WRAO - Wires Phase II Report - 1998

How transmission flows in Midwest – Wires Phase II Report, p. 5

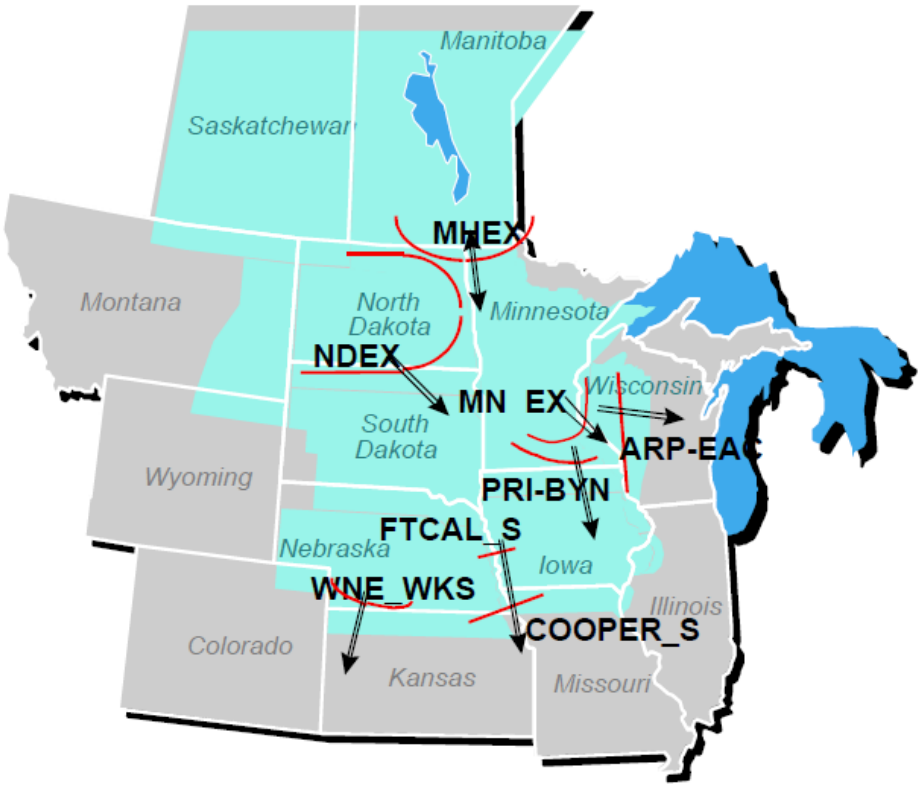
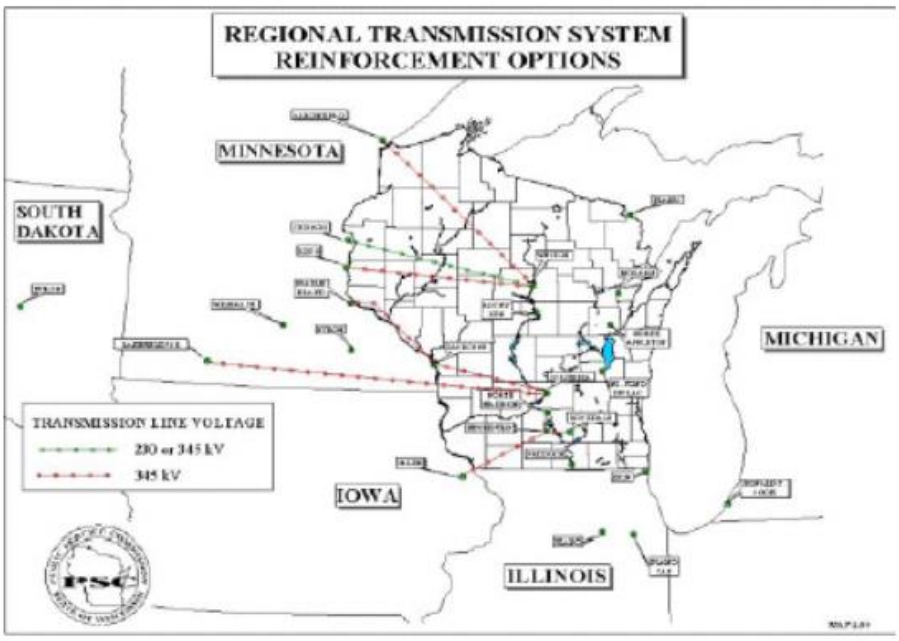


Figure ES- 1

WRAO "Transmission Options" – WIRES Phase II Report How many have NOT been built?

1. Salem – Fitchburg 345 kV (1c)
2. Prairie Island – Columbia 345 kV (2e)
3. Salem – Paddock 345 kV (2f)
4. Arrowhead – Weston – S Fond du Lac 345 kV (3e)
5. Arrowhead – Weston 345 kV (3j)
6. Arrowhead – Weston 230 kV (3k)
7. Chisago – Weston 345 kV (5a)
8. Chisago – Rocky Run 500 kV (6c)
9. Wilmarth – Byron – Columbia 345 kV (8b)
10. Huron – Split Rock – Lakefield – Adams – Genoa – Columbia 345 kV (9a)
11. Plano – Plano Tap 345 kV (12)
12. Arrowhead – Plains 345 kV (13c)



CapX 2020 2005 - CapX 2020 –Tech Update p.5, E-002/CN-06-1115
https://gridnorthpartners.com/projects/

Cap X "Vision" – some not built

4.3.1 Recommended Transmission Vision Facilities

Diagram 10 shows the final compilation of recommended transmission facilities for the Minnesota bias based on the n-1 contingency analysis completed using the facilities in Appendix A and Table 4. All contingency analysis results and PSS/E automaps are included in Appendix B-1.

Ref. Ref.#	Data Source	Facility name				
		From	To	Volt (kV)	Miles	Cost ($M)
F-02	TIPS	Alexandria	Benton County	345	80	60
F-03	TIPS	Alexandria	Maple River	345	126	94.5
F-06	NW	Antelope Valley	Maple River	345	292	219
F-07	CAPX	Arrowhead	Chisago	345	120	90
F-08	CAPX	Arrowhead	Forbes	345	60	45
F-09	CAPX	Benton County	Chisago County	345	59	44.25
F-10	CAPX	Benton County	Granite Falls	345	110	82.5
F-11	MH	Benton County	Riverton	345	78	58.5
F-12	CAPX	Benton County	St. Boni	345	62	46.5
F-13	CAPX	Blue Lake	Ellendale	345	200	150
F-17	CAPX	Boswell	Forbes	345	64	48
F-26	CAPX	Chisago County	Prairie Island	345	82	61.5
F-28	CAPX	Columbia	North LaCrosse	345	80	60
F-30	NW	Ellendale	Hettinger	345	231	173.25
F-32	CAPX	Forbes	Riverton	345	114	85.5
F-36	SMNI	Rochester	North LaCrosse	345	60	45
F-56	SMNI	Prairie Island	Rochester	345	58	43.5
F-63	CAPX	Lakefield Jct	Adams	345	92	69
				Total	**1968**	**1,476**

From: CapX 2020 – App. A-1, Attachment B – Tech Report p. 5, Application for Three 345kV Projects E-002/CN-06-1115

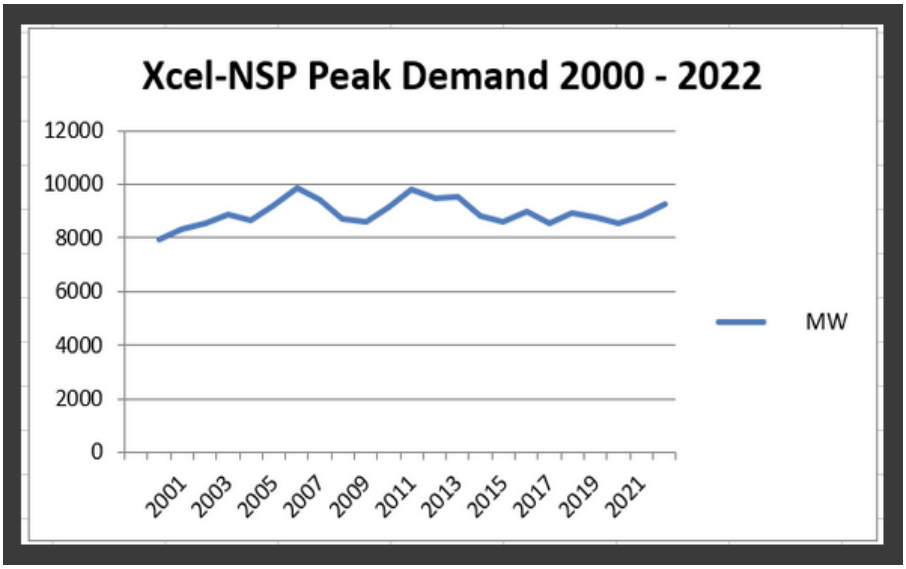
CapX 2020 based on annual 2.49% growth, a GROSS overestimate:

Control area	2009 load level (2004 MAPP Series) (MW)	Yearly growth rate (%)	Calculated 2020 load level (MW)
ALT (West)	3265.3	1.60	3888.2
Xcel Energy (North)	9632.6	2.68	12885.1
MP	1507.3	1.70	1814.4
SMMPA/RPU	330.0	2.70	442.4
GRE	2833.5	3.27	3943.2
OTP/MPC	1677.2	2.70	2248.3
DPC	954.7	2.60	1266.2
Total	20200.6	Ave. = 2.49%	26487.8

Table 1 – CapX 2020 Anticipated Area Growth

2020 12,885MW? Xcel's SEC 10-K filings, 2000-2022. Demand essentially flat.

Xcel P	MW
2000	7,936
2001	8,344
2002	8,529
2003	8,868
2004	8,665
2005	9,212
2006	9,859
2007	9,427
2008	8,697
2009	8,615
2010	9,131
2011	9,792
2012	9,475
2013	9,524
2014	8,848
2015	8,621
2016	9,002
2017	8,546
2018	8,927
2019	8,774
2020	8,571
2021	8,837
2022	9,245



Xcel has 1,500 MW surplus to sell into the market: 2022 SEC 10K, p. 35:
https://d18rn0p25nwr6d.cloudfront.net/CIK-0000072903/e3289f4f-768c-4d54-b8ec-d48a6088805d.pdf

MISO Capacity Credits

The NSP System offered 1,500 MW of excess capacity into the MISO planning resource auction for June 2022 through May 2023. Due to a projected overall capacity shortfall in the MISO region, the 1,500 MWs offered cleared the auction at maximum pricing, generating revenues of approximately $90 million in 2022, with approximately $60 million expected in 2023. These amounts will primarily be used to mitigate customer rate increases or returned through earnings sharing or other mechanisms.

MISO's "MVP Portfolio" circa 2012, BIG PICTURE (2012):

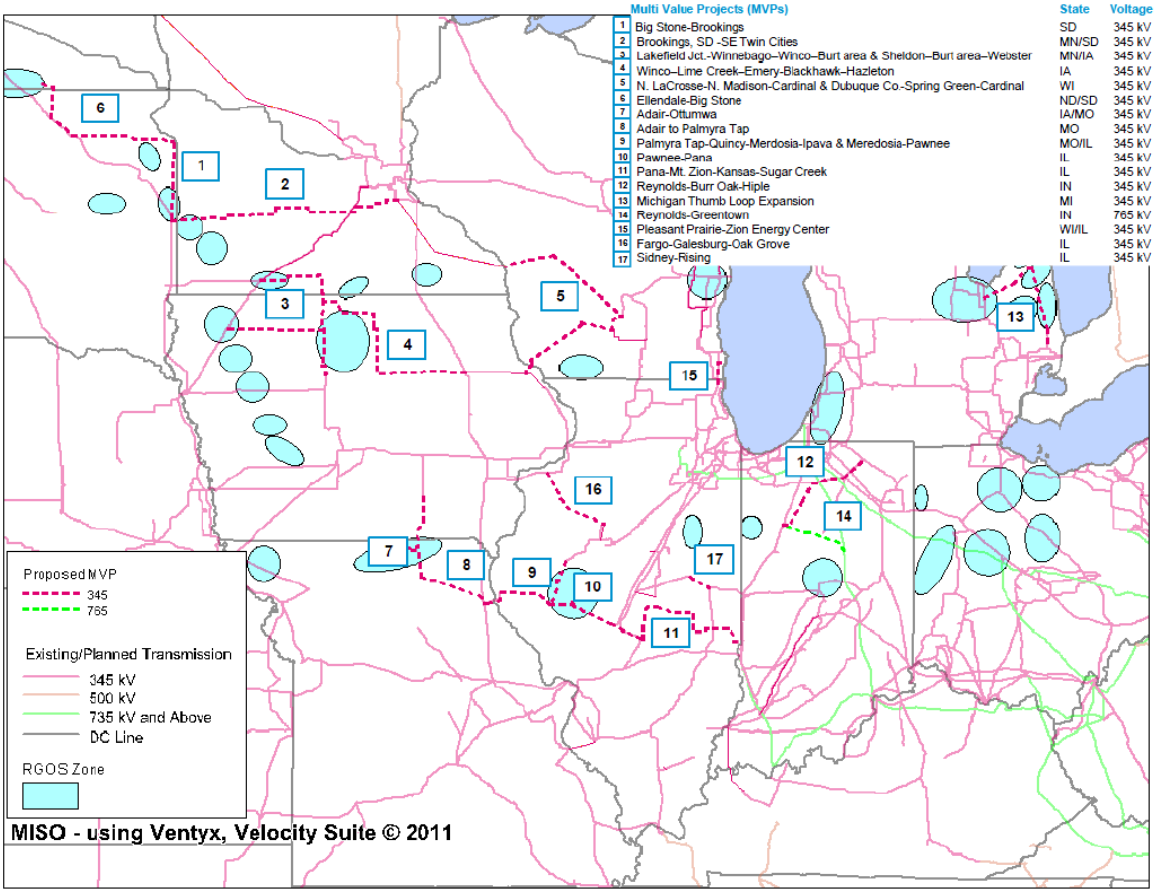


Figure 1.1: MVP portfolio[1]

2012 - MISO MVP in Minnesota – which were built – which were not?:

Multi Value Project Analysis Report Executive Summary

The recommended MVP portfolio includes the Brookings Project, conditionally approved in June 2011, and the Michigan Thumb Loop project, approved in August 2010. It also includes 15 additional projects which, when integrated into the transmission system, provide multiple kinds of benefits under all future scenarios studied[2].

	Project	State	Voltage (kV)	In Service Year	Cost (M, 2011$)[3]
1	Big Stone–Brookings	SD	345	2017	$191
2	Brookings, SD–SE Twin Cities	MN/SD	345	2015	$695
3	Lakefield Jct. –Winnebago–Winco–Burt area & Sheldon–Burt area–Webster	MN/IA	345	2016	$506

2012 MVP projects use MISO "approval" as basis for need claims.

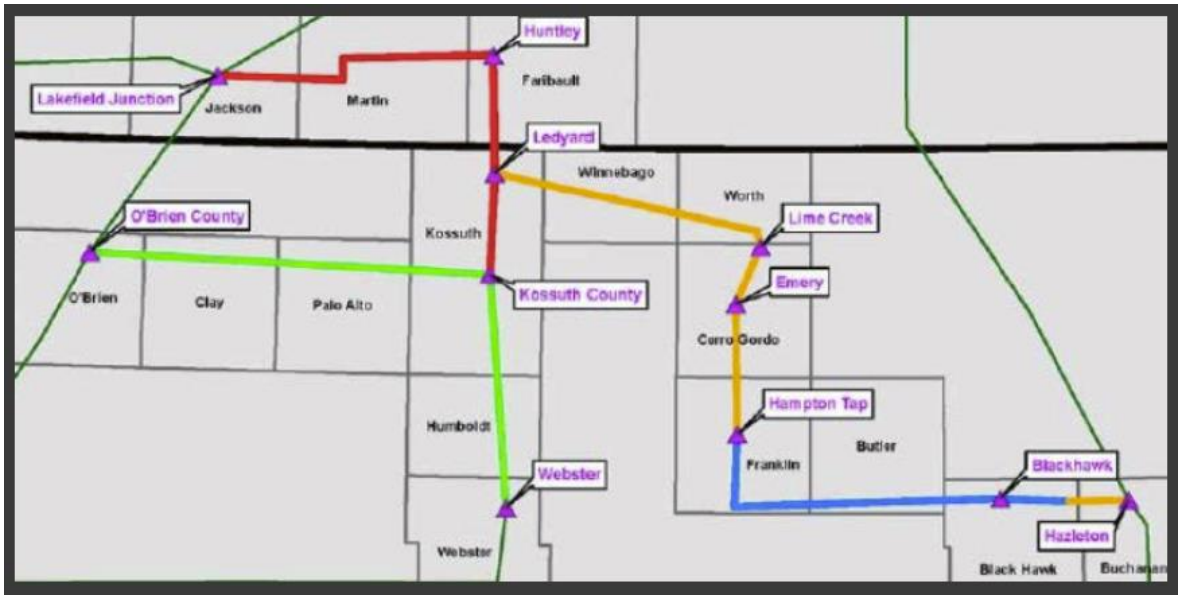
Line loss is considered only "system wide," and not in context of specific proposed transmission lines.

Benefits are based on returns to MISO members.

This MVP Portfolio was modeled, studied, and sold as a "package deal."

	Project	State	Voltage (kV)	In Service Year	Cost (M, 2011$)
1	Big Stone–Brookings	SD	345	2017	$191
2	Brookings, SD–SE Twin Cities	MN/SD	345	2015	$695
3	Lakefield Jct. –Winnebago–Winco–Burt area & Sheldon–Burt area–Webster	MN/IA	345	2015	$511
4	Winco–Lime Creek–Emery–Blackhawk–Hazleton	IA	345	2015	$485
5	N. LaCrosse–N. Madison–Cardinal & Dubuque Co. –Spring Green–Cardinal	WI	345	2018/2020	$714
6	Ellendale–Big Stone	ND/SD	345	2019	$261
7	Adair–Ottumwa	IA/MO	345	2017	$184
8	West Adair–Palmyra Tap	MO/IL	345	2018	$98
9	Palmyra–Quincy–Merdosia–Ipava & Meredosia–Pawnee	IL	345	2018	$392
10	New Pawnee–Pana	IL	345	2018	$88
11	Pana–Mt. Zion–Kansas–Sugar Creek	IL/IN	345	2020	$284
12	Reynolds–Burr Oak–Hiple	IN	345	2018	$271
13	Michigan Thumb Loop Expansion	MI	345	2015	$484
14	New Reynolds–Greentown	IN	765	2018	$245
15	Pleasant Prairie–Zion Energy Center	WI/IL	345	2014	$26
16	Fargo–Oak Grove	IL	345	2018	$193
17	Sidney–Rising	IL	345	2017	$90
Total					$5,214

MVP projects 3 and 4 in Minnesota – MVP 1 in SD, and MVP 2 not built…

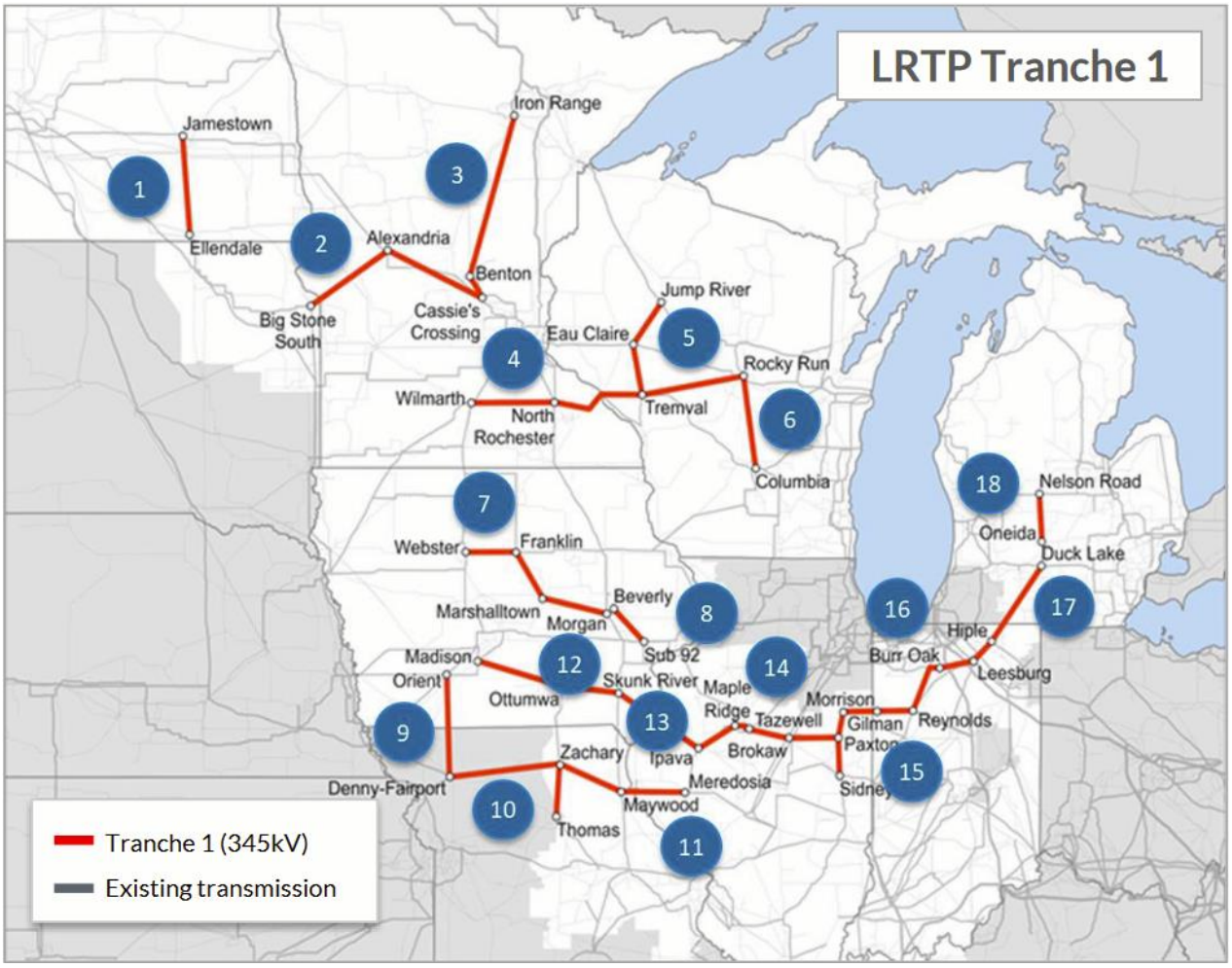


2022 - MISO LRPT Tranche 1, online at:

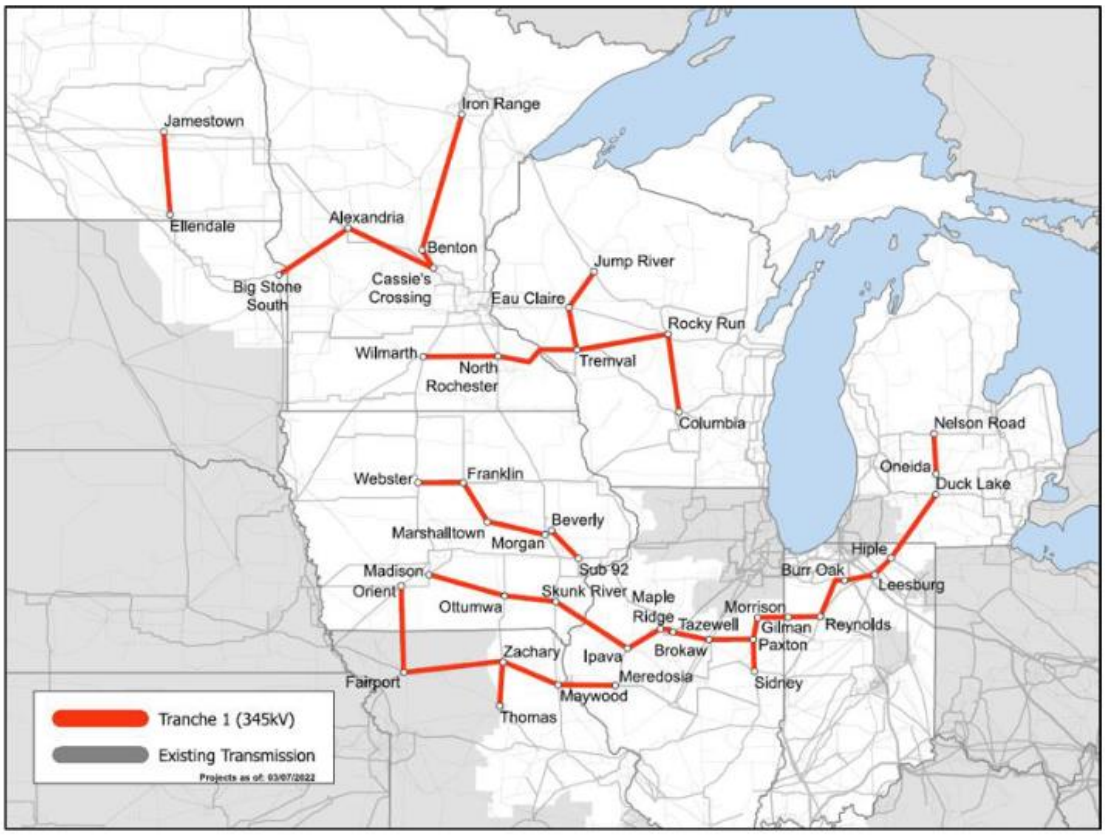
https://cdn.misoenergy.org/20220325%20LRTP%20Workshop%20Item%2002%20Tranche%201%20Portfolio%20and%20Process%20Review623633.pdf

- Jamestown-Ellendale (Southeastern North Dakota)
- Big Stone South- Alexandria (Northeastern South Dakota and West and Central Minnesota)
- Alexandria to Cassie's Crossing, completing a portion of the second circuit of original CapX2020 Fargo-St. Cloud project (Central Minnesota)
- Iron Range-Benton-Cassie's Crossing (Central Minnesota near Becker to Northern Minnesota)
- Wilmarth-North Rochester-Tremval (North Rochester-Tremval completes the second circuit of the original CapX2020 transmission line from North Rochester to the Mississippi River) (Minnesota and Western Wisconsin)
- Tremval-Eau Claire-Jump River (West and Central Wisconsin)
- Tremval-Rocky Run (Central Wisconsin)

2022 - Latest MISO dream list of projects:

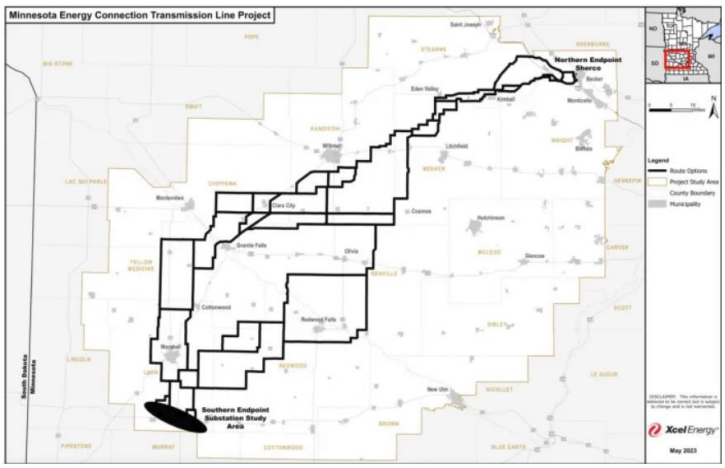


And a more legible map:



Not included in MISO plans is Xcel's scheme to preserve their interconnection rights after Sherco and King coal plants close – at OUR expense, "approved" in the IRP (19-368).:

"MN Energy Connection" - Lyon County to Sherco, PUC Dockets CN-22-131; TL-22-132:



Per Xcel, the scheme for the King plant will be applied for and permitted by Wisconsin's PSC, as it's on the border and a line can interconnect more easily from WI.

THERE'S NO RATIONALE FOR ALL THIS TRANSMISSION, THEY'RE FILLING THEIR POCKETS AT RATEPAYER COST AND LANDOWNER EMINENT DOMAIN! **JUST NO!** THESE PLANS ARE FOR THEIR BOTTOM LINE, AND THERE'S NO BENEFIT TO US.

This is all about transmission system. Who cares about the distribution system? RATEPAYERS!!

Xcel has proposed at least two transmission projects as a solution to distribution issues which does not address the longstanding distribution issues.

- **Hiawatha 115kV** was proposed as solution to area overloads, particularly with the large hospital campus load. This was a distribution issue, as the distribution system had not been upgraded for decades. However, the need for distribution upgrade, rather than a transmission line, was not sufficiently challenged in the permitting process. See PUC Dockets CN-10-694 and TL-09-38.
- **Hollydale 115 kV** was the next transmission project proposed as a solution for distribution issues. This again was a case of distribution system not being upgraded to handle the load, limping along on 13.8 kV when 34.5 kV was needed. Xcel did back down and reworked its plan to upgrade the distribution system, and all is well. See PUC Dockets CN-12-113 and TL-11-152.

There are additional benefits to utilities of all this excess transmission:

- Transmission plans are not factoring in the increased capacity when coal plants are taken off line, and planning for replacement power at that point. Utilities could use this to their advantage.
- Transmission plans is peak planning, and electric use has both decreased peak and shifted time of use, such that planning for peak is not best practices. Utilities could shift planning and use this shift to their advantage.
- Transmission has a higher rate of return than selling electricity
- Owner of transmission can also make money on providing transmission service
- Transmission excess assures that projects will site using transmission, rather than site where the load is.

There are other costs to ratepayers and the public of all this excess transmission:

- Storage is adequate alternative to transmission which should be used. It's cheaper and can site near load.
- Ratepayers bear the cost, and facilitate utilities making higher rate of return.
- Landowners lose land by eminent domain to utilities building transmission.
- Environmental costs to property owners, the public, and flora and fauna are immeasurable, and these costs are not incorporated into cost/benefit analysis.
- Transmission eliminates any chance of a functional distributed generation program, as there is no incentive to site near load.
- Transmission eliminates incentive to upgrade the distribution system, which has been ignored for decades. Upgraded distribution would also facilitate increased distributed generation.
- Injection of distributed generation at substations would remove some of the load that would have been needed to serve area customers.

Distributed generation needs to be the focus – NOW! With distributed generation and closure of coal plants freeing up transmission capacity, we can determine what is really needed.