

2 1/2 pages
 (b)

Option 1H "50/50"

Add Split Rk-Lakefield Jct 345 KV
 Add 345/115 KV intermediate sub & 115 KV line north to Chanarambie

Add Buffalo Ridge-Yankee-White 115 KV
 Add Troy 69 KV SS

Chanarambia-LK Yankton-Lyon Co 115 in
 Willmar-Paynesville 230 in

50% incr gen @ Chanarambie, 50% @ Yankee

Incremental MW, w/ir to	MW base	Facility overload	Applicable Rating, MVA	Outage	Remedy	Qty	Cost	Installed Cost, \$1000	Cumulative
-1475	-1350	C Willmarth	Martin Co	Shurco #3 gen trip	Upgrade to 100 deg C	1 ea	1,000 ea	1,000	1,000
-860	-735	C Lakefield	Fox Lk	Martin Co-Willmarth 345	Build 2nd LAJ-Fox Lk ckt	24 mi	220 /mi	5,280	6,280
-645	-520	C Minn Valley 230/115 KV Lx (100 MVA)		Granite Falls-Minn Valley 230	Line terms @ LAJ & Fox Lk	2 ea	800 ea	1,600	7,880
-580	-455	C Summit	Dome	Blue Lk-Willmarth 345	Replace with 187 MVA	1 ea	1,500 ea	1,500	9,380
-570	-445	C Willmar 115/69 Lx		Granite Falls-Willmar 230	Reconductor	2.8 mi	95 /mi	265	9,645
-380	-255	C Alexandria	Douglas Co	Inman-Wing River 230	Replace with 112 MVA	1 ea	1,200 ea	1,200	10,845
-350	-225	C Dome	Loon Tp	Blue Lk-Willmarth 345	Reconductor	11 mi	95 /mi	1,045	11,891
-125	0	Fox Lk	Rutland	Martin Co-Willmarth 345	Reconductor	22.1 mi	95 /mi	2,100	13,991
-125	0				Rebuild	18 mi	220 /mi	3,960	17,951
-120	5	C Paynesville	Wakefield	GF-MinnValley-Panther 230	ADD CHB-LAJ-LYC 115 KV	1 ea	48,000 ea	48,000	66,951
-95	30	C Elbow Lk	Grant Co	Fergus Fis-Henning 230	Reconductor	15.0 mi	95 /mi	1,425	67,376
-5	120	C Willmar	Kerkhoven	Granite Falls-Willmar 230	Reconductor	3.6 mi	95 /mi	342	67,718
0	125				Reconductor	14.7 mi	95 /mi	1,397	69,114
5	130				(base plan)	1 ea	69,250 ea	69,250	138,364
55	180	Rutland	Winnabago	Martin Co-Willmarth 345	Rebuild	16 mi	220 /mi	3,520	141,884
115	240	C Brandon	Elbow Lk	Fergus Fis-Henning 230	Reconductor	16.6 mi	95 /mi	1,577	143,461
180	305	C Paynesville 230/115 Lx		GF-MinnValley-Panther 230	Increase to 336 MVA	1 ea	500 ea	500	143,961
220	345	Minn Valley	Redwood Fis Tp	Minn Valley-Panther 230	Reconductor	27.7 mi	95 /mi	2,632	146,593
250	375							0	146,593
265	390							0	146,593
265	390	Pipestone	Paritinder	Noddes Co-Chanarambie 115	Add BRL-Yankee-White 115	26 mi	250 /mi	6,500	153,093
265	390				BRI ring bus & new line term	1 ea	2,200 ea	2,200	155,293
265	390				White line term	1 ea	800 ea	800	156,093
270	395	X Brookings	White	White 345/115 Lx	ADD 2nd 345/115 Lx	1 ea	3,000 ea	3,000	159,093
275	400	C Black Dog 230/115 Lx		(System intact)	Replace with 336 MVA	1 ea	1,500 ea	1,500	160,593
340	465	Paynesville	Roscoe Tp	Paynesville-Wakefield 115	Rebuild as dbl ckt 115/69	7.8 mi	300 /mi	2,280	162,873
360	485	X Douglas Co	Long Prairie	Inman-Wing River 230	Reconductor	19.3 mi	95 /mi	1,834	164,706
390	515	Redwood Fis Tp	Franklin	Minn Valley-Panther 230	Reconductor	13 mi	95 /mi	1,235	165,941
395	520	Roscoe Tp	Munson Tp	Paynesville-Wakefield 115	Rebuild as dbl ckt 115/69	4.0 mi	300 /mi	1,200	167,141
400	525							0	167,141
415	540	C Brandon	Alex SS	Fergus Fis-Henning 230	Reconductor	13.2 mi	95 /mi	1,254	168,395
420	545	X White 345/115 Lx		Brookings-White 115 KV	(added 2nd Lx @ 270 MW)	0 ea	0 ea	0	168,395
420	545	Fergus Fis	Hoot Lk	Fergus Fis-Warpeion 230	Reconductor	2.1 mi	95 /mi	200	168,595
450	575	Loon Tp	W Fairbault	Blue Lk-Willmarth 345	Reconductor	10.6 mi	95 /mi	1,007	169,602
455	580	Farm Tp	Munson Tp	Paynesville-Wakefield 115	Rebuild as dbl ckt 115/69	2.0 mi	300 /mi	600	170,202

495	620	Granite Falls	Minn Val Tp	230	418	Martin Co-Willmarth 345	Reconductor	2.5 mi	95 fmi	238	-170,439
505	630	Minn Valley	Panther	230	427	Martin Co-Willmarth 345	Reconductor	30.3 mi	95 fmi	2,879	173,318
550	675	Lx Yankee	Buffalo Ridge	115	292	White-Yankee 115	Reconductor	20.0 mi	95 fmi	1,900	175,218
585	710	Maple River	Wanapeon	230	220	Harrison-Wanapeon 230	Upgrade line term	1.0 ea	200 ea	200	175,418
635	760	X White	Yankee	115	459	Nobles Co-Fenton 115	Build 2nd line to Fenton	14.0 mi	200 fmi	2,800	178,218
635	760	X White	Yankee	115	459	Nobles Co-Fenton 115	Line terms @ Nobles & Fent	2 ea	800 ea	1,600	179,818
635	760	X White	Yankee	115	459	Nobles Co 345/115 lx	Add 2nd 345/115 lx	1 ea	2,500 ea	2,500	182,318
650	775	White	Yankee	115	220	Blue Lx-Willmarth 345	Reconductor Underground	1.0 ea	550 ea	550	182,868
680	805	Dome	Leon Tp (undergrnd)	115	225	White-Yankee 115	Reconductor	42.3 mi	95 fmi	4,019	186,886
705	830	Pipstone	Patfinder	115	459	Split Rk-Patfinder 115	Line terms @ Yankee & W/hi	2 ea	800 ea	1,600	188,486
705	830	White	Yankee	115	292	White-Yankee 115	Build 2nd SPK-PAF 115	1.0 ea	2,600 ea	2,600	191,086
710	835	White	Yankee	115	292	White-Yankee 115	Build 2nd White-Yankee 115	6.0 mi	200 fmi	1,200	192,286
755	880	Pipstone	Buffalo Ridge	115	132	Split Rk-White 345	Reconductor	28.1 mi	95 fmi	2,670	192,286
795	920	Brookings	Flandreau	115							192,286
840	965										194,956

Base Plan

345 kV line (Split Rk-Nobles Co-Lakefield Jct)	94 mi	450 fmi	42,300
115 kV single ckt Nobles Co-Chanarambie	24 mi	200 fmi	4,800
Split Rk sub: line term & 50 MVAR 13.8 kV reactor)	1 ea	2,000	2,000
Lakefield Jct sub: line term	1 ea	1,500	1,500
Nobles Co 345/115 kV sub, 40 MVAR cap & 50 MVAR reactor	1 ea	9,000	9,000
115 kV line term @ Chanarambie	1 ea	800	800
Troy 69 kV Switching Station	1 ea	3,000	3,000
Ft Calhoun-Omarfa interface upgrade	13 mi	450	5,850
Total for base plan			69,250

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