bertie - Jim Hill 161kV	60	1.36	1.28	1.31	1.29	1.31	400	Yes
Kelso - Bertie - Jim Hill 345/161kV	207	2.02	1.68	1.67	1.45	1.71	2351	Yes
Lutesville - Independence 500kV	534	1.22	0.86	0.84	0.65	0.90	2727	Yes
Baldwin - Independence 500 kV	606	0.97	0.83	0.80	0.61	0.80	2727	No
Jim Hill - Lutesville 345kV	201	2.70	2.02	1.99	1.65	2.09	2574	Yes
Dell - Lutesville 345kV	357	2.08	1.30	1.25	0.92	1.39	3140	Yes
Jim Hill - Bertie 345kV	137	4.07	2.93	2.87	2.33	3.05	2574	Yes
Bland - Dell 500kV	600	0.73	0.56	0.57	0.53	0.60	2156	No
Bland - Dell 500kV & Lutesville - Dell 500kV	911	1.25	0.69	0.64	0.43	0.75	4312	No
Bland - Powerland Rd & Lutesville - Dell 500kV	896	1.24	0.69	0.65	0.43	0.75	4312	No
Lutesville - Dell 500kV	312	0.93	0.99	0.99	0.97	0.97	2156	Yes

4 
$$\text{Screening Index} = \frac{2033 \text{ APC Savings} + 2033 \text{ Settlement Agreement Savings}}{\text{Solution Cost} \times \text{MISO Aggregate Annual Charge Rate}}$$



# Screening Results – Settlement Agreement Savings included; assuming Settlement Agreement is renewed perpetually

Transmission Solution	Submitted Cost (2019-\$M)	2033 Year Screening Index					New Line Rating (MVA)	Passed Screening?
		AFC	CFC	DET	LFC	Weighted		
Lutesville - Jim Hill 345kV & Jim Hill - Dell 161kV	324	2.07	1.36	1.32	1.01	1.44	2988	Yes
East Joppa - Dell 500kV	442	2.21	1.25	1.17	0.79	1.36	4330	Yes
Joppa – Sans Souci 500kV	542	0.87	0.73	0.73	0.60	0.73	2229	No
Joppa – W. Memphis 500kV	738	0.62	0.54	0.52	0.45	0.53	2229	No
Joppa – W. Memphis 345kV	740	0.53	0.47	0.47	0.42	0.47	2229	No
Jim Hill - Bertie 161kV	145	0.52	0.60	0.62	0.56	0.58	556	No

- HVDC projects require additional testing
- Projects without physical North/Central and South termination points are not shown in the Screening Results

# Exploring Additional Benefit Metrics

# Stakeholder request for benefit exploration

- Stakeholders interested in additional benefit metrics focused towards North-South capacity increase or Settlement Agreement capacity substitutes
- New metrics will not be counted for project recommendation – exploratory purposes only
- May be qualitative or quantitative in nature

# Request for Feedback by August 23, 2019

- MISO requests feedback on additional benefit metrics to be considered regarding the North-South focus area
  - Feedback should include details describing how the metric would be calculated and applied
  - Please be as specific as possible
- Feedback requests and responses are managed through MISO's Feedback Tool:

<https://www.misoenergy.org/stakeholder-engagement/stakeholder-feedback/>





# Appendix

# North-South Constraint Background

- MISO Transmission Owners have 1000 MW of contract path capacity for flows between MISO North/Central and South regions
- As a result of the 2015 settlement agreement, MISO pays the joint parties for use of up to 2000 MW\* of additional capacity for flows between the MISO North/Central and South regions
  - MISO North/Central → South Regional Directional Transfer Limit **3000 MW**
  - MISO South → North/Central Regional Directional Transfer Limit **2500 MW**
- Payments are made monthly, based on tiers of prior-year actual usage

# Screening Results – Settlement Agreement Savings not included; assuming Settlement Agreement is renewed perpetually

Transmission Solution	Submitted Cost (2019-\$M)	2033 Year Screening Index					New Line Rating (MVA)	Passed Screening?
		AFC	CFC	DET	LFC	Weighted		
Richland - Bertie - Jim Hill 161kV	60	0.08	-0.01	0.02	0.00	0.02	400	No
Kelso - Bertie - Jim Hill 345/161kV	207	0.61	0.28	0.27	0.05	0.30	2351	No
Lutesville - Independence 500kV	534	0.63	0.27	0.25	0.06	0.30	2727	No
Baldwin - Independence 500 kV	606	0.45	0.31	0.28	0.09	0.28	2727	No
Jim Hill - Lutesville 345kV	201	1.19	0.52	0.48	0.14	0.58	2574	No
Dell - Lutesville 345kV	357	1.27	0.49	0.44	0.11	0.58	3140	No
Jim Hill - Bertie 345kV	137	1.86	0.72	0.66	0.12	0.84	2574	No
Bland - Dell 500kV	600	0.22	0.06	0.07	0.02	0.09	2156	No
Bland - Dell 500kV & Lutesville - Dell 500kV	911	0.92	0.36	0.31	0.10	0.42	4312	No
Bland - Powerland Rd & Lutesville - Dell 500kV	896	0.91	0.35	0.31	0.09	0.41	4312	No
Lutesville - Dell 500kV	312	-0.04	0.02	0.02	0.00	0.00	2156	No

11  $Screening\ Index = \frac{2033\ APC\ Savings}{Solution\ Cost \times MISO\ Aggregate\ Annual\ Charge\ Rate}$



# Screening Results – Settlement Agreement Savings not included; assuming Settlement Agreement is renewed perpetually

Transmission Solution	Submitted Cost (2019-\$M)	2033 Year Screening Index					New Line Rating (MVA)	Passed Screening?
		AFC	CFC	DET	LFC	Weighted		
Lutesville - Jim Hill 345kV & Jim Hill - Dell 161kV	324	1.17	0.47	0.42	0.12	0.55	2988	No
East Joppa - Dell 500kV	442	1.56	0.59	0.51	0.14	0.70	4330	No
Joppa – Sans Souci 500kV	542	0.31	0.18	0.17	0.04	0.17	2229	No
Joppa – W. Memphis 500kV	738	0.21	0.13	0.12	0.04	0.12	2229	No
Joppa – W. Memphis 345kV	740	0.12	0.06	0.06	0.01	0.06	2229	No
Jim Hill - Berntie 161kV	145	-0.05	0.03	0.05	-0.01	0.00	556	No

12  $Screening\ Index = \frac{2033\ APC\ Savings}{Solution\ Cost \times MISO\ Aggregate\ Annual\ Charge\ Rate}$



# Screening Results – Settlement Agreement is not renewed; default to 1000 MW North-South capacity

Transmission Solution	Submitted Cost (2019-\$M)	2033 Year Screening Index					New Line Rating (MVA)	Passed Screening?
		AFC	CFC	DET	LFC	Weighted		
Richland - Bertie - Jim Hill 161kV	60	3.77	2.82	2.47	1.20	2.57	400	Yes
Kelso - Bertie - Jim Hill 345/161kV	207	5.34	3.14	2.74	1.03	3.06	2351	Yes
Lutesville - Independence 500kV	534	2.61	1.48	1.29	0.47	1.46	2727	Yes
Baldwin - Independence 500 kV	606	2.20	1.37	1.20	0.45	1.31	2727	Yes
Jim Hill - Lutesville 345kV	201	6.26	3.59	3.14	1.19	3.54	2574	Yes
Dell - Lutesville 345kV	357	4.00	2.15	1.88	0.68	2.18	3140	Yes
Jim Hill - Bertie 345kV	137	9.29	5.23	4.55	1.67	5.18	2574	Yes
Bland - Dell 500kV	600	1.92	1.09	0.95	0.38	1.08	2156	Yes
Bland - Dell 500kV & Lutesville - Dell 500kV	911	2.04	1.03	0.90	0.33	1.07	4312	Yes
Bland - Powerland Rd & Lutesville - Dell 500kV	896	2.04	1.04	0.90	0.33	1.08	4312	Yes
Lutesville - Dell 500kV	312	3.23	2.00	1.73	0.68	1.91	2156	Yes

# Screening Results – Settlement Agreement is not renewed; default to 1000 MW North-South capacity

Transmission Solution	Submitted Cost (2019-\$M)	2033 Year Screening Index					New Line Rating (MVA)	Passed Screening?
		AFC	CFC	DET	LFC	Weighted		
Lutesville - Jim Hill 345kV & Jim Hill - Dell 161kV	324	4.19	2.30	2.00	0.74	2.31	2988	Yes
East Joppa - Dell 500kV	442	3.77	1.93	1.67	0.60	1.99	4330	Yes
Joppa – Sans Souci 500kV	542	2.19	1.31	1.15	0.43	1.27	2229	Yes
Joppa – W. Memphis 500kV	738	1.59	0.97	0.84	0.32	0.93	2229	Yes
Joppa – W. Memphis 345kV	740	1.49	0.90	0.78	0.30	0.87	2229	No
Jim Hill - Berntie 161kV	145	2.00	1.46	1.28	0.61	1.34	556	Yes