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Preliminary

Transmission Screening Study

For the

Big Stone II Feasibility Study

Performed by:

Otter Tail Power Company

Delivery Planning Department

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0.0 Executive Summary

During early 2004, a preliminary transmission study was completed to determine a transmission plan for integrating a second generating unit at Big Stone into the transmission system. The primary objective of this study was to determine the transmission costs associated with different output levels of a potential Big Stone II unit.

Through the past several months, economic analysis, TLTG analysis, loss analysis and constrained interface analysis have been completed for a variety of transmission alternatives during 2009 summer peak conditions.

A total of eleven different transmission alternatives have been studied to compare each alternatives effectiveness in delivering power from a potential Big Stone II plant to seven separate entities without detrimental impacts to the existing transmission system.

During the economic analysis, the eleven different transmission alternatives varied in cost from as low as \$53 million to as high as \$168 million. In general, alternatives that include 230 kV transmission have generally cheaper capital costs than alternatives that include 345 kV lines.

Incremental transfer capability analysis was completed. In this analysis, the generation was increased in 25 MW increments up to a total of 750 MW's. At any given output level, transmission system limitations are identified based on single contingency analysis. Through this analysis, it was demonstrated that the transmission system limitations are not significantly different for the lower capital cost alternatives and the higher capital cost alternatives. As a result, the increased upgrade costs associated with the lower capital cost alternatives do not exceed the investment needed for the higher capital cost alternatives.

Loss analysis indicated that those transmission alternatives that had the highest capital costs result in the most effective reduction in system losses where those transmission alternatives that had the lowest capital costs result in the largest incremental system losses as the size of Big Stone II increases.

When scheduling Big Stone II to all of the potential participants simultaneously, constrained interface analysis has shown that all of the transmission alternatives violate the North Dakota Export interface (NDEX). Due to this project requiring new transmission that will likely cross the NDEX interface, more transmission capacity will be introduced thus dismissing NDEX as a valid constraint. A few transmission alternatives that involve 345 kV transmission to the Twin Cities also caused a PTDF violation across the Minnesota – Wisconsin Stability Interface (MWSI), and Prairie Island – Byron constrained interfaces.

Additional study work will be required to determine the necessary transmission additions for the interconnection and delivery of generation to the Big Stone II participants. Below is a list of the additional analyses that will be required through the study process:

- Distribution Factor Analysis – generation-to-load redispatch with inclusion of OTDF interfaces

- Full ACCC Contingency Analysis (n-1) for summer peak, summer off-peak and winter peak conditions
- Select “n-2” contingency analysis for direct outlet facilities to the Big Stone Plant for summer peak, winter peak and summer off-peak conditions
- Transient Stability Analysis for summer peak, winter peak and summer off-peak conditions

These additional study requirements may trigger different study results than those contained within this study report. Variations in study models, origination of study models, as well as prior queued generation and delivery service requests all play into the final study results that will be obtained through the MISO study process.

1.0 Introduction

The purpose of this report is to document the results of a preliminary transmission study for adding a second generating unit at the Big Stone plant.

The current transmission system at Big Stone is not adequate to support the output from a second generating unit therefore the feasibility stage of this effort included a preliminary transmission screening study. The objective of this study is to give some insight of the required transmission for determining the optimal plant size for integrating the unit into the existing transmission system.

The area utilities that joined in this feasibility effort for Big Stone II involved the following utilities:

- Central Minnesota Municipal Power Agency (CMMPA)
- Great River Energy (GRE)
- Heartland Consumers Power District (HCPD)
- Hutchinson Utilities Commission (HUC)
- Missouri River Energy Services (MRES)
- Minnesota Municipal Power Agency (MMPA)
- Otter Tail Power Company (OTP)

A Steering Committee and Technical Studies Task Force were assembled to aid in the project's development. The Technical Studies Task Force provided the necessary information for each utility to OTP in order to develop base assumptions, build base case models, develop transmission alternatives, review study results, and provide guidance through the preliminary transmission screening study.

2.0 Existing Big Stone Facilities

The site of the proposed generator is adjacent to the existing Big Stone 1 unit located in northeastern South Dakota. The existing unit at Big Stone is co-owned by Otter Tail Power Company, Northwestern Energy, and Montana-Dakota Utilities. This unit was initially installed during May of 1975. Over the years, generation equipment within the plant has been upgraded to get its accredited generation level within the MAPP region to a net output of 475 MW.

The current transmission system supporting this unit includes two 230 kV lines and two 115 kV lines. The 230 kV lines go north and south of the Big Stone site. The north line is from Big Stone to Browns Valley and ultimately terminates at Hankinson, ND. The south line from Big Stone terminates at Blair, SD. The 115 kV lines from the plant also go north and south. The north 115 kV line terminates at Johnson Junction where it intersects the Graceville – Morris 115 kV line. This line serves loads in and around the vicinity of Ortonville and Appleton. The south 115 kV line terminates at Granite Falls. This line serves loads in and around the vicinity of

Canby and Toronto. Figure 1 is shown below and illustrates the outlet lines from Big Stone and Big Stone's relative location within the MAPP region.



3.0 Big Stone II Transmission Alternatives

The Technical Studies Task Force held a conference call on January 29, 2004 to discuss the assumptions in developing the base case models. During this conference call, the following assumptions were agreed upon:

- Start with 2009 Summer Peak models from the MAPP Reliability Study Group formed as part of the MISO Baseline Reliability Study
- Include all planned southwest Minnesota wind facilities
- Stress local transmission by including all existing peaking and wind generation in the study area
- Scheduling of the Big Stone II unit would be a total of 601 MW's as follows:
 - CMMPA = 76 MW's
 - GRE = 100 MW's
 - HCPD = 75 MW's
 - HUC = 50 MW's
 - MMPA = 100 MW's
 - MRES = 100 MW's
 - OTP = 100 MW's

During the conference call and based on input from others following that January 29th conference call, the following list of transmission alternatives were developed.

Figure 2 - Transmission Alternatives Developed for Big Stone II Screening Study

Alternative #	Description	Mileage
1	Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with	47
	Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate	90
2	Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with	47
	Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with	90
	Big Stone - Willmar - Blue Lake 345 kV Line	175
3	Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with	47
	Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with	90
	Big Stone - Willmar - West Waconia 345 kV Line with	158
	Dickinson - West Waconia - Wilmarth 345 kV Line	44
3b	Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with	47
	Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with	90
	Big Stone - Willmar - West Waconia 345 kV Line with	158
	Dickinson - West Waconia - Blue Lake 345 kV Line	64
4	Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with	47
	Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with	90
	Big Stone - Blair - White 345 kV Line with	69
	Ivanhoe - Lyon County 115 kV Line	35
5	Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with	47
	Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with	90
	Blair - Lyon County 230 kV Line with	63
	Lyon County - Franklin 115 kV Line	40
6	Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with	90
	Big Stone - 6 Mile Grove 230 kV Line with	46
	Morris - 6 Mile Grove 230 kV Line with	60
	Benson - 6 Mile Grove - Kerkhoven 115 kV Line	32
7	Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with	90
	Big Stone - 6 Mile Grove - Willmar 230 kV Line with	102
	Morris - 6 Mile Grove 230 kV Line with	60
	Benson - 6 Mile Grove - Kerkhoven 115 kV Line	32
8	Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with	90
	Big Stone - 6 Mile Grove - Willmar - McLeod 230 kV Line with	156
	Morris - 6 Mile Grove 230 kV Line with	60
	Benson - 6 Mile Grove - Kerkhoven 115 kV Line	32
9	Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with	90
	Big Stone - 6 Mile Grove - Willmar - McLeod 230 kV Line with	156
	Morris - 6 Mile Grove 230 kV Line with	60
	Benson - 6 Mile Grove - Kerkhoven 115 kV Line with	32
	Dickinson - West Waconia - Wilmarth 345 kV Line	44
9b	Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with	90
	Big Stone - 6 Mile Grove - Willmar - McLeod 230 kV Line with	156
	Morris - 6 Mile Grove 230 kV Line with	60
	Benson - 6 Mile Grove - Kerkhoven 115 kV Line with	32
	Dickinson - West Waconia - Blue Lake 345 kV Line	64

The preliminary study analysis focused on these eleven transmission alternatives. Geographic maps illustrating these conceptual transmission alternatives are shown in Appendix A.

4.0 Model Development

As mentioned previously, the 2009 summer peak model from the MAPP Reliability Study Group (RSG) was the base case model for the Big Stone II study work. This model was part of the 2003 NERC MMWG model series that had 2008 summer peak MAPP model updates inserted into it from the 2003 series MAPP model series.

In developing the 2009 summer peak base case, various updates were applied to the model. These updates included adding all of the wind generation in the Buffalo Ridge area of Southwest Minnesota. Input was obtained from Xcel Energy in placing the wind generation at realistic locations with the expected installed nameplate capacity at each site. A generation level of approximately 825 MW's was modeled with the expected transmission line upgrades and new projects associated with the 825 MW level. Appendix B includes a list of the specific Buffalo Ridge generation and transmission projects applied to the base summer peak model.

In addition to maximum wind generation, existing generation in the vicinity of Big Stone was turned on to maximum output to stress the transmission system. This generation included sites such as Anson, Marshall, Lake Preston, Lakefield Generating Station, and Pleasant Valley. For each corresponding generation increase, there was an equal generation reduction taken at peaking facilities located in the same control area. This practice was utilized so as to not impact the existing control area interchange schedules originally embedded within the models. Appendix B includes a list of the specific generation changes applied to the base summer peak model.

Once all of the generation and topology changes were applied to the base case model without the addition of Big Stone II, the following interface ties were calculated for the 2009 summer peak base case:

- MHEX = 1495.8 MW
- NDEX = 655.6 MW
- MWSI = 297.3 MW

Since this case was a summer peak model, high simultaneously transfers through the MAPP region were not modeled. High transfers through the MAPP region are the most stressed conditions for the transmission system; however they are most common during summer off-peak conditions. This preliminary study only investigated a summer peak case.

Once this summer peak base case was established, the eleven different transmission alternatives were added to the case to create eleven separate summer peak cases. These eleven summer peak cases were then taken individually and had the Big Stone II generator added to them and dispatched on the following basis:

- Scheduled Big Stone II at 601 MW's as follows:
 - CMMPA = 76 MW's
 - GRE = 100 MW's

- HCPD = 75 MW's
- HUC = 50 MW's
- MMPA = 100 MW's
- MRES = 100 MW's
- OTP = 100 MW's

The following sections of this report will discuss the various types of analysis that has been completed for this preliminary study and the relative performance of the various transmission alternatives.

5.0 Economic Analysis

A preliminary economic analysis was completed to assign capital costs to each alternative considered during the Big Stone II preliminary transmission study. The basis for assigning costs to each alternative was from the *1998 Update to the 1997 MAPP Regional Plan* published by the MAPP Transmission Planning Subcommittee (TPSC). This update to the 1997 plan included a spreadsheet for calculating costs of new transmission lines based on line length, number of terminals, size of transformers, and size of capacitor banks.

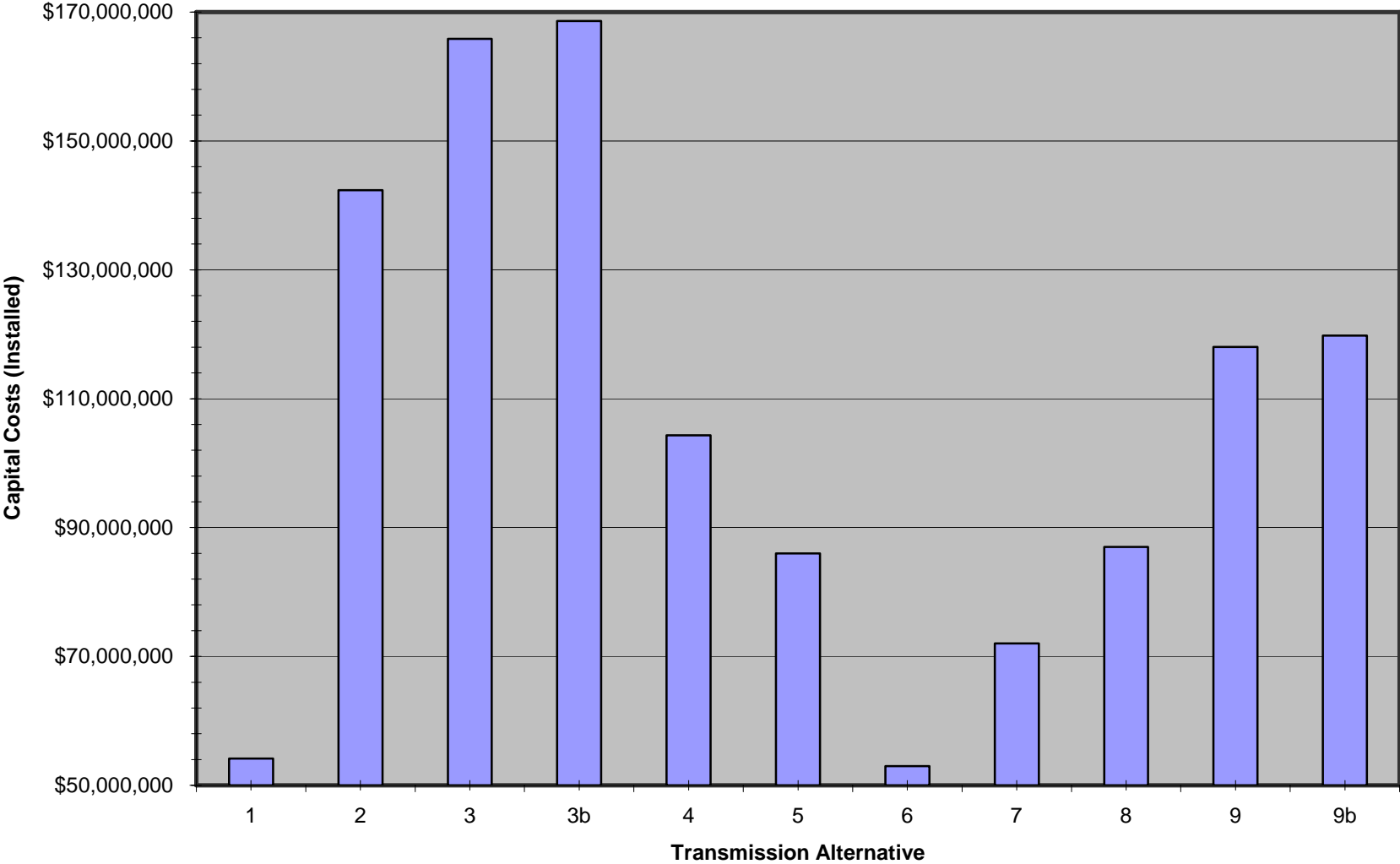
Since the costs derived from this spreadsheet were based on 1998 dollars, a 2% inflation rate was applied to estimate 2004 dollars. Figure 3 is shown below and displays the capital costs for each project. It is important to note that system losses or facility upgrades due to third party impacts are not factored into these capital costs.

Figure 3 – Capital Costs for the Big Stone II Transmission Alternatives

Alternative #	Description	Capital Cost
1	Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate	\$ 54,155,743.04
2	Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - Willmar - Blue Lake 345 kV Line	\$ 142,379,306.96
3	Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - Willmar - West Waconia 345 kV Line with Dickinson - West Waconia - Wilmarth 345 kV Line	\$ 165,853,036.43
3b	Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - Willmar - West Waconia 345 kV Line with Dickinson - West Waconia - Blue Lake 345 kV Line	\$ 168,626,188.87
4	Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - Blair - White 345 kV Line with Ivanhoe - Lyon County 115 kV Line	\$ 104,331,909.63
5	Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Blair - Lyon County 230 kV Line with Lyon County - Franklin 115 kV Line	\$ 86,005,023.96
6	Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - 6 Mile Grove 230 kV Line with Morris - 6 Mile Grove 230 kV Line with Benson - 6 Mile Grove - Kerkhoven 115 kV Line	\$ 52,996,899.39
7	Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - 6 Mile Grove - Willmar 230 kV Line with Morris - 6 Mile Grove 230 kV Line with Benson - 6 Mile Grove - Kerkhoven 115 kV Line	\$ 72,006,521.02
8	Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - 6 Mile Grove - Willmar - McLeod 230 kV Line with Morris - 6 Mile Grove 230 kV Line with Benson - 6 Mile Grove - Kerkhoven 115 kV Line	\$ 87,001,373.64
9	Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - 6 Mile Grove - Willmar - McLeod 230 kV Line with Morris - 6 Mile Grove 230 kV Line with Benson - 6 Mile Grove - Kerkhoven 115 kV Line with Dickinson - West Waconia - Wilmarth 345 kV Line	\$ 118,047,419.21
9b	Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - 6 Mile Grove - Willmar - McLeod 230 kV Line with Morris - 6 Mile Grove 230 kV Line with Benson - 6 Mile Grove - Kerkhoven 115 kV Line with Dickinson - West Waconia - Blue Lake 345 kV Line	\$ 119,799,727.94

These capital costs are shown graphically in Figure 4, which can be found on the following page. Detailed cost for each individual transmission alternative can be found in Appendix C.

Figure 4 - Total Capital Costs of Different Big Stone II Transmission Alternatives



As can be seen within figures 3 and 4, transmission alternative costs range between approximately \$53 million to \$168 million dollars. The least expensive transmission alternatives (1 and 6) are those alternatives that do not include any 345 kV transmission. All of the higher cost transmission alternatives (2, 3, 3b, 4, 9, and 9b) include some length of 345 kV line, which increases these transmission costs over those of the 230 kV transmission alternatives.

6.0 TLTG Analysis

The PSS/E activity TLTG (Transmission Interchange Limit Analysis) estimates the transmission interchange limits of a user-defined subsystem while applying single contingencies. Power transfer from a user-defined source to a user-defined sink is incremented to a specified limit while monitoring branch loadings. At any given transfer level, potential loading violations are reported in an output file for system intact and contingency conditions.

In the output file, each overloaded branch has a calculated power transfer distribution factor (PTDF) or a line outage distribution factor (LODF). During this analysis, any branch exceeding 100% of its emergency rating was recorded as a criteria violation. Overloaded branches were considered valid limiters if the PTDF or LODF quantities exceeded 2% of the transfer level.

For this particular study, the 2009 summer peak case was used with a defined source of the Big Stone II generator. The analysis assumed a 750 MW maximum transfer from Big Stone II to generation resources for each of the seven potential Big Stone II participants. Generation up to 750 MW's was analyzed to determine if there was a drastic increase in transmission upgrade costs beyond the base 601 MW generation level. The generator redispatch from Big Stone II to each party's respective generators is proportionally based on specified participation factors. As a 601 MW project, the following participation factors were used for TLTG analysis as determined by each participant's MW allocation.

Figure 5 - Specified Sinks for TLTG Analysis

<u>Big Stone II Participant</u>	<u>MW Allocation</u>	<u>TLTG Participation Factor</u>
OTP	100 MW's	16.64%
MRES	100 MW's	16.64%
MMPA	100 MW's	16.64%
GRE	100 MW's	16.64%
HUC	50 MW's	8.32%
HCPD	75 MW's	12.48%
CMMPA	76 MW's	12.64%

Output tables generated by TLTG analysis were scrutinized to individually identify each constraint as it was identified during the analysis. For the list of overloaded facilities encountered during each TLTG simulation, a reconductor or rebuild cost was assigned to fixing each overload based on an upgrade or reconductor cost per mile. Likewise, transformer overloads were assumed to be changed out by a larger capacity transformer with an assigned cost based on the voltage level and MVA size of the transformer.

Incremental cost charts were created to graphically illustrate the expected cost of transmission with the increasing size of the Big Stone II unit. The base capital cost for each transmission alternative was assumed at a Big Stone II level of 0 MW's and increased incrementally for each existing transmission constraint encountered when scheduling the power out of Big Stone II to the seven potential Big Stone II participants.

The results from the TLTG analysis for the 2009 summer peak case with each transmission alternative are shown below in figure 6 while scheduling 750 MW's from Big Stone II to the respective participants of the project.

As can be seen from figure 6, transmission alternatives 6 and 1 are the least cost options. Recalling the capital cost quantities, alternatives 6 and 1 were also the lowest capital cost alternatives since they did not involve any 345 kV lines. Figure 6 indicates that even with all of the existing system constraints identified during TLTG analysis, these two transmission alternatives are still approximately \$20 million dollars cheaper than the next cheapest alternative (7) when Big Stone II output is at 750 MW's. Noticing the slope of the lines contained within figure 6 indicates that each transmission alternative hits many of the same transmission constraints; however, these constraints are encountered at different generation levels of Big Stone II. Overall, it appears that those transmission alternatives involving a higher capital cost have a lower incremental cost as the size of Big Stone II is increased. At the 601 MW generation level, it appears that the ordering of transmission alternatives from the least capital cost to the greatest capital cost does not change from the ranking previously identified during the capital cost analysis.

Detailed lists of all the existing transmission constraints encountered during the TLTG analysis can be found in Appendix D.

7.0 Loss Analysis

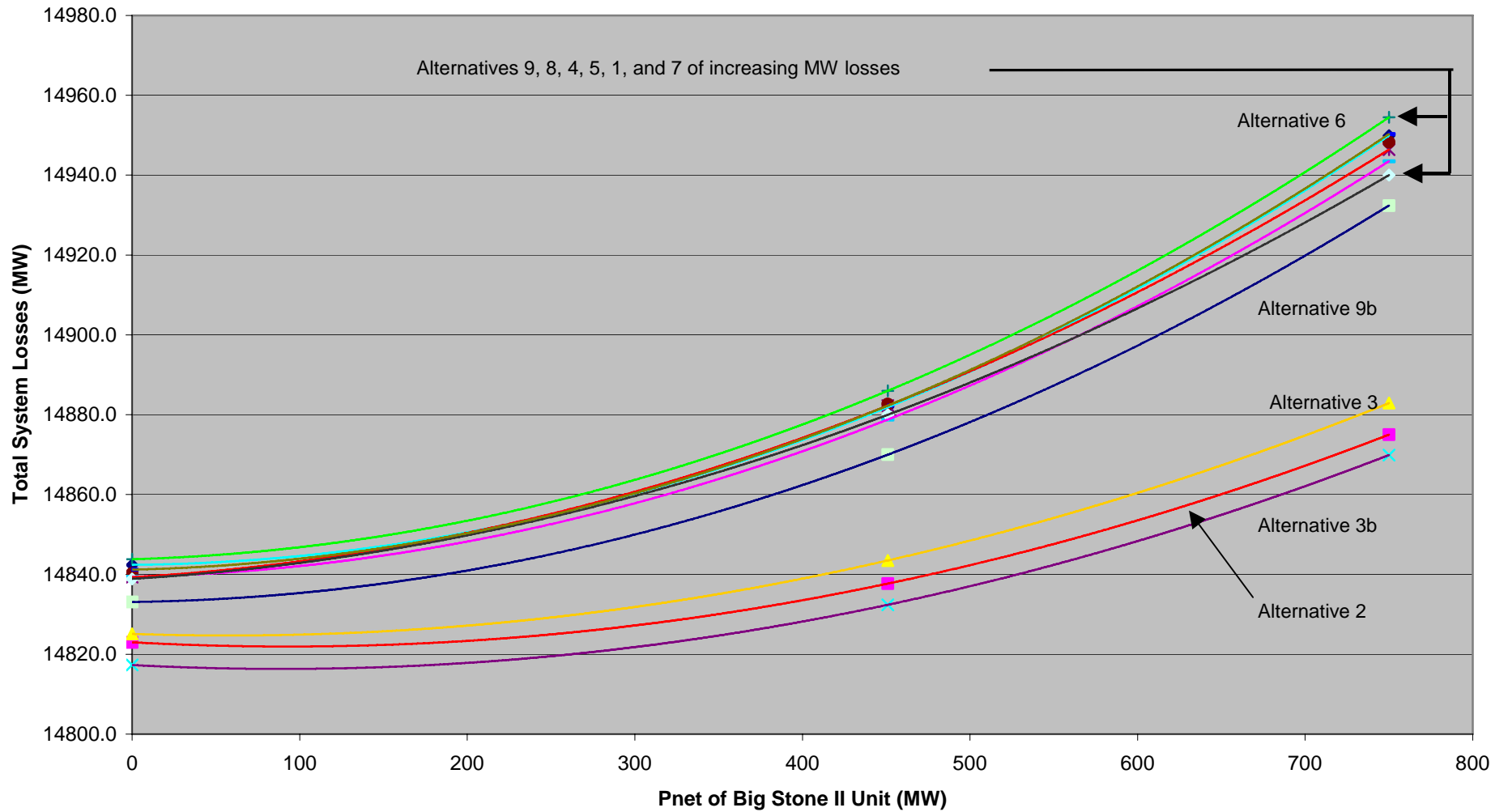
The 2009 summer peak, system intact case has been used to determine the losses associated with each of the eleven transmission alternatives. For this analysis, losses were identified at three generation levels and then plotted in Microsoft Excel and fitted with a trend line of order 2. These three generation levels were 0 MW without transmission (base case), 0 MW with transmission, 451 MW with transmission, and 750 MW with transmission. The following table shows the losses for each transmission alternative and how losses vary from one generation level to another.

Figure 7 - Total System Losses for Varying Levels of Output from Big Stone II

Alternative #	Description	Base Case 0 (Base Case)	Add Xmsn 0	Xmsn Case - Base Case	Pnet at 451	451 Case - Xmsn Case	Pnet at 750	750 Case - Xmsn Case
1	Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate	14885.0	14842.4	-42.6	14881.9	39.5	14949.9	107.5
2	Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - Willmar - Blue Lake 345 kV Line	14885.0	14823.0	-62.0	14837.7	14.7	14875.0	52.0
3	Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - Willmar - West Waconia 345 kV Line with Dickinson - West Waconia - Wilmarth 345 kV Line	14885.0	14825.1	-59.9	14843.5	18.4	14882.9	57.8
3b	Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - Willmar - West Waconia 345 kV Line with Dickinson - West Waconia - Blue Lake 345 kV Line	14885.0	14817.3	-67.7	14832.4	15.1	14869.9	52.6
4	Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - Blair - White 345 kV Line with Ivanhoe - Lyon County 115 kV Line	14885.0	14839.3	-45.7	14882.3	43.0	14946.4	107.1
5	Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Blair - Lyon County 230 kV Line with Lyon County - Franklin 115 kV Line	14885.0	14840.2	-44.8	14882.7	42.5	14948.3	108.1
6	Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - 6 Mile Grove 230 kV Line with Morris - 6 Mile Grove 230 kV Line with Benson - 6 Mile Grove - Kerkhoven 115 kV	14885.0	14843.8	-41.2	14886.0	42.2	14954.5	110.7
7	Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - 6 Mile Grove - Willmar 230 kV Line with Morris - 6 Mile Grove 230 kV Line with Benson - 6 Mile Grove - Kerkhoven 115 kV	14885.0	14841.2	-43.8	14882.3	41.1	14950.3	109.1
8	Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - 6 Mile Grove - Willmar - McLeod 230 kV Line with Morris - 6 Mile Grove 230 kV Line with Benson - 6 Mile Grove - Kerkhoven 115 kV	14885.0	14839.4	-45.6	14878.8	39.4	14943.5	104.1
9	Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - 6 Mile Grove - Willmar - McLeod 230 kV Line with Morris - 6 Mile Grove 230 kV Line with Benson - 6 Mile Grove - Kerkhoven 115 kV Dickinson - West Waconia - Wilmarth 345 kV Line	14885.0	14838.9	-46.1	14880.0	41.1	14940.0	101.1
9b	Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - 6 Mile Grove - Willmar - McLeod 230 kV Line with Morris - 6 Mile Grove 230 kV Line with Benson - 6 Mile Grove - Kerkhoven 115 kV Dickinson - West Waconia - Blue Lake 345 kV Line	14885.0	14833.1	-51.9	14870.0	36.9	14932.4	99.3

Plotting the total system losses as points on a graph and using a trend line of order 2 gives a relative idea of how each of the transmission alternatives compare to one another at increasing levels of Big Stone II generation. This graph can be found on the following page in figure 8.

Figure 8 - System Losses for Each Different Transmission Alternative



As can be seen from figures 7 and 8, the transmission alternatives that involve 345 kV lines result in the largest reduction in system losses with increasing output from Big Stone II. At the 750 MW generation level, transmission alternatives 2, 3, and 3b have decreased system losses over the base case without transmission, as well as the case that includes Big Stone II; whereas some transmission alternatives, such as 1, have a net increase of 65 MW's in losses over the base case, which corresponds to approximately 8.6% of the total output of Big Stone II when scheduled at 750 MW's.

In general, those transmission alternatives that had the highest capital costs result in the most effective reduction in system losses where those transmission alternatives that had the lowest capital costs result in the largest incremental system losses as the size of Big Stone II increases.

Appendix E contains specific loss data by control area for the 0 MW, 451 MW, and 601 MW generation levels of Big Stone II.

At the time of this preliminary loss analysis, an economic value was not placed on losses.

8.0 Technical Studies Task Force Meeting

The Technical Studies Task Force (TSTF) of Big Stone II participants met on March 16, 2004 at MMPA's offices. The following people were present at the meeting:

Joe Jubert	GRE	Brian Zavesky	MRES
Dave Kempf	GRE	Rick Gonzalez	Excel Engineering
Patrick Spethman	HUC	Steve Thompson	CMMPA
Don Nelson	HUC	Randy Porter	MMPA
Jason Weiers	OTP	John Knofczynski	HCPD (via phone)

The meeting focused on reviewing the TLTG analysis results and loss analysis results obtained to date. The group was in agreement with the study techniques employed in carrying out these types of analyses.

8.1 Construction Costs

The task force agreed that construction costs seem reasonable for transmission lines in rural areas, but should be inflated by 50% for line construction in the suburban areas. Furthermore, with the increased steel prices lately, the task force felt it was necessary to increase all termination costs by 10% for steel associated within the substation (bus work, bus supports, etc...). The task force also believed that a reconductor cost of \$98,000 / mile may be a high so \$75,000 was agreed upon when reconductoring existing lines identified during TLTG analysis.

8.2 Loss Analysis

The task force discussed some assumptions in assigning a dollar value to losses. The following parameters were agreed upon for a "first cut" loss analysis.

Capacity Costs = \$400 / kW
Energy Costs = \$30 / MWh

Project Life = 35 years
Loss Life = 20 years

Annual Interest Rate = 6.00%

Levelized Fixed Charge Rate (LFCR) = 16%

8.3 Next Steps

General discussion among the task force members led to the following action items identified for future action:

1. Take a more in depth look at the loss analysis with capacity and energy quantities
2. Test a new 230 kV transmission option to West St. Cloud (called alternative “7b”)
3. Look at less transmission out of the Big Stone Plant
 - a. Do not include both 230 kV upgrades for alternatives that include 345 kV lines
4. Determine the minimum amount of transmission necessary for a 300 MW plant
5. Alternatives that include 345 kV lines – Perform TLTG analysis without the 230 kV lines
6. Alternatives that include 230 kV lines – Perform TLTG analysis with only 1 230 kV line
7. Run TLTG analysis to a higher generation level to determine the transmission breakpoints
8. Create a 2009 summer off-peak case
9. Perform TLTG analysis on summer off-peak case
10. Perform Stability analysis on summer off-peak case
11. Perform “n-2” contingency analysis on summer off-peak case
12. Perform TLTG analysis with increasing generation on Buffalo Ridge (SW MN)

A future face-to-face task force meeting will be held once more study results become available.

8.4 Meeting Follow-Up

As a follow-up to the March 16 TSTF meeting, Rick Gonzalez of Excel Engineering provided an updated capital cost chart based on the loss assumptions that were discussed at the TSTF meeting. This chart was emailed out to the TSTF and is shown below in Figure 9.

Figure 9 - Capital Costs for Big Stone II Transmission Alternatives with Equivalent Installed Cost Based on One Set of Loss Value Assumptions (Performance at 750 MW unit size)

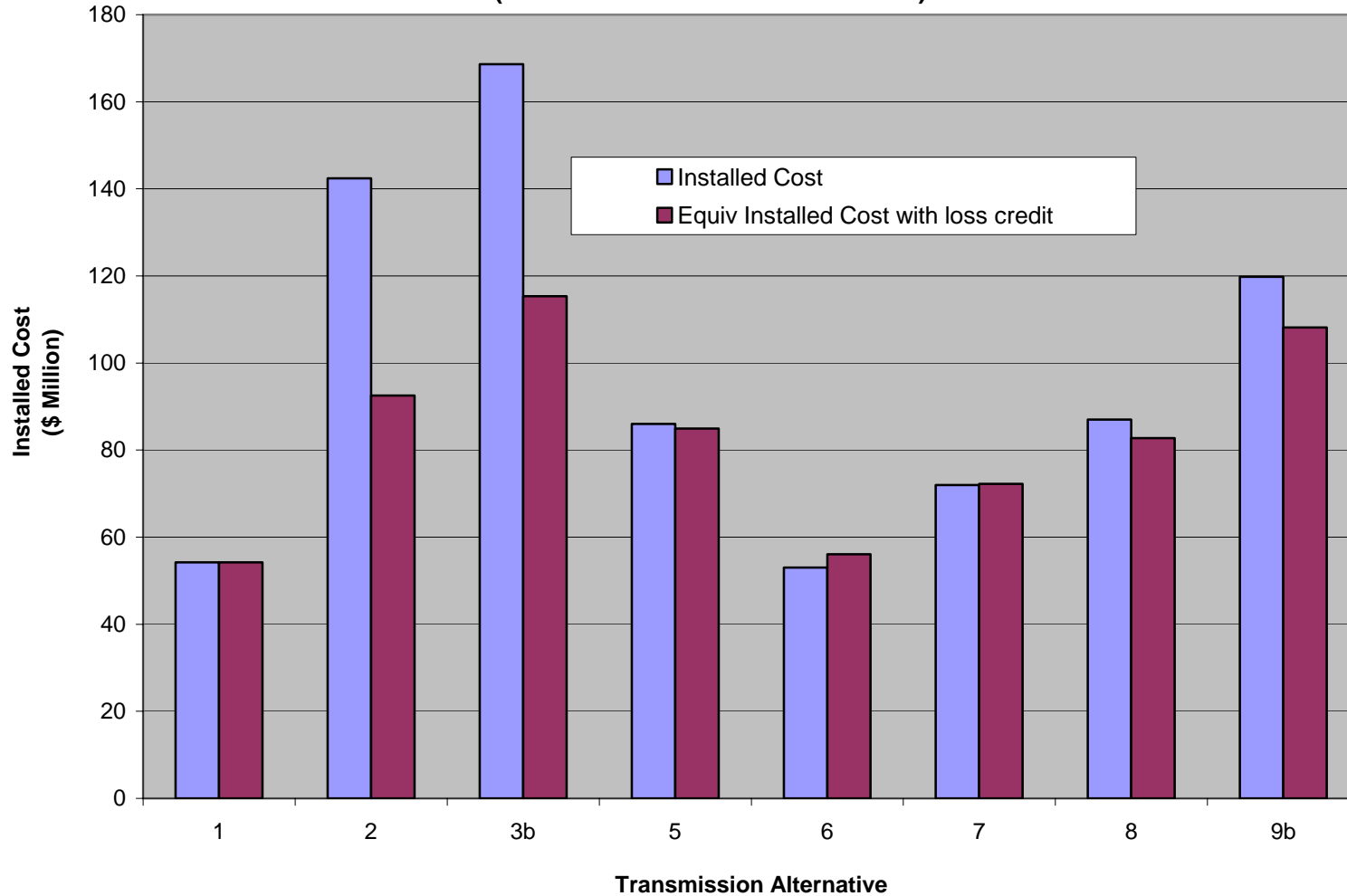


Figure 9 illustrates the equivalent installed capital cost of the remaining transmission alternatives with a loss credit based on the assumptions derived among the TSTF members with the losses normalized to alternative 1. Based on figure 9, the ranking of the transmission alternatives from lowest capital cost to highest capital cost do not vary when the losses are normalized to alternative 1. It is evident that the most expensive transmission alternatives are reduced to quantities closer to the cheaper transmission alternatives when including a value for losses. It is important to note that these equivalent capital costs for transmission are based on one set of loss assumptions that could vary from utility to utility based on their current business practices.

Other follow-up items identified during the Technical Studies Task Force meeting had not been completed due to time constraints and the timing of the Midwest ISO's involvement in this project.

9.0 Distribution Factor Analysis

Favorable study results from a generator interconnection study do not guarantee delivery of the power to a specific market. However, this preliminary study work did take a "first pass" look at one aspect of delivery (constrained interfaces) to give an idea of potential constraints that may be encountered during a subsequent delivery service study. This particular analysis considered a generation-to-generation redispatch to each of the potential Big Stone II participants.

Constrained interface analysis was performed to determine the power transfer distribution factors (PTDF) over a certain group of transmission line(s) that compose a constrained interface when adding the proposed 601 MW generation plant at Big Stone. The 2009 summer peak case was examined with a generation-to-generation PTDF. To calculate the generation-to-generation PTDF, each respective parties' identified generation was scaled down by their respective allocations to match their MW share of the Big Stone II project.

Distribution factors for this preliminary study were calculated based on the following equation:

$$\text{Distribution Factor} = \frac{(\text{MW flow after generation addition}) - (\text{MW flow before generation addition})}{(\text{Amount of generation addition})}$$

In order to calculate the distribution factors, two separate methods were used to compare the eleven separate transmission alternatives. The first methodology applied had each Big Stone II partner dispatched individually. This took each respective partner and redispatched power from Big Stone II to a specific generator identified by each participant's representative on the Technical Studies Task Force. The second methodology applied dispatched the entire Big Stone II project as a whole to all entities simultaneously. This methodology would have had the denominator of the distribution factor set at 601 MW's versus dispatching each participant individually and having the denominator based on each participant's share of the project.

PTDF's apply to a set of constrained interfaces and are applicable during system intact conditions and must not exceed 5% for MISO studies. OTDF's are applicable to a different set of constrained interfaces that are stressed during certain outages and must not exceed 3% for

MISO studies. A generation-to-generation redispatch as well as a generation to load redispatch is necessary in evaluating the potential impact of delivering the new generation to a specific market. For this preliminary study, only PTDF constrained interfaces were studied. Furthermore, a generation-to-generation redispatch was the only redispatch pattern tested during this simulation. Figure 10 illustrates the PTDF quantities obtained when dispatching all of the Big Stone II participants as a whole.

Figure 10 – PTDF Quantities when Dispatching all Big Stone II Participants Simultaneously

Flowgate	Transmission Alternative										
	1	2	3	3b	4	5	6	7	8	9	9b
ARN-HAZLTN	3.20%	1.00%	1.20%	0.90%	3.70%	3.10%	3.20%	3.20%	2.90%	2.70%	2.60%
COOPER_S	-1.40%	-1.10%	-1.20%	-1.20%	-1.10%	-1.50%	-1.50%	-1.60%	-1.50%	-1.60%	-1.60%
ECL-ARP	-2.10%	-0.20%	-0.40%	-0.10%	-2.60%	-2.10%	-2.20%	-2.10%	-1.90%	-1.70%	-1.60%
FT CAL_S	4.10%	4.20%	4.20%	4.10%	4.90%	4.10%	4.10%	4.00%	4.10%	4.00%	4.00%
GGG	-2.20%	-2.40%	-2.50%	-2.40%	-2.40%	-2.30%	-2.30%	-2.30%	-2.30%	-2.40%	-2.40%
GRIS_LNC	2.70%	1.90%	1.80%	1.80%	2.20%	2.60%	2.60%	2.50%	2.40%	2.30%	2.30%
LACYGNE_N	1.00%	0.70%	0.80%	0.80%	1.00%	1.00%	1.10%	1.10%	1.00%	1.00%	1.00%
LKM-WFB	-2.30%	-2.40%	-2.30%	-2.40%	-2.30%	-2.30%	-2.30%	-2.30%	-2.30%	-2.30%	-2.30%
MHEX_N	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%
MHEX_S	0.20%	0.20%	0.10%	0.10%	0.20%	0.20%	0.20%	0.20%	0.20%	0.20%	0.10%
MH_SPC_E	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MH_SPC_W	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MNTZUMA_W	-0.40%	0.40%	0.30%	0.50%	-0.90%	-0.30%	-0.30%	-0.30%	-0.20%	0.00%	0.00%
MP_EXPORT	-0.30%	-0.70%	-0.70%	-0.80%	0.10%	-0.20%	-0.20%	-0.20%	-0.20%	-0.30%	-0.30%
MWSI	-0.30%	5.30%	4.40%	5.40%	-1.70%	-0.20%	-0.50%	-0.20%	0.30%	0.90%	1.30%
NDDC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
NDEX	77.50%	80.40%	80.20%	80.40%	77.60%	77.60%	77.00%	77.30%	77.40%	77.50%	77.60%
NI_WUMS	0.70%	-0.10%	0.00%	-0.20%	0.90%	0.70%	0.70%	0.70%	0.60%	0.50%	0.50%
PRI-BYN	1.80%	5.50%	4.80%	5.60%	0.80%	1.90%	1.70%	1.90%	2.20%	2.60%	2.90%
QUAD-ROCKC	0.70%	0.30%	0.30%	0.30%	0.80%	0.70%	0.80%	0.70%	0.60%	0.60%	0.60%
QUADCITY_W	1.30%	1.10%	1.20%	1.20%	1.10%	1.40%	1.40%	1.40%	1.40%	1.40%	1.40%
WNE_WKS	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	-0.20%	-0.20%
Y2DC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MNEX (INFO)	-7.10%	4.80%	-7.00%	4.90%	-10.30%	-7.20%	-7.40%	-7.00%	-6.10%	-7.60%	-3.40%

As can be seen from Figure 10, all of the transmission alternatives violate the NDEX constrained interface. Due to this project requiring new transmission that will likely cross the NDEX interface, more transmission capacity will be introduced thus dismissing NDEX as a valid constraint. Transmission alternatives 2 and 3b, which involve 345 kV transmission to the Twin Cities, also cause a PTDF violation across the Minnesota – Wisconsin Stability Interface (MWSI), and Prairie Island – Byron constrained interface. The Prairie Island – Byron 345 kV line is actually part of the MWSI constrained interface definition, therefore these two violations can actually be dismissed as only 1 valid violation. Transmission alternative 3 has PTDF quantities across MWSI and Prairie Island – Byron higher than 4%, which were flagged during this preliminary analysis due to the uncertainty of this study model and how it will ultimately compare with the actual model that MISO will use for the system impact study. Furthermore, the

Fort Calhoun South interface is also a concern since PTDF quantities are over 4% that may be bumped over 5% depending on which model MISO uses for the system impact study.

Compared with the scenario of dispatching each of the Big Stone II participants individually, the methodology of dispatching all of the participants simultaneously results in only 1 constrained interface (NDEX) being violated for the majority of transmission alternatives considered. Dispatching Big Stone II individually to the participants results in all the transmission alternatives violating 8 separate constrained interfaces. Dispatching the proposed generation to all of the Big Stone II participants simultaneously results in a power flow canceling effect, which reduces the number of interface violations from eight to one for a majority of the transmission alternatives considered.

Appendices F.1 and F.2 include power flows on each of the transmission lines that compose constrained interfaces that were obtained during the distribution factor analysis. Appendix F.1 includes those quantities derived when dispatching all Big Stone II participants at the same time. On the other hand, appendix F.2 includes the results of the distribution factor analysis when dispatching Big Stone II to all of the potential Big Stone II participants individually.

This preliminary study only considered a generation-to-generation redispatch to the Big Stone II participants under summer peak conditions. Under a full MISO system impact study, a generation-to-load redispatch would also be necessary in determining delivery constraints. MISO typically conducts this type of analysis for the in-service year and an out-year case to determine any delivery impacts to constrained interfaces.

10.0 Big Stone II Interconnection Study Meeting with MISO

Submitting the Big Stone II generation interconnection request within the MISO queue initiated a kick-off meeting of generation developers and interested transmission owners on April 15, 2004. The following section summarizes the discussions that occurred during that meeting.

10.1 Meeting Attendees

Walt Grivna	XEL	Mike Steckelberg	GRE
Stacie Hebert	OTP	Mark Rolfes	OTP
Todd Guerrero	L & V	John Knofczynski	HCPD
Jason Weiers	OTP	Steve Thompson	CMMPA
Del Gallagher	BEPC	Eric Laverty	MISO
Joe Jubert	GRE	Rick Gonzalez	Excel Eng.
Dave Rudolph	BEPC	Brian Zavesky	MRES
Randy Porter	MMPA		

10.2 Model Development

The group 1 study for the Buffalo Ridge area is completed. This study included approximately 950 MW's of new generation with minor system upgrades required beyond those facilities identified within Xcel Energy's Southwest MN Wind Study. These group 1 projects will be included in the base cases for Big Stone II (G392).

Other prior queued generation interconnection requests that will be included in the base cases are G267, which is a 200 MW project in southcentral MN between Franklin and McLeod. The base cases will also include a 205 MW generation addition at Anson (G370), which is located in Sioux Falls, SD.

The group 2 study is currently underway for the same general area of Buffalo Ridge. The projects within the group 2 study equal approximately 1950 MW's of new generation. Of this 1950 MW's, approximately 670 MW's of that is for a single generator at the Wilmarth 345 kV substation (Project G261). This 670 MW project is likely to go forward since a transmission plan has been identified to deliver this power. This large project will be included in the base cases.

To handle the uncertainty of the remaining group 2 projects (approximately 1300 MW's), three cases will be created for each planning horizon. These cases will be:

1. Big Stone II added with Group 2 Projects at 0 MW
2. Big Stone II added with Group 2 Projects at 650 MW's
3. Big Stone II added with Group 2 Projects at 1300 MW's

Those cases that include group 2 projects will be modeled at locations and delivered to an assumed market on a pro rata MW basis of the total group 2 projects. With these assumptions, prior queued OASIS requests may be somewhat accounted for if the group 2 projects are scheduled to the correct locations.

The base case models for this study will be from the group 2 study, which have already had intensive model review by those entities involved in that study. These models include 2007 Summer Peak and Summer Off-peak seasons. Although this plant is not scheduled to be in-service until 2010, a 2007 model will be sufficient for the interconnection study since a further out-year model will likely include speculative generators and more load serving issues. These base cases will be used for both steady state and dynamic (stability) analysis.

10.3 Generator Interconnection Alternatives

Based on past study work for Big Stone II, five generator interconnection alternatives were presented at the meeting. After discussion amongst the meeting participants, it was determined to proceed with alternatives 1 and 3 for the interconnection study. These alternatives include:

1. Big Stone – Ortonville – Johnson Jct. – Morris 115 kV to 230 kV upgrade with Big Stone – Canby – Granite Falls 115 kV to 230 kV upgrade
2. Big Stone – Canby – Granite Falls 115 kV to 230 kV upgrade with a new Big Stone – Willmar 230 kV line

If these alternatives do not seem to work from an interconnection standpoint, other alternatives may be developed later, which may include alternatives 2, 4, or 5 that had been presented at the meeting.

It was pointed out that we must be aware of the load serving benefit that some of these interconnection alternatives offer. The need for one alternative over another may be decided on the ability to accommodate load-serving needs in the region.

10.4 Study Requirements

This study will likely require approval from both the Midwest ISO and the MAPP Design and Review Subcommittee. Unfortunately, each of these approving authorities have different study requirements. The Big Stone II participants will need to decide what assumptions should be used for export levels over critical interfaces in order to meet the requirements of the appropriate approving authority. It was pointed out that assuming different export levels over the critical northern MAPP interfaces will result in different study results. It was suggested that the study should proceed through the MISO study process and perform further analysis on summer off-peak, high transfer conditions at a later date when MAPP DRS approval is sought.

10.5 Schedule

A brief discussion was held on the expected schedule of the interconnection study. MISO discussed the study process in which the thermal analysis will be completed first, with short circuit and stability analysis occurring after the completion of the thermal analysis. Upon completion of the thermal analysis on the two transmission alternatives, a meeting or conference call of the ad hoc study group will be held to discuss the study results. The expected timeframe of completing the thermal analysis on the two interconnection alternatives is July 1, 2004. This timeframe is tentative and may change depending on when OTP receives the study models from MISO.

11.0 Big Stone II Delivery Service Study Meeting with MISO

On Friday, April 2, 2004, the Big Stone II participants submitted delivery service requests to accompany the Big Stone II generation interconnection request. This effort resulted in 98 separate delivery service requests being submitted by the Big Stone II participants. The multitude of requests was a result of the uncertainty of the Big Stone II project at the time the delivery service requests were made. The exact size of the plant is not yet known nor is the exact MW share of each Big Stone II partner. To cover all possible avenues several Big Stone II participants submitted a variety of requests. A summary of all the delivery service requests submitted on April 2nd can be found in appendix G.

The multitude of delivery service requests made by the Big Stone II participants triggered MISO to hold a meeting of the Big Stone II participants on May 13, 2004 at the MISO St. Paul office to discuss options in performing the delivery service study. The following section summarizes the discussions and outcomes that occurred during the meeting.

11.1 Meeting Attendees

Randy Porter	MMPA	Ron Arness	MISO
Joe Jubert	GRE	Richard Dahl	MISO
Dave Kempf	GRE	Jeff Hynds	MISO
Todd Guerrero	L & V	Tim Rogelstad	OTP

Jason Weiers	OTP	Brian Zavesky	MRES (via phone)
Rick Gonzalez	Excel Eng.	Steve Thompson	CMPA (via phone)
John Knofczynski	HCPD		

11.2 Outcomes of the Meeting

- MISO staff indicated they were pleased and supportive with the approach (having 98 transmission requests be grouped into one study) taken by the Big Stone II participants.
- All issues between MISO and the participants, as it relates to the system impact study agreement, have been resolved. MISO will send a final version to the participants next week and the participants will have the agreement executed by the end of May.
- The approach of the System Impact Study will be in phases and MISO is willing to break the deposits into different phases. Rather than having to put \$200,000 down for a study in early June, the project will likely have a deposit in the \$50,000 to \$75,000 range.
- Phase I of the study will assume a project of 601 MW's allocated to each of the participants and delivered to the participants desired sink point. Transmission facilities to deliver the output under this scenario will be identified. Phase II of the study will look at sensitivities to changes of the sink points, as well as the changes in allocation to the project participants. Using this approach should minimize the study time by limiting the scenarios early on, and provide more time for the participants to determine the final allocations.
- MISO staff indicated they saw no reason why the OTP transmission planning department could not be the contractor for the study, and that they will likely select OTP without going through the formal bidding process.
- MISO wants to move the study along as soon as possible. They would like to have models available (which they will supply) in mid-June, and at that point the study can begin. It will be important that the system impact study is coordinated with the interconnection study results.

The meeting with MISO went well and MISO is willing to work toward a November 1, 2004 deadline for having a preliminary recommendation on the necessary transmission to deliver the output of the Big Stone II project.

12.0 Conclusion

This preliminary study work focused on eleven different transmission alternatives to compare each alternatives effectiveness in delivering power from a potential Big Stone II plant to seven separate entities without detrimental impacts to the existing transmission system.

During the economic analysis, the eleven different transmission alternatives varied in cost from as low as \$53 million for alternatives 1 and 6 to as high as \$168 million for alternatives 2, 3, and 3b. These costs are directly related to the proposed line lengths and voltage levels of the various transmission alternatives. Alternatives that include 230 kV transmission have generally cheaper capital costs than alternatives that include 345 kV lines.

TLTG analysis identified existing system limitations as the amount of power transfer from Big Stone II to the seven potential participants was increased. Based on the results of this analysis,

the upgrade costs for the lower capital cost alternatives (230 kV alternatives 1 and 6) are higher than those of the higher capital cost alternatives (345 kV alternatives 3 and 3b); however, the total cumulative upgrade costs associated with the lower capital cost alternatives does not exceed the investment needed for the higher capital cost alternatives.

Loss analysis indicated that those transmission alternatives that had the highest capital costs result in the most effective reduction in system losses where those transmission alternatives that had the lowest capital costs result in the largest incremental system losses as the size of Big Stone II increases. At the highest potential output level from Big Stone II, alternatives 2, 3, and 3b have decreased system losses over the base case without transmission as well as the case that includes Big Stone II; whereas alternative 1 has a net increase in system losses over the base case.

When scheduling Big Stone II to all of the potential participants simultaneously, constrained interface analysis has shown that all of the transmission alternatives violate the North Dakota Export interface (NDEX). Due to this project requiring new transmission that will likely cross the NDEX interface, more transmission capacity will be introduced thus dismissing NDEX as a valid constraint. Transmission alternatives 2 and 3b, which involve 345 kV transmission to the Twin Cities, also caused a PTDF violation across the Minnesota – Wisconsin Stability Interface (MWSI), and Prairie Island – Byron constrained interfaces. Furthermore, the Fort Calhoun South interface is also a concern since PTDF quantities are over 4%, which may be bumped over 5% due to the uncertainty of this study model and how it will actually compare with the actual model that MISO will use for the system impact study.

The following figure illustrates a summary of how the transmission alternatives are ranked according to each type of analysis performed during this preliminary study.

Figure 11 - Summary of Transmission Alternative Ranking for Various Types of Analysis Completed During the Preliminary Study

Alternative #	Description	Capital Cost ¹	Losses ²	DF Analysis ³
1	Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate	2	9	1
2	Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - Willmar - Blue Lake 345 kV Line	9	2	2
3	Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - Willmar - West Waconia 345 kV Line with Dickinson - West Waconia - Wilmarth 345 kV Line	10	3	1
3b	Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - Willmar - West Waconia 345 kV Line with Dickinson - West Waconia - Blue Lake 345 kV Line	11	1	2
4	Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - Blair - White 345 kV Line with Ivanhoe - Lyon County 115 kV Line	6	7	1
5	Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Blair - Lyon County 230 kV Line with Lyon County - Franklin 115 kV Line	4	8	1
6	Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - 6 Mile Grove 230 kV Line with Morris - 6 Mile Grove 230 kV Line with Benson - 6 Mile Grove - Kerkhoven 115 kV Line	1	11	1
7	Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - 6 Mile Grove - Willmar 230 kV Line with Morris - 6 Mile Grove 230 kV Line with Benson - 6 Mile Grove - Kerkhoven 115 kV Line	3	10	1
8	Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - 6 Mile Grove - Willmar - McLeod 230 kV Line with Morris - 6 Mile Grove 230 kV Line with Benson - 6 Mile Grove - Kerkhoven 115 kV Line	5	6	1
9	Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - 6 Mile Grove - Willmar - McLeod 230 kV Line with Morris - 6 Mile Grove 230 kV Line with Benson - 6 Mile Grove - Kerkhoven 115 kV Line with Dickinson - West Waconia - Wilmarth 345 kV Line	8	5	1
9b	Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - 6 Mile Grove - Willmar - McLeod 230 kV Line with Morris - 6 Mile Grove 230 kV Line with Benson - 6 Mile Grove - Kerkhoven 115 kV Line with Dickinson - West Waconia - Blue Lake 345 kV Line	7	4	1

¹ Number indicates the ranking of alternatives from least capital cost (1) to highest capital cost (11)

² Number indicates the ranking of alternatives from most reduction in system losses (1) to least reduction in system losses (11)

³ Number indicates the number of constrained interfaces that were violated during a 2009 summer peak generation-to-generation redispatch

13.0 Remaining Work to Perform

During this preliminary screening study, economic analysis, loss analysis, distribution factor analysis, and TLTG analysis have been completed for a 2009 summer peak condition. The results obtained from these types of analyses do not include a full picture of what constraints may be encountered during the MISO interconnection and delivery service studies. Typical MISO study practices include looking at summer peak, summer off-peak, and winter peak conditions for the in-service year as well as an out-year case (beyond 2010). The MISO study process would include the following types of analysis which have not been completed as part of this preliminary study:

- Distribution Factor Analysis – generation-to-load redispatch with inclusion of OTDF interfaces
- Full ACSC Contingency Analysis (n-1) for summer peak, summer off-peak and winter peak conditions
- Select “n-2” contingency analysis for direct outlet facilities to the Big Stone Plant for summer peak, winter peak and summer off-peak conditions
- Transient Stability Analysis for summer peak, winter peak and summer off-peak conditions

These aspects of the MISO study process may trigger different study results than those contained within this study report. Variations in study models, origination of study models, as well as prior queued generation and delivery service requests all play into the final study results that will be obtained through the MISO study process.

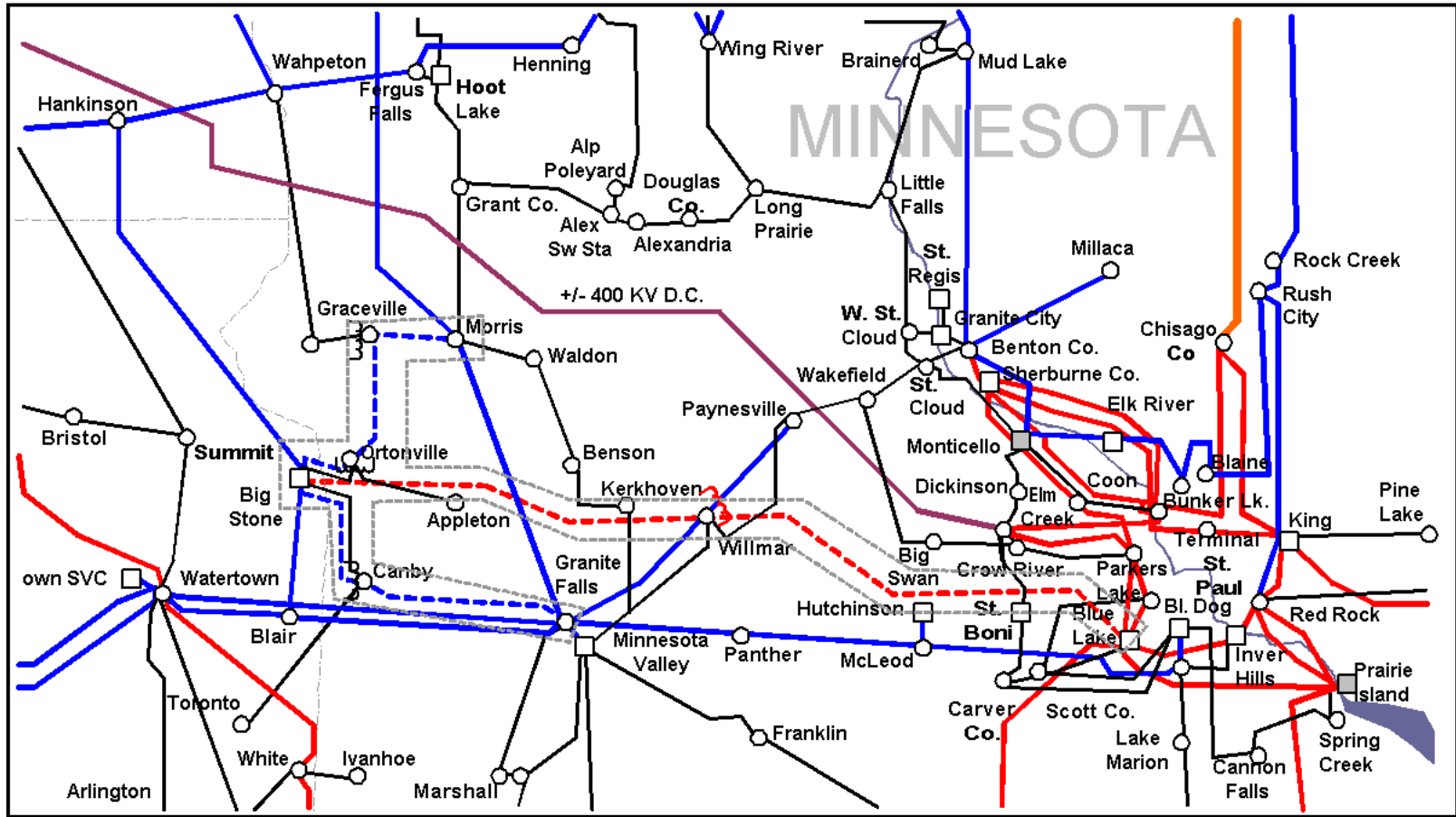
Although there is currently no criteria for voltage stability analysis (PV or VQ), the MISO study may include requirements to investigate what this proposed interconnection and delivery do to the existing voltage stability limits and performance of the existing transmission system.

Due to the lack of time before this study transitioned into the MISO study process, this preliminary study work has identified some potential issues that may arise during summer peak conditions. Additional issues may be identified during summer off-peak and winter peak during the additional types of analyses that had not been completed as part of this preliminary study.

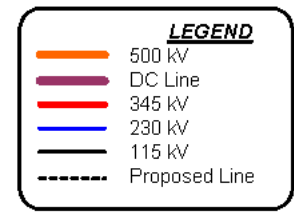
APPENDIX A

Geographic Maps of Proposed Transmission Alternatives

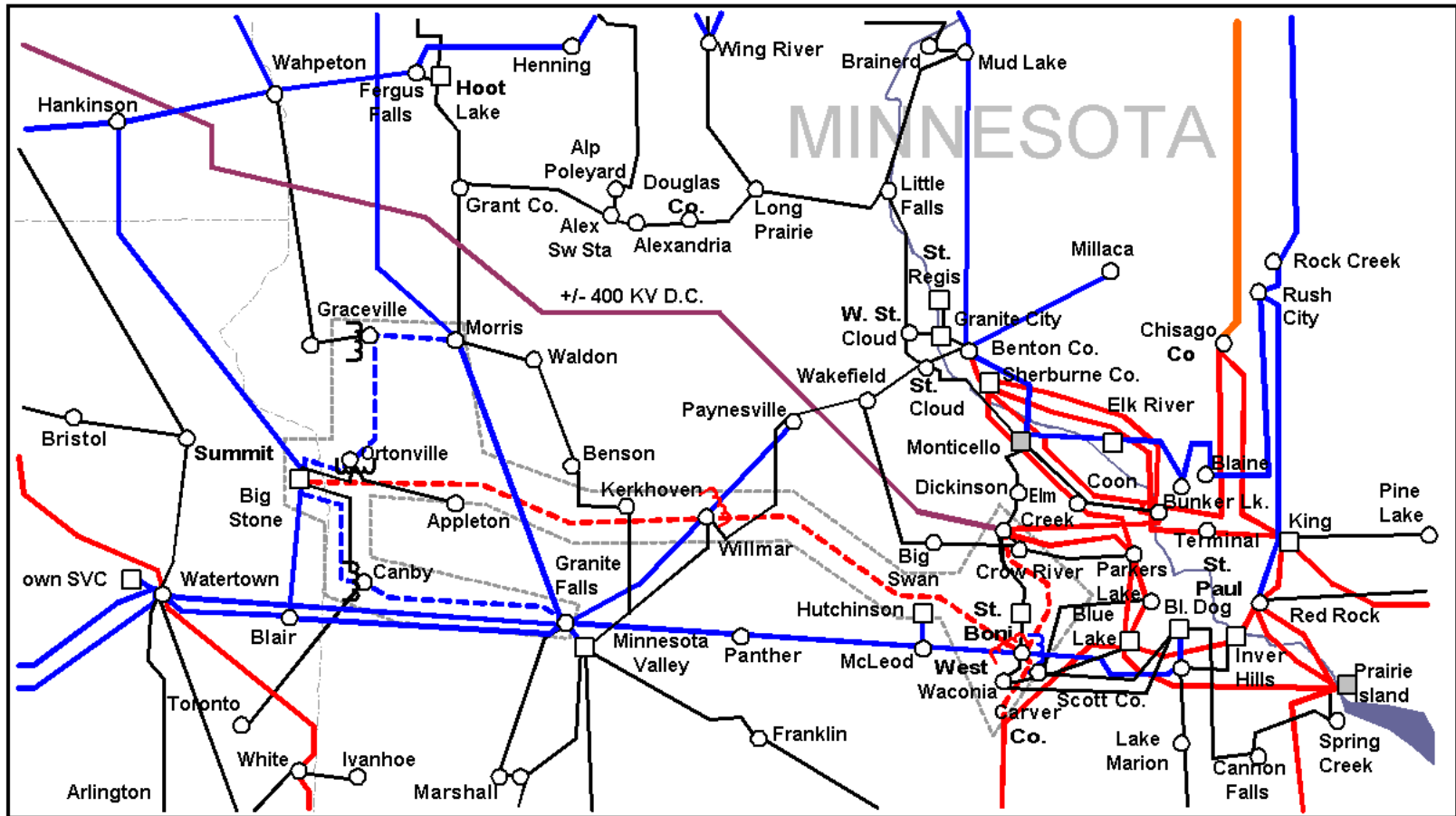
TRANSMISSION ALTERNATIVE 2



Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with
 Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with
 Big Stone - Willmar - Blue Lake 345 kV Line



TRANSMISSION ALTERNATIVE 3

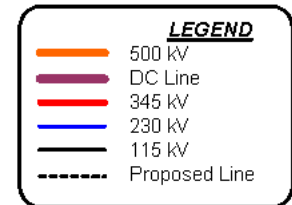


Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with

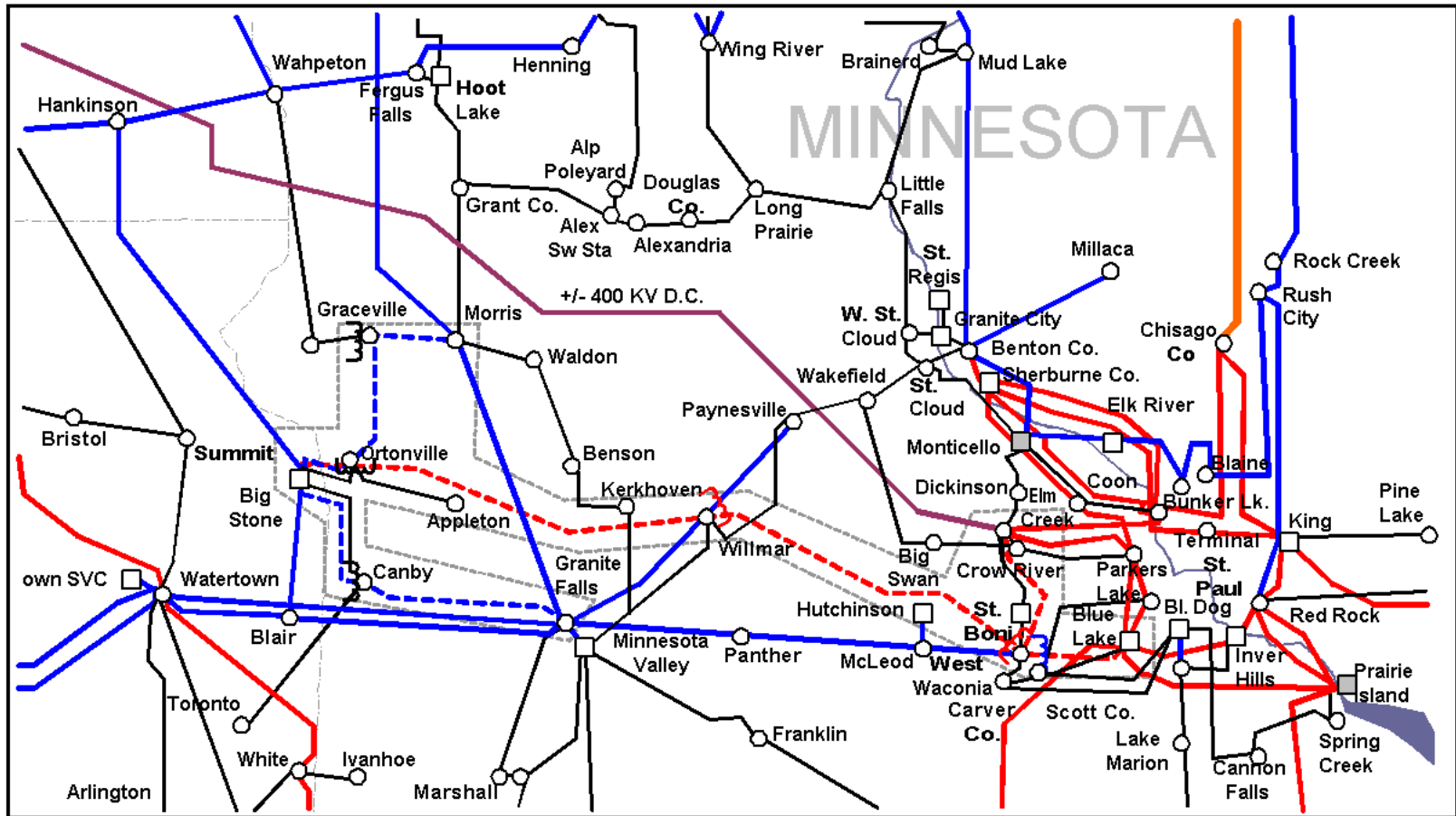
Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with

Big Stone - Willmar - Blue Lake 345 kV Line with

Dickinson - West Waconia - Wilmarth 345 kV Line



TRANSMISSION ALTERNATIVE 3b

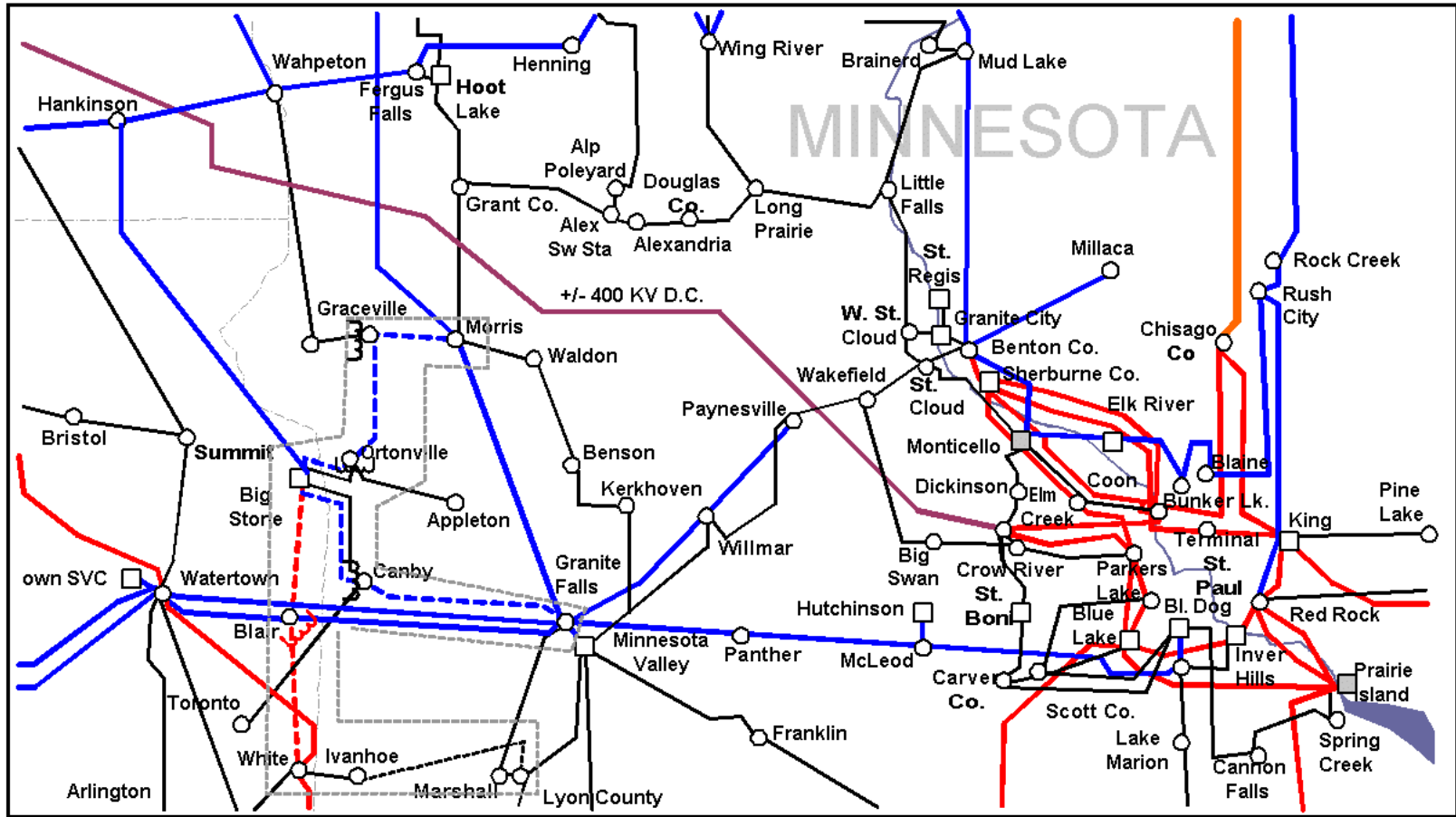


Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with
 Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with
 Big Stone - Willmar - West Waconia 345 kV Line with
 Dickinson - West Waconia - Blue Lake 345 kV Line

LEGEND

- 500 kV
- DC Line
- 345 kV
- 230 kV
- 115 kV
- - - Proposed Line

TRANSMISSION ALTERNATIVE 4

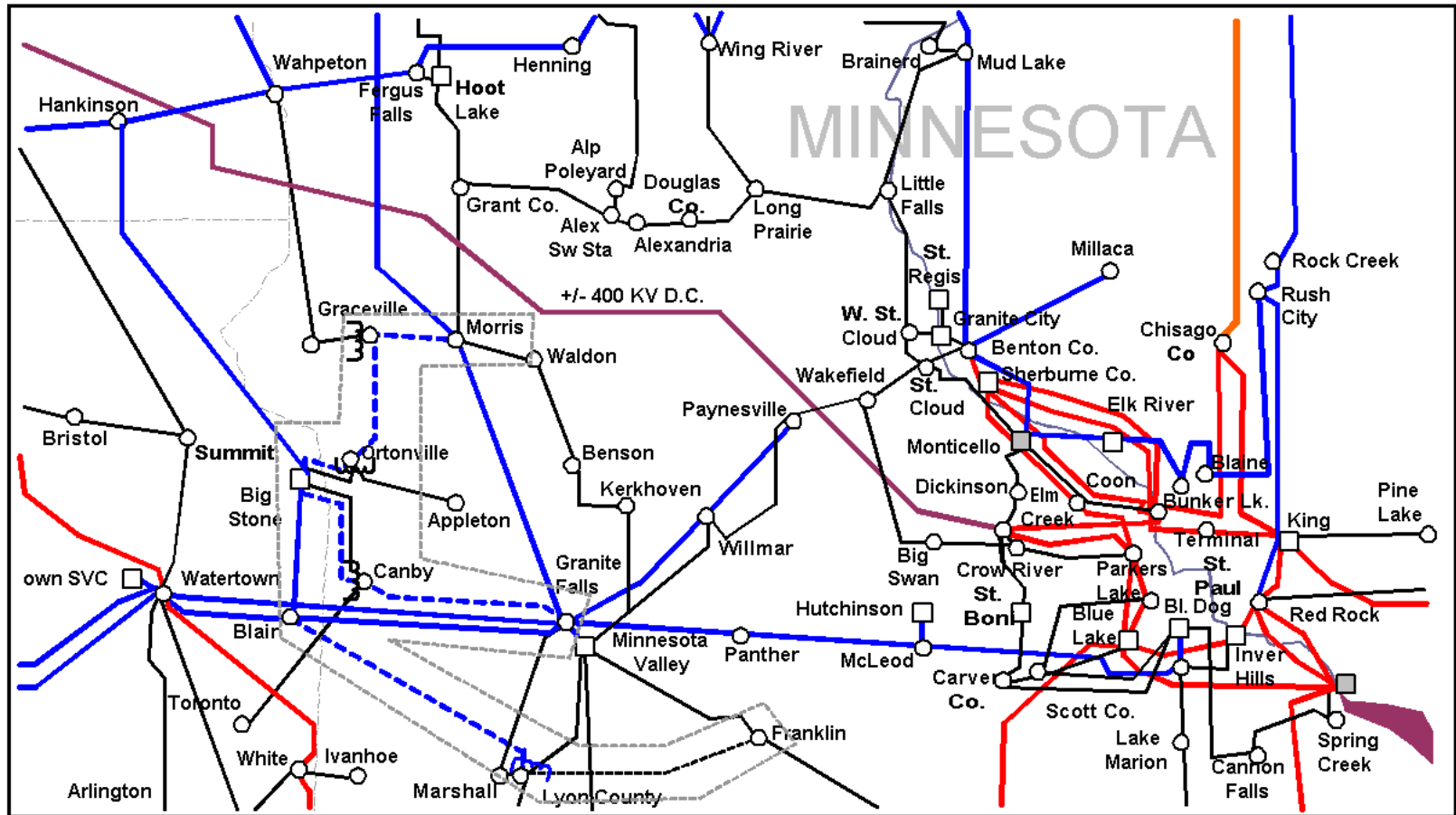


Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with
 Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with
 Big Stone - Blair - White 345 kV Line with
 Ivanhoe - Lyon County 115 kV Line

LEGEND

- 500 kV
- DC Line
- 345 kV
- 230 kV
- 115 kV
- - - Proposed Line

TRANSMISSION ALTERNATIVE 5

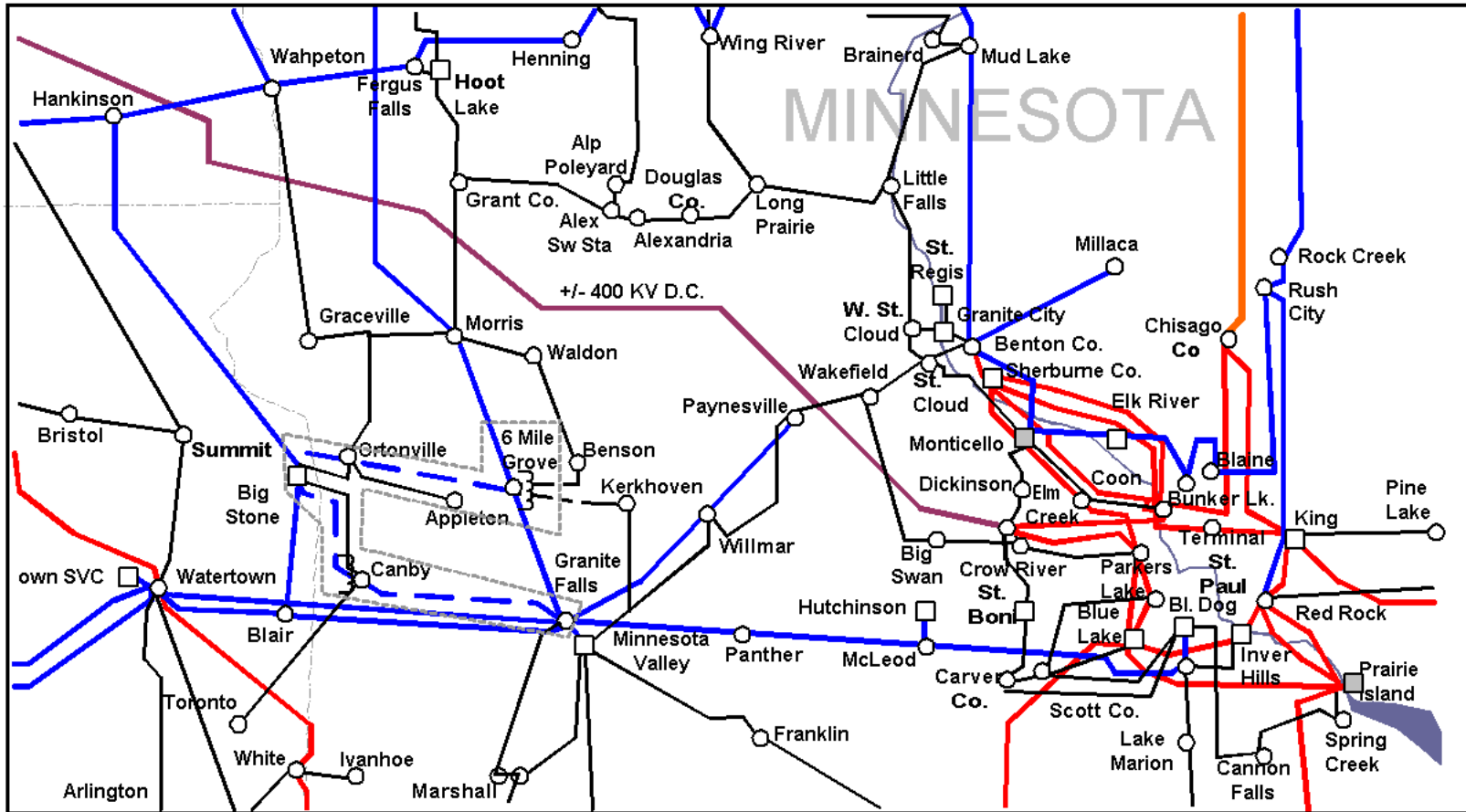


Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with
 Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with
 Blair - Lyon County 230 kV Line with
 Lyon County - Franklin 115 kV Line

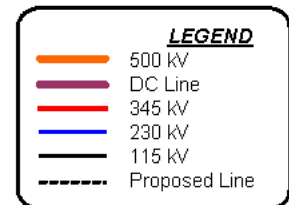
LEGEND

- 500 kV
- DC Line
- 345 kV
- 230 kV
- 115 kV
- - - Proposed Line

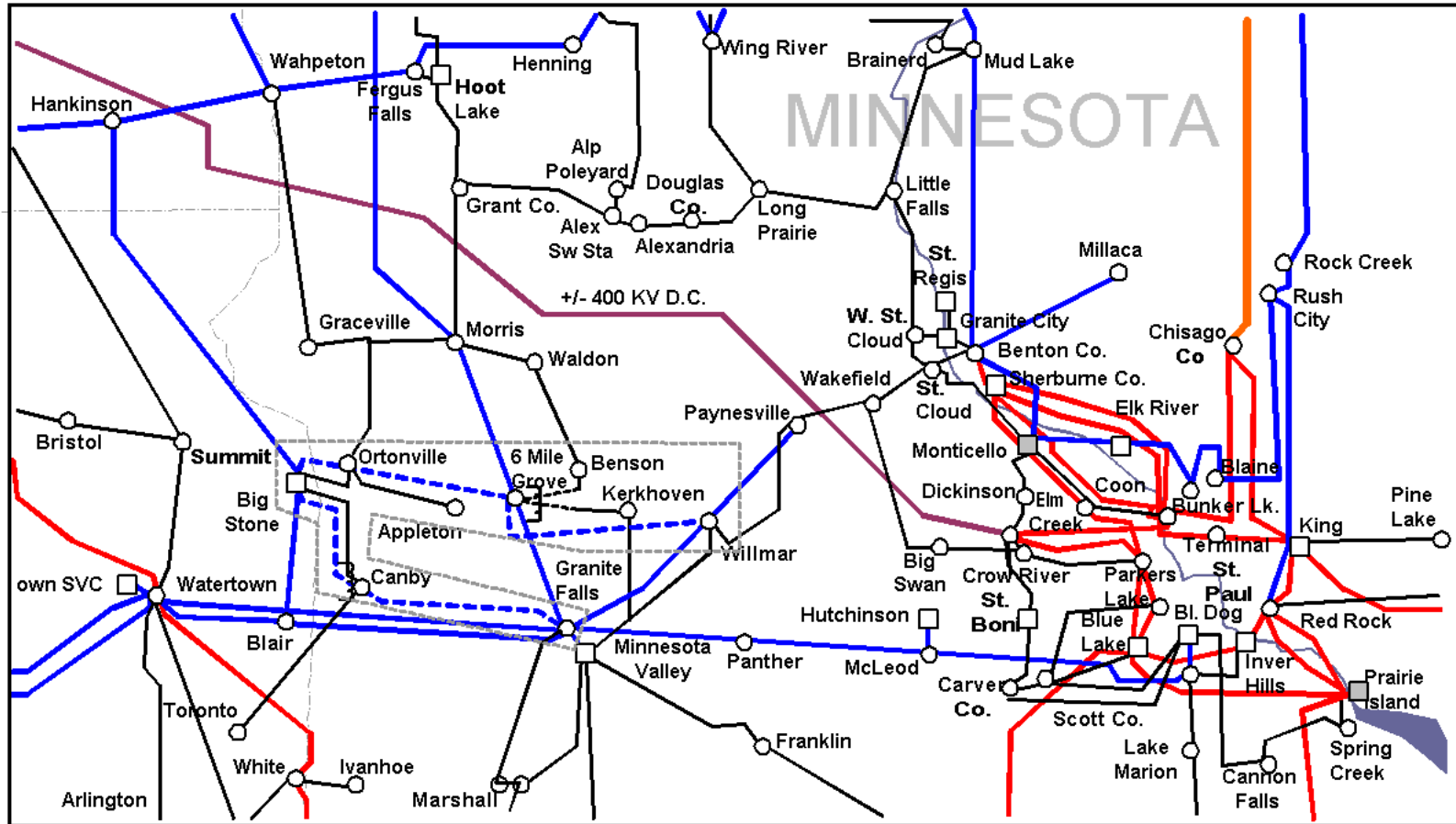
TRANSMISSION ALTERNATIVE 6



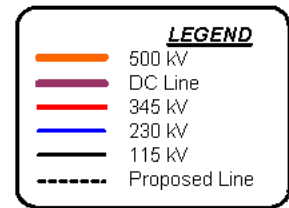
Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - 6 Mile Grove 230 kV Line
 adding a new 6 Mile Grove Substation along Morris - Granite Falls 230 kV line and extending
 Benson - Kerkhoven 115 kV line to 6 Mile Grove



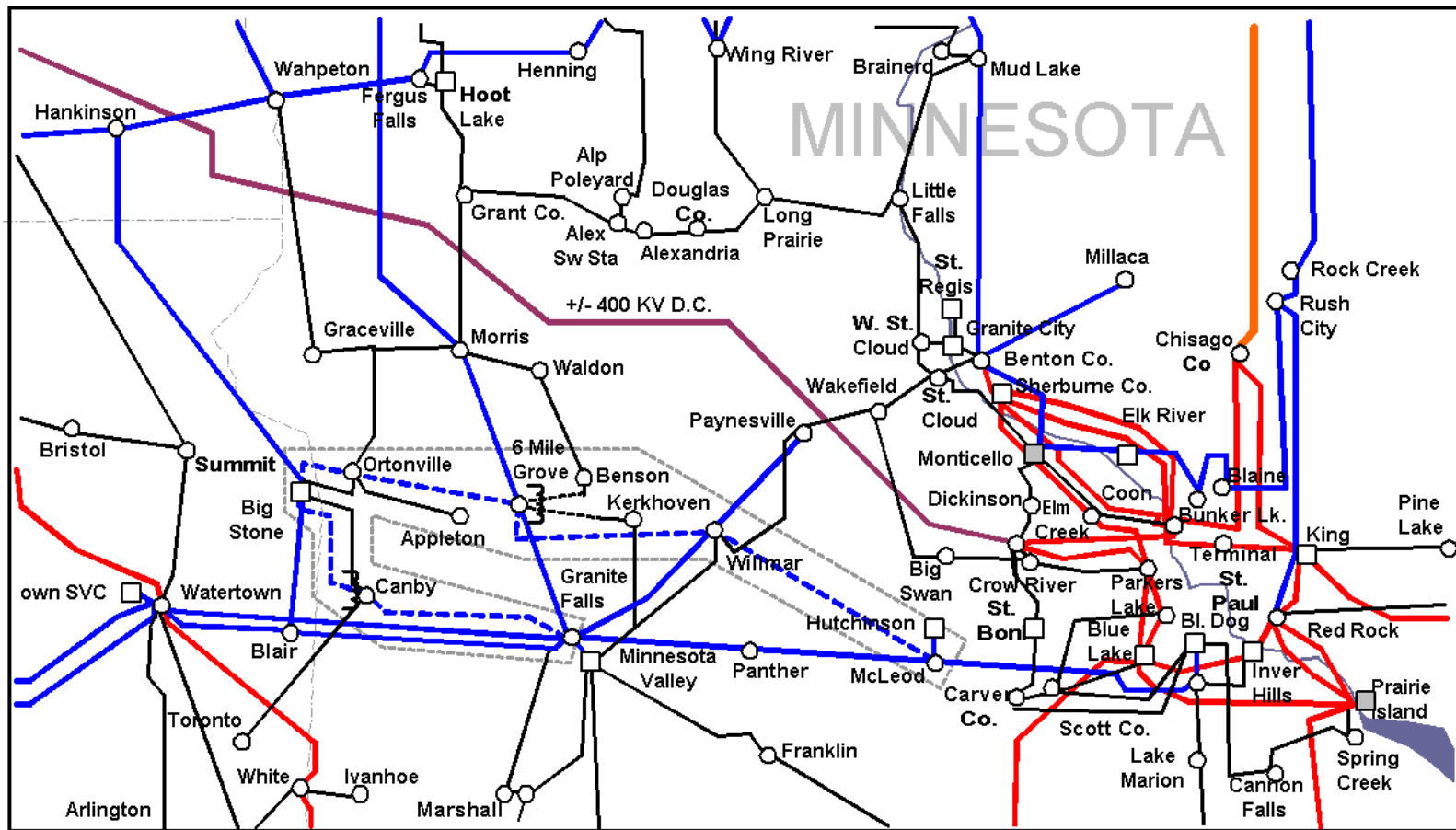
TRANSMISSION ALTERNATIVE 7



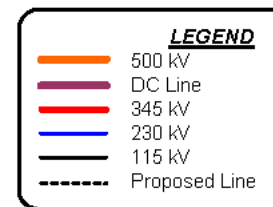
Big Stone - Canby - Granite Falls 115 to 230 kV Uprate with
 Big Stone - 6 Mile Grove - Willmar 230 kV Line with
 Benson - Kerkhoven 115 kV line extension to 6 Mile Grove



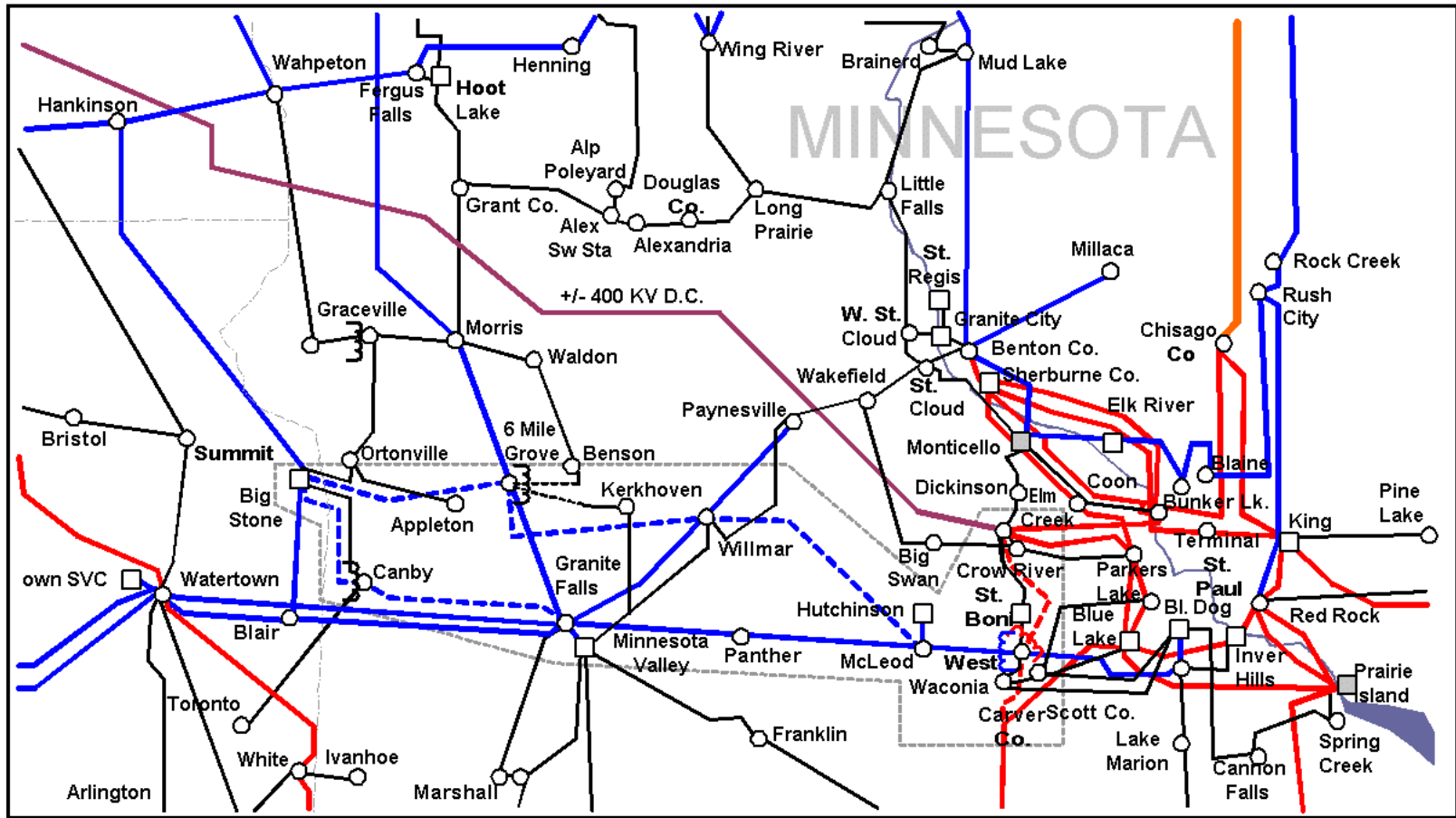
TRANSMISSION ALTERNATIVE 8



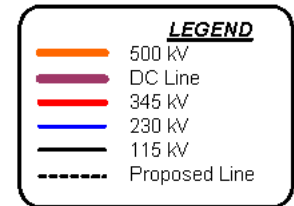
Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with
 Big Stone - 6 Mile Grove - Willmar - McLeod 230 kV Line with
 Benson - Kerkhoven 115 kV Line extension to 6 Mile Grove



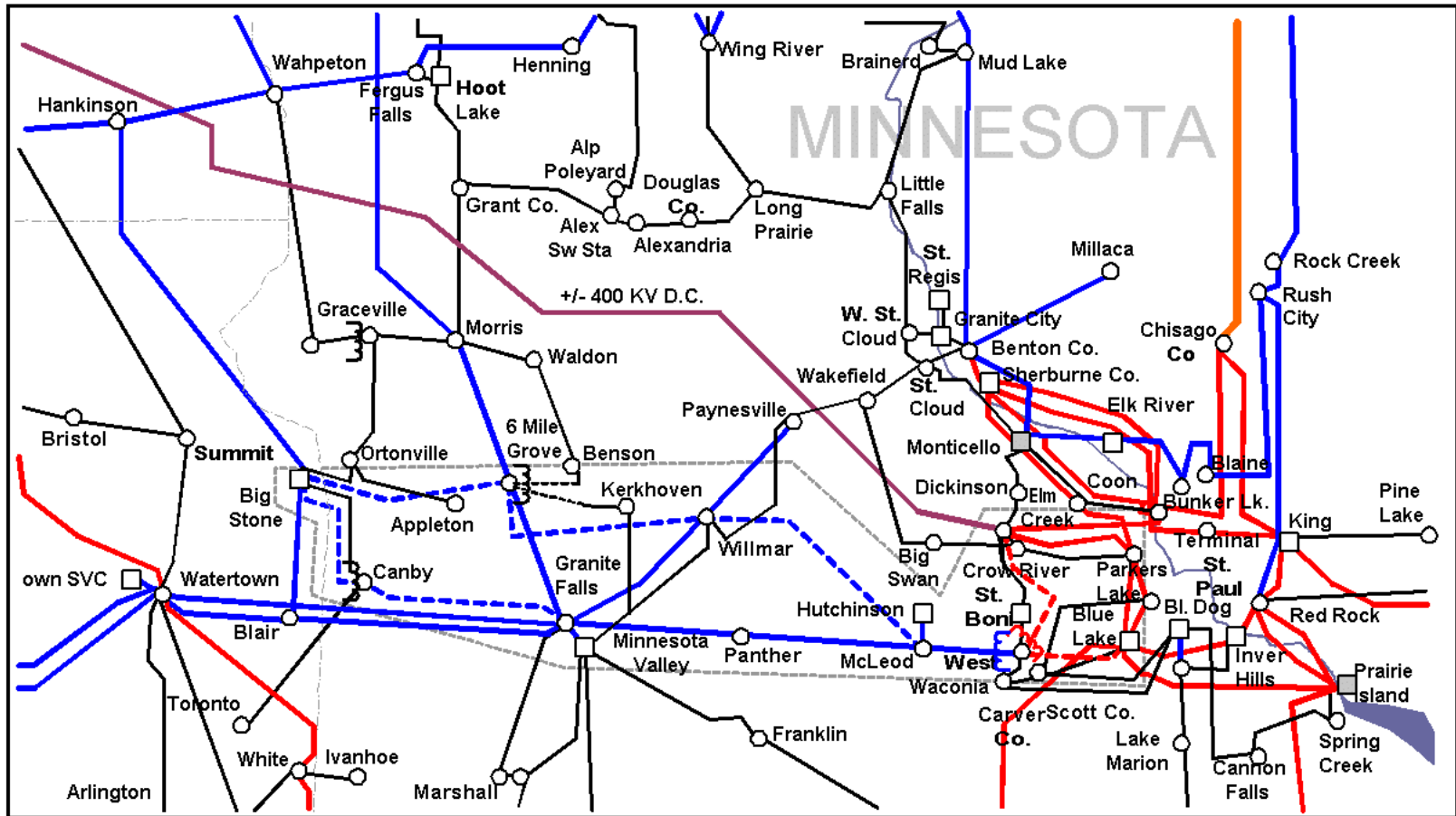
TRANSMISSION ALTERNATIVE 9



Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with
 Big Stone - 6 Mile Grove - Willmar - McLeod 230 kV Line with
 Morris - 6 Mile Grove - Granite Falls 230 kV Line with
 Benson - 6 Mile Grove - Kerkhoven 115 kV Line with
 Dickinson - West Waconia - Wilmarth 345 kV Line



TRANSMISSION ALTERNATIVE 9b



Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with
 Big Stone - 6 Mile Grove - Willmar - McLeod 230 kV Line with
 Morris - 6 Mile Grove - Granite Falls 230 kV Line with
 Benson - 6 Mile Grove - Kerkhoven 115 kV Line with
 Dickinson - West Waconia - Blue Lake 345 kV Line

LEGEND

- 500 kV
- DC Line
- 345 kV
- 230 kV
- 115 kV
- Proposed Line

APPENDIX B

Model Alterations to Create Base Case 2009 Summer Peak Model

Model Alterations to Create Base Case

Generation Alterations in the Xcel Energy Control Area:

235 MW's at Buffalo Ridge
280 MW's at Chanarambie
200 MW's at Fenton
100 MW's at Yankee
10 MW's at Woodstock
Anson #2 at 112.5 MW's
Anson #4 at 94 MW's
Anson #5 at 94 MW's
Marshall at 17 MW's
Added Faribault Generation project
Removed Pathfinder generation (retired)

Offset this generation increase in Xcel Energy's Control Area by turning down:

Blue Lake
Wheaton
Inver Hills

Generation Alterations in the Great River Energy Control Area:

Lakefield #1 through #6 set at 92 MW's each
FibroMinn at 50 MW's

Offset this generation increase in Great River Energy's Control Area by turning down:

Dakota County Generation (Fake generator)

Generation Alterations in the Otter Tail Power Company Control Area:

Lake Preston at 20 MW's

Offset this generation increase in Otter Tail Power's Control Area by turning down:

Hoot Lake #2

Transmission Additions inserted into the model:

Added Lake Yankton SVC
Added Buffalo Ridge – Yankee – White 115 kV Line
Added Fox Lake – Lakefield 161 kV Line (2nd Circuit)
Added Nobles – Fenton – Chanarambie 115 kV Line
Added Split Rock – Nobles – Lakefield 345 kV Line
Removed Appleton – Canby – Dawson 115 kV Line

APPENDIX C

Detailed Capital Cost Information For the Proposed Transmission Alternatives

Facility Choices and Price (1998 \$)			Transmission Alternative 1		2% Inflation Rate
Facility	Unit Cost (1998\$)	Unit	Quantity	Cost	Conversion to 2004 Dollars
Lines:					
500 kV	\$515,000	mile		\$ -	\$ -
345 kV	\$364,000	mile		\$ -	\$ -
230 kV	\$245,000	mile	137	\$ 33,565,000	\$ 37,799,641.60
161 kV	\$229,000	mile		\$ -	\$ -
115 kV	\$204,000	mile		\$ -	\$ -

Complete Line Terminal [breaker(s), bay, disconnects, relaying, etc]					2% Inflation Rate for Conversion to 2004 Dollars
500 kV	\$1,800,000	Each		\$ -	\$ -
345 kV	\$900,000	Each		\$ -	\$ -
230 kV	\$600,000	Each	17	\$ 10,200,000	\$ 11,486,856.68
161 kV	\$450,000	Each		\$ -	\$ -
115 kV	\$400,000	Each	3	\$ 1,200,000	\$ 1,351,394.90

Auto Transformers:					2004 Dollars
500 kV HV	Formula Based	MVA		\$ -	\$ -
345 kV HV	Formula Based	MVA		\$ -	\$ -
345 kV HV	Formula Based	MVA		\$ -	\$ -
345 kV HV	Formula Based	MVA		\$ -	\$ -
230 kV HV	Formula Based	MVA	125	\$ 1,041,250	\$ 1,172,616.62
230 kV HV	Formula Based	MVA	125	\$ 1,041,250	\$ 1,172,616.62
230 kV HV	Formula Based	MVA	125	\$ 1,041,250	\$ 1,172,616.62
161 kV HV	Formula Based	MVA		\$ -	\$ -

Capacitors:					2004 Dollars
345 kV	Formula Based	KVAR		\$ -	\$ -
230 kV	Formula Based	KVAR		\$ -	\$ -
161 kV	Formula Based	KVAR		\$ -	\$ -
115 kV	Formula Based	KVAR		\$ -	\$ -
	Facilities Cost			\$ 48,088,750	\$ 54,155,743.04
	Losses			\$ -	\$ -
	Total Cost			\$ 48,088,750	\$ 54,155,743.04

Alternative 1 - Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate

Line Costs: Big Stone - Highway 12 - Ortonville - Johnson Jct. - Morris 230 kV Line = 47 Miles
Big Stone - Marietta - Burr Jct. - Canby - Granite Falls 230 kV Line = 90 Miles

of Terminals: Big Stone (2); Ortonville (3); Johnson Jct. (3); Morris (2) = 10 230 kV Terminals
Big Stone (2); Canby (3); Granite Falls (2) = 7 230 kV Terminals
Ortonville (1); Canby (1); Johnson Jct. (1) = 3 115 kV Terminals

Xfmr Costs: Ortonville (1 - 230/115); Johnson Jct. (1 - 230/115); Canby (1 - 230/115)
230/115 kV Xfmr = 125 MVA (Similar to Rugby)

Facility Choices and Price (1998 \$)			Transmission Alternative 2		2% Inflation Rate
Facility	Unit Cost (1998\$)	Unit	Quantity	Cost	Conversion to 2004 Dollars
Lines:					
500 kV	\$515,000	mile		\$ -	\$ -
345 kV	\$364,000	mile	174	\$ 63,336,000	\$ 71,326,622.99
230 kV	\$245,000	mile	137	\$ 33,565,000	\$ 37,799,641.60
161 kV	\$229,000	mile		\$ -	\$ -
115 kV	\$204,000	mile		\$ -	\$ -

Complete Line Terminal [breaker(s), bay, disconnects, relaying, etc]					2% Inflation Rate for Conversion to 2004 Dollars
500 kV	\$1,800,000	Each		\$ -	\$ -
345 kV	\$900,000	Each	7	\$ 6,300,000	\$ 7,094,823.24
230 kV	\$600,000	Each	21	\$ 12,600,000	\$ 14,189,646.48
161 kV	\$450,000	Each		\$ -	\$ -
115 kV	\$400,000	Each	3	\$ 1,200,000	\$ 1,351,394.90

Auto Transformers:					2004 Dollars
500 kV HV	Formula Based	MVA		\$ -	\$ -
345 kV HV	Formula Based	MVA		\$ -	\$ -
345 kV HV	Formula Based	MVA	336	\$ 3,152,000	\$ 3,549,663.95
345 kV HV	Formula Based	MVA	336	\$ 3,152,000	\$ 3,549,663.95
230 kV HV	Formula Based	MVA	125	\$ 1,041,250	\$ 1,172,616.62
230 kV HV	Formula Based	MVA	125	\$ 1,041,250	\$ 1,172,616.62
230 kV HV	Formula Based	MVA	125	\$ 1,041,250	\$ 1,172,616.62
161 kV HV	Formula Based	MVA		\$ -	\$ -

Capacitors:					2004 Dollars
345 kV	Formula Based	KVAR		\$ -	\$ -
230 kV	Formula Based	KVAR		\$ -	\$ -
161 kV	Formula Based	KVAR		\$ -	\$ -
115 kV	Formula Based	KVAR		\$ -	\$ -

	Facilities Cost			\$ 126,428,750	\$ 142,379,306.96
	Losses			\$ -	\$ -
	Total Cost			\$ 126,428,750	\$ 142,379,306.96

Alternative 2 - Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - Willmar - Blue Lake 345 kV Line

Line Costs: Big Stone - Highway 12 - Ortonville - Johnson Jct. - Morris 230 kV Line = 47 Miles
Big Stone - Marietta - Burr Jct. - Canby - Granite Falls 230 kV Line = 90 Miles
Big Stone - Willmar - Blue Lake 345 kV Line = 174 Miles

of Terminals: Big Stone (2); Ortonville (3); Johnson Jct. (3); Morris (2) = 10 230 kV Terminals
Big Stone (2); Canby (3); Granite Falls (2) = 7 230 kV Terminals
Big Stone (2); Willmar (2) = 4 230 kV Terminals
Big Stone (2); Willmar (3); Blue Lake (2) = 7 345 kV Terminals
Ortonville (1); Canby (1); Johnson Jct. (1) = 3 115 kV Terminals

Xfmr Costs: Ortonville (1 - 230/115); Johnson Jct. (1 - 230/115); Canby (1 - 230/115)
Big Stone (1 - 345/230); Willmar (1 - 345/230)
345/230 kV Xfmr = 336 MVA (Similar to Xcel's Red Rock)
230/115 kV Xfmr = 125 MVA (Similar to Rugby)

Facility Choices and Price (1998 \$)			Transmission Alternative 3		2% Inflation Rate
Facility	Unit Cost (1998\$)	Unit	Quantity	Cost	Conversion to 2004 Dollars
Lines:					
500 kV	\$515,000	mile		\$ -	\$ -
345 kV	\$364,000	mile	202	\$ 73,528,000	\$ 82,804,470.36
230 kV	\$245,000	mile	137	\$ 33,565,000	\$ 37,799,641.60
161 kV	\$229,000	mile		\$ -	\$ -
115 kV	\$204,000	mile		\$ -	\$ -

Complete Line Terminal [breaker(s), bay,disconnects, relaying, etc]					2% Inflation Rate for Conversion to 2004 Dollars
500 kV	\$1,800,000	Each		\$ -	\$ -
345 kV	\$900,000	Each	14	\$ 12,600,000	\$ 14,189,646.48
230 kV	\$600,000	Each	23	\$ 13,800,000	\$ 15,541,041.39
161 kV	\$450,000	Each		\$ -	\$ -
115 kV	\$400,000	Each	3	\$ 1,200,000	\$ 1,351,394.90

Auto Transformers:					2004 Dollars
500 kV HV	Formula Based	MVA		\$ -	\$ -
345 kV HV	Formula Based	MVA	336	\$ 3,152,000	\$ 3,549,663.95
345 kV HV	Formula Based	MVA	336	\$ 3,152,000	\$ 3,549,663.95
345 kV HV	Formula Based	MVA	336	\$ 3,152,000	\$ 3,549,663.95
230 kV HV	Formula Based	MVA	125	\$ 1,041,250	\$ 1,172,616.62
230 kV HV	Formula Based	MVA	125	\$ 1,041,250	\$ 1,172,616.62
230 kV HV	Formula Based	MVA	125	\$ 1,041,250	\$ 1,172,616.62
161 kV HV	Formula Based	MVA		\$ -	\$ -

Capacitors:					2004 Dollars
345 kV	Formula Based	KVAR		\$ -	\$ -
230 kV	Formula Based	KVAR		\$ -	\$ -
161 kV	Formula Based	KVAR		\$ -	\$ -
115 kV	Formula Based	KVAR		\$ -	\$ -
Facilities Cost				\$ 147,272,750	\$ 165,853,036.43
Losses				\$ -	\$ -
Total Cost				\$ 147,272,750	\$ 165,853,036.43

**Alternative 3 - Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with
Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with
Big Stone - Willmar - Carver County 345 kV Line with
Dickinson - Carver County - Wilmarth 345 kV Line**

Line Costs: Big Stone - Highway 12 - Ortonville - Johnson Jct. - Morris 230 kV Line = 47 Miles
Big Stone - Marietta - Burr Jct. - Canby - Granite Falls 230 kV Line = 90 Miles
Big Stone - Willmar - Carver County 345 kV Line = 157 Miles
Dickinson - Carver County - Wilmarth 345 kV Line = 45 Miles

of Terminals: Big Stone (2); Ortonville (3); Johnson Jct. (3); Morris (2) = 10 230 kV Terminals
Big Stone (2); Canby (3); Granite Falls (2) = 7 230 kV Terminals
Big Stone (2); Willmar (2); Carver County (2) = 6 230 kV Terminals
Big Stone (2); Willmar (3); Carver County (2) = 7 345 kV Terminals
Dickinson (2); Carver County (2); Wilmarth (3) = 7 345 kV Terminals
Ortonville (1); Canby (1); Johnson Jct. (1) = 3 115 kV Terminals

Xfmr Costs: Ortonville (1 - 230/115); Johnson Jct. (1 - 230/115); Canby (1 - 230/115)
Big Stone (1 - 345/230); Willmar (1 - 345/230); Carver County (1 - 345/230)
345/230 kV Xfmr = 336 MVA (Similar to Xcel's Red Rock)
230/115 kV Xfmr = 125 MVA (Similar to Rugby)

Facility Choices and Price (1998 \$)			Transmission Alternative 3b		2% Inflation Rate
Facility	Unit Cost (1998\$)	Unit	Quantity	Cost	Conversion to 2004 Dollars
Lines:					
500 kV	\$515,000	mile		\$ -	\$ -
345 kV	\$364,000	mile	205	\$ 74,620,000	\$ 84,034,239.73
230 kV	\$245,000	mile	137	\$ 33,565,000	\$ 37,799,641.60
161 kV	\$229,000	mile		\$ -	\$ -
115 kV	\$204,000	mile		\$ -	\$ -

Complete Line Terminal [breaker(s), bay, disconnects, relaying, etc]					2% Inflation Rate for Conversion to 2004 Dollars
500 kV	\$1,800,000	Each		\$ -	\$ -
345 kV	\$900,000	Each	13	\$ 11,700,000	\$ 13,176,100.31
230 kV	\$600,000	Each	23	\$ 13,800,000	\$ 15,541,041.39
161 kV	\$450,000	Each		\$ -	\$ -
115 kV	\$400,000	Each	4	\$ 1,600,000	\$ 1,801,859.87

Auto Transformers:					2004 Dollars
500 kV HV	Formula Based	MVA		\$ -	\$ -
345 kV HV	Formula Based	MVA	336	\$ 3,152,000	\$ 3,549,663.95
345 kV HV	Formula Based	MVA	336	\$ 3,152,000	\$ 3,549,663.95
345 kV HV	Formula Based	MVA	336	\$ 3,152,000	\$ 3,549,663.95
230 kV HV	Formula Based	MVA	125	\$ 1,041,250	\$ 1,172,616.62
230 kV HV	Formula Based	MVA	125	\$ 1,041,250	\$ 1,172,616.62
230 kV HV	Formula Based	MVA	125	\$ 1,041,250	\$ 1,172,616.62
230 kV HV	Formula Based	MVA	336	\$ 1,870,480	\$ 2,106,464.28
161 kV HV	Formula Based	MVA		\$ -	\$ -

Capacitors:					2004 Dollars
345 kV	Formula Based	KVAR		\$ -	\$ -
230 kV	Formula Based	KVAR		\$ -	\$ -
161 kV	Formula Based	KVAR		\$ -	\$ -
115 kV	Formula Based	KVAR		\$ -	\$ -
	Facilities Cost			\$ 149,735,230	\$ 168,626,188.87
	Losses			\$ -	\$ -
	Total Cost			\$ 149,735,230	\$ 168,626,188.87

Alternative 3b - Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - Willmar - West Waconia 345 kV Line with Dickinson - West Waconia - Blue Lake 345 kV Line

Line Costs: Big Stone - Highway 12 - Ortonville - Johnson Jct. - Morris 230 kV Line = 47 Miles
 Big Stone - Marietta - Burr Jct. - Canby - Granite Falls 230 kV Line = 90 Miles
 Big Stone - Willmar - West Waconia 345 kV Line = 157 Miles
 Dickinson - West Waconia - Blue Lake 345 kV Line = 48 Miles'

of Terminals: Big Stone (2); Ortonville (3); Johnson Jct. (3); Morris (2) = 10 230 kV Terminals
 Big Stone (2); Canby (3); Granite Falls (2) = 7 230 kV Terminals
 Big Stone (2); Willmar (1); West Waconia (3) = 6 230 kV Terminals
 Big Stone (2); Willmar (3); West Waconia (2) = 7 345 kV Terminals
 Dickinson (2); West Waconia (2); Blue Lake (2) = 6 345 kV Terminals
 Ortonville (1); Canby (1); Johnson Jct. (1); West Waconia (1) = 4 115 kV Terminals

Xfmr Costs: Ortonville (1 - 230/115); Johnson Jct. (1 - 230/115); Canby (1 - 230/115)
 Big Stone (1 - 345/230); Willmar (1 - 345/230); West Waconia (1 - 345/230)
 West Waconia (1 - 230/115)
 345/230 kV Xfmr = 336 MVA (Similar to Xcel's Red Rock)
 230/115 kV Xfmr = 336 MVA (Similar to Xcel's Black Dog)
 230/115 kV Xfmr = 125 MVA (Similar to Rugby)

*West Waconia to Blue Lake would actually be an uprate of the existing 230 kV Line to Black Dog

Facility Choices and Price (1998 \$)			Transmission Alternative 4		2% Inflation Rate
Facility	Unit Cost (1998\$)	Unit	Quantity	Cost	Conversion to 2004 Dollars
Lines:					
500 kV	\$515,000	mile		\$ -	\$ -
345 kV	\$364,000	mile	36	\$ 13,104,000	\$ 14,757,232.34
345 kV	\$273,000	mile	33	\$ 9,009,000	\$ 10,145,597.24
230 kV	\$245,000	mile	137	\$ 33,565,000	\$ 37,799,641.60
161 kV	\$229,000	mile		\$ -	\$ -
115 kV	\$204,000	mile	34.5	\$ 7,038,000	\$ 7,925,931.11

Complete Line Terminal [breaker(s), bay, disconnects, relaying, etc]					2% Inflation Rate for Conversion to 2004 Dollars
500 kV	\$1,800,000	Each		\$ -	\$ -
345 kV	\$900,000	Each	7	\$ 6,300,000	\$ 7,094,823.24
230 kV	\$600,000	Each	19	\$ 11,400,000	\$ 12,838,251.58
161 kV	\$450,000	Each		\$ -	\$ -
115 kV	\$400,000	Each	7	\$ 2,800,000	\$ 3,153,254.77

Auto Transformers:					2004 Dollars
500 kV HV	Formula Based	MVA		\$ -	\$ -
345 kV HV	Formula Based	MVA	336	\$ 3,152,000	\$ 3,549,663.95
345 kV HV	Formula Based	MVA	336	\$ 3,152,000	\$ 3,549,663.95
230 kV HV	Formula Based	MVA	125	\$ 1,041,250	\$ 1,172,616.62
230 kV HV	Formula Based	MVA	125	\$ 1,041,250	\$ 1,172,616.62
230 kV HV	Formula Based	MVA	125	\$ 1,041,250	\$ 1,172,616.62
161 kV HV	Formula Based	MVA		\$ -	\$ -

Capacitors:					2004 Dollars
345 kV	Formula Based	KVAR		\$ -	\$ -
230 kV	Formula Based	KVAR		\$ -	\$ -
161 kV	Formula Based	KVAR		\$ -	\$ -
115 kV	Formula Based	KVAR		\$ -	\$ -
	Facilities Cost			\$ 92,643,750	\$ 104,331,909.63
	Losses			\$ -	\$ -
	Total Cost			\$ 92,643,750	\$ 104,331,909.63

**Alternative 4 - Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with
Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with
Big Stone - Blair - White 345 kV Line with
Ivanhoe - Lyon County 115 kV Line**

Line Costs: Big Stone - Highway 12 - Ortonville - Johnson Jct. - Morris 230 kV Line = 47 Miles
Big Stone - Marietta - Burr Jct. - Canby - Granite Falls 230 kV Line = 90 Miles
Big Stone - Blair 345 kV Line = 33 Miles*
Blair - White 345 kV Line = 36 Miles
Ivanhoe - Lyon County 115 kV Line = 34.5 Miles

of Terminals: Big Stone (2); Ortonville (3); Johnson Jct. (3); Morris (2) = 10 230 kV Terminals
Big Stone (2); Canby (3); Granite Falls (2) = 7 230 kV Terminals
Big Stone (2) = 2 230 kV Terminals
Big Stone (2); Blair (3); White (2) = 7 345 kV Terminals
Ivanhoe (2); Lyon County (2) = 4 115 kV Terminals
Ortonville (1); Canby (1); Johnson Jct. (1) = 3 115 kV Terminals

Xfmr Costs: Ortonville (1 - 230/115); Johnson Jct. (1 - 230/115); Canby (1 - 230/115)
Big Stone (1 - 345/230); Blair (1 - 345/230)
345/230 kV Xfmr = 336 MVA (Similar to Xcel's Red Rock)
230/115 kV Xfmr = 125 MVA (Similar to Rugby)

*Big Stone to Blair would actually be an uprate of the existing 230 kV Line assumed to be 75% of new line cost

Facility Choices and Price (1998 \$)			Transmission Alternative 5		2% Inflation Rate
Facility	Unit Cost (1998\$)	Unit	Quantity	Cost	Conversion to 2004 Dollars
Lines:					
500 kV	\$515,000	mile		\$ -	\$ -
345 kV	\$364,000	mile		\$ -	\$ -
230 kV	\$245,000	mile	201	\$ 49,245,000	\$ 55,457,868.34
161 kV	\$229,000	mile		\$ -	\$ -
115 kV	\$204,000	mile	40	\$ 8,160,000	\$ 9,189,485.34

Complete Line Terminal [breaker(s), bay, disconnects, relaying, etc]					2% Inflation Rate for Conversion to 2004 Dollars
500 kV	\$1,800,000	Each		\$ -	\$ -
345 kV	\$900,000	Each		\$ -	\$ -
230 kV	\$600,000	Each	20	\$ 12,000,000	\$ 13,513,949.03
161 kV	\$450,000	Each		\$ -	\$ -
115 kV	\$400,000	Each	7	\$ 2,800,000	\$ 3,153,254.77

Auto Transformers:					2004 Dollars
500 kV HV	Formula Based	MVA		\$ -	\$ -
345 kV HV	Formula Based	MVA		\$ -	\$ -
230 kV HV	Formula Based	MVA	125	\$ 1,041,250	\$ 1,172,616.62
230 kV HV	Formula Based	MVA	125	\$ 1,041,250	\$ 1,172,616.62
230 kV HV	Formula Based	MVA	125	\$ 1,041,250	\$ 1,172,616.62
230 kV HV	Formula Based	MVA	125	\$ 1,041,250	\$ 1,172,616.62
161 kV HV	Formula Based	MVA		\$ -	\$ -

Capacitors:					2004 Dollars
345 kV	Formula Based	KVAR		\$ -	\$ -
230 kV	Formula Based	KVAR		\$ -	\$ -
161 kV	Formula Based	KVAR		\$ -	\$ -
115 kV	Formula Based	KVAR		\$ -	\$ -

	Facilities Cost			\$ 76,370,000	\$ 86,005,023.96
	Losses			\$ -	\$ -
	Total Cost			\$ 76,370,000	\$ 86,005,023.96

**Alternative 5 - Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with
Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with
Blair - Lyon County 230 kV Line with
Lyon County - Franklin 115 kV Line**

Line Costs: Big Stone - Highway 12 - Ortonville - Johnson Jct. - Morris 230 kV Line = 47 Miles
Big Stone - Marietta - Burr Jct. - Canby - Granite Falls 230 kV Line = 90 Miles
Blair - Lyon County 230 kV Line = 64 Miles
Lyon County - Franklin 115 kV Line = 40 Miles

of Terminals: Big Stone (2); Ortonville (3); Johnson Jct. (3); Morris (2) = 10 230 kV Terminals
Big Stone (2); Canby (3); Granite Falls (2) = 7 230 kV Terminals
Blair (1); Lyon County (2) = 3 230 kV Terminals
Lyon County (2); Franklin (2) = 4 115 kV Terminals
Ortonville (1); Canby (1); Johnson Jct. (1) = 3 115 kV Terminals

Xfmr Costs: Ortonville (1 - 230/115); Johnson Jct. (1 - 230/115); Canby (1 - 230/115)
Lyon County (1 - 230/115)
230/115 kV Xfmr = 125 MVA (Similar to Rugby)

Facility Choices and Price (1998 \$)			Transmission Alternative 6		2% Inflation Rate
Facility	Unit Cost (1998\$)	Unit	Quantity	Cost	Conversion to 2004 Dollars
Lines:					
500 kV	\$515,000	mile		\$ -	\$ -
345 kV	\$364,000	mile		\$ -	\$ -
230 kV	\$245,000	mile	136	\$ 33,320,000	\$ 37,523,731.81
161 kV	\$229,000	mile		\$ -	\$ -
115 kV	\$204,000	mile	7	\$ 1,428,000	\$ 1,608,159.93

Complete Line Terminal [breaker(s), bay,disconnects, relaying, etc]					2% Inflation Rate for Conversion to 2004 Dollars
500 kV	\$1,800,000	Each		\$ -	\$ -
345 kV	\$900,000	Each		\$ -	\$ -
230 kV	\$600,000	Each	13	\$ 7,800,000	\$ 8,784,066.87
161 kV	\$450,000	Each		\$ -	\$ -
115 kV	\$400,000	Each	4	\$ 1,600,000	\$ 1,801,859.87

Auto Transformers:					2004 Dollars
500 kV HV	Formula Based	MVA		\$ -	\$ -
345 kV HV	Formula Based	MVA		\$ -	\$ -
230 kV HV	Formula Based	MVA	125	\$ 1,041,250	\$ 1,172,616.62
230 kV HV	Formula Based	MVA	336	\$ 1,870,480	\$ 2,106,464.28
161 kV HV	Formula Based	MVA		\$ -	\$ -

Capacitors:					2004 Dollars
345 kV	Formula Based	KVAR		\$ -	\$ -
230 kV	Formula Based	KVAR		\$ -	\$ -
161 kV	Formula Based	KVAR		\$ -	\$ -
115 kV	Formula Based	KVAR		\$ -	\$ -
Facilities Cost				\$ 47,059,730	\$ 52,996,899.39
Losses				\$ -	\$ -
Total Cost				\$ 47,059,730	\$ 52,996,899.39

**Alternative 6 - Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with
Big Stone - 6 Mile Grove 230 kV Line with
Benson - 6 Mile Grove - Kerkhoven 115 kV Line**

Line Costs: Big Stone - Marietta - Burr Jct. - Canby - Granite Falls 230 kV Line = 90 Miles
Big Stone - 6 Mile Grove 230 kV Line = 46 Miles
Benson - 6 Mile Grove - Kerkhoven 115 kV Line = 7 Miles*

of Terminals: Big Stone (2); Canby (3); Granite Falls (2) = 7 230 kV Terminals
Big Stone (2); 6 Mile Grove (4) = 6 230 kV Terminals
6 Mile Grove (3); Canby (1) = 4 115 kV Terminals

Xfmr Costs: Canby (1 - 230/115); 6 Mile Grove (1 - 230/115)
230/115 kV Xfmr = 125 MVA (Similar to Rugby)
230/115 kV Xfmr = 336 MVA (Obtained from GRE)

*Benson to Kerkhoven 115 kV Line already exists - would only need to add 7 miles for the new 6 Mile Grove Sub

Facility Choices and Price (1998 \$)			Transmission Alternative 7		2% Inflation Rate
Facility	Unit Cost (1998\$)	Unit	Quantity	Cost	Conversion to 2004 Dollars
Lines:					
500 kV	\$515,000	mile		\$ -	\$ -
345 kV	\$364,000	mile		\$ -	\$ -
230 kV	\$245,000	mile	200	\$ 49,000,000	\$ 55,181,958.54
161 kV	\$229,000	mile		\$ -	\$ -
115 kV	\$204,000	mile	7	\$ 1,428,000	\$ 1,608,159.93

Complete Line Terminal [breaker(s), bay,disconnects, relaying, etc]					2% Inflation Rate for Conversion to 2004 Dollars
500 kV	\$1,800,000	Each		\$ -	\$ -
345 kV	\$900,000	Each		\$ -	\$ -
230 kV	\$600,000	Each	15	\$ 9,000,000	\$ 10,135,461.77
161 kV	\$450,000	Each		\$ -	\$ -
115 kV	\$400,000	Each	4	\$ 1,600,000	\$ 1,801,859.87

Auto Transformers:					2004 Dollars
500 kV HV	Formula Based	MVA		\$ -	\$ -
345 kV HV	Formula Based	MVA		\$ -	\$ -
230 kV HV	Formula Based	MVA	125	\$ 1,041,250	\$ 1,172,616.62
230 kV HV	Formula Based	MVA	336	\$ 1,870,480	\$ 2,106,464.28
161 kV HV	Formula Based	MVA		\$ -	\$ -

Capacitors:					2004 Dollars
345 kV	Formula Based	KVAR		\$ -	\$ -
230 kV	Formula Based	KVAR		\$ -	\$ -
161 kV	Formula Based	KVAR		\$ -	\$ -
115 kV	Formula Based	KVAR		\$ -	\$ -
	Facilities Cost			\$ 63,939,730	\$ 72,006,521.02
	Losses			\$ -	\$ -
	Total Cost			\$ 63,939,730	\$ 72,006,521.02

**Alternative 7 - Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with
Big Stone - 6 Mile Grove - Willmar 230 kV Line with
Benson - 6 Mile Grove - Kerkhoven 115 kV Line**

Line Costs: Big Stone - Marietta - Burr Jct. - Canby - Granite Falls 230 kV Line = 90 Miles
Big Stone - 6 Mile Grove - Willmar 230 kV Line = 103 Miles
Benson - 6 Mile Grove - Kerkhoven 115 kV Line = 7 Miles*

of Terminals: Big Stone (2); Canby (3); Granite Falls (2) = 7 230 kV Terminals
Big Stone (2); 6 Mile Grove (5); Willmar (1) = 8 230 kV Terminals
6 Mile Grove (3); Canby (1) = 4 115 kV Terminals

Xfmr Costs: Canby (1 - 230/115); 6 Mile Grove (1 - 230/115)
230/115 kV Xfmr = 125 MVA (Similar to Rugby)
230/115 kV Xfmr = 336 MVA (Obtained from GRE)

*Benson to Kerkhoven 115 kV Line already exists - would only need to add 7 miles for the new 6 Mile Grove Sub

Facility Choices and Price (1998 \$)			Transmission Alternative 8		2% Inflation Rate
Facility	Unit Cost (1998\$)	Unit	Quantity	Cost	Conversion to 2004 Dollars
Lines:					
500 kV	\$515,000	mile		\$ -	\$ -
345 kV	\$364,000	mile		\$ -	\$ -
230 kV	\$245,000	mile	247	\$ 60,515,000	\$ 68,149,718.80
161 kV	\$229,000	mile		\$ -	\$ -
115 kV	\$204,000	mile	7	\$ 1,428,000	\$ 1,608,159.93

Complete Line Terminal [breaker(s), bay, disconnects, relaying, etc]					2% Inflation Rate for Conversion to 2004 Dollars
500 kV	\$1,800,000	Each		\$ -	\$ -
345 kV	\$900,000	Each		\$ -	\$ -
230 kV	\$600,000	Each	18	\$ 10,800,000	\$ 12,162,554.13
161 kV	\$450,000	Each		\$ -	\$ -
115 kV	\$400,000	Each	4	\$ 1,600,000	\$ 1,801,859.87

Auto Transformers:					2004 Dollars
500 kV HV	Formula Based	MVA		\$ -	\$ -
345 kV HV	Formula Based	MVA		\$ -	\$ -
230 kV HV	Formula Based	MVA	125	\$ 1,041,250	\$ 1,172,616.62
230 kV HV	Formula Based	MVA	336	\$ 1,870,480	\$ 2,106,464.28
161 kV HV	Formula Based	MVA		\$ -	\$ -

Capacitors:					2004 Dollars
345 kV	Formula Based	KVAR		\$ -	\$ -
230 kV	Formula Based	KVAR		\$ -	\$ -
161 kV	Formula Based	KVAR		\$ -	\$ -
115 kV	Formula Based	KVAR		\$ -	\$ -
	Facilities Cost			\$ 77,254,730	\$ 87,001,373.64
	Losses			\$ -	\$ -
	Total Cost			\$ 77,254,730	\$ 87,001,373.64

**Alternative 8 - Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with
Big Stone - 6 Mile Grove - Willmar - McLeod 230 kV Line with
Benson - 6 Mile Grove - Kerkhoven 115 kV Line**

Line Costs: Big Stone - Marietta - Burr Jct. - Canby - Granite Falls 230 kV Line = 90 Miles
Big Stone - 6 Mile Grove - Willmar - McLeod 230 kV Line = 157 Miles
Benson - 6 Mile Grove - Kerkhoven 115 kV Line = 7 Miles*

of Terminals: Big Stone (2); Canby (3); Granite Falls (2) = 7 230 kV Terminals
Big Stone (2); 6 Mile Grove (5); Willmar (2); McLeod (2) = 11 230 kV Terminals
6 Mile Grove (3); Canby (1) = 4 115 kV Terminals

Xfmr Costs: Canby (1 - 230/115); 6 Mile Grove (1 - 230/115)
230/115 kV Xfmr = 125 MVA (Similar to Rugby)
230/115 kV Xfmr = 336 MVA (Obtained from GRE)

*Benson to Kerkhoven 115 kV Line already exists - would only need to add 7 miles for the new 6 Mile Grove Sub

Facility Choices and Price (1998 \$)			Transmission Alternative 9		2% Inflation Rate
Facility	Unit Cost (1998\$)	Unit	Quantity	Cost	Conversion to 2004 Dollars
Lines:					
500 kV	\$515,000	mile		\$ -	\$ -
345 kV	\$364,000	mile	44	\$ 16,016,000	\$ 18,036,617.31
230 kV	\$245,000	mile	247	\$ 60,515,000	\$ 68,149,718.80
161 kV	\$229,000	mile		\$ -	\$ -
115 kV	\$204,000	mile	7	\$ 1,428,000	\$ 1,608,159.93

Complete Line Terminal [breaker(s), bay, disconnects, relaying, etc]					2% Inflation Rate for Conversion to 2004 Dollars
500 kV	\$1,800,000	Each		\$ -	\$ -
345 kV	\$900,000	Each	8	\$ 7,200,000	\$ 8,108,369.42
230 kV	\$600,000	Each	20	\$ 12,000,000	\$ 13,513,949.03
161 kV	\$450,000	Each		\$ -	\$ -
115 kV	\$400,000	Each	4	\$ 1,600,000	\$ 1,801,859.87

Auto Transformers:					2004 Dollars
500 kV HV	Formula Based	MVA		\$ -	\$ -
345 kV HV	Formula Based	MVA	336	\$ 3,152,000	\$ 3,549,663.95
230 kV HV	Formula Based	MVA	125	\$ 1,041,250	\$ 1,172,616.62
230 kV HV	Formula Based	MVA	336	\$ 1,870,480	\$ 2,106,464.28
161 kV HV	Formula Based	MVA		\$ -	\$ -

Capacitors:					2004 Dollars
345 kV	Formula Based	KVAR		\$ -	\$ -
230 kV	Formula Based	KVAR		\$ -	\$ -
161 kV	Formula Based	KVAR		\$ -	\$ -
115 kV	Formula Based	KVAR		\$ -	\$ -
Facilities Cost				\$ 104,822,730	\$ 118,047,419.21
Losses				\$ -	\$ -
Total Cost				\$ 104,822,730	\$ 118,047,419.21

**Alternative 9 - Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with
Big Stone - 6 Mile Grove - Willmar - McLeod 230 kV Line with
Benson - 6 Mile Grove - Kerkhoven 115 kV Line with
Dickinson - Carver County - Wilmarth 345 kV Line**

**Line Costs: Big Stone - Marietta - Burr Jct. - Canby - Granite Falls 230 kV Line = 90 Miles
Big Stone - 6 Mile Grove - Willmar - McLeod 230 kV Line = 157 Miles
Benson - 6 Mile Grove - Kerkhoven 115 kV Line = 7 Miles*
Dickinson - Carver County - Wilmarth 345 kV Line = 44 Miles**

**# of Terminals: Big Stone (2); Canby (3); Granite Falls (2) = 7 230 kV Terminals
Big Stone (2); 6 Mile Grove (5); Willmar (2); McLeod (2) = 11 230 kV Terminals
6 Mile Grove (3); Canby (1) = 4 115 kV Terminals
Dickinson (2); Carver County (3); Wilmarth (3) = 8 345 kV Terminals
Carver County (2) = 2 230 kV Terminals**

**Xfmr Costs: Canby (1 - 230/115); 6 Mile Grove (1 - 230/115); Carver County (1 - 345/230)
345/230 kV Xfmr = 336 MVA (Similar to Xcel's Red Rock)
230/115 kV Xfmr = 125 MVA (Similar to Rugby)
230/115 kV Xfmr = 336 MVA (Obtained from GRE)**

*Benson to Kerkhoven 115 kV Line already exists - would only need to add 7 miles for the new 6 Mile Grove Sub

Facility Choices and Price (1998 \$)			Transmission Alternative 9b		2% Inflation Rate
Facility	Unit Cost (1998\$)	Unit	Quantity	Cost	Conversion to 2004 Dollars
Lines:					
500 kV	\$515,000	mile		\$ -	\$ -
345 kV	\$364,000	mile	48	\$ 17,472,000	\$ 19,676,309.79
230 kV	\$245,000	mile	247	\$ 60,515,000	\$ 68,149,718.80
161 kV	\$229,000	mile		\$ -	\$ -
115 kV	\$204,000	mile	7	\$ 1,428,000	\$ 1,608,159.93

Complete Line Terminal [breaker(s), bay, disconnects, relaying, etc]					2% Inflation Rate for Conversion to 2004 Dollars
500 kV	\$1,800,000	Each		\$ -	\$ -
345 kV	\$900,000	Each	7	\$ 6,300,000	\$ 7,094,823.24
230 kV	\$600,000	Each	21	\$ 12,600,000	\$ 14,189,646.48
161 kV	\$450,000	Each		\$ -	\$ -
115 kV	\$400,000	Each	5	\$ 2,000,000	\$ 2,252,324.84

Auto Transformers:				2004 Dollars	
500 kV HV	Formula Based	MVA		\$ -	\$ -
345 kV HV	Formula Based	MVA	336	\$ 3,152,000	\$ 3,549,663.95
230 kV HV	Formula Based	MVA	125	\$ 1,041,250	\$ 1,172,616.62
230 kV HV	Formula Based	MVA	336	\$ 1,870,480	\$ 2,106,464.28
161 kV HV	Formula Based	MVA		\$ -	\$ -

Capacitors:			2004 Dollars		
345 kV	Formula Based	KVAR		\$ -	\$ -
230 kV	Formula Based	KVAR		\$ -	\$ -
161 kV	Formula Based	KVAR		\$ -	\$ -
115 kV	Formula Based	KVAR		\$ -	\$ -
	Facilities Cost			\$ 106,378,730	\$ 119,799,727.94
	Losses			\$ -	\$ -
	Total Cost			\$ 106,378,730	\$ 119,799,727.94

Alternative 9b - Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - 6 Mile Grove - Willmar - McLeod 230 kV Line with Benson - 6 Mile Grove - Kerkhoven 115 kV Line with Dickinson - West Waconia - Blue Lake 345 kV Line

Line Costs: Big Stone - Marietta - Burr Jct. - Canby - Granite Falls 230 kV Line = 90 Miles
Big Stone - 6 Mile Grove - Willmar - McLeod 230 kV Line = 157 Miles
Benson - 6 Mile Grove - Kerkhoven 115 kV Line = 7 Miles*
Dickinson - West Waconia - Blue Lake 345 kV Line = 48 Miles**

of Terminals: Big Stone (2); Canby (3); Granite Falls (2) = 7 230 kV Terminals
Big Stone (2); 6 Mile Grove (5); Willmar (2); McLeod (2) = 11 230 kV Terminals
6 Mile Grove (3); Canby (1); West Waconia (1) = 5 115 kV Terminals
Dickinson (2); West Waconia (3); Blue Lake (2) = 7 345 kV Terminals
West Waconia (3) = 3 230 kV Terminals

Xfmr Costs: Canby (1 - 230/115); 6 Mile Grove (1 - 230/115); West Waconia (1 - 345/230)
West Waconia (1 - 230/115)
345/230 kV Xfmr = 336 MVA (Similar to Xcel's Red Rock)
230/115 kV Xfmr = 125 MVA (Similar to Rugby)
230/115 kV Xfmr = 336 MVA (Similar to Xcel's Black Dog)
230/115 kV Xfmr = 336 MVA (Obtained from GRE)

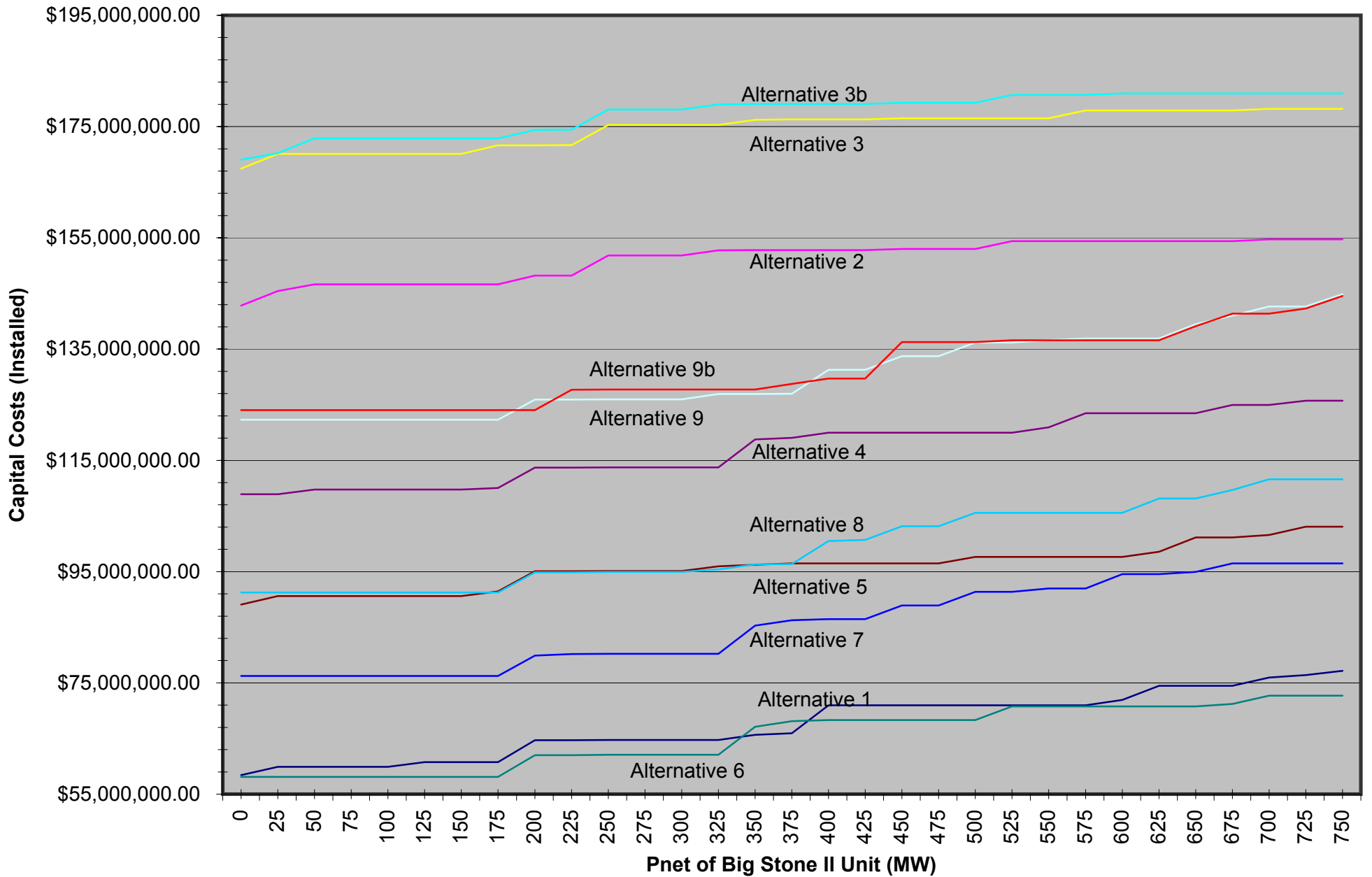
*Benson to Kerkhoven 115 kV Line already exists - would only need to add 7 miles for the new 6 Mile Grove Sub

**West Waconia to Blue Lake would actually be an uprate of the existing 230 kV Line to Black Dog

APPENDIX D

Transmission Constraints Identified During TLTG Analysis

Total Installed Capital Cost of Xmsn Alternatives with Increasing Size of Big Stone II Unit



Alternative 1
Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with
Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate

BGSII at 451 MW to 5 Original Partners

Scheduling 300 MW (total of 851 MW) to GRE and City of Hutchinson

Incremental MW increase from BGSII = 451 MW	Facility Overloaded		Applicable MVA Rating	Outage		Remedy	Miles/Qty	Cost	Installed Cost	
	From Bus	To Bus		From Bus	To Bus				Incremental	Cumulative
139.5	63314 BIGSTON4 230	66666 BIGSTN2G22.0	590	BASE CASE		Use Larger Xfmr	750 MVA		\$ -	\$ -
150.5	63216 ORTONVL7 115	63321 ORTNVLEY 230	156	63314 [BIGSTON4 230]	63320 [ORTNVLE4 230]	Use Larger Xfmr	200 MVA	\$951,325.70	\$ 951,325.70	\$ 951,325.70
150.5	63320 ORTNVLE4 230	63321 ORTNVLEY 230	156	63314 [BIGSTON4 230]	63320 [ORTNVLE4 230]	Use Larger Xfmr	200 MVA		\$ -	\$ 951,325.70
165.1	63327 HANKSON4 230	63329 WAHPETN4 230	385	63369 [JAMESTN3 345]	66791 [CENTER 3 345]	Reconductor	26	\$98,000/mi	\$ 2,548,000.00	\$3,499,325.70
245.1	63314 BIGSTON4 230	63320 ORTNVLE4 230	429	63314 [BIGSTON4 230]	63325 [BROWNSV4 230]	Use Beefy Cond.*	5.2	\$49,000/mi	\$ 254,800.00	\$3,754,125.70
245.5	63320 ORTNVLE4 230	63337 JHNSNJ4 230	429	63314 [BIGSTON4 230]	63325 [BROWNSV4 230]	Use Beefy Cond.*	25	\$49,000/mi	\$ 1,225,000.00	\$4,979,125.70
274.9	60190 BLK DOG7 115	60258 WILSON 7 115	310	60190 [BLK DOG7 115]	60258 [WILSON 7 115]	Reconductor	4.5	\$98,000/mi	\$ 441,000.00	\$5,420,125.70
297.5	63337 JHNSNJ4 230	66554 MORRIS 4 230	429	63314 [BIGSTON4 230]	63325 [BROWNSV4 230]	Use Beefy Cond.*	15.5	\$49,000/mi	\$ 759,500.00	\$6,179,625.70

*Must use conductor larger than 954 ACSR - 1272 ACSR?

Alternative 2
Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with
Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with
Big Stone - Willmar - Blue Lake 345 kV Line

BGSII at 451 MW to 5 Original Partners

Scheduling 300 MW (total of 851 MW) to GRE and City of Hutchinson

Incremental MW increase from Big Stone II Unit	Facility Overloaded		Applicable MVA Rating	Outage		Remedy	Miles/Qty	Cost	Installed Cost	
	From Bus	To Bus		From Bus	To Bus				Incremental	Cumulative
72.4	63314 BIGSTON4 230	63361 BIGSTN3 345	420	60101 [FORBES 2 500] 61550 [FORB1JCT 230] 60101 [FORBES 2 500] 61552 [FORB2JCT 230] 61552 [FORB2JCT 230] 60101 [FORBES 2 500] 67564 [DORSEY 2 500] 60173 [ROSEAUN2 500] 60174 [ROSEAUS2 500]	61550 [FORB1JCT 230] 61624 [FORBES 4 230] 61551 [FORB1TR934.5] 61552 [FORB2JCT 230] 61624 [FORBES 4 230] 61553 [FORB2TR934.5] 60198 [CHIS-N 2 500] 60173 [ROSEAUN2 500] 60174 [ROSEAUS2 500] 60101 [FORBES 2 500]	Use Larger Xfmr	400 MVA	\$1,405,450.70	\$ 1,405,450.70	\$1,405,450.70
139.5	63314 BIGSTON4 230	66666 BIGSTN2G22.0	590	BASE CASE		Use Larger Xfmr	750 MVA		\$ -	\$1,405,450.70
261.2	60150 MNVLTAP4 230	66550 GRANITF4 230	350	60192 [BLUE LK3 345]	63057 [WLLMAR3 345]	Reconductor	3	\$98,000/mi	\$ 294,000.00	\$1,699,450.70

Alternative 3
Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with
Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with
Big Stone - Willmar - Carver County 345 kV Line with
Dickinson - Carver County - Wilmarth 345 kV Line

BGSII at 451 MW to 5 Original Partners

Scheduling 300 MW (total of 851 MW) to GRE and City of Hutchinson

Incremental MW increase from Big Stone II Unit	Facility Overloaded		Applicable MVA Rating	Outage		Remedy	Miles/Qty	Cost	Installed Cost	
	From Bus	To Bus		From Bus	To Bus				Incremental	Cumulative
	135.8	63314 BIGSTON4 230		63361 BIGSTN3 345	336				BASE CASE	
139.5	63314 BIGSTON4 230	66666 BIGSTN2G22.0	590	BASE CASE		Use Larger Xfmr	750 MVA		\$ -	\$1,405,450.70
238.7	60150 MNVLTAP4 230	66550 GRANITF4 230	350	60055 [CRVRCO4 345]	63057 [WLLMAR3 345]	Reconductor	3	\$98,000/mi	\$ 294,000.00	\$1,699,450.70

Alternative 3b
Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with
Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with
Big Stone - Willmar - West Waconia 345 kV Line with
Dickinson - West Waconia - Blue Lake 345 kV Line

BGSII at 451 MW to 5 Original Partners

Scheduling 300 MW (total of 851 MW) to GRE and City of Hutchinson

Incremental MW increase from Big Stone II Unit	Facility Overloaded		Applicable MVA Rating	Outage		Remedy	Miles/Qty	Cost	Installed Cost	
	From Bus	To Bus		From Bus	To Bus				Incremental	Cumulative
86	63314 BIGSTON4 230	63361 BIGSTN3 345	420	60101 [FORBES 2 500] 61550 [FORB1JCT 230] 61550 [FORB1JCT 230] 60101 [FORBES 2 500] 61552 [FORB2JCT 230] 61552 [FORB2JCT 230] 60101 [FORBES 2 500] 67564 [DORSEY 2 500] 60173 [ROSEAUN2 500] 60174 [ROSEAUS2 500]	61550 [FORB1JCT 230] 61624 [FORBES 4 230] 61551 [FORB1TR934.5] 61552 [FORB2JCT 230] 61624 [FORBES 4 230] 61553 [FORB2TR934.5] 60198 [CHIS-N 2 500] 60173 [ROSEAUN2 500] 60174 [ROSEAUS2 500] 60101 [FORBES 2 500]	Use Larger Xfmr	400 MVA	\$1,405,450.70	\$ 1,405,450.70	\$ 1,405,450.70
139.5	63314 BIGSTON4 230	66666 BIGSTN2G22.0	590	BASE CASE		Use Larger Xfmr	750 MVA		\$ -	\$ 1,405,450.70
167.5	60150 MNVLTAP4 230	66550 GRANITF4 230	350	60055 [WWCNIA3 345]	63057 [WLLMAR3 345]	Reconductor	3	\$98,000/mi	\$ 294,000.00	\$ 1,699,450.70

Alternative 4
Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with
Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with
Big Stone - Blair - White 345 kV Line with
Ivanhoe - Lyon County 115 kV Line

BGSII at 451 MW to 5 Original Partners

Scheduling 300 MW (total of 851 MW) to GRE and City of Hutchinson

Incremental MW increase from Big Stone II Unit	Facility Overloaded		Applicable MVA Rating	Outage		Remedy	Miles/Qty	Cost	Installed Cost	
	From Bus	To Bus		From Bus	To Bus				Incremental	Cumulative
104.6	63216 ORTONVL7 115	63321 ORTNVLEY 230	156	63314 [BIGSTON4 230]	63320 [ORTNVLE4 230]	Use Larger Xfmr	200 MVA	\$951,325.70	\$ 951,325.70	\$ 951,325.70
104.6	63320 ORTNVLE4 230	63321 ORTNVLEY 230	156	63314 [BIGSTON4 230]	63320 [ORTNVLE4 230]	Use Larger Xfmr	200 MVA		\$ -	\$ 951,325.70
133.7	63327 HANKSON4 230	63329 WAHPETN4 230	385	63369 [JAMESTN3 345]	66791 [CENTER 3 345]	Reconductor	26	\$98,000/mi	\$ 2,548,000.00	\$ 3,499,325.70
139.5	63314 BIGSTON4 230	66666 BIGSTN2G22.0	590	BASE CASE		Use Larger Xfmr	750 MVA		\$ -	\$ 3,499,325.70
222.9	63314 BIGSTON4 230	63320 ORTNVLE4 230	429	63314 [BIGSTON4 230]	63325 [BROWNSV4 230]	Use Beefy Cond.*	5.2	\$49,000/mi	\$ 254,800.00	\$ 3,754,125.70
224.3	63320 ORTNVLE4 230	63337 JHNSNJT4 230	429	63314 [BIGSTON4 230]	63325 [BROWNSV4 230]	Use Beefy Cond.*	25	\$49,000/mi	\$ 1,225,000.00	\$ 4,979,125.70
281.3	63337 JHNSNJT4 230	66554 MORRIS 4 230	429	63314 [BIGSTON4 230]	63325 [BROWNSV4 230]	Use Beefy Cond.*	15.5	\$49,000/mi	\$ 759,500.00	\$ 5,738,625.70

*Must use conductor larger than 954 ACSR - 1272 ACSR?

Alternative 5
Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with
Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with
Blair - Lyon County 230 kV Line with
Lyon County - Franklin 115 kV Line

BGSII at 451 MW to 5 Original Partners

Scheduling 300 MW (total of 851 MW) to GRE and City of Hutchinson

Incremental MW increase from Big Stone II Unit	Facility Overloaded		Applicable MVA Rating	Outage		Remedy	Miles/Qty	Cost	Installed Cost	
	From Bus	To Bus		From Bus	To Bus				Incremental	Cumulative
	42.3	60287 NOBLES 7 115		60369 FENTON 7 115	310				60283 [YANKEE 7 115]	66538 [WHITE 7 115]
139.5	63314 BIGSTON4 230	66666 BIGSTN2G22.0	590	BASE CASE		Use Larger Xfmr	750 MVA		\$ -	\$1,176,000.00
175.7	63320 ORTNVLE4 230	63321 ORTNVLEY 230	156	63314 [BIGSTON4 230]	63320 [ORTNVLE4 230]	Use Larger Xfmr	200 MVA	\$951,325.70	\$ 951,325.70	\$2,127,325.70
175.7	63216 ORTONVL7 115	63321 ORTNVLEY 230	156	63314 [BIGSTON4 230]	63320 [ORTNVLE4 230]	Use Larger Xfmr	200 MVA		\$ -	\$2,127,325.70
192.9	63327 HANKSON4 230	63329 WAHPETN4 230	385	63369 [JAMESTN3 345]	66791 [CENTER 3 345]	Reconductor	26	\$98,000/mi	\$ 2,548,000.00	\$4,675,325.70
242.7	60190 BLK DOG7 115	60258 WILSON 7 115	310	60190 [BLK DOG7 115]	60258 [WILSON 7 115]	Reconductor	4.5	\$98,000/mi	\$ 441,000.00	\$5,116,325.70
273.3	63314 BIGSTON4 230	63320 ORTNVLE4 230	429	63314 [BIGSTON4 230]	63325 [BROWNSV4 230]	Use Beefy Cond.*	5.2	\$49,000/mi	\$ 254,800.00	\$5,371,125.70
273.6	63320 ORTNVLE4 230	63337 JHNSNJ4 230	429	63314 [BIGSTON4 230]	63325 [BROWNSV4 230]	Use Beefy Cond.*	25	\$49,000/mi	\$ 1,225,000.00	\$6,596,125.70

*Must use conductor larger than 954 ACSR - 1272 ACSR?

Alternative 6
Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with
Big Stone - 6 Mile Grove 230 kV Line with
Benson - 6 Mile Grove - Kerkhoven 115 kV Line

BGSII at 451 MW to 5 Original Partners

Scheduling 300 MW (total of 851 MW) to GRE and City of Hutchinson

Incremental MW increase from Big Stone II Unit	Facility Overloaded		Applicable MVA Rating	Outage		Remedy	Miles/Qty	Cost	Installed Cost	
	From Bus	To Bus		From Bus	To Bus				Incremental	Cumulative
81.2	62003 JOH NJCT7 115	63216 ORTONVL7 115	106.2	63314 [BIGSTON4 230]	63320 [6MI GRV4 230]	Reconductor	25	\$98,000/mi	\$ 2,450,000.00	\$ 2,450,000.00
139.5	63314 BIGSTON4 230	66666 BIGSTN2G22.0	590	BASE CASE		Use Larger Xfmr	750 MVA		\$ -	\$ 2,450,000.00
148	63327 HANKSON4 230	63329 WAHPETN4 230	385	63369 [JAMESTN3 345]	66791 [CENTER 3 345]	Coyote Reduction	26		\$ -	\$ 2,450,000.00
222.5	60190 BLK DOG7 115	60258 WILSON 7 115	310	60190 [BLK DOG7 115]	60258 [WILSON 7 115]	Reconductor	4.5	\$98,000/mi	\$ 441,000.00	\$ 2,891,000.00
265.4	62003 JOH NJCT7 115	66555 MORRIS 7 115	107.8	63314 [BIGSTON4 230]	63320 [6MI GRV4 230]	Reconductor	15.5	\$98,000/mi	\$ 1,519,000.00	\$ 4,410,000.00

Alternative 7
Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with
Big Stone - 6 Mile Grove - Willmar 230 kV Line with
Benson - 6 Mile Grove - Kerkhoven 115 kV Line

BGSII at 451 MW to 5 Original Partners

Scheduling 300 MW (total of 851 MW) to GRE and City of Hutchinson

Incremental MW increase from Big Stone II Unit	Facility Overloaded		Applicable MVA Rating	Outage		Remedy	Miles/Qty	Cost	Installed Cost	
	From Bus	To Bus		From Bus	To Bus				Incremental	Cumulative
	53.2	62003 JOHNNCT7 115		63216 ORTONVL7 115	106.2				63314 [BIGSTON4 230]	63320 [6MI GRV4 230]
106.4	60156 PYNSVIL7 115	60760 PAYNES 869.0	65	60156 [PYNSVIL7 115]	60162 [WAKEFLD7 115]	New Parallel Xfmr	52 MVA	\$603,334.76	\$ 603,334.76	\$ 3,053,334.76
139.5	63314 BIGSTON4 230	66666 BIGSTN2G22.0	590	BASE CASE		Use Larger Xfmr	750 MVA			\$ 3,053,334.76
160.5	63327 HANKSON4 230	63329 WAHPETN4 230	385	63369 [JAMESTN3 345]	66791 [CENTER 3 345]	Reconductor	26	\$98,000/mi	\$2,548,000.00	\$ 5,601,334.76
208.9	60190 BLK DOG7 115	60258 WILSON 7 115	310	60190 [BLK DOG7 115]	60258 [WILSON 7 115]	Reconductor	4.5	\$98,000/mi	\$ 441,000.00	\$ 6,042,334.76
235.8	62003 JOHNNCT7 115	66555 MORRIS 7 115	107.8	63314 [BIGSTON4 230]	63320 [6MI GRV4 230]	Reconductor	15.5	\$98,000/mi	\$1,519,000.00	\$ 7,561,334.76

Alternative 8
Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with
Big Stone - 6 Mile Grove - Willmar - McLeod 230 kV Line with
Benson - 6 Mile Grove - Kerkhoven 115 kV Line

BGSII at 451 MW to 5 Original Partners

Scheduling 300 MW (total of 851 MW) to GRE and City of Hutchinson

Incremental MW increase from Big Stone II Unit	Facility Overloaded		Applicable MVA Rating	Outage		Remedy	Miles/Qty	Cost	Installed Cost	
	From Bus	To Bus		From Bus	To Bus				Incremental	Cumulative
	41.9	62003 JOHNNCT7 115		63216 ORTONVL7 115	106.2				63314 [BIGSTON4 230]	63320 [6MI GRV4 230]
139.5	63314 BIGSTON4 230	66666 BIGSTN2G22.0	590	BASE CASE		Use Larger Xfmr	750 MVA			\$ 2,450,000.00
177.5	63327 HANKSON4 230	63329 WAHPETN4 230	385	63369 [JAMESTN3 345]	66791 [CENTER 3 345]	Reconductor	26	\$98,000/mi	\$ 2,548,000.00	\$ 4,998,000.00
222.9	62003 JOHNNCT7 115	66555 MORRIS 7 115	107.8	63314 [BIGSTON4 230]	63320 [6MI GRV4 230]	Reconductor	15.5	\$98,000/mi	\$ 1,519,000.00	\$ 6,517,000.00
235.1	60150 MNVLTAP4 230	66550 GRANITF4 230	350	63050 [WILLMAR4 230]	66550 [GRANITF4 230]	Reconductor	3	\$98,000/mi	\$ 294,000.00	\$ 6,811,000.00
245.5	63054 PANTHER4 230	60742 PANTHER869.0	87.5	62980 [MCLEOD 4 230]	63054 [PANTHER4 230]	New Parallel Xfmr	70 MVA	\$929,196.61	\$ 929,196.61	\$ 7,740,196.61
249.5	62982 HUTCHMN7 115	62986 HUTCHMN869.0	83.3	60189 [BLK DOG4 230]	60190 [BLK DOG7 115]	New Parallel Xfmr	83.3 MVA	\$729,243.77	\$ 729,243.77	\$ 8,469,440.38

Alternative 9
Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with
Big Stone - 6 Mile Grove - Willmar - McLeod 230 kV Line with
Benson - 6 Mile Grove - Kerkhoven 115 kV Line with
Dickinson - Carver County - Wilmarth 345 kV Line

BGSII at 451 MW to 5 Original Partners

Scheduling 300 MW (total of 851 MW) to GRE and City of Hutchinson

Incremental MW increase from Big Stone II Unit	Facility Overloaded		Applicable MVA Rating	Outage		Remedy	Miles/Qty	Cost	Installed Cost	
	From Bus	To Bus		From Bus	To Bus				Incremental	Cumulative
39.2	62003 JOHNNCT7 115	63216 ORTONVL7 115	106.2	63314 [BIGSTON4 230]	63320 [6MI GRV4 230]	Reconductor	25	\$98,000/mi	\$ 2,450,000.00	\$ 2,450,000.00
100.5	60190 BLK DOG7 115	60258 WILSON 7 115	310	60190 [BLK DOG7 115]	60258 [WILSON 7 115]	Reconductor	4.5	\$98,000/mi	\$ 441,000.00	\$ 2,891,000.00
135.1	60150 MNVLTAP4 230	66550 GRANITF4 230	350	60101 [FORBES 2 500] 61550 [FORB1JCT 230] 61550 [FORB1JCT 230] 60101 [FORBES 2 500] 61552 [FORB2JCT 230] 61552 [FORB2JCT 230] 60101 [FORBES 2 500] 67564 [DORSEY 2 500] 60173 [ROSEAUN2 500] 60174 [ROSEAUS2 500]	61550 [FORB1JCT 230] 61624 [FORBES 4 230] 61551 [FORB1TR934.5] 61552 [FORB2JCT 230] 61624 [FORBES 4 230] 61553 [FORB2TR934.5] 60198 [CHIS-N 2 500] 60173 [ROSEAUN2 500] 60174 [ROSEAUS2 500] 60101 [FORBES 2 500]	Reconductor	3	\$98,000/mi	\$ 294,000.00	\$ 3,185,000.00
139.5	63314 BIGSTON4 230	66666 BIGSTN2G22.0	590	BASE CASE		Use Larger Xfmr	750 MVA		\$ -	\$ 3,185,000.00
148	60050 WLMRTHTP 345	60055 CRVRCO4 345	792	63030 [DICKNSN3 345] 60270 [MPLEGV13 345] 63030 [DICKNSN3 345] 63030 [DICKNSN3 345]	60270 [MPLEGV13 345] 60233 [PARKERS3 345] 60202 [COON CK3 345] 62925 [DICKNSN7 115]	Use Beefy Cond.**	19.5	2-1272 ACSR	\$ -	\$ 3,185,000.00
198.5	63327 HANKSON4 230	63329 WAHPETN4 230	385	63369 [JAMESTN3 345]	66791 [CENTER 3 345]	Reconductor	26	\$98,000/mi	\$ 2,548,000.00	\$ 5,733,000.00
220.2	62003 JOHNNCT7 115	66555 MORRIS 7 115	107.8	63314 [BIGSTON4 230]	63320 [6MI GRV4 230]	Reconductor	15.5	\$98,000/mi	\$ 1,519,000.00	\$ 7,252,000.00
236.9	63054 PANTHER4 230	60742 PANTHER869.0	87.5	62980 [MCLEOD 4 230]	63054 [PANTHER4 230]	New Parallel Xfmr	70 MVA	\$929,196.61	\$ 929,196.61	\$ 8,181,196.61
241.9	62982 HUTCHMN7 115	62986 HUTCHMN869.0	83.3	60053 [CARVRCO4 230]	62980 [MCLEOD 4 230]	New Parallel Xfmr	83.3 MVA	\$729,243.77	\$ 729,243.77	\$ 8,910,440.38
297.7	63314 BIGSTON4 230	63320 6MI GRV4 230	430	63314 [BIGSTON4 230]	63325 [BROWNSV4 230]	Use Beefy Cond.*	45.6	\$49,000/mi	\$ 2,234,400.00	\$ 11,144,840.38

*Must use conductor larger than 954 ACSR - 1272 ACSR?

**Must use conductor larger than 2-1272 ACSR

Alternative 9b
Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with
Big Stone - 6 Mile Grove - Willmar - McLeod 230 kV Line with
Benson - 6 Mile Grove - Kerkhoven 115 kV Line with
Dickinson - West Waconia - Blue Lake 345 kV Line

BGSII at 451 MW to 5 Original Partners

Scheduling 300 MW (total of 851 MW) to GRE and City of Hutchinson

Incremental MW increase from Big Stone II Unit	Facility Overloaded		Applicable MVA Rating	Outage		Remedy	Miles/Qty	Cost	Installed Cost	
	From Bus	To Bus		From Bus	To Bus				Incremental	Cumulative
81.8	60150 MNVLTAP4 230	66550 GRANITF4 230	350	60101 [FORBES 2 500] 61550 [FORB1JCT 230] 61550 [FORB1JCT 230] 60101 [FORBES 2 500] 61552 [FORB2JCT 230] 61552 [FORB2JCT 230] 60101 [FORBES 2 500] 67564 [DORSEY 2 500] 60173 [ROSEAUN2 500] 60174 [ROSEAUS2 500]	61550 [FORB1JCT 230] 61624 [FORBES 4 230] 61551 [FORB1TR934.5] 61552 [FORB2JCT 230] 61624 [FORBES 4 230] 61553 [FORB2TR934.5] 60198 [CHIS-N 2 500] 60173 [ROSEAUN2 500] 60174 [ROSEAUS2 500] 60101 [FORBES 2 500]	Reconductor	3	\$98,000/mi	\$ 294,000.00	\$ 294,000.00
139.5	63314 BIGSTON4 230	66666 BIGSTN2G22.0	590	BASE CASE		Use Larger Xfmr	750 MVA		\$ -	\$ 294,000.00
195.2	60055 WSTWCNA 345	60192 BLUE LK3 345	792	63030 [DICKNSN3 345] 60270 [MPLEGV13 345] 63030 [DICKNSN3 345] 63030 [DICKNSN3 345]	60270 [MPLEGV13 345] 60233 [PARKERS3 345] 60202 [COON CK3 345] 62925 [DICKNSN7 115]	Use Beefy Cond.**	24	2-1272 ACSR	\$ -	\$ 294,000.00
199.1	63327 HANKSON4 230	63329 WAHPETN4 230	385	63369 [JAMESTN3 345]	66791 [CENTER 3 345]	Reconductor	26	\$98,000/mi	\$ 2,548,000.00	\$ 2,842,000.00
222.3	62003 JOH NJCT7 115	66555 MORRIS 7 115	107.8	63314 [BIGSTON4 230]	63320 [6MI GRV4 230]	Reconductor	15.5	\$98,000/mi	\$ 1,519,000.00	\$ 4,361,000.00
226.4	62982 HUTCHMN7 115	62986 HUTCHMN869.0	83.3	60053 [WSTWCNA4 230]	62980 [MCLEOD 4 230]	New Parallel Xfmr	83.3 MVA	\$729,243.77	\$ 729,243.77	\$ 5,090,243.77
285.9	63054 PANTHER4 230	60742 PANTHER869.0	87.5	62980 [MCLEOD 4 230]	63054 [PANTHER4 230]	New Parallel Xfmr	70 MVA	\$929,196.61	\$ 929,196.61	\$ 6,019,440.38
294.3	63314 BIGSTON4 230	63320 6MI GRV4 230	430	63314 [BIGSTON4 230]	63325 [BROWNSV4 230]	Use Beefy Cond.*	45.6	\$49,000/mi	\$ 2,234,400.00	\$ 8,253,840.38

*Must use conductor larger than 954 ACSR - 1272 ACSR?

**Must use conductor larger than 2-1272 ACSR

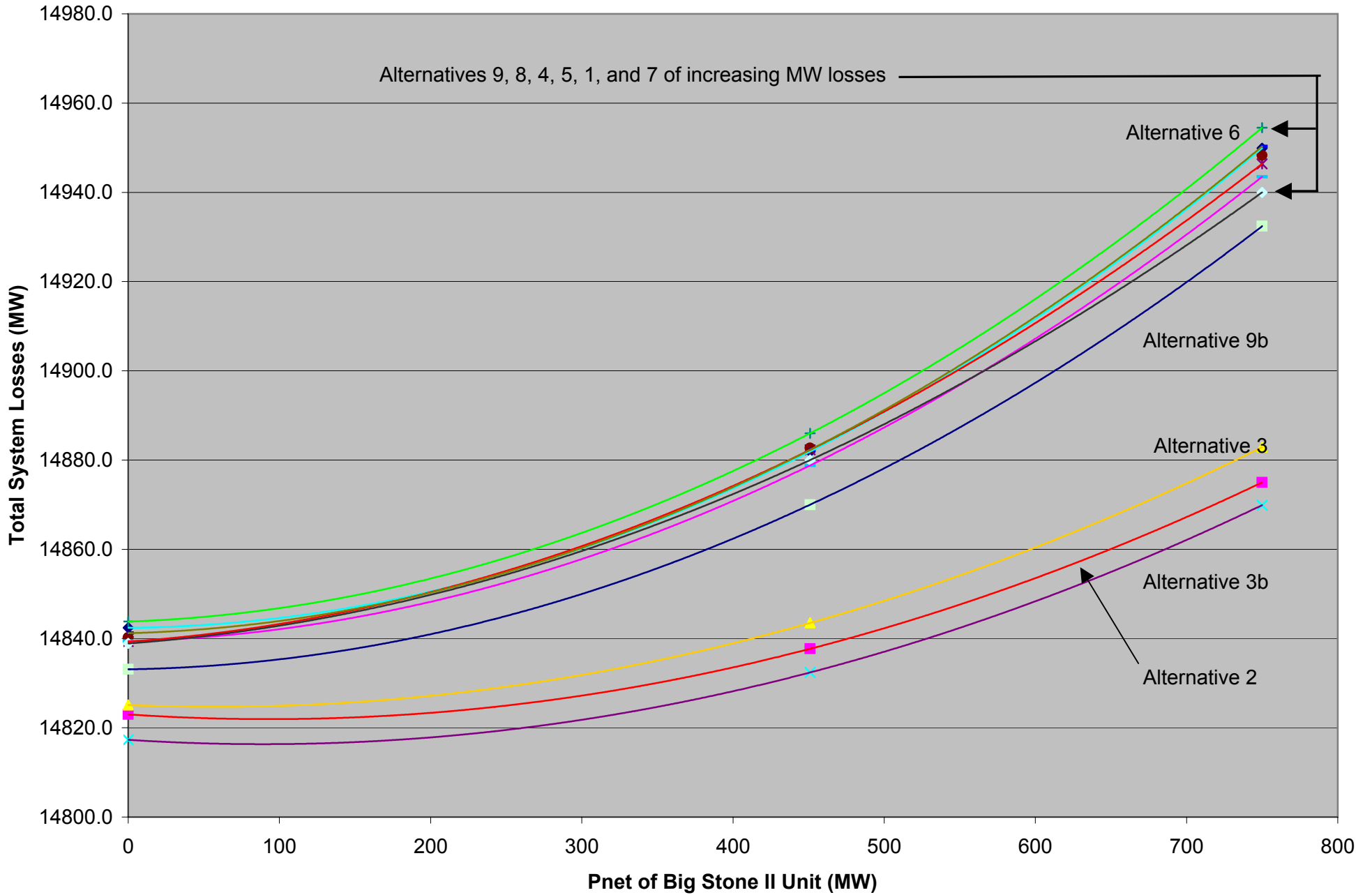
APPENDIX E

Loss Analysis Broken Down by Control Area

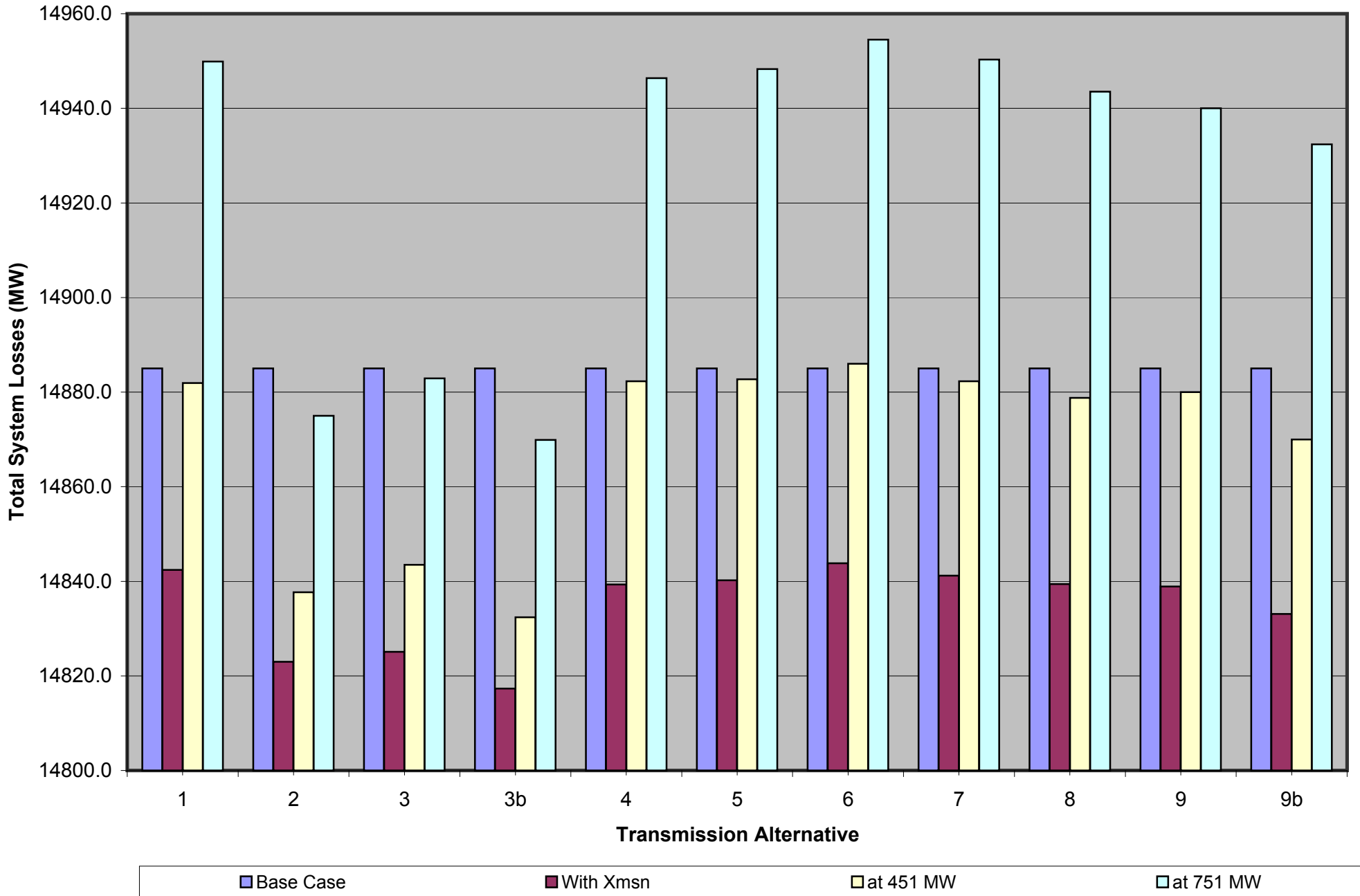
Transmission Alternatives Studied for Preliminary Big Stone II Transmission Study

Alternative #	Description	Base Case 0 (Base Case)	Add Xmsn 0	Xmsn Case - Base Case	Pnet at 451	451 Case - Xmsn Case	Pnet at 750	750 Case - Xmsn Case
1	Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate	14885.0	14842.4	-42.6	14881.9	39.5	14949.9	107.5
2	Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - Willmar - Blue Lake 345 kV Line	14885.0	14823.0	-62.0	14837.7	14.7	14875.0	52.0
3	Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - Willmar - West Waconia 345 kV Line with Dickinson - West Waconia - Wilmarth 345 kV Line	14885.0	14825.1	-59.9	14843.5	18.4	14882.9	57.8
3b	Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - Willmar - West Waconia 345 kV Line with Dickinson - West Waconia - Blue Lake 345 kV Line	14885.0	14817.3	-67.7	14832.4	15.1	14869.9	52.6
4	Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - Blair - White 345 kV Line with Ivanhoe - Lyon County 115 kV Line	14885.0	14839.3	-45.7	14882.3	43.0	14946.4	107.1
5	Big Stone - Ortonville - Johnson Jct. - Morris 115 kV to 230 kV Uprate with Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Blair - Lyon County 230 kV Line with Lyon County - Franklin 115 kV Line	14885.0	14840.2	-44.8	14882.7	42.5	14948.3	108.1
6	Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - 6 Mile Grove 230 kV Line with Morris - 6 Mile Grove 230 kV Line with Benson - 6 Mile Grove - Kerkhoven 115 kV Line	14885.0	14843.8	-41.2	14886.0	42.2	14954.5	110.7
7	Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - 6 Mile Grove - Willmar 230 kV Line with Morris - 6 Mile Grove 230 kV Line with Benson - 6 Mile Grove - Kerkhoven 115 kV Line	14885.0	14841.2	-43.8	14882.3	41.1	14950.3	109.1
8	Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - 6 Mile Grove - Willmar - McLeod 230 kV Line with Morris - 6 Mile Grove 230 kV Line with Benson - 6 Mile Grove - Kerkhoven 115 kV Line	14885.0	14839.4	-45.6	14878.8	39.4	14943.5	104.1
9	Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - 6 Mile Grove - Willmar - McLeod 230 kV Line with Morris - 6 Mile Grove 230 kV Line with Benson - 6 Mile Grove - Kerkhoven 115 kV Line with Dickinson - West Waconia - Wilmarth 345 kV Line	14885.0	14838.9	-46.1	14880.0	41.1	14940.0	101.1
9b	Big Stone - Canby - Granite Falls 115 kV to 230 kV Uprate with Big Stone - 6 Mile Grove - Willmar - McLeod 230 kV Line with Morris - 6 Mile Grove 230 kV Line with Benson - 6 Mile Grove - Kerkhoven 115 kV Line with Dickinson - West Waconia - Blue Lake 345 kV Line	14885.0	14833.1	-51.9	14870.0	36.9	14932.4	99.3

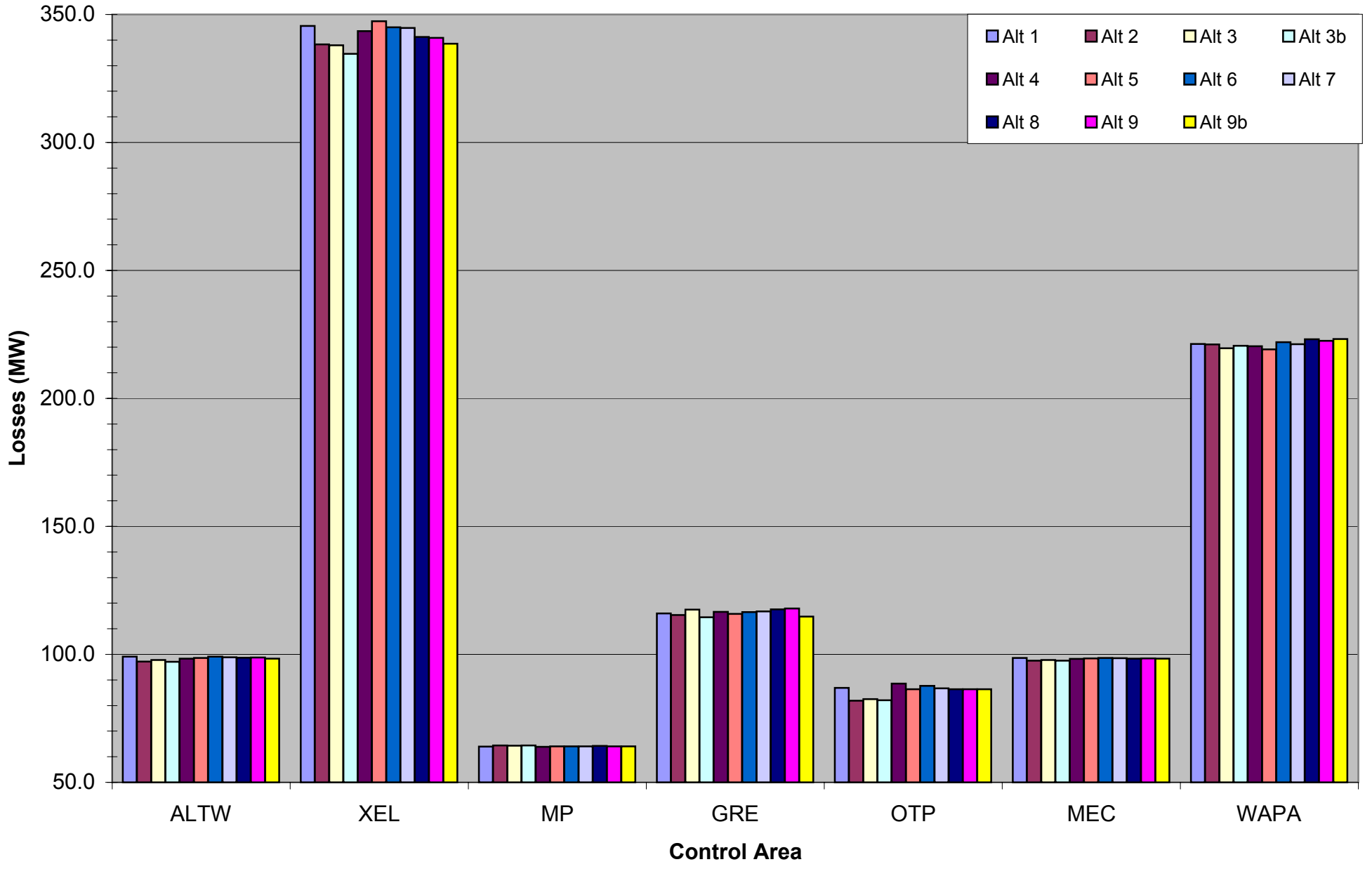
System Losses for Each Different Xmsn Alternative



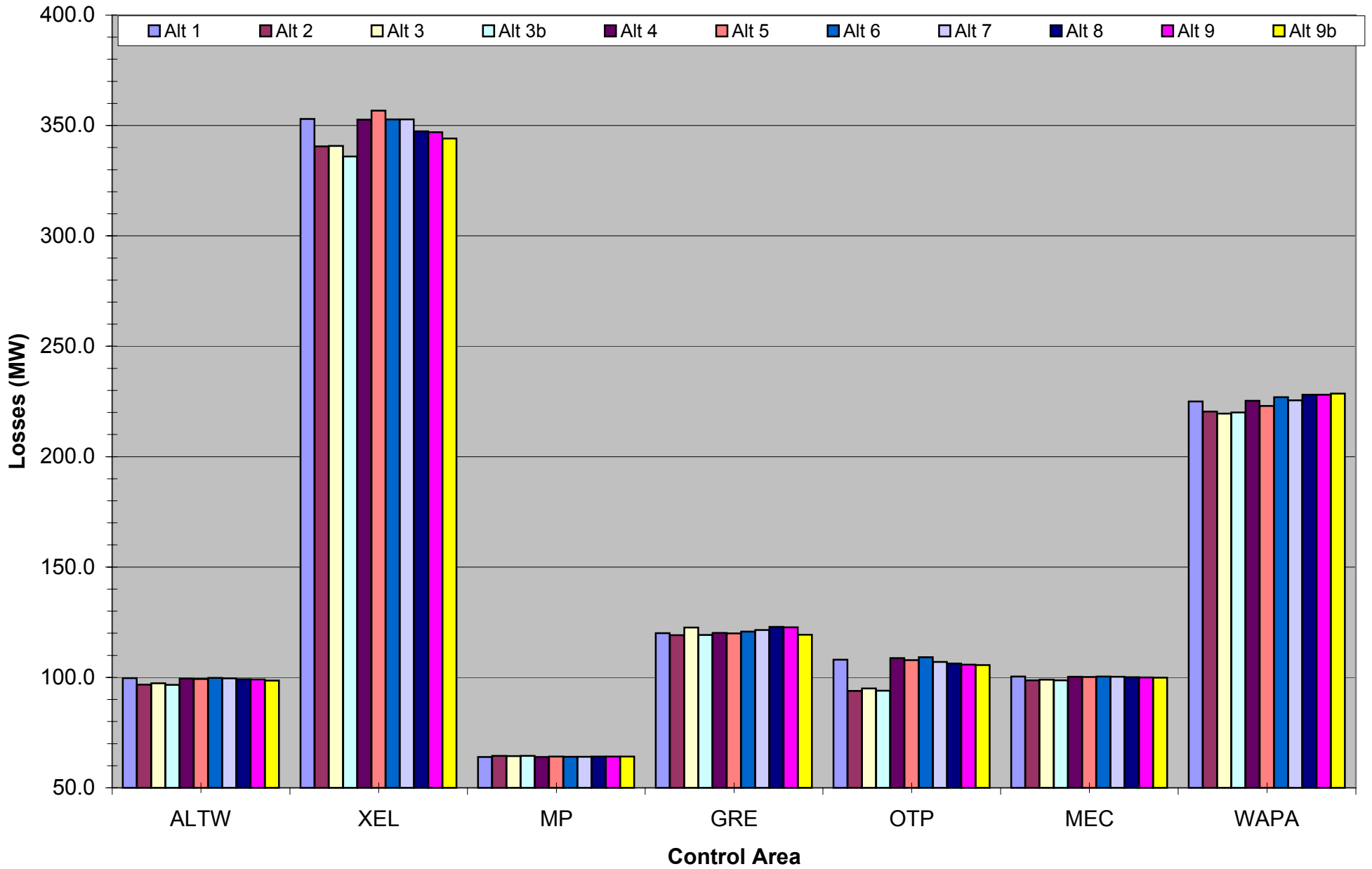
Total System Losses at Varying Levels of Output from Big Stone II Unit



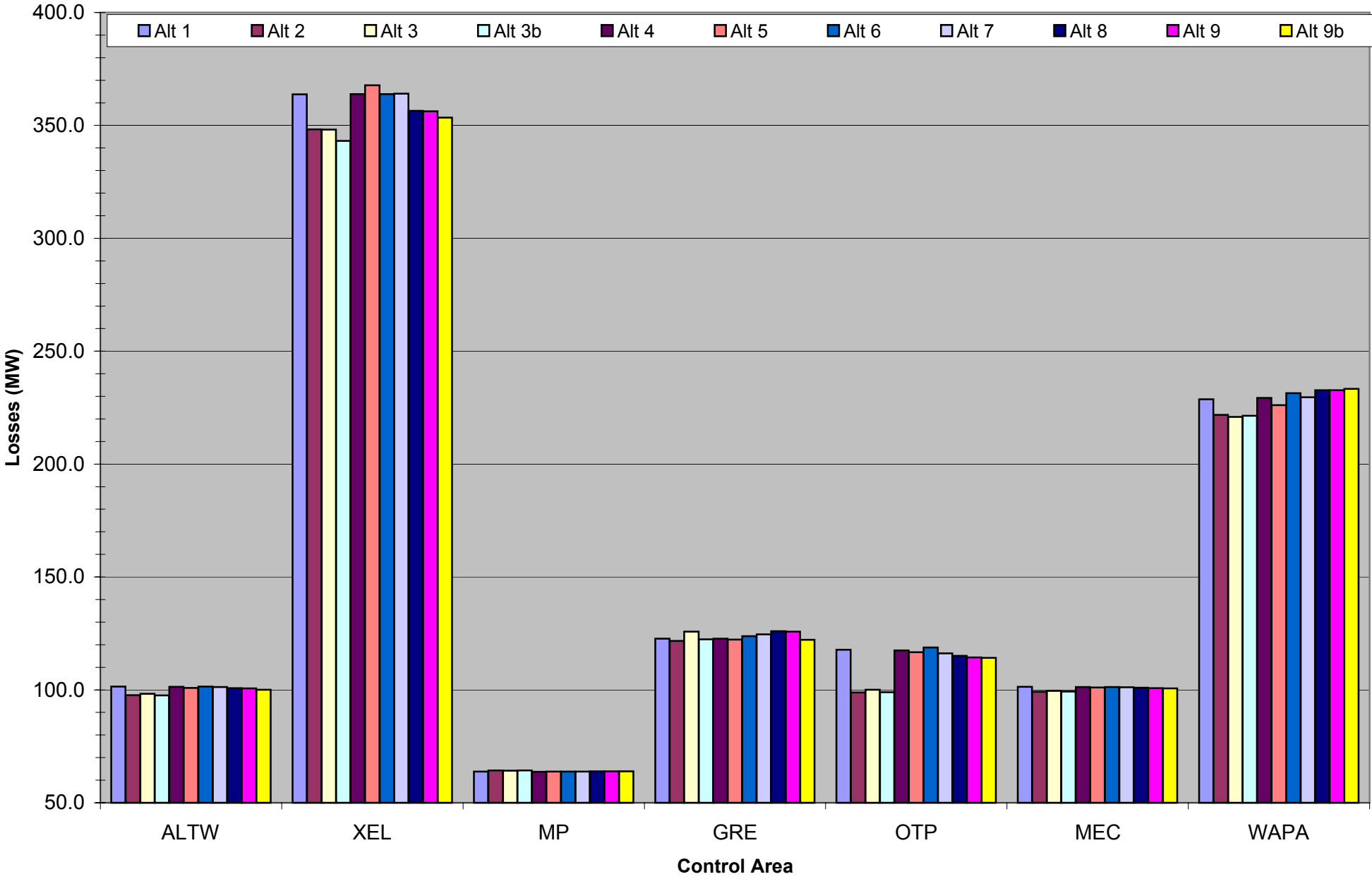
Control Area Losses Big Stone II at 0 MW - Transmission Added



Control Area Losses Big Stone II at 451 MW



Losses By Control Area Big Stone II at 601 MW



Big Stone II Preliminary Transmission Study
Losses by Control Area for Varying Levels of Big Stone II

1

Control Area	Abbreviation	Company	Base Case	Alternative 1				
			No Xmsn	0 MW	451 MW	Δ MW	601 MW	Δ MW
331	ALTW	Alliant Energy - West	99.6	99.1	99.7	0.6	101.5	2.4
600	XEL	Xcel Energy	344.9	345.5	353.0	7.5	363.8	18.3
608	MP	Minnesota Power	64.2	64.0	63.9	-0.1	63.8	-0.2
610	MP-West	Minnesota Power West	8.1	8.0	8.7	0.7	9.2	1.2
613	SMMPA	Southern MN Municipal Power Agency	0.8	0.9	1.0	0.1	1.0	0.1
618	GRE	Great River Energy	115.5	116.0	120.0	4.0	122.7	6.7
626	OTP	Otter Tail Power Company	95.1	86.9	108.0	21.1	117.8	30.9
633	MPW	Muscatine Power and Water	0.4	0.4	0.4	0.0	0.4	0.0
635	MEC	Mid-American Energy Council	98.9	98.6	100.4	1.8	101.4	2.8
640	NPPD	Nebraska Public Power District	109.5	109.4	107.0	-2.4	107.1	-2.3
645	OPPD	Omaha Public Power District	28.3	28.3	27.8	-0.5	27.8	-0.5
650	LES	Lincoln Electric System	12.2	12.2	12.1	-0.1	12.2	0.0
652	WAPA	Western Area Power Administration	222.2	221.3	225.0	3.7	228.7	7.4
667	MHEB	Manitoba Hydro	278.3	278.3	277.5	-0.8	277.0	-1.3
672	SPC	Saskatchewan Power Company	91.3	91.3	91.2	-0.1	91.2	-0.1
680	DPC	Dairyland Power Cooperative	73.3	73.8	73.3	-0.5	73.7	-0.1
Total System Losses =			14852.7	14843.7	14882.1	38.4	14917.5	73.8
MAPP		MAPP System Losses =	1543.0	1534.9	1569.3	34.4	1597.8	62.9

Big Stone II Preliminary Transmission Study
Losses by Control Area for Varying Levels of Big Stone II

2

Control Area	Abbreviation	Company	Base Case	Alternative 2				
			No Xmsn	0 MW	451 MW	Δ MW	601 MW	Δ MW
331	ALTW	Alliant Energy - West	99.6	97.2	96.7	-0.5	97.7	0.5
600	XEL	Xcel Energy	344.9	338.3	340.5	2.2	348.2	9.9
608	MP	Minnesota Power	64.2	64.4	64.5	0.1	64.3	-0.1
610	MP-West	Minnesota Power West	8.1	7.7	7.9	0.2	8.1	0.4
613	SMMPA	Southern MN Municipal Power Agency	0.8	1.0	1.1	0.1	1.1	0.1
618	GRE	Great River Energy	115.5	115.4	119.1	3.7	121.7	6.3
626	OTP	Otter Tail Power Company	95.1	81.9	93.9	12.0	98.9	17.0
633	MPW	Muscatine Power and Water	0.4	0.4	0.4	0.0	0.4	0.0
635	MEC	Mid-American Energy Council	98.9	97.5	98.7	1.2	99.2	1.7
640	NPPD	Nebraska Public Power District	109.5	109.4	106.9	-2.5	107.0	-2.4
645	OPPD	Omaha Public Power District	28.3	28.5	28.0	-0.5	27.9	-0.6
650	LES	Lincoln Electric System	12.2	12.2	12.1	-0.1	12.1	-0.1
652	WAPA	Western Area Power Administration	222.2	221.1	220.4	-0.7	221.8	0.7
667	MHEB	Manitoba Hydro	278.3	279.0	278.5	-0.5	278.1	-0.9
672	SPC	Saskatchewan Power Company	91.3	91.3	91.3	0.0	91.3	0.0
680	DPC	Dairyland Power Cooperative	73.3	73.4	72.6	-0.8	72.9	-0.5
Total System Losses =			14852.7	14824.1	14838.6	14.5	14859.5	35.4
MAPP		MAPP System Losses =	1543.0	1521.5	1535.9	14.4	1553.0	31.5

Big Stone II Preliminary Transmission Study
Losses by Control Area for Varying Levels of Big Stone II

3

Control Area	Abbreviation	Company	Base Case	Alternative 3				
			No Xmsn	0 MW	451 MW	Δ MW	601 MW	Δ MW
331	ALTW	Alliant Energy - West	99.6	97.8	97.3	-0.5	98.3	0.5
600	XEL	Xcel Energy	344.9	338.0	340.8	2.8	348.1	10.1
608	MP	Minnesota Power	64.2	64.3	64.4	0.1	64.2	-0.1
610	MP-West	Minnesota Power West	8.1	7.7	8.0	0.3	8.2	0.5
613	SMMPA	Southern MN Municipal Power Agency	0.8	1.0	1.1	0.1	1.1	0.1
618	GRE	Great River Energy	115.5	117.5	122.6	5.1	125.8	8.3
626	OTP	Otter Tail Power Company	95.1	82.5	95.0	12.5	100.1	17.6
633	MPW	Muscatine Power and Water	0.4	0.4	0.4	0.0	0.4	0.0
635	MEC	Mid-American Energy Council	98.9	97.8	99.0	1.2	99.6	1.8
640	NPPD	Nebraska Public Power District	109.5	109.4	106.9	-2.5	107.0	-2.4
645	OPPD	Omaha Public Power District	28.3	28.4	27.9	-0.5	27.9	-0.5
650	LES	Lincoln Electric System	12.2	12.2	12.1	-0.1	12.1	-0.1
652	WAPA	Western Area Power Administration	222.2	219.6	219.5	-0.1	220.9	1.3
667	MHEB	Manitoba Hydro	278.3	278.8	278.3	-0.5	278.0	-0.8
672	SPC	Saskatchewan Power Company	91.3	91.3	91.3	0.0	91.2	-0.1
680	DPC	Dairyland Power Cooperative	73.3	73.4	72.6	-0.8	72.9	-0.5
Total System Losses =			14852.7	14826.2	14843.8	17.6	14865.9	39.7
MAPP		MAPP System Losses =	1543.0	1522.3	1539.9	17.6	1557.5	35.2

Big Stone II Preliminary Transmission Study
Losses by Control Area for Varying Levels of Big Stone II

3b

Control Area	Abbreviation	Company	Base Case	Alternative 3b				
			No Xmsn	0 MW	451 MW	Δ MW	601 MW	Δ MW
331	ALTW	Alliant Energy - West	99.6	97.1	96.6	-0.5	97.6	0.5
600	XEL	Xcel Energy	344.9	334.6	336.0	1.4	343.1	8.5
608	MP	Minnesota Power	64.2	64.4	64.5	0.1	64.3	-0.1
610	MP-West	Minnesota Power West	8.1	7.6	7.9	0.3	8.1	0.5
613	SMMPA	Southern MN Municipal Power Agency	0.8	1.0	1.1	0.1	1.1	0.1
618	GRE	Great River Energy	115.5	114.5	119.2	4.7	122.4	7.9
626	OTP	Otter Tail Power Company	95.1	82.1	94.0	11.9	99.0	16.9
633	MPW	Muscatine Power and Water	0.4	0.4	0.4	0.0	0.4	0.0
635	MEC	Mid-American Energy Council	98.9	97.5	98.7	1.2	99.3	1.8
640	NPPD	Nebraska Public Power District	109.5	109.4	106.9	-2.5	106.9	-2.5
645	OPPD	Omaha Public Power District	28.3	28.4	28.0	-0.4	27.9	-0.5
650	LES	Lincoln Electric System	12.2	12.2	12.1	-0.1	12.1	-0.1
652	WAPA	Western Area Power Administration	222.2	220.6	220.0	-0.6	221.4	0.8
667	MHEB	Manitoba Hydro	278.3	278.9	278.4	-0.5	278.1	-0.8
672	SPC	Saskatchewan Power Company	91.3	91.3	91.3	0.0	91.2	-0.1
680	DPC	Dairyland Power Cooperative	73.3	73.5	72.7	-0.8	72.9	-0.6
Total System Losses =			14852.7	14818.5	14832.7	14.2	14854.4	35.9
MAPP		MAPP System Losses =	1543.0	1516.4	1531.2	14.8	1548.2	31.8

Big Stone II Preliminary Transmission Study
Losses by Control Area for Varying Levels of Big Stone II

4

Control Area	Abbreviation	Company	Base Case	Alternative 4				
			No Xmsn	0 MW	451 MW	Δ MW	601 MW	Δ MW
331	ALTW	Alliant Energy - West	99.6	98.3	99.5	1.2	101.4	3.1
600	XEL	Xcel Energy	344.9	343.5	352.7	9.2	363.9	20.4
608	MP	Minnesota Power	64.2	63.9	63.9	0.0	63.7	-0.2
610	MP-West	Minnesota Power West	8.1	8.1	8.7	0.6	9.3	1.2
613	SMMPA	Southern MN Municipal Power Agency	0.8	0.9	1.0	0.1	1.0	0.1
618	GRE	Great River Energy	115.5	116.6	120.1	3.5	122.7	6.1
626	OTP	Otter Tail Power Company	95.1	88.6	108.7	20.1	117.5	28.9
633	MPW	Muscatine Power and Water	0.4	0.4	0.4	0.0	0.4	0.0
635	MEC	Mid-American Energy Council	98.9	98.2	100.3	2.1	101.3	3.1
640	NPPD	Nebraska Public Power District	109.5	109.5	107.0	-2.5	107.1	-2.4
645	OPPD	Omaha Public Power District	28.3	28.4	27.8	-0.6	27.8	-0.6
650	LES	Lincoln Electric System	12.2	12.2	12.2	0.0	12.2	0.0
652	WAPA	Western Area Power Administration	222.2	220.4	225.3	4.9	229.3	8.9
667	MHEB	Manitoba Hydro	278.3	278.2	277.5	-0.7	277.0	-1.2
672	SPC	Saskatchewan Power Company	91.3	91.3	91.2	-0.1	91.2	-0.1
680	DPC	Dairyland Power Cooperative	73.3	73.5	73.2	-0.3	73.7	0.2
Total System Losses =			14852.7	14840.4	14882.4	42.0	14917.8	77.4
MAPP		MAPP System Losses =	1543.0	1533.7	1570.0	36.3	1598.1	64.4

Big Stone II Preliminary Transmission Study
Losses by Control Area for Varying Levels of Big Stone II

5

Control Area	Abbreviation	Company	Base Case	Alternative 5				
			No Xmsn	0 MW	451 MW	Δ MW	601 MW	Δ MW
331	ALTW	Alliant Energy - West	99.6	98.6	99.3	0.7	100.9	2.3
600	XEL	Xcel Energy	344.9	347.4	356.7	9.3	367.8	20.4
608	MP	Minnesota Power	64.2	64.1	64.1	0.0	63.8	-0.3
610	MP-West	Minnesota Power West	8.1	8.0	8.6	0.6	9.1	1.1
613	SMMPA	Southern MN Municipal Power Agency	0.8	0.9	1.0	0.1	1.0	0.1
618	GRE	Great River Energy	115.5	115.8	119.9	4.1	122.3	6.5
626	OTP	Otter Tail Power Company	95.1	86.4	107.8	21.4	116.7	30.3
633	MPW	Muscatine Power and Water	0.4	0.4	0.4	0.0	0.4	0.0
635	MEC	Mid-American Energy Council	98.9	98.4	100.2	1.8	101.1	2.7
640	NPPD	Nebraska Public Power District	109.5	109.4	107.0	-2.4	107.2	-2.2
645	OPPD	Omaha Public Power District	28.3	28.3	27.8	-0.5	27.8	-0.5
650	LES	Lincoln Electric System	12.2	12.2	12.1	-0.1	12.2	0.0
652	WAPA	Western Area Power Administration	222.2	219.2	223.0	3.8	226.1	6.9
667	MHEB	Manitoba Hydro	278.3	278.3	277.5	-0.8	277.1	-1.2
672	SPC	Saskatchewan Power Company	91.3	91.3	91.2	-0.1	91.2	-0.1
680	DPC	Dairyland Power Cooperative	73.3	73.7	73.3	-0.4	73.7	0.0
Total System Losses =			14852.7	14841.1	14882.7	41.6	14916.0	74.9
MAPP		MAPP System Losses =	1543.0	1533.8	1570.6	36.8	1597.5	63.7

Big Stone II Preliminary Transmission Study
Losses by Control Area for Varying Levels of Big Stone II

6

Control Area	Abbreviation	Company	Base Case	Alternative 6					
			No Xmsn	0 MW	451 MW	Δ MW	601 MW	Δ MW	
331	ALTW	Alliant Energy - West	99.6	99.1	99.8	0.7	101.5	2.4	
600	XEL	Xcel Energy	344.9	345.0	352.8	7.8	363.9	18.9	
608	MP	Minnesota Power	64.2	64.1	64.0	-0.1	63.8	-0.3	
610	MP-West	Minnesota Power West	8.1	7.9	8.4	0.5	8.9	1.0	
613	SMMPA	Southern MN Municipal Power Agency	0.8	0.9	1.0	0.1	1.0	0.1	
618	GRE	Great River Energy	115.5	116.5	120.8	4.3	123.8	7.3	
626	OTP	Otter Tail Power Company	95.1	87.7	109.1	21.4	118.8	31.1	
633	MPW	Muscatine Power and Water	0.4	0.4	0.4	0.0	0.4	0.0	
635	MEC	Mid-American Energy Council	98.9	98.6	100.4	1.8	101.3	2.7	
640	NPPD	Nebraska Public Power District	109.5	109.4	107.0	-2.4	107.1	-2.3	
645	OPPD	Omaha Public Power District	28.3	28.3	27.8	-0.5	27.8	-0.5	
650	LES	Lincoln Electric System	12.2	12.2	12.1	-0.1	12.2	0.0	
652	WAPA	Western Area Power Administration	222.2	222.0	226.9	4.9	231.4	9.4	
667	MHEB	Manitoba Hydro	278.3	278.4	277.7	-0.7	277.2	-1.2	
672	SPC	Saskatchewan Power Company	91.3	91.3	91.2	-0.1	91.2	-0.1	
680	DPC	Dairyland Power Cooperative	73.3	73.8	73.3	-0.5	73.8	0.0	
Total System Losses =			14852.7	14845.1	14886.2	41.1	14923.0	77.9	
MAPP			MAPP System Losses =	1543.0	1536.5	1572.9	36.4	1602.6	66.1

Big Stone II Preliminary Transmission Study
Losses by Control Area for Varying Levels of Big Stone II

7

Control Area	Abbreviation	Company	Base Case	Alternative 7				
			No Xmsn	0 MW	451 MW	Δ MW	601 MW	Δ MW
331	ALTW	Alliant Energy - West	99.6	98.9	99.6	0.7	101.3	2.4
600	XEL	Xcel Energy	344.9	344.7	352.8	8.1	364.1	19.4
608	MP	Minnesota Power	64.2	64.1	64.0	-0.1	63.8	-0.3
610	MP-West	Minnesota Power West	8.1	7.8	8.3	0.5	8.7	0.9
613	SMMPA	Southern MN Municipal Power Agency	0.8	0.9	1.0	0.1	1.0	0.1
618	GRE	Great River Energy	115.5	116.8	121.5	4.7	124.6	7.8
626	OTP	Otter Tail Power Company	95.1	86.7	107.0	20.3	116.2	29.5
633	MPW	Muscatine Power and Water	0.4	0.4	0.4	0.0	0.4	0.0
635	MEC	Mid-American Energy Council	98.9	98.5	100.3	1.8	101.2	2.7
640	NPPD	Nebraska Public Power District	109.5	109.4	107.0	-2.4	107.1	-2.3
645	OPPD	Omaha Public Power District	28.3	28.3	27.8	-0.5	27.8	-0.5
650	LES	Lincoln Electric System	12.2	12.2	12.1	-0.1	12.2	0.0
652	WAPA	Western Area Power Administration	222.2	221.2	225.5	4.3	229.6	8.4
667	MHEB	Manitoba Hydro	278.3	278.4	277.7	-0.7	277.2	-1.2
672	SPC	Saskatchewan Power Company	91.3	91.3	91.2	-0.1	91.2	-0.1
680	DPC	Dairyland Power Cooperative	73.3	73.7	73.3	-0.4	73.7	0.0
Total System Losses =			14852.7	14842.2	14882.3	40.1	14918.4	76.2
MAPP		MAPP System Losses =	1543.0	1534.4	1569.9	35.5	1598.8	64.4

Big Stone II Preliminary Transmission Study
Losses by Control Area for Varying Levels of Big Stone II

8

Control Area	Abbreviation	Company	Base Case	Alternative 8				
			No Xmsn	0 MW	451 MW	Δ MW	601 MW	Δ MW
331	ALTW	Alliant Energy - West	99.6	98.7	99.2	0.5	100.8	2.1
600	XEL	Xcel Energy	344.9	341.2	347.4	6.2	356.5	15.3
608	MP	Minnesota Power	64.2	64.2	64.1	-0.1	63.9	-0.3
610	MP-West	Minnesota Power West	8.1	7.8	8.2	0.4	8.6	0.8
613	SMMPA	Southern MN Municipal Power Agency	0.8	0.9	1.1	0.2	1.0	0.1
618	GRE	Great River Energy	115.5	117.6	122.9	5.3	126.0	8.4
626	OTP	Otter Tail Power Company	95.1	86.4	106.3	19.9	115.1	28.7
633	MPW	Muscatine Power and Water	0.4	0.4	0.4	0.0	0.4	0.0
635	MEC	Mid-American Energy Council	98.9	98.3	100.1	1.8	101.0	2.7
640	NPPD	Nebraska Public Power District	109.5	109.4	107.0	-2.4	107.1	-2.3
645	OPPD	Omaha Public Power District	28.3	28.3	27.9	-0.4	27.8	-0.5
650	LES	Lincoln Electric System	12.2	12.2	12.1	-0.1	12.1	-0.1
652	WAPA	Western Area Power Administration	222.2	223.1	228.1	5.0	232.7	9.6
667	MHEB	Manitoba Hydro	278.3	278.5	277.8	-0.7	277.4	-1.1
672	SPC	Saskatchewan Power Company	91.3	91.3	91.2	-0.1	91.2	-0.1
680	DPC	Dairyland Power Cooperative	73.3	73.7	73.2	-0.5	73.6	-0.1
Total System Losses =			14852.7	14840.6	14879.1	38.5	14912.2	71.6
MAPP		MAPP System Losses =	1543.0	1533.3	1567.8	34.5	1594.4	61.1

Big Stone II Preliminary Transmission Study
Losses by Control Area for Varying Levels of Big Stone II

9

Control Area	Abbreviation	Company	Base Case	Alternative 9				
			No Xmsn	0 MW	451 MW	Δ MW	601 MW	Δ MW
331	ALTW	Alliant Energy - West	99.6	98.8	99.1	0.3	100.7	1.9
600	XEL	Xcel Energy	344.9	340.9	347.0	6.1	356.3	15.4
608	MP	Minnesota Power	64.2	64.1	64.1	0.0	63.9	-0.2
610	MP-West	Minnesota Power West	8.1	7.8	8.2	0.4	8.6	0.8
613	SMMPA	Southern MN Municipal Power Agency	0.8	0.9	1.1	0.2	1.0	0.1
618	GRE	Great River Energy	115.5	117.9	122.7	4.8	125.8	7.9
626	OTP	Otter Tail Power Company	95.1	86.4	105.8	19.4	114.4	28.0
633	MPW	Muscatine Power and Water	0.4	0.4	0.4	0.0	0.4	0.0
635	MEC	Mid-American Energy Council	98.9	98.4	100.0	1.6	100.8	2.4
640	NPPD	Nebraska Public Power District	109.5	109.4	107.0	-2.4	107.1	-2.3
645	OPPD	Omaha Public Power District	28.3	28.3	27.9	-0.4	27.8	-0.5
650	LES	Lincoln Electric System	12.2	12.2	12.1	-0.1	12.2	0.0
652	WAPA	Western Area Power Administration	222.2	222.5	228.1	5.6	232.7	10.2
667	MHEB	Manitoba Hydro	278.3	278.5	277.9	-0.6	277.5	-1.0
672	SPC	Saskatchewan Power Company	91.3	91.3	91.2	-0.1	91.2	-0.1
680	DPC	Dairyland Power Cooperative	73.3	73.6	73.1	-0.5	73.5	-0.1
Total System Losses =			14852.7	14840.1	14877.3	37.2	14910.5	70.4
MAPP		MAPP System Losses =	1543.0	1532.6	1566.6	34.0	1593.2	60.6

Big Stone II Preliminary Transmission Study
Losses by Control Area for Varying Levels of Big Stone II

9b

Control Area	Abbreviation	Company	Base Case	Alternative 9b				
			No Xmsn	0 MW	451 MW	Δ MW	601 MW	Δ MW
331	ALTW	Alliant Energy - West	99.6	98.3	98.6	0.3	100.1	1.8
600	XEL	Xcel Energy	344.9	338.6	344.1	5.5	353.4	14.8
608	MP	Minnesota Power	64.2	64.1	64.1	0.0	63.9	-0.2
610	MP-West	Minnesota Power West	8.1	7.8	8.2	0.4	8.6	0.8
613	SMMPA	Southern MN Municipal Power Agency	0.8	1.0	1.1	0.1	1.0	0.0
618	GRE	Great River Energy	115.5	114.8	119.3	4.5	122.2	7.4
626	OTP	Otter Tail Power Company	95.1	86.4	105.6	19.2	114.2	27.8
633	MPW	Muscatine Power and Water	0.4	0.4	0.4	0.0	0.4	0.0
635	MEC	Mid-American Energy Council	98.9	98.3	99.9	1.6	100.7	2.4
640	NPPD	Nebraska Public Power District	109.5	109.4	106.9	-2.5	107.1	-2.3
645	OPPD	Omaha Public Power District	28.3	28.3	27.9	-0.4	27.8	-0.5
650	LES	Lincoln Electric System	12.2	12.2	12.1	-0.1	12.1	-0.1
652	WAPA	Western Area Power Administration	222.2	223.2	228.6	5.4	233.3	10.1
667	MHEB	Manitoba Hydro	278.3	278.5	277.9	-0.6	277.5	-1.0
672	SPC	Saskatchewan Power Company	91.3	91.3	91.2	-0.1	91.2	-0.1
680	DPC	Dairyland Power Cooperative	73.3	73.8	73.3	-0.5	73.7	-0.1
Total System Losses =			14852.7	14834.7	14870.0	35.3	14903.4	68.7
MAPP		MAPP System Losses =	1543.0	1528.1	1560.6	32.5	1587.1	59.0

APPENDIX F.1

Flows on Individual Transmission Lines For Constrained Interface Analysis

Distribution Factor Analysis

2009 Summer Peak

Generation to Generation Dispatch
Sceduling Big Stone II to all 7 Entities Together

Flowgate	Transmission Alternative										
	1	2	3	3b	4	5	6	7	8	9	9b
ARN-HAZLTN	3.20%	1.00%	1.20%	0.90%	3.70%	3.10%	3.20%	3.20%	2.90%	2.70%	2.60%
COOPER_S	-1.40%	-1.10%	-1.20%	-1.20%	-1.10%	-1.50%	-1.50%	-1.60%	-1.50%	-1.60%	-1.60%
ECL-ARP	-2.10%	-0.20%	-0.40%	-0.10%	-2.60%	-2.10%	-2.20%	-2.10%	-1.90%	-1.70%	-1.60%
FT CAL_S	4.10%	4.20%	4.20%	4.10%	4.90%	4.10%	4.10%	4.00%	4.10%	4.00%	4.00%
GGG	-2.20%	-2.40%	-2.50%	-2.40%	-2.40%	-2.30%	-2.30%	-2.30%	-2.30%	-2.40%	-2.40%
GRIS_LNC	2.70%	1.90%	1.80%	1.80%	2.20%	2.60%	2.60%	2.50%	2.40%	2.30%	2.30%
LACYGNE_N	1.00%	0.70%	0.80%	0.80%	1.00%	1.00%	1.10%	1.10%	1.00%	1.00%	1.00%
LKM-WFB	-2.30%	-2.40%	-2.30%	-2.40%	-2.30%	-2.30%	-2.30%	-2.30%	-2.30%	-2.30%	-2.30%
MHEX_N	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%
MHEX_S	0.20%	0.20%	0.10%	0.10%	0.20%	0.20%	0.20%	0.20%	0.20%	0.20%	0.10%
MH_SPC_E	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MH_SPC_W	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MNTZUMA_W	-0.40%	0.40%	0.30%	0.50%	-0.90%	-0.30%	-0.30%	-0.30%	-0.20%	0.00%	0.00%
MP_EXPORT	-0.30%	-0.70%	-0.70%	-0.80%	0.10%	-0.20%	-0.20%	-0.20%	-0.20%	-0.30%	-0.30%
MWSI	-0.30%	5.30%	4.40%	5.40%	-1.70%	-0.20%	-0.50%	-0.20%	0.30%	0.90%	1.30%
NDDC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
NDEX	77.50%	80.40%	80.20%	80.40%	77.60%	77.60%	77.00%	77.30%	77.40%	77.50%	77.60%
NI_WUMS	0.70%	-0.10%	0.00%	-0.20%	0.90%	0.70%	0.70%	0.70%	0.60%	0.50%	0.50%
PRI-BYN	1.80%	5.50%	4.80%	5.60%	0.80%	1.90%	1.70%	1.90%	2.20%	2.60%	2.90%
QUAD-ROCKC	0.70%	0.30%	0.30%	0.30%	0.80%	0.70%	0.80%	0.70%	0.60%	0.60%	0.60%
QUADCITY_W	1.30%	1.10%	1.20%	1.20%	1.10%	1.40%	1.40%	1.40%	1.40%	1.40%	1.40%
WNE_WKS	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	-0.10%	-0.20%	-0.20%
Y2DC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MNEX (INFO)	-7.10%	4.80%	-7.00%	4.90%	-10.30%	-7.20%	-7.40%	-7.00%	-6.10%	-7.60%	-3.40%

Distribution Factor Analysis
2009 Summer Peak
 Scheduling 601 MW's from Big Stone II to 7 Entities

Base Transaction for DF Calculation = 601 MW

Interface Definition From Bus	Transmission Alternative 1			Transmission Alternative 2			Transmission Alternative 3			Transmission Alternative 3b			Transmission Alternative 4			Transmission Alternative 5			Transmission Alternative 6			Transmission Alternative 7			Transmission Alternative 8			Transmission Alternative 9			Transmission Alternative 9b					
	Base Case	BOSI Case	Difference	Base Case	BOSI Case	Difference	Base Case	BOSI Case	Difference	Base Case	BOSI Case	Difference	Base Case	BOSI Case	Difference	Base Case	BOSI Case	Difference	Base Case	BOSI Case	Difference	Base Case	BOSI Case	Difference	Base Case	BOSI Case	Difference	Base Case	BOSI Case	Difference	Base Case	BOSI Case	Difference			
	with Xsens at 601 MW	with Xsens at 601 MW	at 601 MW	with Xsens at 601 MW	with Xsens at 601 MW	at 601 MW	with Xsens at 601 MW	with Xsens at 601 MW	at 601 MW	with Xsens at 601 MW	with Xsens at 601 MW	at 601 MW	with Xsens at 601 MW	with Xsens at 601 MW	at 601 MW	with Xsens at 601 MW	with Xsens at 601 MW	at 601 MW	with Xsens at 601 MW	with Xsens at 601 MW	at 601 MW	with Xsens at 601 MW	with Xsens at 601 MW	at 601 MW	with Xsens at 601 MW	with Xsens at 601 MW	at 601 MW	with Xsens at 601 MW	with Xsens at 601 MW	at 601 MW	with Xsens at 601 MW	with Xsens at 601 MW	at 601 MW			
34093 ARNOLD 3	34018 HAZLTON3	384.9	404	5.00%	371.9	377.6	1.60%	375.8	383	2.00%	371.8	377.5	1.50%	381.2	403.5	5.80%	382.8	401.6	4.90%	384.8	404.3	5.10%	383.7	402.8	5.00%	382.2	398.8	4.60%	382.3	398.5	4.20%	380.6	396.3	4.10%		
SUBTOTALS FOR: ARN-HAZLTN			384.9	404	5.00%	371.9	377.6	1.60%	375.8	383	2.00%	371.8	377.5	1.50%	381.2	403.5	5.80%	382.8	401.6	4.90%	384.8	404.3	5.10%	383.7	402.8	5.00%	382.2	398.8	4.60%	382.3	398.5	4.20%	380.6	396.3	4.10%	
					19.1	3.20%		5.8	1.80%		7.4	1.20%		22.3	3.70%		19.9	3.10%		19.5	3.20%		19.8	3.20%		17.6	2.90%		19.2	2.70%		19.6	2.70%			
64786 COOPER 3	59199 ST JOE 3	54.3	48.9	-10.00%	52.4	48.1	-8.20%	53.3	48.8	-8.50%	53.6	49	-8.60%	53.1	48.8	-8.40%	54	48.1	-10.80%	54.2	48.3	-10.90%	54.3	48.3	-11.00%	53.8	48.2	-10.50%	53.8	47.7	-11.30%	54.6	48.6	-11.10%		
SUBTOTALS FOR: COOPER_3			54.3	48.9	-10.00%	52.4	48.1	-8.20%	53.3	48.8	-8.50%	53.6	49	-8.60%	53.1	48.8	-8.40%	54	48.1	-10.80%	54.2	48.3	-10.90%	54.3	48.3	-11.00%	53.8	48.2	-10.50%	53.8	47.7	-11.30%	54.6	48.6	-11.10%	
					-8.4	-1.40%		-6.6	-1.10%		-7.2	-1.20%		-6.8	-1.10%		-8.1	-1.50%		-9.2	-1.50%		-9.4	-1.60%		-8.8	-1.20%		-9.5	-1.60%		-9.5	-1.60%			
60304 EAU CL 3	92494 ARP 345	92.3	79.6	-13.80%	103.2	101.8	-1.30%	100.8	98.5	-2.30%	102.5	101.7	-0.80%	95.2	79.9	-16.10%	93.9	81.3	-13.40%	92.4	79.2	-14.20%	93.4	80.7	-13.60%	94.7	83.3	-12.10%	95	84.8	-10.80%	94.7	85	-10.30%		
SUBTOTALS FOR: ECL-ARP			92.3	79.6	-13.80%	103.2	101.8	-1.30%	100.8	98.5	-2.30%	102.5	101.7	-0.80%	95.2	79.9	-16.10%	93.9	81.3	-13.40%	92.4	79.2	-14.20%	93.4	80.7	-13.60%	94.7	83.3	-12.10%	95	84.8	-10.80%	94.7	85	-10.30%	
					-12.8	-2.10%		-1.3	-0.20%		-2.3	-0.40%		-0.8	-0.10%		-15.3	-2.60%		-12.6	-1.90%		-13.2	-2.20%		-12.7	-1.90%		-11.4	-1.20%		-10.7	-1.60%			
65351 S3451 3	65354 S3454 3	82.2	90.3	9.80%	81.8	90.3	10.70%	82	90.9	10.40%	80.2	82.4	90.9	10.40%	80.2	90.3	12.50%	81.9	90	9.80%	82.3	90.3	9.70%	82.4	90.4	9.90%	82	90.1	9.90%	82.8	90.8	9.70%				
SUBTOTALS FOR: FT_CAL_S			152.1	176.7	16.20%	148.9	173.9	16.70%	150.1	175.5	16.80%	150.6	176.2	17.30%	147.2	176.5	18.90%	151.1	175.5	16.10%	152.2	176.6	16.80%	152.3	176.6	16.80%	151.7	176.3	16.20%	151.1	175.2	16.00%	152.9	176.8	16.90%	
					24.6	4.10%		24.9	4.20%		25.4	4.20%		24.5	4.10%		24.4	4.10%		24.6	4.10%		24.6	4.10%		24.6	4.10%		24.6	4.10%		24.1	4.00%		23.9	4.00%
64832 GENTLM4	64909 PLATT4	157.4	156.1	-0.80%	157.4	156	-0.90%	157.4	156	-0.90%	157.4	156	-0.90%	157.4	156.1	-0.80%	157.4	156.1	-0.80%	157.4	156.1	-0.80%	157.4	156.1	-0.80%	157.4	156	-0.80%	157.4	156.1	-0.80%	157.4	156	-0.80%		
64832 GENTLM4	64909 NPLATT4	157.4	156.5	-0.80%	157.4	156.5	-0.90%	157.4	156.5	-0.90%	157.4	156.5	-0.90%	157.4	156.5	-0.90%	157.4	156.5	-0.90%	157.4	156.5	-0.90%	157.4	156.5	-0.90%	157.4	156.5	-0.90%	157.4	156.5	-0.90%	157.4	156.5	-0.90%		
64832 GENTLM4	64909 NPLATT4	162.4	161	-0.90%	162.4	161	-0.90%	162.4	161	-0.90%	162.4	161	-0.90%	162.4	161	-0.90%	162.4	161	-0.90%	162.4	161	-0.90%	162.4	161	-0.90%	162.4	161	-0.90%	162.4	161	-0.90%	162.4	161	-0.90%		
64831 GENTLM3	64984 SWEET W3	328.2	323.2	-1.50%	327.9	328.4	0.50%	328	322.6	-1.60%	328	322.6	-1.60%	328	322.6	-1.60%	328.2	323.2	-1.50%	328.2	323.2	-1.50%	328.1	323.1	-1.50%	328.1	323.1	-1.50%	328.1	323.1	-1.50%	328.1	323.1	-1.50%		
64831 GENTLM3	64948 REDWIL03	277.2	276.8	-0.10%	275.3	274.7	-0.20%	276.1	275.3	-0.30%	275.9	275.1	-0.30%	277.1	276.6	-0.20%	277	276.4	-0.20%	277	276.4	-0.20%	277	276.3	-0.30%	276.6	276.7	-0.40%	276.8	276.7	-0.40%	276.9	276.9	-0.40%		
SUBTOTALS FOR: GGS			1356.3	1354.5	-0.10%	1354.5	1349.3	-0.40%	1354.5	1349.3	-0.40%	1354.5	1349.3	-0.40%	1354.5	1349.3	-0.40%	1354.5	1349.3	-0.40%	1354.5	1349.3	-0.40%	1354.5	1349.3	-0.40%	1354.5	1349.3	-0.40%	1354.5	1349.3	-0.40%	1354.5	1349.3	-0.40%	
					-13.3	-2.20%		-14.6	-2.40%		-14.8	-2.40%		-14.7	-2.40%		-14.2	-2.40%		-13.8	-2.30%		-13.8	-2.30%		-13.8	-2.30%		-13.8	-2.30%		-13.8	-2.30%		-13.8	-2.30%
64833 PAULINE3	64902 MOORE 3	55.9	60.5	8.40%	53.1	56.6	5.80%	54.3	57.4	5.70%	53.7	56.8	5.60%	55.2	60.3	7.30%	55.6	60	8.00%	55.7	60.2	8.00%	55.5	59.9	7.90%	55.2	59.5	7.70%	55.4	59.3	7.10%	55.1	59	7.10%		
64839 GR ISLD4	64902 COLME W4	99.8	95.6	-4.20%	100.1	95.8	-4.30%	100	95.6	-4.40%	99.9	95.6	-4.30%	100.8	95.7	-4.10%	100	95.8	-4.20%	99.8	95.6	-4.20%	99.7	95.5	-4.20%	99.6	95.6	-4.20%	99.9	95.7	-4.20%	99.6	95.5	-4.20%		
66571 GR ISLD3	64898 MCCOOL 3	145.8	161.4	10.70%	140.3	152.8	8.80%	142.2	154.3	8.50%	141	153.1	8.60%	146.6	160.9	9.70%	145.1	160.2	10.40%	145.4	160.6	10.40%	145	160	10.30%	144.3	159	10.20%	144.7	158.5	9.60%	144.2	156.1	9.60%		
SUBTOTALS FOR: GRIS_LNC			301.5	317.6	5.30%	293.9	305	3.80%	296.5	307.3	3.60%	294.6	305.6	3.70%	303.7	316.9	4.70%	300.7	316.1	5.10%	300.9	316.3	5.10%	300.2	315.4	5.10%	299.3	314	4.90%	300	313.5	4.50%	299	312.6	4.50%	
					16.1	2.70%		11.1	1.90%		10.8	1.80%		11.9	1.80%		15.3	2.20%		15.4	2.60%		15.2	2.50%		14.7	2.40%		13.8	2.30%		13.6	2.30%			
57981 LACYONE7	57965 WGRDNR7	577.8	581	0.60%	578.1	580.6	0.40%	577.8	580.4	0.50%	577.6	580.2	0.50%	578.1	581.1	0.50%	577.8	581.2	0.60%	577.8	581.3	0.60%	577.7	581.2	0.60%	577.9	581.1	0.60%	577.9	581.3	0.60%	577.6	580.9	0.60%		
SUBTOTALS FOR: LACYONE_N			1298.3	1304.4	0.50%	1298.5	1303	0.30%	1298.2	1302.9	0.40%	1297.8	1302.4	0.40%	1298.8	1304.5	0.50%	1298.4	1304.7	0.50%	1298.4	1304.8	0.50%	1298.4	1304.8	0.50%	1298.4	1304.8	0.50%	1298.4	1304.8	0.50%	1297.9	1304.1	0.50%	
					6.1	0.50%		4.5	0.70%		4.6	0.80%		5.7	1.00%		6.3	1.00%		6.4	1.00%		6.4	1.00%		6.4	1.00%		6.1	1.00%		6.3	1.00%			
62234 LKMMNR7	60276 ARLAKE7	53.7	40	-25.60%	52.9	38.4	-27.40%	53.1	39	-26.50%	53.6	39.1	-27.00%	53.5	40	-25.30%	53.9	40.2	-25.50%	53.8	40	-25.50%	53.7	40	-25.60%	53.6	39.8	-25.80%	53.4	39.5	-25.90%	54.4	40.5	-25.60%		
SUBTOTALS FOR: LKM-WFB			53.7	40	-25.60%	52.9	38.4	-27.40%	53.1	39	-26.50%	53.6	39.1	-27.00%	53.5	40	-25.30%	53.9	40.2	-25.50%	53.8	40	-25.50%	53.7	40	-25.60%	53.6	39.8	-25.80%	53.4	39.5	-25.90%	54.4	40.5	-25.60%	
					-13.8	-2.30%		-14.5	-2.40%		-14.1	-2.30%		-14.5	-2.40%		-13.5	-2.30%		-13.7	-2.30%		-13.7	-2.30%		-13.8	-2.30%		-13.8	-2.30%		-13.8	-2.30%			
60175 ROSEAU 4	67576 RICHER 4	-144.2	-146.8	1.80%	-142.9	-144.6	1.20%	-143.2	-144.9	1.20%	-143	-144.7	1.20%	-143	-144.7	1.20%	-144	-146.8	1.80%	-144	-146.8	1.80%	-144	-146.8	1.80%	-143.7	-146.2	1.70%	-143.7	-146.8	1.50%	-143.7	-148.5	1.50%		
60173 ROSEAU2N	67564 DORSEY 2	-1139	-1174.4	3.10%	-1120.2	-1141.8	1.90%	-1125.4	-1147.1	1.80%	-1141.3	-1174.6	3.00%	-1141.3	-1174.6	3.00%	-1137.2	-1171.6	3.00%	-1136.8	-1170.1	2.90%	-1134.8	-1167.2	2.90%	-1132.4	-1163.4	2.70%	-1132.8							

67105 LELAND03	66506 FITTHOMP3	132.4	144.9	9.40%	128.9	139.7	8.40%	130	140.5	8.00%	129.1	139.9	8.30%	136	145.5	7.00%	132.6	144.9	9.20%	131.4	142.6	8.60%	130.8	141.8	8.40%	130.3	141.1	8.30%	130.8	141.1	7.90%	130.1	140.5	8.00%			
67105 LELAND03	67160 GROTON 3	254.9	244.6	-4.00%	258.1	250.9	-2.80%	256.9	249.7	-2.80%	257.6	250.6	-2.70%	259.7	246.2	-5.20%	255.8	246.1	-3.80%	253.9	242.6	-4.50%	253.7	242.3	-4.50%	254.1	242.9	-4.40%	254	243.4	-4.20%	254	243.5	-4.10%			
67101 ANTELOP3	67120 BRDLAND3	193.6	191.3	-1.10%	194.4	193.5	-0.40%	194	193	-0.50%	194.2	193.4	-0.40%	195.4	192.9	-1.30%	194	192.2	-0.90%	192.6	189.3	-1.70%	192.3	188.9	-1.80%	192.4	189	-1.80%	192.4	189.3	-1.60%	192.2	189.2	-1.60%			
63314 BIGSTON4	66503 BLAIR 4	-5	203.1	-999.00%	-76.5	78.2	-202.20%	-70.5	84.1	-219.30%	-75.3	79.7	-205.80%	-70.5	84.1	-219.30%	-75.3	79.7	-205.80%	-70.5	84.1	-219.30%	-75.3	79.7	-205.80%	-70.5	84.1	-219.30%	-75.3	79.7	-205.80%	-70.5	84.1	-219.30%	-75.3	79.7	-205.80%
66554 MORRIS 4	66505 GRANITE4	15.3	55.7	263.50%	-3.4	25.6	661.60%	-7.8	21.7	-376.30%	-5.5	24.4	-546.00%	-5.5	24.4	-546.00%	-5.5	24.4	-546.00%	-5.5	24.4	-546.00%	-5.5	24.4	-546.00%	-5.5	24.4	-546.00%	-5.5	24.4	-546.00%	-5.5	24.4	-546.00%	-5.5	24.4	-546.00%
63336 AUBUBON4	63053 HUBBARD0	116.5	137.2	17.80%	105.1	116.6	10.90%	108.1	119.3	10.40%	106.2	117.3	10.50%	118.7	137.7	18.60%	115.6	135.6	17.30%	114.1	132.7	16.30%	112.2	130.2	16.00%	110.9	128.3	15.70%	111.3	127.4	14.50%	111	126.9	14.30%			
66521 SULLYBT4	66519 OAH4 4	-70.5	-62.7	-11.00%	-72.7	-65.8	-9.40%	-72	-65.4	-9.20%	-72.6	-65.7	-9.50%	-67.4	-62	-8.10%	-70.2	-63.8	-10.00%	-71.9	-64.8	-9.50%	-71.9	-65.3	-8.90%	-71.8	-65.3	-8.50%	-72.4	-66.1	-8.50%	-72.4	-66.1	-8.50%			
63052 NMAN 4	61611 WINGR44	100.9	118.4	17.40%	83	88.9	7.00%	87.5	92.8	6.10%	84.6	89.8	6.10%	105.6	119.5	13.10%	99.7	116.4	16.70%	99.4	115.3	16.00%	97.2	112.3	15.60%	95.2	109.6	15.10%	95.9	108.4	13.10%	95.3	107.7	13.00%			
66470 BISON 4	66467 MAURINE4	-1.1	4.7	-516.70%	-2.5	2.6	-205.50%	-2.1	3	-244.10%	-2.4	2.7	-214.60%	0.1	4.9	999.00%	-1.1	4.6	-521.80%	-1.5	3.9	-357.00%	-1.7	3.6	-307.70%	-1.9	3.3	-274.30%	-1.7	3.3	-290.70%	-2	3.1	-256.20%	-2	3.1	-256.20%
66716 LAPORTE7	61640 BADOURA7	0.5	6.5	999.00%	-2.4	1.3	-153.60%	-1.7	1.9	-213.50%	-2.1	1.4	-167.70%	0.8	6.6	760.30%	0.3	5.9	999.00%	-0.1	5.4	-999.00%	-0.5	4.8	-999.00%	-0.8	4.4	-635.40%	-0.7	4.2	-663.50%	-0.8	4.1	-619.10%	-0.8	4.1	-619.10%
63052 NMAN 4	60144 DOLANSO7	33.3	35.7	7.40%	28.3	28	-1.00%	29.1	28.7	-1.50%	28.5	28.1	-1.50%	34.5	36	4.50%	33	35.2	6.80%	32.8	34.5	5.20%	30.9	32.2	4.20%	30.7	32	4.10%	30.9	31.8	3.10%	30.7	31.7	3.10%			
67327 ELLENL7	67401 ABDUCT77	-6.3	-1.8	-72.20%	-8.1	-4.8	-41.40%	-7.9	-4.6	-41.50%	-8.1	-4.7	-41.90%	-3.3	-0.6	-80.60%	-6	-1.5	-75.20%	-6.8	-2.9	-57.70%	-7.1	-3.4	-53.00%	-7.3	-3.5	-51.50%	-7.1	-3.4	-51.80%	-7.4	-3.6	-50.90%			
66432 ELDYND7	66534 ORDWAY 7	-19.5	-20.5	5.30%	-19.3	-20	3.30%	-19.5	-20.2	3.70%	-19.4	-20	2.90%	-19.4	-20	2.90%	-20.1	-21.8	3.30%	-20.4	-22.1	8.70%	-20.3	-21.2	8.50%	-20.3	-21.9	7.70%	-20.4	-21.9	7.50%	-20.4	-21.9	7.50%			
66438 FORMAN 7	66522 SUMMIT-7	-2.2	-19.3	-14.40%	-23.9	-21.5	-10.10%	-23.8	-21.5	-8.90%	-24	-21.5	-10.30%	-19.9	-17.9	-10.00%	-22.2	-18.9	-14.90%	-23.1	-20.5	-11.30%	-23.4	-21	-10.50%	-23.5	-21	-10.40%	-23.4	-20.9	-10.70%	-23.6	-21	-10.80%			
63311 CANEY 4	66505 GRANITE4	90.1	197	118.50%	49.8	139.3	161.90%	49.2	129.7	169.30%	48.6	130.2	167.60%	103.7	207.4	100.00%	89.3	193.6	116.70%	90.1	177	121.00%	73.6	169.2	129.70%	73.5	169.3	129.10%	72.5	166.4	133.80%	73.6	170.6	131.70%			
62006 KERKHO 7	62005 KERKHO7	9.3	19.3	56.30%	6.2	9.1	48.50%	5.4	8.2	53.00%	5.9	8.8	50.30%	9.9	15.1	52.70%	9.3	13.6	46.40%	23.7	37.1	56.30%	16.5	26.1	58.40%	16.5	26.1	58.40%	16.4	26.2	60.30%	16.3	26.3	60.80%			
66752 DRAYTON4	67597 LETELERA	-238.5	-216.9	-9.10%	-249.9	-236.9	-5.20%	-248.8	-233.8	-5.30%	-248.6	-236.1	-5.10%	-236.4	-216.5	-8.40%	-239.5	-218.5	-8.80%	-240.2	-220.2	-8.30%	-241.6	-222.2	-8.00%	-243.1	-224.5	-7.60%	-242.7	-225.6	-7.00%	-242.9	-225.9	-7.00%			
63379 RUGBY 4	67523 GLENBOR4	42.4	59	39.00%	33.8	44	30.20%	35.1	46.4	28.50%	34.9	44.5	28.10%	42.6	58.8	37.90%	41.4	57.6	38.90%	41.4	57.7	39.20%	40.9	56.4	38.00%	39.8	54.7	37.40%	40	53.7	34.20%	40	53.6	33.90%			
63361 BIGSTN3	63057 WILLMAR3				202.5	254.7	75.10%	187.6	339.3	80.90%	199.6	351.4	76.00%																								
63361 BIGSTN3	66640 BLAIR 3																																				
63320 OMI GRV4	66530 GRANITE4																																				
63320 OMI GRV4	63059 WILLMAR4																																				
SUBTOTALS FOR: NDEX		625.8	1091.5	74.40%	631.1	1114.2	76.60%	630.7	1112.9	76.50%	631	1114.1	76.60%	624.6	1091	74.70%	628.3	1093	74.50%	623.6	1086.6	74.20%	624.2	1088.8	74.40%	624.4	1089.7	74.50%	624	1090.4	74.60%	624.3	1090.6	74.70%			
Difference =		465.7	77.50%		483.1	80.40%		482.2	80.20%		483.1	80.40%		466.4	77.60%		466.6	77.60%		463	77.60%		464.6	77.30%		465.3	77.40%		466	77.50%		466.4	77.60%				
36406 WEMPL: B	39058 PAD 345	636.1	640	0.60%	631.8	631.1	-0.10%	632.6	632.4	0.00%	632	631.1	-0.10%	634.3	639.8	0.90%	635.4	639.3	0.60%	636.1	640.3	0.70%	635.7	639.8	0.60%	635.3	638.8	0.60%	635	638.1	0.50%	635.3	638.1	0.40%			
SUBTOTALS FOR: NI_WUMS		636.1	640	0.60%	631.8	631.1	-0.10%	632.6	632.4	0.00%	632	631.1	-0.10%	634.3	639.8	0.90%	635.4	639.3	0.60%	636.1	640.3	0.70%	635.7	639.8	0.60%	635.3	638.8	0.60%	635	638.1	0.50%	635.3	638.1	0.40%			
Difference =		4	0.70%		-0.7	-0.10%		-0.2	0.60%		-0.9	-0.20%		5.5	0.90%		3.9	0.70%		4.2	0.70%		4.1	0.70%		3.5	0.60%		3	0.50%		2.8	0.50%				
60105 PR ISLD3	61950 BYRON 3	-204.7	-193.8	-5.30%	-180.8	-147.5	-18.30%	-189.1	-160.5	-15.10%	-182.5	-149.1	-18.30%	-186.1	-193	-2.60%	-202.4	-191.1	-5.60%	-204.7	-194.3	-4.10%	-203	-191.8	-5.50%	-200.5	-187.3	-6.60%	-199.7	-184.2	-7.80%	-199	-181.5	-8.80%			
SUBTOTALS FOR: PR-BYN		-204.7	-193.8	-5.30%	-180.8	-147.5	-18.30%	-189.1	-160.5	-15.10%	-182.5	-149.1	-18.30%	-186.1	-193	-2.60%	-202.4	-191.1	-5.60%	-204.7	-194.3	-4.10%	-203	-191.8	-5.50%	-200.5	-187.3	-6.60%	-199.7	-184.2	-7.80%	-199	-181.5	-8.80%			
Difference =		10.9	1.89%		33.3	5.60%		4.60%	7.40%		33.5	5.60%		5.1	0.80%		11.3	1.90%		10.4	1.70%		11.2	1.90%		13.2	2.20%		15.6	2.60%		17.5	2.90%				
36382 QUAD:	34038 ROCK CK3	510.1	514.1	0.80%	507.4	509.3	0.40%	508.3	510.1	0.40%	507.5	509.2	0.30%	509.1	514.1	1.00%	509.5	513.7	0.80%	509.8	514.3	0.90%	509.6	514.1	0.90%	509.7	513.4	0.70%	509.7	513.2	0.70%	509.2	512.7	0.70%			
SUBTOTALS FOR: QUAD-ROCK		510.1	514.1	0.80%	507.4	509.3	0.40%	508.3	510.1	0.40%	507.5	509.2	0.30%	509.1	514.1	1.00%	509.5	513.7	0.80%	509.8	514.3	0.90%	509.6	514.1	0.90%	509.7	513.4	0.70%	509.7	513.2	0.70%	509.2	512.7	0.70%			
Difference =		4	0.70%		1.8	0.30%		0.90%	1.8	0.30%		1.7	0.30%		5	1.00%		4.2	0.70%		4.6	0.80%		4.5	0.70%		3.7	0.60%		3.5	0.60%		3.5	0.60%			
36382 QUAD:	64405 SUB J1 3	554.5	559.3	0.90%	555.1	559	0.70%	554.9	559	0.70%	554.4	558.5	0.70%	555.3	559.4	0.70%	554.7	559.6	0.90%	554.5	559.5	0.90%	554.5	559.5	0.90%	554.6	559.5	0.90%	554.8	559.8	0.90%	553.9	559.9	0.90%			
64400 MECCORD3	64409 E MOLLN3	275	278.3	1.20%	275.8	278.7	1.00%	275.6	278.4	1.10%	275.2	278.3	1.10%	275.8	278.4	1.10%	275.2	278.6	1.20%	275.1	278.4	1.20%	275.1	278.4	1.20%	275.2	278.4	1.20%	275.3	278.4	1.20%	274.7	278.1	1.30%			
SUBTOTALS FOR: QUADCTY_W		829.5	837.6	1.00%	830.9	837.7	0.80%	830.4	837.5	0.90%	829.6	836.8	0.90%	831.1	837.7	0.80%	829.9	838.2	1.00%	829.6	837.9	1.00%	829.6	837.9	1.00%	829.8	838	1.00%	830.1	838.5	1.00%	828.6	837	1.00%			
Difference =		8.1	1.30%		6.8	1.10%		7.1	1.20%		7.2	1.20%		6.7	1.10%		8.2	1.40%		8.3	1.40%		8.3	1.40%		8.4	1.40%		8.5	1.40%		8.5	1.40%				
64831 GENTLMNS	64943 REDWIL03	277.2	276.8	-0.10%	275.3	274.7	-0.20%	276.1	275.3	-0.30%	275.9	275.1	-0.30%	277.1	276.6	-0.20%	276.9	276.3	-0.20%	277	276.4	-0.20%	277	276.3	-0.30%	276.6	276	-0.20%	276.8	275.7	-0.40%	276.9	275.9	-0.40%			
SUBTOTALS FOR: WNE_WKS		277.2	276.8	-0.10%	275.3	274.7	-0.20%	276.1	275.3	-0.30%	275.9	275.1	-0.30%	277.1	276.6	-0.20%	276.9	276.3	-0.20%	277	276.4	-0.20%	277	276.3	-0.30%	276.6	276	-0.20%	276.8	275.7	-0.4						

APPENDIX F.2

Constrained Interface Analysis Results
While Scheduling
Big Stone II Participants Individually

Distribution Factor Analysis

2009 Summer Peak Case
Generation to Generation Dispatch

Flowgate	Alternative 1						
	CMPA	GRE	HCPD	HUC	MMPA	MRES	OTP
ARN-HAZLTN	11.30%	7.90%	-9.30%	5.80%	8.00%	-7.80%	3.20%
COOPER_S	2.40%	1.60%	-12.50%	-0.90%	1.80%	2.60%	-1.40%
ECL-ARP	-4.30%	-6.70%	6.70%	-5.30%	-4.60%	4.90%	-2.60%
FT CAL_S	3.20%	1.70%	20.80%	-0.50%	1.70%	6.60%	-0.30%
GGG	1.50%	1.20%	-24.90%	0.60%	1.30%	2.20%	-0.20%
GRIS_LNC	4.80%	3.90%	-5.00%	2.40%	4.30%	7.80%	0.10%
LACYGNE_N	-0.20%	0.00%	1.80%	0.80%	-0.10%	1.80%	0.80%
LKM-WFB	-0.30%	0.90%	-0.20%	0.20%	-14.40%	-0.20%	0.20%
MHEX_N	-0.40%	-0.30%	-0.30%	-0.10%	-0.30%	-0.20%	0.10%
MHEX_S	0.60%	0.50%	0.30%	0.30%	0.50%	0.30%	0.00%
MH_SPC_E	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MH_SPC_W	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MNTZUMA_W	-5.90%	-4.40%	5.20%	-1.70%	-4.30%	7.20%	-0.70%
MP_EXPORT	-0.90%	0.90%	-4.60%	1.40%	-0.20%	-3.70%	3.20%
MWSI	15.50%	-21.90%	17.80%	-14.00%	0.10%	15.50%	-7.40%
NDDC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
NDEX	96.40%	96.00%	97.80%	98.40%	96.30%	97.80%	-8.70%
NI_WUMS	1.70%	2.60%	-3.70%	2.10%	1.70%	-3.20%	1.70%
PRI-BYN	19.90%	-15.20%	11.10%	-8.80%	4.70%	10.50%	-4.80%
QUAD-ROCKC	1.90%	0.90%	-1.80%	0.20%	1.20%	-1.30%	0.60%
QUADCITY_W	0.70%	-0.50%	1.20%	0.80%	0.00%	4.50%	0.30%
WNE_WKS	1.20%	0.90%	-3.80%	0.10%	1.00%	1.10%	-0.40%
Y2DC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MNEX (INFO)	9.90%	-43.00%	23.30%	-24.20%	-13.60%	22.40%	-14.20%

Summary: 8 Flowgates Violated
1 Flowgate Possibly Violated

Distribution Factor Analysis

2009 Summer Peak Case
Generation to Generation Dispatch

Flowgate	Alternative 2						
	CMPA	GRE	HCPD	HUC	MMPA	MRES	OTP
ARN-HAZLTN	8.90%	5.30%	-11.00%	4.20%	5.50%	-9.50%	1.90%
COOPER_S	2.30%	1.30%	-12.80%	-0.80%	1.70%	2.40%	-1.30%
ECL-ARP	-2.30%	-4.50%	8.20%	-3.90%	-2.50%	6.40%	-1.50%
FT CAL_S	3.00%	1.50%	20.50%	-0.40%	1.50%	6.40%	-0.20%
GGG	1.10%	0.80%	-25.20%	0.40%	1.00%	2.00%	-0.40%
GRIS_LNC	3.60%	2.70%	-5.90%	1.60%	3.20%	7.10%	-0.50%
LACYGNE_N	-0.20%	-0.10%	1.80%	0.60%	-0.30%	1.70%	0.70%
LKM-WFB	-0.40%	0.80%	-0.30%	0.10%	-14.60%	-0.30%	0.10%
MHEX_N	-0.10%	-0.20%	-0.20%	-0.30%	-0.20%	-0.10%	0.10%
MHEX_S	0.20%	0.30%	0.20%	0.30%	0.30%	0.10%	-0.10%
MH_SPC_E	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MH_SPC_W	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MNTZUMA_W	-4.90%	-3.30%	6.00%	-1.20%	-3.30%	8.00%	-0.20%
MP_EXPORT	-1.30%	0.50%	-4.90%	1.10%	-0.70%	-4.00%	2.90%
MWSI	21.80%	-15.00%	22.60%	-9.80%	6.60%	20.10%	-4.00%
NDDC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
NDEX	98.60%	98.40%	99.90%	100.40%	98.60%	99.90%	-6.50%
NI_WUMS	0.90%	1.80%	-4.40%	1.50%	0.80%	-3.80%	1.20%
PRI-BYN	24.10%	-10.40%	14.40%	-5.80%	9.10%	13.70%	-2.50%
QUAD-ROCKC	1.80%	1.10%	-1.90%	0.80%	1.00%	-1.30%	0.80%
QUADCITY_W	0.40%	-0.60%	1.20%	0.50%	-0.10%	4.40%	0.10%
WNE_WKS	1.00%	0.70%	-4.00%	0.10%	0.80%	1.00%	-0.40%
Y2DC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MNEX (INFO)	23.60%	-27.90%	34.30%	-14.80%	0.50%	32.90%	-6.90%

Summary: 8 Flowgates Violated
1 Flowgate Possibly Violated

Distribution Factor Analysis

2009 Summer Peak Case
Generation to Generation Dispatch

Flowgate	Alternative 3						
	CMPA	GRE	HCPD	HUC	MMPA	MRES	OTP
ARN-HAZLTN	9.20%	5.70%	-10.70%	4.00%	5.90%	-9.20%	2.00%
COOPER_S	2.30%	1.20%	-12.80%	-0.50%	1.60%	2.40%	-1.40%
ECL-ARP	-2.40%	-4.70%	8.00%	-3.60%	-2.80%	6.20%	-1.60%
FT CAL_S	3.10%	1.50%	20.60%	-0.30%	1.50%	6.50%	-0.30%
GGG	1.10%	0.80%	-25.20%	0.40%	0.90%	2.00%	-0.40%
GRIS_LNC	3.50%	2.60%	-6.10%	1.60%	3.00%	6.90%	-0.60%
LACYGNE_N	-0.30%	0.00%	1.70%	0.50%	-0.20%	1.70%	0.70%
LKM-WFB	-0.40%	0.90%	-0.20%	0.10%	-14.50%	-0.20%	0.10%
MHEX_N	-0.10%	-0.10%	0.00%	-0.10%	-0.10%	-0.10%	0.20%
MHEX_S	0.20%	0.20%	0.00%	0.10%	0.20%	0.10%	-0.20%
MH_SPC_E	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MH_SPC_W	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MNTZUMA_W	-4.80%	-3.30%	6.00%	-1.10%	-3.40%	7.90%	-0.10%
MP_EXPORT	-1.20%	0.50%	-4.70%	0.90%	-0.50%	-3.90%	2.90%
MWSI	20.70%	-16.30%	21.40%	-9.50%	5.20%	19.00%	-4.50%
NDDC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
NDEX	98.50%	98.20%	99.60%	100.30%	98.40%	99.70%	-6.70%
NI_WUMS	1.00%	1.90%	-4.20%	1.40%	1.00%	-3.60%	1.30%
PRI-BYN	23.10%	-11.50%	13.40%	-5.90%	7.90%	12.80%	-2.90%
QUAD-ROCKC	1.30%	0.90%	-1.90%	0.10%	1.00%	-1.30%	0.50%
QUADCITY_W	0.70%	-0.40%	1.30%	0.60%	-0.10%	4.40%	0.40%
WNE_WKS	1.10%	0.70%	-3.90%	0.20%	0.80%	1.00%	-0.40%
Y2DC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MNEX (INFO)	10.20%	-42.10%	19.30%	-14.80%	-17.20%	18.10%	-11.40%

Summary: 8 Flowgates Violated
1 Flowgate Possibly Violated

Distribution Factor Analysis

2009 Summer Peak Case
Generation to Generation Dispatch

Flowgate	Alternative 3b						
	CMMPA	GRE	HCPD	HUC	MMPA	MRES	OTP
ARN-HAZLTN	8.80%	5.20%	-11.00%	4.00%	5.50%	-9.40%	1.90%
COOPER_S	2.10%	1.20%	-12.90%	-1.10%	1.50%	2.00%	-1.50%
ECL-ARP	-2.20%	-4.40%	8.30%	-3.60%	-2.40%	6.40%	-1.40%
FT CAL_S	2.90%	1.40%	20.40%	-0.60%	1.30%	6.20%	-0.30%
GG5	1.10%	0.80%	-25.20%	0.40%	0.90%	2.00%	-0.40%
GRIS_LNC	3.60%	2.70%	-5.90%	1.70%	3.10%	7.10%	-0.50%
LACYGNE_N	-0.20%	0.00%	1.80%	0.70%	-0.10%	1.90%	0.70%
LKM-WFB	-0.40%	0.80%	-0.30%	0.10%	-14.60%	-0.30%	0.10%
MHEX_N	-0.20%	-0.10%	0.00%	-0.20%	-0.10%	-0.10%	0.20%
MHEX_S	0.20%	0.20%	0.00%	0.30%	0.20%	0.10%	-0.20%
MH_SPC_E	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MH_SPC_W	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MNTZUMA_W	-4.70%	-3.20%	6.20%	-1.20%	-3.30%	8.10%	-0.10%
MP_EXPORT	-1.40%	0.40%	-4.90%	0.90%	-0.70%	-4.00%	2.80%
MWSI	22.00%	-14.70%	22.60%	-9.40%	6.70%	20.10%	-3.90%
NDDC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
NDEX	98.60%	98.40%	99.80%	100.60%	98.60%	99.80%	-6.50%
NI_WUMS	0.90%	1.70%	-4.30%	1.50%	0.80%	-3.70%	1.20%
PRI-BYN	24.20%	-10.30%	14.30%	-5.80%	9.10%	13.70%	-2.50%
QUAD-ROCKC	1.60%	0.80%	-2.20%	0.90%	1.20%	-1.10%	0.50%
QUADCITY_W	0.70%	-0.40%	1.30%	0.30%	-0.10%	4.50%	0.30%
WNE_WKS	0.90%	0.60%	-4.00%	-0.10%	0.80%	0.80%	-0.50%
Y2DC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MNEX (INFO)	24.10%	-27.30%	34.20%	-15.20%	0.80%	33.00%	-6.70%

Summary: 8 Flowgates Violated
1 Flowgate Possibly Violated

Distribution Factor Analysis

2009 Summer Peak Case
Generation to Generation Dispatch

Flowgate	Alternative 4						
	CMPA	GRE	HCPD	HUC	MMPA	MRES	OTP
ARN-HAZLTN	12.00%	8.70%	-8.30%	6.50%	8.80%	-6.70%	3.70%
COOPER_S	2.40%	1.40%	-12.80%	-1.40%	1.70%	2.30%	-1.50%
ECL-ARP	-4.90%	-7.40%	5.90%	-5.70%	-5.20%	4.10%	-3.00%
FT CAL_S	3.90%	2.30%	21.30%	-0.20%	2.30%	7.20%	0.10%
GGG	1.30%	1.00%	-25.10%	0.50%	1.10%	2.10%	-0.30%
GRIS_LNC	4.30%	3.40%	-5.60%	2.00%	3.80%	7.30%	-0.30%
LACYGNE_N	-0.10%	0.20%	2.00%	1.00%	0.00%	1.90%	0.90%
LKM-WFB	-0.20%	1.00%	-0.10%	0.20%	-14.40%	-0.20%	0.20%
MHEX_N	-0.20%	-0.20%	-0.20%	-0.20%	-0.20%	-0.10%	0.20%
MHEX_S	0.40%	0.40%	0.30%	0.30%	0.40%	0.10%	-0.20%
MH_SPC_E	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MH_SPC_W	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MNTZUMA_W	-6.50%	-4.90%	4.70%	-2.20%	-4.90%	6.60%	-0.90%
MP_EXPORT	-0.40%	1.40%	-4.00%	1.70%	0.30%	-3.10%	3.50%
MWSI	13.70%	-23.70%	15.60%	-15.30%	-1.70%	13.10%	-8.50%
NDDC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
NDEX	96.10%	95.70%	97.60%	98.00%	96.10%	97.50%	-9.00%
NI_WUMS	2.20%	3.00%	-3.20%	2.50%	2.20%	-2.60%	2.00%
PRI-BYN	18.60%	-16.30%	9.70%	-9.50%	3.50%	9.00%	-5.50%
QUAD-ROCKC	2.70%	1.90%	-1.00%	1.70%	1.90%	-0.70%	1.10%
QUADCITY_W	0.50%	-0.60%	1.20%	0.50%	-0.10%	4.40%	0.30%
WNE_WKS	1.10%	0.80%	-3.90%	-0.10%	0.90%	1.00%	-0.40%
Y2DC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MNEX (INFO)	5.90%	-46.60%	19.00%	-26.70%	-17.40%	17.70%	-16.30%

Summary: 8 Flowgates Violated
1 Flowgate Possibly Violated

Distribution Factor Analysis

2009 Summer Peak Case
Generation to Generation Dispatch

Flowgate	Alternative 5						
	CMPA	GRE	HCPD	HUC	MMPA	MRES	OTP
ARN-HAZLTN	11.30%	7.90%	-9.20%	5.80%	8.00%	-7.60%	3.20%
COOPER_S	2.20%	1.20%	-12.80%	-1.30%	1.50%	2.20%	-1.50%
ECL-ARP	-4.30%	-6.70%	6.70%	-5.30%	-4.60%	4.90%	-2.60%
FT CAL_S	3.10%	1.60%	20.60%	-0.70%	1.50%	6.40%	-0.30%
GGG	1.40%	1.10%	-25.00%	0.50%	1.20%	2.20%	-0.20%
GRIS_LNC	4.60%	3.80%	-5.20%	2.20%	4.20%	7.80%	0.00%
LACYGNE_N	-0.20%	0.20%	1.80%	0.90%	0.00%	2.00%	0.80%
LKM-WFB	-0.30%	0.90%	-0.20%	0.20%	-14.40%	-0.20%	0.20%
MHEX_N	-0.20%	-0.30%	-0.20%	-0.10%	-0.20%	-0.20%	0.10%
MHEX_S	0.40%	0.50%	0.30%	0.20%	0.30%	0.30%	0.00%
MH_SPC_E	0.00%	0.00%	0.00%	0.00%	0.00%	0.10%	0.00%
MH_SPC_W	0.00%	0.00%	0.00%	0.00%	0.00%	-0.10%	0.00%
MNTZUMA_W	-5.90%	-4.40%	5.30%	-1.60%	-4.20%	7.20%	-0.70%
MP_EXPORT	-0.80%	1.00%	-4.50%	1.50%	-0.10%	-3.60%	3.20%
MWSI	15.50%	-21.80%	17.70%	-14.10%	0.10%	15.30%	-7.40%
NDDC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
NDEX	96.50%	96.10%	98.00%	98.60%	96.40%	97.80%	-8.50%
NI_WUMS	1.80%	2.70%	-3.70%	2.20%	1.80%	-3.10%	1.80%
PRI-BYN	19.80%	-15.10%	11.00%	-8.80%	4.70%	10.40%	-4.80%
QUAD-ROCKC	1.80%	1.40%	-1.90%	0.60%	1.60%	-0.90%	1.00%
QUADCITY_W	0.60%	-0.50%	1.30%	0.60%	0.00%	4.40%	0.30%
WNE_WKS	1.20%	0.80%	-3.80%	0.00%	1.00%	1.00%	-0.30%
Y2DC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MNEX (INFO)	9.60%	-43.10%	23.20%	-24.60%	-13.80%	22.00%	-14.30%

Summary: 8 Flowgates Violated
1 Flowgate Possibly Violated

Distribution Factor Analysis

2009 Summer Peak Case
Generation to Generation Dispatch

Flowgate	Alternative 6						
	CMMPA	GRE	HCPD	HUC	MMPA	MRES	OTP
ARN-HAZLTN	11.40%	8.00%	-9.10%	5.90%	8.00%	-7.60%	3.40%
COOPER_S	2.20%	1.40%	-12.80%	-1.20%	1.70%	2.00%	-1.60%
ECL-ARP	-4.40%	-6.80%	6.60%	-5.30%	-4.60%	4.80%	-2.70%
FT CAL_S	3.20%	1.70%	20.60%	-0.60%	1.60%	6.40%	-0.40%
GGG	1.40%	1.10%	-25.00%	0.60%	1.20%	2.20%	-0.30%
GRIS_LNC	4.60%	3.80%	-5.20%	2.20%	4.20%	7.70%	0.00%
LACYGNE_N	-0.10%	0.10%	1.90%	0.80%	-0.10%	2.00%	0.90%
LKM-WFB	-0.30%	0.90%	-0.20%	0.20%	-14.40%	-0.20%	0.20%
MHEX_N	-0.30%	-0.30%	-0.20%	-0.30%	-0.20%	-0.10%	0.10%
MHEX_S	0.50%	0.50%	0.30%	0.40%	0.40%	0.20%	0.00%
MH_SPC_E	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MH_SPC_W	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MNTZUMA_W	-6.00%	-4.50%	5.30%	-1.70%	-4.30%	7.20%	-0.70%
MP_EXPORT	-0.80%	1.00%	-4.50%	1.50%	-0.10%	-3.60%	3.40%
MWSI	15.50%	-21.90%	17.70%	-14.00%	0.10%	15.30%	-7.70%
NDDC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
NDEX	96.10%	95.70%	97.60%	98.10%	96.00%	97.60%	-9.60%
NI_WUMS	1.90%	2.70%	-3.60%	2.30%	1.90%	-3.00%	1.80%
PRI-BYN	19.80%	-15.10%	11.00%	-8.60%	4.60%	10.50%	-5.00%
QUAD-ROCKC	2.40%	1.60%	-1.60%	1.40%	1.50%	-0.50%	0.90%
QUADCITY_W	0.60%	-0.40%	1.30%	0.80%	0.00%	4.50%	0.40%
WNE_WKS	1.20%	0.90%	-3.80%	0.10%	1.00%	1.00%	-0.40%
Y2DC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MNEX (INFO)	9.60%	-43.10%	23.20%	-24.00%	-13.80%	22.30%	-14.70%

Summary: 8 Flowgates Violated
1 Flowgate Possibly Violated

Distribution Factor Analysis

2009 Summer Peak Case
Generation to Generation Dispatch

Flowgate	Alternative 7						
	CMPMA	GRE	HCPD	HUC	MMPA	MRES	OTP
ARN-HAZLTN	11.30%	8.00%	-9.10%	5.70%	8.00%	-7.70%	3.40%
COOPER_S	1.90%	1.10%	-13.00%	-1.50%	1.50%	2.10%	-1.80%
ECL-ARP	-4.30%	-6.70%	6.60%	-5.20%	-4.50%	4.90%	-2.70%
FT CAL_S	3.00%	1.50%	20.50%	-0.70%	1.60%	6.40%	-0.40%
GGG	1.40%	1.10%	-25.00%	0.50%	1.20%	2.20%	-0.30%
GRIS_LNC	4.60%	3.80%	-5.20%	2.20%	4.20%	7.70%	0.00%
LACYGNE_N	0.00%	0.20%	1.90%	1.00%	0.00%	1.90%	0.90%
LKM-WFB	-0.30%	0.90%	-0.20%	0.20%	-14.50%	-0.20%	0.20%
MHEX_N	-0.20%	-0.20%	-0.10%	-0.10%	-0.20%	0.00%	0.20%
MHEX_S	0.40%	0.40%	0.10%	0.20%	0.30%	0.10%	-0.10%
MH_SPC_E	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MH_SPC_W	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MNTZUMA_W	-5.90%	-4.40%	5.30%	-1.80%	-4.30%	7.30%	-0.60%
MP_EXPORT	-0.80%	1.00%	-4.40%	1.50%	-0.10%	-3.60%	3.40%
MWSI	15.60%	-21.70%	17.70%	-13.50%	0.30%	15.50%	-7.70%
NDDC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
NDEX	96.30%	95.90%	97.70%	98.30%	96.20%	97.80%	-9.40%
NI_WUMS	1.90%	2.70%	-3.70%	2.20%	1.80%	-3.10%	1.80%
PRI-BYN	19.90%	-15.00%	11.10%	-8.40%	4.80%	10.60%	-5.00%
QUAD-ROCKC	2.30%	1.60%	-1.40%	1.30%	1.60%	-1.00%	0.70%
QUADCITY_W	0.60%	-0.60%	1.30%	0.50%	0.00%	4.50%	0.40%
WNE_WKS	1.10%	0.80%	-3.90%	-0.10%	0.90%	1.00%	-0.40%
Y2DC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MNEX (INFO)	10.10%	-42.60%	23.40%	-23.30%	-13.30%	22.60%	-14.60%

Summary: 8 Flowgates Violated
1 Flowgate Possibly Violated

Distribution Factor Analysis

2009 Summer Peak Case

Generation to Generation Dispatch

Flowgate	Alternative 8						
	CMPA	GRE	HCPD	HUC	MMPA	MRES	OTP
ARN-HAZLTN	11.00%	7.70%	-9.30%	5.30%	7.70%	-7.80%	3.30%
COOPER_S	2.30%	1.20%	-12.80%	-0.90%	1.60%	2.10%	-1.70%
ECL-ARP	-4.10%	-6.50%	6.90%	-4.70%	-4.30%	5.00%	-2.70%
FT CAL_S	3.20%	1.60%	20.60%	-0.40%	1.60%	6.40%	-0.40%
GGG	1.40%	1.10%	-25.00%	0.50%	1.20%	2.10%	-0.30%
GRIS_LNC	4.50%	3.70%	-5.30%	2.00%	4.00%	7.70%	-0.10%
LACYGNE_N	-0.20%	0.10%	1.80%	0.70%	-0.10%	2.00%	0.90%
LKM-WFB	-0.30%	0.90%	-0.20%	0.20%	-14.50%	-0.20%	0.20%
MHEX_N	-0.10%	-0.20%	-0.10%	-0.10%	-0.20%	0.00%	0.20%
MHEX_S	0.30%	0.40%	0.10%	0.20%	0.30%	0.10%	-0.10%
MH_SPC_E	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MH_SPC_W	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MNTZUMA_W	-5.70%	-4.20%	5.50%	-1.70%	-4.20%	7.40%	-0.60%
MP_EXPORT	-0.80%	1.00%	-4.50%	1.40%	-0.20%	-3.60%	3.40%
MWSI	16.10%	-21.30%	18.10%	-12.50%	0.80%	15.70%	-7.50%
NDDC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
NDEX	96.40%	96.00%	97.80%	98.30%	96.30%	97.80%	-9.40%
NI_WUMS	1.70%	2.60%	-3.80%	1.90%	1.70%	-3.10%	1.80%
PRI-BYN	20.20%	-14.80%	11.20%	-7.80%	5.10%	10.70%	-4.90%
QUAD-ROCKC	1.60%	1.10%	-2.20%	0.90%	1.10%	-1.10%	0.70%
QUADCITY_W	0.60%	-0.50%	1.30%	0.50%	0.00%	4.50%	0.30%
WNE_WKS	1.20%	0.80%	-3.90%	0.10%	1.00%	1.00%	-0.40%
Y2DC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MNEX (INFO)	10.80%	-41.80%	24.00%	-21.50%	-12.40%	23.10%	-14.30%

Summary: 8 Flowgates Violated
1 Flowgate Possibly Violated

Distribution Factor Analysis

2009 Summer Peak Case
Generation to Generation Dispatch

Flowgate	Alternative 9						
	CMMPA	GRE	HCPD	HUC	MMPA	MRES	OTP
ARN-HAZLTN	10.70%	7.20%	-9.60%	5.10%	7.50%	-8.00%	3.10%
COOPER_S	2.00%	1.20%	-12.70%	-0.80%	1.40%	2.20%	-1.60%
ECL-ARP	-3.80%	-6.10%	7.00%	-4.50%	-4.10%	5.10%	-2.40%
FT CAL_S	3.00%	1.50%	20.60%	-0.40%	1.50%	6.40%	-0.40%
GGG	1.30%	1.00%	-25.10%	0.60%	1.10%	2.10%	-0.30%
GRIS_LNC	4.30%	3.40%	-5.50%	2.20%	3.80%	7.50%	-0.20%
LACYGNE_N	0.00%	0.10%	1.80%	0.70%	0.00%	2.00%	0.90%
LKM-WFB	-0.30%	0.90%	-0.20%	0.10%	-14.40%	-0.20%	0.20%
MHEX_N	-0.20%	-0.30%	-0.20%	-0.20%	-0.20%	-0.20%	0.10%
MHEX_S	0.40%	0.40%	0.20%	0.30%	0.30%	0.20%	-0.10%
MH_SPC_E	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MH_SPC_W	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MNTZUMA_W	-5.40%	-4.00%	5.60%	-1.60%	-4.00%	7.50%	-0.40%
MP_EXPORT	-0.90%	0.90%	-4.50%	1.20%	-0.20%	-3.60%	3.30%
MWSI	17.00%	-20.10%	18.60%	-11.90%	1.40%	16.10%	-7.00%
NDDC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
NDEX	96.50%	96.10%	98.00%	98.50%	96.40%	97.90%	-9.30%
NI_WUMS	1.60%	2.40%	-3.80%	1.90%	1.70%	-3.20%	1.70%
PRI-BYN	20.80%	-14.00%	11.60%	-7.50%	5.50%	11.00%	-4.50%
QUAD-ROCKC	2.00%	0.80%	-2.30%	0.80%	1.20%	-1.30%	0.20%
QUADCITY_W	0.80%	-0.40%	1.30%	0.40%	0.10%	4.60%	0.50%
WNE_WKS	1.10%	0.70%	-3.90%	0.10%	0.80%	0.90%	-0.40%
Y2DC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MNEX (INFO)	10.10%	-42.20%	19.30%	-14.90%	-17.30%	18.00%	-12.50%

Summary: 8 Flowgates Violated
1 Flowgate Possibly Violated

Distribution Factor Analysis

2009 Summer Peak Case
Generation to Generation Dispatch

Flowgate	Alternative 9b						
	CMMPA	GRE	HCPD	HUC	MMPA	MRES	OTP
ARN-HAZLTN	10.50%	7.20%	-9.70%	5.30%	7.30%	-8.10%	3.20%
COOPER_S	2.20%	1.10%	-12.90%	-0.70%	1.60%	2.10%	-1.80%
ECL-ARP	-3.70%	-6.10%	7.20%	-4.70%	-4.00%	5.30%	-2.50%
FT CAL_S	3.10%	1.50%	20.50%	-0.30%	1.50%	6.30%	-0.50%
GGG	1.30%	1.00%	-25.10%	0.60%	1.10%	2.10%	-0.30%
GRIS_LNC	4.20%	3.40%	-5.50%	2.10%	3.80%	7.50%	-0.20%
LACYGNE_N	-0.20%	0.10%	1.90%	0.60%	-0.10%	1.90%	1.00%
LKM-WFB	-0.30%	0.90%	-0.20%	0.20%	-14.50%	-0.20%	0.20%
MHEX_N	-0.20%	-0.20%	-0.20%	-0.10%	-0.20%	-0.10%	0.20%
MHEX_S	0.30%	0.40%	0.20%	0.20%	0.30%	0.20%	-0.10%
MH_SPC_E	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MH_SPC_W	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MNTZUMA_W	-5.40%	-3.80%	5.60%	-1.50%	-3.80%	7.70%	-0.40%
MP_EXPORT	-0.90%	0.90%	-4.60%	1.40%	-0.20%	-3.70%	3.30%
MWSI	17.60%	-19.60%	19.30%	-12.70%	2.10%	16.80%	-7.00%
NDDC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
NDEX	96.50%	96.10%	97.90%	98.60%	96.50%	97.90%	-9.30%
NI_WUMS	1.50%	2.40%	-3.90%	2.00%	1.60%	-3.30%	1.70%
PRI-BYN	21.30%	-13.50%	12.10%	-7.90%	6.10%	11.50%	-4.50%
QUAD-ROCKC	1.90%	1.30%	-1.80%	0.80%	1.10%	-1.00%	1.00%
QUADCITY_W	0.70%	-0.30%	1.30%	0.70%	0.20%	4.60%	0.40%
WNE_WKS	1.10%	0.70%	-3.90%	0.20%	0.90%	1.00%	-0.50%
Y2DC	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
MNEX (INFO)	14.70%	-37.40%	27.00%	-22.10%	-8.90%	25.80%	-12.80%

Summary: 8 Flowgates Violated
1 Flowgate Possibly Violated

Distribution Factor Analysis

Transmission Alternative 1

2009 Summer Peak Case
Generation to Generation Dispatct

Interface Definition		CMMPA BGSII Case at 76 MW		GRE BGSII Case at 100 MW		HCPD BGSII Case at 75 MW		HUC BGSII Case at 50 MW		MMPA BGSII Case at 100 MW		MRES BGSII Case at 100 MW		OTP BGSII Case at 100 MW	
From Bus	To Bus	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference
34093	ARNOLD 3 34018 HAZLTON3	384.9	393.4	2.20%	384.9	392.8	2.10%	384.9	377.9	-1.80%	384.9	387.8	0.80%	384.9	388.1
SUBTOTALS FOR: ARN-HAZLTN		384.9	393.4	2.20%	384.9	392.8	2.10%	384.9	377.9	-1.80%	384.9	387.8	0.80%	384.9	388.1
		Difference =	8.6	11.30%	Difference =	7.9	7.90%	Difference =	-6.9	-9.30%	Difference =	2.9	5.80%	Difference =	3.2
64786	COOPER 3 59199 ST JOE 3	54.3	55.3	1.90%	54.3	55.2	1.60%	54.3	49	-9.80%	54.3	54	-0.50%	54.3	53.5
64786	COOPER 3 96039 7FAIRPT	63.4	64.1	1.20%	63.4	64	1.10%	63.4	59.3	-6.40%	63.4	64.1	1.20%	63.4	62.8
SUBTOTALS FOR: COOPER_S		117.7	119.5	1.50%	117.7	119.2	1.30%	117.7	108.3	-8.00%	117.7	117.2	-0.40%	117.7	116.2
		Difference =	1.8	2.40%	Difference =	1.6	1.60%	Difference =	-9.4	-12.50%	Difference =	-0.4	-0.90%	Difference =	-1.4
60304	EAU CL 3 92494 ARP 345	92.3	89	-3.60%	92.3	85.6	-7.30%	92.3	97.4	5.50%	92.3	87.8	-4.90%	92.3	89.7
SUBTOTALS FOR: ECL-ARP		92.3	89	-3.60%	92.3	85.6	-7.30%	92.3	97.4	5.50%	92.3	87.8	-4.90%	92.3	89.7
		Difference =	-3.3	-4.30%	Difference =	-6.7	-6.70%	Difference =	5.1	6.70%	Difference =	-2.6	-5.30%	Difference =	-2.6
65351	S3451 3 65354 S3454 3	82.2	82.8	0.70%	82.2	82.5	0.30%	82.2	89.2	8.40%	82.2	82	-0.30%	82.2	82.1
65351	S3451 3 65359 S3459 3	30.2	31.8	5.20%	30.2	31.5	4.10%	30.2	37.6	24.40%	30.2	30.2	-0.10%	30.2	30.1
65451	S1251 5 65497 S1297 5	39.7	40	0.80%	39.7	39.9	0.60%	39.7	40.9	3.20%	39.7	39.7	0.00%	39.7	39.7
SUBTOTALS FOR: FT_CAL_S		152.1	154.6	1.60%	152.1	153.9	1.10%	152.1	167.7	10.20%	152.1	151.9	-0.20%	152.1	151.8
		Difference =	2.4	3.20%	Difference =	1.7	1.70%	Difference =	15.6	20.60%	Difference =	-0.2	-0.50%	Difference =	-0.3
64832	GENTLMN4 64909 N PLATT4	157.4	157.4	0.00%	157.4	157.4	0.00%	157.4	156	-0.90%	157.4	157.4	0.00%	157.4	157.4
64832	GENTLMN4 64909 N PLATT4	157.9	157.9	0.00%	157.9	157.9	0.00%	157.9	156.4	-0.90%	157.9	157.9	0.00%	157.9	157.9
64832	GENTLMN4 64909 N PLATT4	162.4	162.4	0.00%	162.4	162.4	0.00%	162.4	160.9	-0.90%	162.4	162.4	0.00%	162.4	162.4
64831	GENTLMN3 64984 SWEET W3	273.8	273.9	0.00%	273.8	273.9	0.00%	273.8	268.6	-1.90%	273.8	273.9	0.00%	273.8	273.9
64831	GENTLMN3 64984 SWEET W3	328.2	328.3	0.00%	328.2	328.3	0.00%	328.2	321.9	-1.90%	328.2	328.3	0.00%	328.2	328.2
64831	GENTLMN3 64943 REDWIL03	277.2	278.1	0.30%	277.2	278.1	0.30%	277.2	274.3	-1.00%	277.2	277.2	0.00%	277.2	276.8
SUBTOTALS FOR: GGS		1356.8	1357.9	0.10%	1356.8	1358	0.10%	1356.8	1338.1	-1.40%	1356.8	1357.1	0.00%	1356.8	1356.6
		Difference =	1.1	1.50%	Difference =	1.2	1.20%	Difference =	-18.7	-24.90%	Difference =	0.3	0.60%	Difference =	-0.2
64933	PAULINE3 64902 MOORE 3	55.9	57	2.10%	55.9	57.1	2.20%	55.9	54.3	-2.80%	55.9	56.2	0.60%	55.9	55.9
64839	GR ISLD4 64780 COLMB W4	99.8	99.6	-0.30%	99.8	99.6	-0.20%	99.8	95.9	-3.90%	99.8	99.9	0.10%	99.8	99.8
66571	GR ISLD3 64896 MCCOOL 3	145.8	148.5	1.90%	145.8	148.7	2.00%	145.8	147.5	1.20%	145.8	146.6	0.50%	145.8	145.9
SUBTOTALS FOR: GRIS_LNC		301.5	305.1	1.20%	301.5	306.4	1.30%	301.5	297.7	-1.20%	301.5	302.7	0.40%	301.5	301.6
		Difference =	3.6	4.80%	Difference =	3.9	3.90%	Difference =	-3.8	-5.00%	Difference =	1.2	2.40%	Difference =	0.1
57981	LACYGNE7 57965 W GRDNR7	577.6	577.6	0.00%	577.8	577.7	0.00%	577.8	578.7	0.20%	577.8	578	0.00%	577.8	578.2
57981	LACYGNE7 57968 STILLWEL7	720.5	720.6	0.00%	720.5	720.6	0.00%	720.5	720.9	0.10%	720.5	720.7	0.00%	720.5	720.9
SUBTOTALS FOR: LACYGNE_N		1298.3	1298.2	0.00%	1298.3	1298.3	0.00%	1298.3	1299.6	0.10%	1298.3	1298.7	0.00%	1298.3	1299.1
		Difference =	-0.1	-0.20%	Difference =	0	0.00%	Difference =	1.3	1.80%	Difference =	0.4	0.80%	Difference =	0.8
62234	LKMAR7 60276 AIRLAKE7	53.7	53.5	-0.40%	53.7	54.7	1.80%	53.7	53.6	-0.30%	53.7	53.8	0.20%	53.7	54
SUBTOTALS FOR: LKM-WFB		53.7	53.5	-0.40%	53.7	54.7	1.80%	53.7	53.6	-0.30%	53.7	53.8	0.20%	53.7	54
		Difference =	-0.2	-0.30%	Difference =	0.9	0.90%	Difference =	-0.1	-0.20%	Difference =	0.1	0.20%	Difference =	0.2
60175	ROSEAU 4 67576 RICHER 4	-144.2	-144.6	0.30%	-144.2	-144.8	0.50%	-144.2	-144.4	0.20%	-144.2	-144.4	0.40%	-144.2	-144.3
60173	ROSEAU2 67564 DORSEY 2	-1139	-1146.3	0.60%	-1139	-1149.4	0.90%	-1139	-1142.4	0.30%	-1139	-1148.3	0.80%	-1139	-1137.9
66752	DRAYTON4 67557 LETELER4	-234.2	-229.9	-1.80%	-234.2	-228.2	-2.60%	-234.2	-231.8	-1.00%	-234.2	-232.2	-0.90%	-234.2	-235.9
63379	RUGBY 4 67523 GLENBOR4	42.4	45.7	7.70%	42.4	47.2	11.20%	42.4	43.5	2.40%	42.4	44	3.80%	42.4	43.3
SUBTOTALS FOR: MHX_N		-1474.9	-1475.2	0.00%	-1474.9	-1475.2	0.00%	-1474.9	-1475.1	0.00%	-1474.9	-1474.9	0.00%	-1474.9	-1474.8
		Difference =	-0.3	-0.40%	Difference =	-0.3	-0.30%	Difference =	-0.2	-0.30%	Difference =	-0.1	-0.10%	Difference =	0.1
67576	RICHER 4 60175 ROSEAU 4	146.6	147.1	0.30%	146.6	147.3	0.50%	146.6	146.8	0.20%	146.6	146.9	0.20%	146.6	146.8
67564	DORSEY 2 60173 ROSEAU2	1155.8	1163.3	0.70%	1155.8	1166.4	0.90%	1155.8	1159.2	0.30%	1155.8	1165.3	0.80%	1155.8	1154.7
67557	LETELER4 66752 DRAYTON4	238.5	234.1	-1.90%	238.5	232.3	-2.60%	238.5	236.1	-1.00%	238.5	232.9	-2.40%	238.5	240.3
67523	GLENBOR4 63379 RUGBY 4	-42.1	-45.2	7.60%	-42.1	-46.7	11.10%	-42.1	-43.1	2.40%	-42.1	-43.6	3.70%	-42.1	-42.9
SUBTOTALS FOR: MHX_S		1498.8	1499.3	0.00%	1498.8	1499.3	0.00%	1498.8	1499.1	0.00%	1498.8	1499.3	0.00%	1498.8	1498.9
		Difference =	0.4	0.60%	Difference =	0.5	0.50%	Difference =	0.2	0.30%	Difference =	0.5	0.50%	Difference =	0
68613	AUBURN4 67525 RESTON 4	42.2	42.1	-0.40%	42.2	42	-0.50%	42.2	42.2	-0.10%	42.2	42	-0.40%	42.2	42.2
68615	YORKTON4 67514 ROBLIN 4	-90.5	-90.5	0.00%	-90.5	-90.4	-0.10%	-90.5	-90.5	0.00%	-90.5	-90.4	-0.10%	-90.5	-90.5
68630	EBCAMPB4 67515 RALL 4	-6.3	-6.2	-1.20%	-6.3	-6.2	-1.80%	-6.3	-6.3	-0.50%	-6.3	-6.2	-1.50%	-6.3	-6.3
SUBTOTALS FOR: MH_SPC_E		-54.6	-54.6	0.00%	-54.6	-54.6	0.00%	-54.6	-54.6	0.00%	-54.6	-54.6	0.00%	-54.6	-54.6
		Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0
67525	RESTON 4 68613 AUBURN4	-42.1	-41.9	-0.40%	-42.1	-41.9	-0.50%	-42.1	-42	-0.10%	-42.1	-41.9	-0.40%	-42.1	-42
67514	ROBLIN 4 68615 YORKTON4	91.3	91.3	0.00%	91.3	91.2	-0.10%	91.3	91.3	0.00%	91.3	91.2	-0.10%	91.3	91.3
67515	RALL 4 68630 EBCAMPB4	6.5	6.4	-1.20%	6.5	6.4	-1.80%	6.5	6.5	-0.50%	6.5	6.4	-1.50%	6.5	6.5
SUBTOTALS FOR: MH_SPC_W		55.7	55.8	0.00%	55.7	55.7	0.00%	55.7	55.7	0.00%	55.7	55.7	0.00%	55.7	55.7
		Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0

Distribution Factor Analysis Transmission Alternative 1

2009 Summer Peak Case
Generation to Generation Dispatct

		CMMPA			GRE			HCPD			HUC			MMPA			MRES			OTP								
64095 MNTZUMA3	64064 BONDRNT3	8.9	4.4	-50.20%	8.9	4.5	-49.20%	8.9	12.8	43.70%	8.9	8.1	-9.30%	8.9	4.6	-48.60%	8.9	16.2	80.90%	8.9	8.2	-8.00%						
SUBTOTALS FOR: MNTZUMA_W		8.9	4.4	-50.20%	8.9	4.5	-49.20%	8.9	12.8	43.70%	8.9	8.1	-9.30%	8.9	4.6	-48.60%	8.9	16.2	80.90%	8.9	8.2	-8.00%						
Difference =		-4.5		-5.90%	Difference =	-4.4		-4.40%	Difference =	3.9		5.20%	Difference =	-0.8		-1.70%	Difference =	-4.3		-4.30%	Difference =	7.2		7.20%	Difference =	-0.7		-0.70%
61702 LASKIN 7	61705 BABBITT7	63.4	63.4	0.00%	63.4	63.4	0.00%	63.4	63.4	-0.10%	63.4	63.4	0.00%	63.4	63.4	-0.10%	63.4	63.4	-0.10%	63.4	63.5	0.10%						
61702 LASKIN 7	61722 FORBES 7	43.9	43.9	0.00%	43.9	43.9	0.10%	43.9	43.9	-0.10%	43.9	43.9	0.00%	43.9	43.9	0.00%	43.9	43.9	-0.10%	43.9	43.9	-0.10%						
61702 LASKIN 7	62451 LAKELND7	64.5	64.5	0.00%	64.5	64.5	0.00%	64.5	64.5	-0.10%	64.5	64.5	0.00%	64.5	64.5	-0.10%	64.5	64.5	-0.10%	64.5	64.6	0.10%						
61702 LASKIN 7	61574 LASKNJCT	-74.8	-74.7	-0.10%	-74.8	-74.7	0.00%	-74.8	-74.7	-0.10%	-74.8	-74.8	0.00%	-74.8	-74.7	-0.10%	-74.8	-74.7	-0.10%	-74.8	-74.8	0.10%						
61626 BOSWELL4	61625 BLCKBRY4	139.4	139.2	-0.20%	139.4	139	-0.30%	139.4	139.3	-0.10%	139.4	139.3	-0.10%	139.4	139.1	-0.30%	139.4	139.2	-0.20%	139.4	140.1	0.50%						
61626 BOSWELL4	61625 BLCKBRY4	135.7	135.4	-0.20%	135.7	135.3	-0.30%	135.7	135.5	-0.10%	135.7	135.6	-0.10%	135.7	135.4	-0.30%	135.7	135.5	-0.20%	135.7	136.4	0.50%						
61626 BOSWELL4	61627 SHANNON4	87.8	88.3	0.60%	87.8	88.6	0.90%	87.8	88.1	0.40%	87.8	88	0.20%	87.8	88.5	0.80%	87.8	88.2	0.50%	87.8	86.3	-1.60%						
61615 ARROWHWD4	61614 98L TAP4	55.9	54.6	-2.40%	55.9	54.4	-2.70%	55.9	54.3	-2.80%	55.9	55.6	-0.60%	55.9	54.3	-2.80%	55.9	54.1	-3.30%	55.9	58.5	4.60%						
61615 ARROWHWD4	61554 AWH01JCT	154.9	154.8	-0.10%	154.9	154.7	-0.20%	154.9	154.6	-0.20%	154.9	154.9	0.00%	154.9	154.7	-0.10%	154.9	154.6	-0.20%	154.9	155.6	0.40%						
61615 ARROWHWD4	61556 AWH02JCT	160.3	160.2	-0.10%	160.3	160	-0.20%	160.3	160	-0.20%	160.3	160.3	0.00%	160.3	160.1	-0.10%	160.3	160	-0.20%	160.3	161	0.40%						
61615 ARROWHWD4	61624 FORBES 4	-110.5	-110.9	0.30%	-110.5	-110.3	-0.20%	-110.5	-111.7	1.00%	-110.5	-110.4	-0.10%	-110.5	-110.7	0.20%	-110.5	-111.8	1.10%	-110.5	-110.2	-0.30%						
61615 ARROWHWD4	63055 BEARCK 4	56.6	58	2.30%	56.6	59.5	5.00%	56.6	56.6	-0.10%	56.6	57.7	1.80%	56.6	58.7	3.60%	56.6	56.8	0.20%	56.6	55.6	-1.80%						
SUBTOTALS FOR: MP_EXPORT		777.3	778.6	-0.10%	777.3	778.3	0.10%	777.3	773.9	-0.40%	777.3	778	0.10%	777.3	777.1	0.00%	777.3	773.6	-0.50%	777.3	780.6	0.40%						
Difference =		-0.7		-0.90%	Difference =	0.9		0.90%	Difference =	-3.4		-4.60%	Difference =	0.7		1.40%	Difference =	-0.2		-0.20%	Difference =	-3.7		-3.70%	Difference =	3.2		3.20%
60105 PR ISLD3	61950 BYRON 3	-204.7	-189.6	-7.40%	-204.7	-219.9	-7.40%	-204.7	-196.4	-4.10%	-204.7	-209.1	2.10%	-204.7	-200	-2.30%	-204.7	-194.2	-5.10%	-204.7	-209.6	2.40%						
60304 EAU CL 3	92494 ARP 345	92.3	89	-3.60%	92.3	85.6	-7.30%	92.3	97.4	5.50%	92.3	89.7	-2.80%	92.3	87.8	-4.90%	92.3	97.3	5.40%	92.3	89.7	-2.80%						
SUBTOTALS FOR: MWSI		-112.4	-100.6	-10.50%	-112.4	-134.3	-19.50%	-112.4	-99	-11.90%	-112.4	-117	-6.20%	-112.4	-112.3	-0.10%	-112.4	-96.9	-13.80%	-112.4	-119.8	6.60%						
Difference =		11.8		15.50%	Difference =	-21.9		-21.90%	Difference =	13.4		17.60%	Difference =	-1.4		-14.00%	Difference =	0.1		0.10%	Difference =	15.5		15.50%	Difference =	-7.4		-7.40%
66756 SQBUTTE4	63049 STANTON4	-36.4	-34.4	-5.50%	-36.4	-33.7	-7.40%	-36.4	-34.9	-4.30%	-36.4	-35.4	-2.70%	-36.4	-33.8	-7.10%	-36.4	-34.3	-5.80%	-36.4	-36.8	1.20%						
66756 SQBUTTE4	66751 CENTER 4	-41.4	-42.1	1.80%	-41.4	-42.6	2.90%	-41.4	-41	-0.80%	-41.4	-41.8	1.00%	-41.4	-42.3	2.30%	-41.4	-41.1	-0.60%	-41.4	-42.8	3.50%						
66756 SQBUTTE4	66791 CENTER 3	90	88.8	-1.40%	90	88.5	-1.70%	90	88.1	-2.10%	90	89.5	-0.60%	90	88.4	-1.80%	90	87.7	-2.60%	90	91.9	2.10%						
63041 COAL CR4	63042 COAL TP4	-23.2	-23.4	0.60%	-23.2	-23.2	0.00%	-23.2	-23.2	-0.10%	-23.2	-23.2	0.30%	-23.2	-23.4	0.70%	-23.2	-23.4	0.00%	-23.2	-23.4	0.70%						
63041 COAL CR4	63049 STANTON4	-125.3	-126.2	0.80%	-125.3	-126.7	1.20%	-125.3	-125.4	0.10%	-125.3	-125.8	0.40%	-125.3	-126.5	1.00%	-125.3	-125.5	0.20%	-125.3	-126.1	0.60%						
63041 COAL CR4	63381 UNDERWD4	144.6	145.7	0.80%	144.6	146.3	1.20%	144.6	144.7	0.10%	144.6	145.2	0.40%	144.6	146	1.00%	144.6	144.8	0.10%	144.6	145.6	0.70%						
SUBTOTALS FOR: NDDC		8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%						
Difference =		0		0.00%	Difference =	0		0.00%	Difference =	0		0.00%	Difference =	0		0.00%	Difference =	0		0.00%	Difference =	0		0.00%				
67105 LELAND03	66506 FTTHOMP3	132.4	134.3	1.40%	132.4	134.3	1.40%	132.4	136.9	3.30%	132.4	133	0.50%	132.4	134.7	1.70%	132.4	137.1	3.50%	132.4	130.8	-1.20%						
67105 LELAND03	67180 GROTON 3	254.9	253.7	-0.50%	254.9	253.2	-0.70%	254.9	253.4	-0.60%	254.9	254.5	-0.20%	254.9	253.4	-0.60%	254.9	254.4	-0.20%	254.9	252.3	-1.00%						
67101 ANTELOP3	67120 BRDLAND3	193.6	193.4	-0.10%	193.6	193.6	0.00%	193.6	194.2	0.30%	193.6	193.5	0.00%	193.6	193.4	-0.10%	193.6	194.8	0.70%	193.6	191.3	-1.20%						
63361 BIGSTN3	66503 BLAIR 4	-5	22.2	-544.50%	-5	30.3	-705.80%	-5	23.6	-572.70%	-5	12.8	-356.00%	-5	30.8	-716.50%	-5	34.4	-787.90%	-5	20	-499.30%						
66554 MORRIS 4	66550 GRANITF4	15.3	21.6	40.70%	15.3	23.5	53.70%	15.3	21.3	39.00%	15.3	21.5	40.50%	15.3	23.8	55.50%	15.3	23.6	54.20%	15.3	13.5	-11.80%						
63336 AUDUBON4	63053 HUBBARD4	116.5	120.6	3.50%	116.5	122.2	4.90%	116.5	119	2.20%	116.5	118.6	1.80%	116.5	121.7	4.50%	116.5	119.7	2.80%	116.5	113.2	-2.80%						
66521 SULLYBT4	66519 OAH4	-70.5	-69.3	-1.70%	-70.5	-69.3	-1.60%	-70.5	-67.4	-4.40%	-70.5	-70	-0.60%	-70.5	-69	-2.10%	-70.5	-67.2	-4.60%	-70.5	-72	2.20%						
63052 INMAN 4	61611 WINGRIV4	100.9	107.4	6.50%	100.9	109.9	8.90%	100.9	105.6	4.60%	100.9	104.3	3.30%	100.9	109.3	8.30%	100.9	106.8	5.80%	100.9	81.8	-18.90%						
66470 BISON 4	66497 MAURINE4	-1.1	-0.4	-61.80%	-1.1	-0.4	-62.50%	-1.1	1.6	-244.20%	-1.1	-0.9	-19.90%	-1.1	-0.3	-76.20%	-1.1	0.6	-154.40%	-1.1	-1.7	54.40%						
66716 LAPORTE7	61640 BAOURA7	0.5	1.5	181.80%	0.5	1.9	256.80%	0.5	1	96.50%	0.5	1	98.80%	0.5	1.7	234.30%	0.5	1.2	126.10%	0.5	0.7	27.10%						
63222 ALEXAND7	60144 DGLASCO7	33.3	34.9	4.90%	33.3	35.5	6.70%	33.3	34.4	3.60%	33.3	34.3	3.20%	33.3	35.4	6.30%	33.3	34.8	4.50%	33.3	26.4	-20.50%						
67327 ELLENDL7	67401 ABDNUCT7	-6.3	-5.5	-12.40%	-6.3	-5.4	-14.20%	-6.3	-5.1	-19.70%	-6.3	-5.9	-6.90%	-6.3	-5.3	-16.40%	-6.3	-4.5	-28.70%	-6.3	-7.7	21.60%						
66432 EDGELEY7	66534 ORDWAY 7	-19.5	-19.6	0.30%	-19.5	-19.7	1.00%	-19.5	-19.1	-1.80%	-19.5	-19.5	0.10%	-19.5	-19.6	0.20%	-19.5	-18.8	-3.80%	-19.5	-21.2	8.80%						
66438 FORMAN 7	66522 SUMMIT7	-22.6	-22	-2.50%	-22.6	-21.9	-2.80%	-22.6	-21.7	-4.00%	-22.6	-22.2	-1.60%	-22.6	-21.8	-3.30%	-22.6	-20.7	-8.10%	-22.6	-24.1	7.00%						
63311 CANBY 4	66550 GRANITF4	90.1	104.5	16.00%	90.1	109.2	21.20%	90.1	103.7	15.10%	90.1	101.5	12.70%	90.1	108.3	20.10%	90.1	108.3	20.10%	90.1	104	15.40%						
62006 KERKHO 7	62005 KERKHO7	9.3	10.3	10.30%	9.3	10.6	13.70%	9.3	10.2	9.90%	9.3	10.8	15.80%	9.3	10.7	14.50%	9.3	10.6	13.80%	9.3	6.9	-25.40%						
66752 DRAYTON4	67557 LETELER4	-238.5	-234.1	-1.90%	-238.5	-232.3	-2.60%	-238.5	-236.1	-1.00%	-238.5	-236.4	-0.90%	-238.5	-232.9	-2.40%	-238.5	-235.4	-1.30%	-238.5	-240.3	0.80%						
63379 RUGBY 4	67523 GLENBOR4	42.4	45.7	7.70%	42.4	47.2	11.20%	42.4	43.5	2.40%	42.4	44	3.80%	42.4	46.6	9.80%	42.4	43.9	3.40%	42.4	43.3	2.10%						
SUBTOTALS FOR: NDEX		625.8	699	11.70%	625.8	721.8	15.30%	625.8	698.1	11.70%	625.8	674.9	7.90%	625.8	722.1	15.40%	625.8	723.6	15.60%	625.8	617.1	-1.40%						
Difference =		73.3		96.43%	Difference =	96		96.00%	Difference =	73.4		97.60%	Difference =	49.2														

Distribution Factor Analysis Transmission Alternative 1

2009 Summer Peak Case
Generation to Generation Dispatct

	CMPA		GRE		HCPD		HUC		MMPA		MRES		OTP								
	Difference =	0.5	0.70%	Difference =	-0.5	-0.50%	Difference =	0.9	1.20%	Difference =	0.4	0.80%	Difference =	0	0.00%	Difference =	4.5	4.50%	Difference =	0.3	0.30%
64831 GENTLMN3 64943 REDWILO3	277.2	278.1	0.30%	277.2	278.1	0.30%	277.2	274.3	-1.00%	277.2	277.2	0.00%	277.2	278.2	0.40%	277.2	278.3	0.40%	277.2	276.8	-0.10%
SUBTOTALS FOR: WNE_WKS	277.2	278.1	0.30%	277.2	278.1	0.30%	277.2	274.3	-1.00%	277.2	277.2	0.00%	277.2	278.2	0.40%	277.2	278.3	0.40%	277.2	276.8	-0.10%
	Difference =	0.9	1.20%	Difference =	0.9	0.90%	Difference =	-2.8	-3.80%	Difference =	0.1	0.10%	Difference =	1	1.00%	Difference =	1.1	1.10%	Difference =	-0.4	-0.40%
66756 SQBUTTE4 63049 STANTON4	-36.4	-34.4	-5.50%	-36.4	-33.7	-7.40%	-36.4	-34.9	-4.30%	-36.4	-35.4	-2.70%	-36.4	-33.8	-7.10%	-36.4	-34.3	-5.80%	-36.4	-36.8	1.20%
66756 SQBUTTE4 66751 CENTER 4	-41.4	-42.1	1.80%	-41.4	-42.6	2.90%	-41.4	-41	-0.80%	-41.4	-41.8	1.00%	-41.4	-42.3	2.30%	-41.4	-41.1	-0.60%	-41.4	-42.8	3.50%
66756 SQBUTTE4 66791 CENTER 3	90	88.8	-1.40%	90	88.5	-1.70%	90	88.1	-2.10%	90	89.5	-0.60%	90	88.4	-1.80%	90	87.7	-2.60%	90	91.9	2.10%
SUBTOTALS FOR: Y2DC	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%
	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%
60186 AS KING3 60304 EAU CL 3	317.8	317.7	0.00%	317.8	311	-2.10%	317.8	322.9	1.60%	317.8	315.1	-0.80%	317.8	315.1	-0.80%	317.8	323.1	1.70%	317.8	315.1	-0.80%
60105 PR ISLD3 61950 BYRON 3	-204.7	-189.6	-7.40%	-204.7	-219.9	7.40%	-204.7	-196.4	-4.10%	-204.7	-209.1	2.10%	-204.7	-200	-2.30%	-204.7	-194.2	-5.10%	-204.7	-209.6	2.40%
60192 BLUE LK3 60050 WLMRTHTP	-495.7	-503.6	1.60%	-495.7	-515.2	3.90%	-495.7	-492.7	-0.60%	-495.7	-500	0.90%	-495.7	-496.3	0.10%	-495.7	-490.1	-1.10%	-495.7	-502.1	1.30%
60187 AS KING7 60325 WILLOWRV7	128.6	128.9	0.20%	128.6	127.7	-0.70%	128.6	129.2	0.50%	128.6	128.2	-0.30%	128.6	128.4	-0.10%	128.6	129.2	0.50%	128.6	128.3	-0.20%
60238 REDROCK7 68966 GLENMONT	50	50.3	0.70%	50	48.4	-3.10%	50	50.6	1.20%	50	49.5	-0.90%	50	49.6	-0.80%	50	50.6	1.30%	50	49.8	-0.40%
62234 LKMARN 7 60276 AIRLAKE7	53.7	53.5	-0.40%	53.7	54.7	1.80%	53.7	53.6	-0.30%	53.7	53.8	0.20%	53.7	39.3	-26.90%	53.7	53.5	-0.40%	53.7	54	0.40%
SUBTOTALS FOR: MNEX (INFO)	-150.3	-142.8	-5.00%	-150.3	-193.3	28.60%	-150.3	-132.8	-11.60%	-150.3	-162.4	8.00%	-150.3	-163.9	9.10%	-150.3	-127.9	-14.90%	-150.3	-164.5	9.50%
	Difference =	7.5	9.90%	Difference =	-43	-43.00%	Difference =	17.5	23.30%	Difference =	-12.1	-24.20%	Difference =	-13.6	-13.60%	Difference =	22.4	22.40%	Difference =	-14.2	-14.20%

Distribution Factor Analysis Transmission Alternative 2

2009 Summer Peak Case
Generation to Generation Dispatct

		CMMPA		GRE		HCPD		HUC		MMPA		MRES		OTP							
64095 MNTZUMA3 64064 BONDRT3	17.1	13.4	-21.80%	17.1	13.8	-19.40%	17.1	21.6	26.40%	17.1	16.5	-3.50%	17.1	13.8	-19.30%	17.1	25.1	46.70%	17.1	16.9	-1.20%
SUBTOTALS FOR: MNTZUMA_W	17.1	13.4	-21.80%	17.1	13.8	-19.40%	17.1	21.6	26.40%	17.1	16.5	-3.50%	17.1	13.8	-19.30%	17.1	25.1	46.70%	17.1	16.9	-1.20%
	Difference =	-3.7	-4.90%	Difference =	-3.3	-3.30%	Difference =	4.5	6.00%	Difference =	-0.6	-1.20%	Difference =	-3.3	-3.30%	Difference =	8	6.00%	Difference =	-0.2	-0.20%
61702 LASKIN 7 61705 BABBITT7	63.5	63.4	0.00%	63.5	63.5	0.00%	63.5	63.4	-0.10%	63.5	63.5	0.00%	63.5	63.4	0.00%	63.5	63.4	-0.10%	63.5	63.5	0.10%
61702 LASKIN 7 61722 FORBES 7	43.9	43.9	0.00%	43.9	43.9	0.00%	43.9	43.8	-0.10%	43.9	43.9	0.00%	43.9	43.8	-0.10%	43.9	43.8	-0.10%	43.9	43.8	-0.10%
61702 LASKIN 7 62451 LAKEIND7	64.6	64.6	0.00%	64.6	64.6	0.00%	64.6	64.5	-0.10%	64.6	64.6	0.00%	64.6	64.5	-0.10%	64.6	64.5	-0.10%	64.6	64.6	0.10%
61702 LASKIN 7 61574 LASKNJCT	-74.8	-74.8	-0.10%	-74.8	-74.8	0.00%	-74.8	-74.7	-0.10%	-74.8	-74.8	0.00%	-74.8	-74.7	-0.10%	-74.8	-74.7	-0.10%	-74.8	-74.9	0.10%
61626 BOSWELL4 61625 BLCKBRY4	140.2	140	-0.20%	140.2	139.9	-0.20%	140.2	140.1	-0.10%	140.2	140.1	0.00%	140.2	139.9	-0.20%	140.2	140	-0.10%	140.2	140.9	0.50%
61626 BOSWELL4 61625 BLCKBRY4	136.4	136.2	-0.20%	136.4	136.1	-0.20%	136.4	136.3	-0.10%	136.4	136.4	0.00%	136.4	136.2	-0.20%	136.4	136.3	-0.10%	136.4	137.2	0.50%
61626 BOSWELL4 61627 SHANNON4	86.3	86.8	0.50%	86.3	86.9	0.70%	86.3	86.5	0.30%	86.3	86.4	0.10%	86.3	86.8	0.60%	86.3	86.6	0.40%	86.3	84.9	-1.70%
61615 ARROWHWD4 61614 98L TAP4	58.7	57.7	-1.80%	58.7	57.6	-2.00%	58.7	57.4	-2.30%	58.7	58.5	-0.40%	58.7	57.5	-2.10%	58.7	57.1	-2.70%	58.7	61.4	4.50%
61615 ARROWHWD4 61554 AWHD1JCT	155.5	155.3	-0.10%	155.5	155.2	-0.10%	155.5	155.2	-0.20%	155.5	155.4	0.00%	155.5	155.3	-0.10%	155.5	155.1	-0.20%	155.5	156.1	0.40%
61615 ARROWHWD4 61556 AWHD2JCT	160.9	160.7	-0.10%	160.9	160.6	-0.10%	160.9	160.6	-0.20%	160.9	160.8	0.00%	160.9	160.7	-0.10%	160.9	160.5	-0.20%	160.9	161.6	0.40%
61615 ARROWHWD4 61624 FORBES 4	-110.8	-111.1	0.30%	-110.8	-110.7	-0.10%	-110.8	-112	1.10%	-110.8	-110.7	-0.10%	-110.8	-111.1	1.20%	-110.8	-112.1	1.20%	-110.8	-110.5	-0.30%
61615 ARROWHWD4 63055 BEARCK 4	51.7	52.4	1.30%	51.7	53.7	3.80%	51.7	51.2	-1.00%	51.7	52.5	1.50%	51.7	53	2.40%	51.7	51.3	-0.90%	51.7	50.3	-2.70%
SUBTOTALS FOR: MP_EXPORT	776	775	-0.10%	776	776.5	0.10%	776	772.3	-0.50%	776	776.6	0.10%	776	775.3	-0.10%	776	772	-0.50%	776	778.9	0.40%
	Difference =	-1	-1.30%	Difference =	0.5	0.50%	Difference =	-3.7	-4.90%	Difference =	0.6	1.10%	Difference =	-0.7	-0.70%	Difference =	-4	-4.00%	Difference =	2.9	2.90%
60105 PR ISLD3 61950 BYRON 3	-180.8	-162.5	-10.10%	-180.8	-191.3	5.80%	-180.8	-170	-6.00%	-180.8	-183.7	1.60%	-180.8	-171.8	-5.00%	-180.8	-167.1	-7.60%	-180.8	-183.3	1.40%
60304 EAU CL 3 92494 ARP 345	103.2	101.4	-1.70%	103.2	98.7	-4.40%	103.2	109.3	6.00%	103.2	101.2	-1.90%	103.2	100.7	-2.40%	103.2	109.6	6.20%	103.2	101.7	-1.40%
SUBTOTALS FOR: MWSI	-77.6	-61.1	-21.30%	-77.6	-92.6	19.30%	-77.6	-60.7	-21.90%	-77.6	-82.5	6.30%	-77.6	-71.1	-8.50%	-77.6	-57.5	-25.90%	-77.6	-61	5.10%
	Difference =	16.6	21.60%	Difference =	-15	-15.00%	Difference =	17	22.60%	Difference =	-4.9	-9.80%	Difference =	6.6	6.60%	Difference =	20.1	23.10%	Difference =	-8.4	-4.00%
66756 SQBUTTE4 63049 STANTON4	-41.4	-40	-3.30%	-41.4	-39.6	-4.30%	-41.4	-40.3	-2.70%	-41.4	-40.7	-1.60%	-41.4	-39.7	-4.10%	-41.4	-39.8	-3.70%	-41.4	-42.3	2.40%
66756 SQBUTTE4 66751 CENTER 4	-39.2	-39.7	1.30%	-39.2	-40	2.20%	-39.2	-38.6	-1.40%	-39.2	-39.5	0.80%	-39.2	-39.8	1.60%	-39.2	-38.6	-1.40%	-39.2	-40.4	3.20%
66756 SQBUTTE4 66791 CENTER 3	92.8	91.9	-0.90%	92.8	91.9	-1.00%	92.8	91.1	-1.80%	92.8	92.5	-0.30%	92.8	91.7	-1.20%	92.8	90.7	-2.20%	92.8	95	2.40%
63041 COAL CR4 63042 COAL TP4	-22.9	-23	0.40%	-22.9	-23	0.60%	-22.9	-22.8	-0.20%	-22.9	-22.9	0.20%	-22.9	-23	0.50%	-22.9	-22.8	-0.20%	-22.9	-23	0.50%
63041 COAL CR4 63049 STANTON4	-122.6	-123.3	0.50%	-122.6	-123.6	0.80%	-122.6	-122.5	-0.10%	-122.6	-123	0.30%	-122.6	-123.4	0.60%	-122.6	-122.5	-0.10%	-122.6	-123.2	0.50%
63041 COAL CR4 63381 UNDERWD4	141.6	142.3	0.50%	141.6	142.7	0.80%	141.6	141.4	-0.10%	141.6	142	0.30%	141.6	142.5	0.60%	141.6	141.5	-0.10%	141.6	142.3	0.50%
SUBTOTALS FOR: NDDC	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	-0.10%
	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%
67105 LELAND03 66506 FTTHOMP3	128.9	130.2	1.10%	128.9	130.1	0.90%	128.9	133	3.20%	128.9	129.2	0.30%	128.9	130.6	1.30%	128.9	133.2	3.40%	128.9	126.8	-1.60%
67105 LELAND03 67160 GROTON 3	258.1	257.2	-0.30%	258.1	256.9	-0.50%	258.1	256.9	-0.50%	258.1	257.8	-0.10%	258.1	257.1	-0.40%	258.1	258	0.00%	258.1	255.5	-1.00%
67101 ANTELOP3 67120 BRDLAND3	194.4	194.3	0.00%	194.4	194	-0.20%	194.4	195.1	0.40%	194.4	194.3	0.00%	194.4	194.3	0.00%	194.4	195.7	0.70%	194.4	192	-1.20%
63361 BIGSTN3 66503 BLAIR 4	-76.5	-57	-25.50%	-76.5	-51.9	-32.20%	-76.5	-54.4	-28.90%	-76.5	-63.7	-16.70%	-76.5	-50.9	-33.50%	-76.5	-45.5	-40.50%	-76.5	-57.8	-24.50%
66554 MORRIS 4 66550 GRANITF4	-3.4	1.3	-138.20%	-3.4	2.8	-182.90%	-3.4	1.1	-133.90%	-3.4	1.3	-190.80%	-3.4	3	-199.90%	-3.4	3	-188.90%	-3.4	-6.8	102.70%
63336 AUDUBON4 63053 HUBBARD4	105.1	108.1	2.80%	105.1	109.2	3.90%	105.1	106.6	1.40%	105.1	106.7	1.50%	105.1	108.8	3.60%	105.1	107.1	1.90%	105.1	101.4	-3.50%
66521 SULLYBT4 66519 OAH4 4	-72.7	-71.8	-1.20%	-72.7	-71.9	-1.00%	-72.7	-69.8	-4.00%	-72.7	-72.4	-0.40%	-72.7	-71.6	-1.50%	-72.7	-69.7	-4.10%	-72.7	-74.6	2.60%
63052 INMAN 4 61611 WINGRIV4	83	87.7	5.70%	83	89.4	7.80%	83	86.2	3.90%	83	85.5	3.10%	83	89	7.30%	83	87	4.90%	83	63.2	-23.80%
66470 BISON 4 66497 MAURINE4	-2.5	-2	-21.10%	-2.5	-2	-18.90%	-2.5	0.1	-104.80%	-2.5	-2.4	-5.70%	-2.5	-1.9	-25.80%	-2.5	-0.9	-63.50%	-2.5	-3.3	30.10%
66716 LAPORTE7 61640 BAOURA7	-2.4	-1.7	-29.20%	-2.4	-1.4	-42.00%	-2.4	-2.1	-10.90%	-2.4	-1.9	-17.50%	-2.4	-1.5	-37.50%	-2.4	-2	-14.70%	-2.4	-2.1	-9.50%
63222 ALEXAND7 60144 DGLASCO7	28.3	29.5	4.30%	28.3	29.9	6.00%	28.3	29.1	2.90%	28.3	29.1	3.10%	28.3	29.8	5.60%	28.3	29.3	3.70%	28.3	21.3	-24.60%
67327 ELLENDL7 67401 ABDNJCT7	-8.1	-7.6	-7.20%	-8.1	-7.5	-7.70%	-8.1	-7.1	-13.30%	-8.1	-7.8	-3.70%	-8.1	-7.4	-9.50%	-8.1	-6.6	-19.60%	-8.1	-9.6	18.30%
66432 EDGELEY7 66534 ORDWAY 7	-19.3	-19.3	0.00%	-19.3	-19.4	0.50%	-19.3	-18.9	-2.00%	-19.3	-19.3	0.00%	-19.3	-19.3	-0.20%	-19.3	-18.5	-4.00%	-19.3	-20.9	8.40%
66438 FORMAN 7 66522 SUMMIT7	-23.9	-23.5	-1.80%	-23.9	-23.5	-1.90%	-23.9	-23.1	-3.30%	-23.9	-23.7	-1.00%	-23.9	-23.3	-2.40%	-23.9	-22.3	-7.00%	-23.9	-25.6	6.90%
63311 CANBY 4 66550 GRANITF4	49.8	60.3	21.10%	49.8	63.5	27.70%	49.8	60	20.60%	49.8	58.2	17.10%	49.8	63.8	28.20%	49.8	63.5	27.70%	49.8	60.1	20.80%
62006 KERKHO 7 62005 KERKHO7	6.2	6.9	12.60%	6.2	7.2	17.10%	6.2	6.8	11.00%	6.2	7.4	20.90%	6.2	7.3	17.90%	6.2	7.1	15.40%	6.2	3.6	-41.80%
66752 DRAYTON4 67557 LETELER4	-249.9	-246.8	-1.20%	-249.9	-245.6	-1.70%	-249.9	-248.5	-0.60%	-249.9	-248.5	-0.60%	-249.9	-246.1	-1.50%	-249.9	-248.1	-1.10%	-249.9	-252.6	1.10%
63379 RUGBY 4 67523 GLENBOR4	33.8	36	6.50%	33.8	37	9.60%	33.8	34.1	0.80%	33.8	34.9	3.30%	33.8	36.5	8.10%	33.8	34.2	1.30%	33.8	33.8	0.10%
63361 BIGSTN3 63057 WLLMAR3	202.5	224.4	10.80%	202.5	232.6	14.80%	202.5	220.9	9.10%	202.5	216.5	6.90%	202.5	231.5	14.30%	202.5	226.4	11.80%	202.5	220.1	8.70%
SUBTOTALS FOR: NDEX	631.1	706.1	11.90%	631.1	729.5	15.60%	631.1	706	11.90%	631.1	681.3	8.00%	631.1	729.7	15.60%	631.1	731	15.80%	631.1	624.6	-1.00%
	Difference =	75	95.60%	Difference =	98.4	95.40%	Difference =	74.9	95.90%	Difference =	50.2	100.40%	Difference =	98.6	95.60%	Difference =	99.9	95.90%	Difference =		

Distribution Factor Analysis Transmission Alternative 2

2009 Summer Peak Case
Generation to Generation Dispatc

		CMMPA		GRE		HCPD		HUC		MMPA		MRES		OTP								
SUBTOTALS FOR: QUADCITY_W		830.9	831.2	0.00%	830.9	830.4	-0.10%	830.9	831.8	0.10%	830.9	830.8	0.00%	830.9	835.3	0.50%	830.9	831.1	0.00%			
Difference =		0.3	0.40%	Difference =	-0.6	-0.60%	Difference =	0.9	1.20%	Difference =	0.2	0.50%	Difference =	-0.1	-0.10%	Difference =	4.4	4.40%	Difference =	0.1	0.10%	
64831 GENTLMN3	64943 REDWILO3	275.3	276.1	0.30%	275.3	276	0.20%	275.3	272.3	-1.10%	275.3	275.4	0.00%	275.3	276.2	0.30%	275.3	276.3	0.30%	275.3	274.9	-0.10%
SUBTOTALS FOR: WNE_WKS		275.3	276.1	0.30%	275.3	276	0.20%	275.3	272.3	-1.10%	275.3	275.4	0.00%	275.3	276.2	0.30%	275.3	276.3	0.30%	275.3	274.9	-0.10%
Difference =		0.8	1.00%	Difference =	0.7	0.70%	Difference =	-3	-4.00%	Difference =	0	0.10%	Difference =	0.8	0.80%	Difference =	1	1.00%	Difference =	-0.4	-0.40%	
66756 SQBUTTE4	63049 STANTON4	-41.4	-40	-3.30%	-41.4	-39.6	-4.30%	-41.4	-40.3	-2.70%	-41.4	-40.7	-1.60%	-41.4	-39.7	-4.10%	-41.4	-39.8	-3.70%	-41.4	-42.3	2.40%
66756 SQBUTTE4	66751 CENTER 4	-39.2	-39.7	1.30%	-39.2	-40	2.20%	-39.2	-38.6	-1.40%	-39.2	-39.5	0.80%	-39.2	-39.8	1.60%	-39.2	-38.6	-1.40%	-39.2	-40.4	3.20%
66756 SQBUTTE4	66791 CENTER 3	92.8	91.9	-0.90%	92.8	91.9	-1.00%	92.8	91.1	-1.80%	92.8	92.5	-0.30%	92.8	91.7	-1.20%	92.8	90.7	-2.20%	92.8	95	2.40%
SUBTOTALS FOR: Y2DC		12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%
Difference =		0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	
60186 AS KING3	60304 EAU CL 3	328.7	330.2	0.50%	328.7	324.2	-1.40%	328.7	335	1.90%	328.7	326.7	-0.60%	328.7	328.2	-0.20%	328.7	335.5	2.10%	328.7	327.2	-0.50%
60105 PR ISLD3	61950 BYRON 3	-180.8	-162.5	-10.10%	-180.8	-191.3	5.80%	-180.8	-170	-6.00%	-180.8	-183.7	1.60%	-180.8	-171.8	-5.00%	-180.8	-167.1	-7.60%	-180.8	-183.3	1.40%
60192 BLUE LK3	60050 WLMRTHTP	-453.7	-456.4	0.60%	-453.7	-465.6	2.60%	-453.7	-446.4	-1.60%	-453.7	-455.6	0.40%	-453.7	-447.1	-1.40%	-453.7	-442.8	-2.40%	-453.7	-456.6	0.60%
60187 AS KING7	60325 WILLOWRV7	130.1	130.6	0.40%	130.1	129.5	-0.50%	130.1	130.9	0.60%	130.1	129.8	-0.20%	130.1	130.2	0.10%	130.1	130.9	0.70%	130.1	130	-0.10%
60238 REDROCK7	68966 GLENMONT	52.1	52.7	1.30%	52.1	51	-2.10%	52.1	52.9	1.60%	52.1	51.8	-0.60%	52.1	52	0.00%	52.1	53	1.80%	52.1	52.1	0.00%
62234 LKMARN 7	60276 AIRLAKE7	52.9	52.5	-0.60%	52.9	53.7	1.50%	52.9	52.6	-0.40%	52.9	52.9	0.10%	52.9	38.3	-27.60%	52.9	52.5	-0.60%	52.9	53	0.20%
SUBTOTALS FOR: MNEX (INFO)		-70.7	-52.8	-25.30%	-70.7	-98.6	39.40%	-70.7	-45	-36.30%	-70.7	-78.1	10.40%	-70.7	-70.2	-0.70%	-70.7	-37.9	-46.50%	-70.7	-77.7	9.80%
Difference =		17.9	23.60%	Difference =	-27.9	-27.90%	Difference =	25.7	34.30%	Difference =	-7.4	-14.80%	Difference =	0.5	0.50%	Difference =	32.9	32.90%	Difference =	-6.9	-6.90%	

Distribution Factor Analysis Transmission Alternative 3

2009 Summer Peak Case
Generation to Generation Dispatc

		CMMPA		GRE		HCPD		HUC		MMPA		MRES		OTP								
64095	MNTZUMA3 64064 BONDRT3	14.4	10.8	-25.20%	14.4	11.1	-22.80%	14.4	18.9	31.30%	14.4	13.9	-3.70%	14.4	11	-23.30%	14.4	22.3	55.00%	14.4	14.3	-0.60%
	SUBTOTALS FOR: MNTZUMA_W	14.4	10.8	-25.20%	14.4	11.1	-22.80%	14.4	18.9	31.30%	14.4	13.9	-3.70%	14.4	11	-23.30%	14.4	22.3	55.00%	14.4	14.3	-0.60%
	Difference =	-3.6	-4.80%	Difference =	-3.3	-3.30%	Difference =	4.5	6.00%	Difference =	-0.5	-1.10%	Difference =	-3.4	-3.40%	Difference =	7.9	7.90%	Difference =	-0.1	-0.10%	
61702	LASKIN 7 61705 BABBITT7	63.5	63.4	0.00%	63.5	63.4	0.00%	63.5	63.4	-0.10%	63.5	63.4	0.00%	63.5	63.4	-0.10%	63.5	63.4	-0.10%	63.5	63.5	0.10%
61702	LASKIN 7 61722 FORBES 7	43.9	43.9	0.00%	43.9	43.9	0.00%	43.9	43.8	-0.10%	43.9	43.9	0.00%	43.9	43.8	-0.10%	43.9	43.8	-0.10%	43.9	43.9	-0.10%
61702	LASKIN 7 62451 LAKEIND7	64.6	64.5	0.00%	64.6	64.5	0.00%	64.6	64.5	-0.10%	64.6	64.5	0.00%	64.6	64.5	-0.10%	64.6	64.5	-0.10%	64.6	64.6	0.10%
61702	LASKIN 7 61574 LASKNJCT	-74.8	-74.7	-0.10%	-74.8	-74.8	0.00%	-74.8	-74.7	-0.10%	-74.8	-74.8	0.00%	-74.8	-74.7	-0.10%	-74.8	-74.7	-0.10%	-74.8	-74.9	0.10%
61626	BOSWELL4 61625 BLCKBRY4	139.9	139.7	-0.20%	139.9	139.6	-0.20%	139.9	139.8	-0.10%	139.9	139.9	-0.10%	139.9	139.7	-0.20%	139.9	139.8	-0.10%	139.9	140.7	0.50%
61626	BOSWELL4 61625 BLCKBRY4	136.2	136	-0.20%	136.2	135.9	-0.20%	136.2	136.1	-0.10%	136.2	136.1	-0.10%	136.2	135.9	-0.20%	136.2	136	-0.10%	136.2	136.9	0.50%
61626	BOSWELL4 61627 SHANNON4	86.8	87.2	0.50%	86.8	87.4	0.70%	86.8	87	0.30%	86.8	86.9	0.20%	86.8	87.3	0.60%	86.8	87.1	0.40%	86.8	85.3	-1.70%
61615	ARROWHWD461614 98L TAP4	57.6	56.6	-1.80%	57.6	56.5	-2.00%	57.6	56.3	-2.30%	57.6	57.4	-0.50%	57.6	56.4	-2.10%	57.6	56.1	-2.70%	57.6	60.3	4.60%
61615	ARROWHWD461554 AWH01JCT	155.2	155.1	-0.10%	155.2	155	-0.10%	155.2	155	-0.20%	155.2	155.2	0.00%	155.2	155.1	-0.10%	155.2	154.9	-0.20%	155.2	155.9	0.40%
61615	ARROWHWD461556 AWH02JCT	160.7	160.5	-0.10%	160.7	160.4	-0.10%	160.7	160.4	-0.20%	160.7	160.6	0.00%	160.7	160.5	-0.10%	160.7	160.3	-0.20%	160.7	161.3	0.40%
61615	ARROWHWD461624 FORBES 4	-110.9	-111.3	0.30%	-110.9	-110.8	-0.10%	-110.9	-112.1	1.00%	-110.9	-110.9	-0.10%	-110.9	-111.2	0.20%	-110.9	-112.2	1.10%	-110.9	-110.6	-0.30%
61615	ARROWHWD463055 BEARCK 4	53.1	53.8	1.30%	53.1	55.1	3.80%	53.1	52.6	-0.90%	53.1	53.8	1.40%	53.1	54.4	2.40%	53.1	52.7	-0.80%	53.1	51.7	-2.60%
	SUBTOTALS FOR: MP_EXPORT	775.7	774.8	-0.10%	775.7	776.2	0.10%	775.7	772.2	-0.50%	775.7	776.2	0.10%	775.7	775.2	-0.10%	775.7	771.8	-0.50%	775.7	778.6	0.40%
	Difference =	-0.9	-1.20%	Difference =	0.5	0.50%	Difference =	-3.5	-4.70%	Difference =	0.5	0.90%	Difference =	-0.5	-0.50%	Difference =	-3.9	-3.90%	Difference =	2.9	2.90%	
60105	PR ISLD3 61950 BYRON 3	-189.1	-171.5	-9.30%	-189.1	-200.6	6.10%	-189.1	-179	-5.30%	-189.1	-192	1.60%	-189.1	-181.1	-4.20%	-189.1	-176.2	-6.80%	-189.1	-192	1.50%
60304	EAU CL 3 92494 ARP 345	100.8	98.9	-1.80%	100.8	96	-4.70%	100.8	106.8	5.90%	100.8	99	-1.80%	100.8	98	-2.70%	100.8	107	6.10%	100.8	99.2	-1.50%
	SUBTOTALS FOR: MWSI	-88.3	-72.5	-17.80%	-88.3	-104.5	18.50%	-88.3	-72.2	-18.20%	-88.3	-93	5.40%	-88.3	-83.1	-5.90%	-88.3	-69.2	-21.50%	-88.3	-92.7	5.10%
	Difference =	15.7	20.70%	Difference =	-16.3	-16.30%	Difference =	16.1	21.40%	Difference =	-4.8	-9.50%	Difference =	5.2	5.20%	Difference =	19	19.00%	Difference =	-4.5	-4.50%	
66756	SQBUTTE4 63049 STANTON4	-40.2	-38.8	-3.30%	-40.2	-38.4	-4.40%	-40.2	-39.1	-2.80%	-40.2	-39.5	-1.60%	-40.2	-38.5	-4.20%	-40.2	-38.6	-3.80%	-40.2	-41.2	2.50%
66756	SQBUTTE4 66751 CENTER 4	-39.7	-40.2	1.30%	-39.7	-40.6	2.20%	-39.7	-39.2	-1.40%	-39.7	-40	0.80%	-39.7	-40.4	-1.70%	-39.7	-39.2	-1.30%	-39.7	-41	3.20%
66756	SQBUTTE4 66791 CENTER 3	92.1	91.3	-0.90%	92.1	91.2	-1.00%	92.1	90.5	-1.80%	92.1	91.8	-0.40%	92.1	91.1	-1.10%	92.1	90.1	-2.20%	92.1	94.4	2.50%
63041	COAL CR4 63042 COAL TP4	-23	-23.1	0.40%	-23	-23.1	0.60%	-23	-22.9	-0.20%	-23	-23	0.20%	-23	-23.1	0.50%	-23	-22.9	-0.20%	-23	-23.1	0.50%
63041	COAL CR4 63049 STANTON4	-123.3	-124	0.50%	-123.3	-124.3	0.80%	-123.3	-123.2	-0.10%	-123.3	-123.7	0.30%	-123.3	-124.1	0.70%	-123.3	-123.2	-0.10%	-123.3	-123.9	0.40%
63041	COAL CR4 63381 UNDERW4	142.4	143.1	0.50%	142.4	143.5	0.80%	142.4	142.2	-0.10%	142.4	142.8	0.30%	142.4	143.3	0.60%	142.4	142.3	-0.10%	142.4	143	0.50%
	SUBTOTALS FOR: NDDC	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%
	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	
67105	LELANDO3 66506 FTTHOMP3	130	131.3	1.00%	130	131.2	0.90%	130	134.1	3.10%	130	130.4	0.30%	130	131.6	1.20%	130	134.2	3.20%	130	127.9	-1.60%
67105	LELANDO3 67180 GROTON 3	256.9	256	-0.30%	256.9	255.7	-0.50%	256.9	255.7	-0.50%	256.9	256.6	-0.10%	256.9	255.9	-0.40%	256.9	256.8	0.00%	256.9	254.3	-1.00%
67101	ANTELOP3 67120 BRDLAND3	194	193.9	0.00%	194	193.6	-0.20%	194	194.6	0.30%	194	193.9	0.00%	194	193.9	-0.10%	194	193.3	-0.70%	194	191.6	-1.20%
63361	BIGSTN3 66503 BLAIR 4	-70.5	-50.9	-27.80%	-70.5	-45.6	-35.40%	-70.5	-48.5	-31.30%	-70.5	-57.7	-18.10%	-70.5	-44.9	-36.30%	-70.5	-39.7	-43.70%	-70.5	-51.7	-26.60%
66554	MORRIS 4 66550 GRANITF4	-7.8	-3	-61.50%	-7.8	-1.5	-81.50%	-7.8	-3.2	-58.80%	-7.8	-3.3	-57.40%	-7.8	-1.2	-84.30%	-7.8	-1.4	-82.70%	-7.8	-11.2	-43.10%
63336	AUDUBON4 63053 HUBBARD4	108.1	111	2.70%	108.1	112.2	3.80%	108.1	109.6	1.40%	108.1	109.7	1.50%	108.1	111.8	3.40%	108.1	110	1.80%	108.1	104.4	-3.40%
66521	SULLYBT4 66519 OAH4 4	-72	-71.2	-1.20%	-72	-71.3	-1.00%	-72	-69.2	-4.00%	-72	-71.7	-0.40%	-72	-71	-1.40%	-72	-69.1	-4.10%	-72	-73.9	2.60%
63052	INMAN 4 61611 WINGRIV4	87.5	92.1	5.30%	87.5	93.9	7.30%	87.5	90.6	3.60%	87.5	90	2.90%	87.5	93.4	6.80%	87.5	91.4	4.50%	87.5	67.6	-22.70%
66470	BISON 4 66497 MAURINE4	-2.1	-1.5	-25.00%	-2.1	-1.6	-22.10%	-2.1	0.5	-126.20%	-2.1	-1.9	-7.70%	-2.1	-1.5	-29.50%	-2.1	-0.5	-75.40%	-2.1	-2.8	37.20%
66716	LAPORTE7 61640 BAOURA7	-1.7	-1	-40.80%	-1.7	-0.7	-58.70%	-1.7	-1.4	-15.20%	-1.7	-1.3	-23.80%	-1.7	-0.8	-52.40%	-1.7	-1.3	-20.60%	-1.7	-1.5	-13.10%
63222	ALEXAND7 60144 DGLASCO7	29.1	30.3	4.10%	29.1	30.8	5.70%	29.1	29.9	2.80%	29.1	30	3.00%	29.1	30.7	5.30%	29.1	30.2	3.50%	29.1	22.1	-24.00%
67327	ELLENDL7 67401 ABDNUCT7	-7.9	-7.3	-7.30%	-7.9	-7.3	-7.90%	-7.9	-6.8	-13.40%	-7.9	-7.6	-4.00%	-7.9	-7.1	-9.50%	-7.9	-6.3	-19.90%	-7.9	-9.4	18.90%
66432	EDGELEY7 66534 ORDWAY 7	-19.5	-19.5	0.00%	-19.5	-19.6	0.50%	-19.5	-19.1	-1.90%	-19.5	-19.4	-0.10%	-19.5	-19.4	-0.10%	-19.5	-18.7	-3.90%	-19.5	-21.1	8.30%
66438	FORMAN 7 66522 SUMMIT7	-23.8	-23.4	-1.80%	-23.8	-23.4	-1.90%	-23.8	-23.1	-3.30%	-23.8	-23.6	-1.10%	-23.8	-23.3	-2.40%	-23.8	-22.2	-6.90%	-23.8	-25.5	6.90%
63311	CANBY 4 66550 GRANITF4	48.2	58.9	22.30%	48.2	62.3	29.40%	48.2	58.6	21.60%	48.2	56.5	17.30%	48.2	62.4	29.60%	48.2	62.1	28.90%	48.2	58.7	21.80%
62006	KERKHO 7 62005 KERKHO7	5.4	6.1	14.00%	5.4	6.4	18.80%	5.4	6.1	12.80%	5.4	6.5	21.30%	5.4	6.5	19.80%	5.4	6.3	17.90%	5.4	2.8	-48.20%
66752	DRAYTON4 67557 LETELER4	-243.7	-243.7	-1.20%	-243.7	-242.5	-1.70%	-243.7	-245.4	-0.60%	-243.7	-245.3	-0.60%	-243.7	-246.8	-1.60%	-243.7	-244.9	-0.70%	-243.7	-249.6	1.10%
63379	RUGBY 4 67523 GLENBOR4	36.1	38.3	6.10%	36.1	39.3	9.00%	36.1	36.4	0.80%	36.1	37.2	3.00%	36.1	38.9	7.60%	36.1	36.6	1.30%	36.1	36.1	0.00%
63361	BIGSTN3 63057 WLLMAR3	187.6	209.1	11.50%	187.6	216.8	15.60%	187.6	206	9.80%	187.6	202.1	7.70%	187.6	216.4	15.30%	187.6	211.6	12.80%	187.6	205.1	9.30%
	SUBTOTALS FOR: NDEX	630.7	705.5	11.90%	630.7	728.9	15.60%	630.7	705.4	11.80%	630.7	680.8	7.90%	630.7	729.1	15.60%	630.7	730.4	15.80%	630.7	624	-1.10%
	Difference =	74.8	95.50%	Difference =	98.2	95.20%	Difference =	74.7	95.60%	Difference =												

Distribution Factor Analysis Transmission Alternative 3

2009 Summer Peak Case
Generation to Generation Dispatct

		CMMPA		GRE		HCPD		HUC		MMPA		MRES		OTP								
SUBTOTALS FOR: QUADCITY_W		830.4	831	0.10%	830.4	830	0.00%	830.4	831.4	0.10%	830.4	830.7	0.00%	830.4	830.4	0.00%	830.4	834.9	0.50%	830.4	830.8	0.00%
Difference =			0.6	0.70%	Difference =	-0.4	-0.40%	Difference =	1	1.30%	Difference =	0.3	0.60%	Difference =	-0.1	-0.10%	Difference =	4.4	4.40%	Difference =	0.4	0.40%
64831 GENTLMN3	64943 REDWILO3	276.1	276.9	0.30%	276.1	276.7	0.20%	276.1	273.1	-1.10%	276.1	276.1	0.00%	276.1	276.8	0.30%	276.1	277	0.30%	276.1	275.7	-0.10%
SUBTOTALS FOR: WNE_WKS		276.1	276.9	0.30%	276.1	276.7	0.20%	276.1	273.1	-1.10%	276.1	276.1	0.00%	276.1	276.8	0.30%	276.1	277	0.30%	276.1	275.7	-0.10%
Difference =			0.8	1.10%	Difference =	0.7	0.70%	Difference =	-3	-3.90%	Difference =	0.1	0.20%	Difference =	0.8	0.80%	Difference =	1	1.00%	Difference =	-0.4	-0.40%
66756 SQBUTTE4	63049 STANTON4	-40.2	-38.8	-3.30%	-40.2	-38.4	-4.40%	-40.2	-39.1	-2.80%	-40.2	-39.5	-1.60%	-40.2	-38.5	-4.20%	-40.2	-38.6	-3.80%	-40.2	-41.2	2.50%
66756 SQBUTTE4	66751 CENTER 4	-39.7	-40.2	1.30%	-39.7	-40.6	2.20%	-39.7	-39.2	-1.40%	-39.7	-40	0.80%	-39.7	-40.4	1.70%	-39.7	-39.2	-1.30%	-39.7	-41	3.20%
66756 SQBUTTE4	66791 CENTER 3	92.1	91.3	-0.90%	92.1	91.2	-1.00%	92.1	90.5	-1.80%	92.1	91.8	-0.40%	92.1	91.1	-1.10%	92.1	90.1	-2.20%	92.1	94.4	2.50%
SUBTOTALS FOR: Y2DC		12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%
Difference =			0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%
60186 AS KING3	60304 EAU CL 3	326.6	328.1	0.40%	326.6	321.9	-1.40%	326.6	332.7	1.90%	326.6	324.8	-0.60%	326.6	325.8	-0.30%	326.6	333.2	2.00%	326.6	325.1	-0.50%
60105 PR ISLD3	61950 BYRON 3	-189.1	-171.5	-9.30%	-189.1	-200.6	6.10%	-189.1	-179	-5.30%	-189.1	-192	1.60%	-189.1	-181.1	-4.20%	-189.1	-176.2	-6.80%	-189.1	-192	1.50%
60192 BLUE LK3	60050 WLMRTHTP	-473.7	-485.7	2.50%	-473.7	-498.6	5.30%	-473.7	-476.7	0.60%	-473.7	-475.8	0.40%	-473.7	-483.5	2.10%	-473.7	-476.4	0.60%	-473.7	-480.6	1.50%
60187 AS KING7	60325 WILLOWRV7	129.9	130.3	0.40%	129.9	129.2	-0.50%	129.9	130.6	0.60%	129.9	129.6	-0.20%	129.9	129.9	0.10%	129.9	130.7	0.60%	129.9	129.7	-0.10%
60238 REDROCK7	68966 GLENMONT	51.5	52.1	1.10%	51.5	50.3	-2.40%	51.5	52.3	1.50%	51.5	51.2	-0.60%	51.5	51.4	-0.20%	51.5	52.4	1.70%	51.5	51.5	0.00%
62234 LKMARN 7	60276 AIRLAKE7	53.1	52.8	-0.50%	53.1	54	1.60%	53.1	52.9	-0.30%	53.1	53.2	0.10%	53.1	38.6	-27.30%	53.1	52.9	-0.50%	53.1	53.3	0.30%
SUBTOTALS FOR: MNEX (INFO)		-101.6	-93.9	-7.60%	-101.6	-143.7	41.50%	-101.6	-87.1	-14.20%	-101.6	-109	7.30%	-101.6	-118.8	16.90%	-101.6	-83.4	-17.90%	-101.6	-113	11.20%
Difference =			7.7	10.20%	Difference =	-42.1	-42.10%	Difference =	14.4	19.30%	Difference =	-7.4	-14.80%	Difference =	-17.2	-17.20%	Difference =	18.1	18.10%	Difference =	-11.4	-11.40%

Distribution Factor Analysis Transmission Alternative 3b

2009 Summer Peak Case
Generation to Generation Dispatc

		CMMPA		GRE		HCPD		HUC		MMPA		MRES		OTP							
64095 MNTZUMA3 64064 BONDRT3	15.5	11.9	-23.10%	15.5	12.3	-20.40%	15.5	20.2	30.00%	15.5	14.9	-4.00%	15.5	12.3	-21.00%	15.5	23.6	52.10%	15.5	15.4	-0.90%
SUBTOTALS FOR: MNTZUMA_W	15.5	11.9	-23.10%	15.5	12.3	-20.40%	15.5	20.2	30.00%	15.5	14.9	-4.00%	15.5	12.3	-21.00%	15.5	23.6	52.10%	15.5	15.4	-0.90%
	Difference =	-3.6	-4.70%	Difference =	-3.2	-3.20%	Difference =	4.7	6.20%	Difference =	-0.6	-1.20%	Difference =	-3.3	-3.30%	Difference =	8.1	8.10%	Difference =	-0.1	-0.10%
61702 LASKIN 7 61705 BABBITT7	63.5	63.4	0.00%	63.5	63.4	0.00%	63.5	63.4	-0.10%	63.5	63.5	0.00%	63.5	63.4	0.00%	63.5	63.4	-0.10%	63.5	63.5	0.10%
61702 LASKIN 7 61722 FORBES 7	43.9	43.9	0.00%	43.9	43.9	0.00%	43.9	43.8	-0.10%	43.9	43.9	0.00%	43.9	43.8	-0.10%	43.9	43.8	-0.10%	43.9	43.9	0.00%
61702 LASKIN 7 62451 LAKEIND7	64.6	64.6	0.00%	64.6	64.6	0.00%	64.6	64.5	-0.10%	64.6	64.6	0.00%	64.6	64.5	-0.10%	64.6	64.5	-0.10%	64.6	64.6	0.10%
61702 LASKIN 7 61574 LASKNJCT	-74.8	-74.8	-0.10%	-74.8	-74.8	0.00%	-74.8	-74.7	-0.10%	-74.8	-74.8	0.00%	-74.8	-74.7	-0.10%	-74.8	-74.7	-0.10%	-74.8	-74.9	0.10%
61626 BOSWELL4 61625 BLCKBRY4	140.1	139.9	-0.10%	140.1	139.8	-0.20%	140.1	139.9	-0.10%	140.1	140	0.00%	140.1	139.8	-0.20%	140.1	139.9	-0.10%	140.1	140.8	0.50%
61626 BOSWELL4 61625 BLCKBRY4	136.3	136.1	-0.10%	136.3	136	-0.20%	136.3	136.2	-0.10%	136.3	136.3	0.00%	136.3	136.1	-0.20%	136.3	136.2	-0.10%	136.3	137	0.50%
61626 BOSWELL4 61627 SHANNON4	86.5	86.9	0.50%	86.5	87.1	0.70%	86.5	86.8	0.30%	86.5	86.7	0.10%	86.5	87.1	0.60%	86.5	86.9	0.40%	86.5	85.1	-1.70%
61615 ARROWHWD4 61614 98L TAP4	58.4	57.3	-1.80%	58.4	57.2	-1.90%	58.4	57	-2.30%	58.4	58.1	-0.40%	58.4	57.2	-2.10%	58.4	56.8	-2.70%	58.4	61	4.60%
61615 ARROWHWD4 61554 AWHD1JCT	155.4	155.2	-0.10%	155.4	155.2	-0.20%	155.4	155.1	-0.20%	155.4	155.3	-0.10%	155.4	155.2	-0.10%	155.4	155.1	-0.20%	155.4	156	0.40%
61615 ARROWHWD4 61556 AWHD2JCT	160.8	160.7	-0.10%	160.8	160.6	-0.20%	160.8	160.5	-0.20%	160.8	160.7	-0.10%	160.8	160.6	-0.20%	160.8	160.5	-0.30%	160.8	161.5	0.40%
61615 ARROWHWD4 61624 FORBES 4	-110.7	-111	0.30%	-110.7	-110.5	-0.10%	-110.7	-111.8	1.10%	-110.7	-110.5	-0.10%	-110.7	-110.9	0.20%	-110.7	-112	1.20%	-110.7	-110.3	-0.30%
61615 ARROWHWD4 63055 BEARCK 4	52	52.7	1.30%	52	53.9	3.70%	52	51.5	-1.10%	52	52.8	1.50%	52	53.2	2.30%	52	51.5	-0.90%	52	50.6	-2.70%
SUBTOTALS FOR: MP_EXPORT	776	774.9	-0.10%	776	776.4	0.00%	776	772.3	-0.50%	776	776.4	0.10%	776	775.3	-0.10%	776	772	-0.50%	776	778.8	0.40%
	Difference =	-1.1	-1.40%	Difference =	0.4	0.40%	Difference =	-3.7	-4.90%	Difference =	0.5	0.90%	Difference =	-0.7	-0.70%	Difference =	-4	-4.00%	Difference =	2.8	2.80%
60105 PR ISLD3 61950 BYRON 3	-182.5	-164.1	-10.10%	-182.5	-192.9	5.70%	-182.5	-171.8	-5.90%	-182.5	-185.4	1.60%	-182.5	-173.4	-5.00%	-182.5	-168.8	-7.50%	-182.5	-185	1.40%
60304 EAU CL 3 92494 ARP 345	102.5	100.9	-1.60%	102.5	98.2	-4.30%	102.5	108.7	6.10%	102.5	100.7	-1.80%	102.5	100.1	-2.30%	102.5	108.9	6.30%	102.5	101.1	-1.40%
SUBTOTALS FOR: MWSI	-80	-63.3	-20.90%	-80	-94.7	18.40%	-80	-63.1	-21.20%	-80	-84.7	5.90%	-80	-73.3	-8.40%	-80	-59.9	-25.20%	-80	-83.9	4.80%
	Difference =	16.7	22.60%	Difference =	-14.7	-14.70%	Difference =	16.9	22.60%	Difference =	-4.7	-9.40%	Difference =	6.7	6.70%	Difference =	20.1	29.10%	Difference =	-3.9	-3.90%
66756 SQBUTTE4 63049 STANTON4	-40.9	-39.6	-3.20%	-40.9	-39.2	-4.20%	-40.9	-39.8	-2.70%	-40.9	-40.3	-1.50%	-40.9	-39.3	-4.10%	-40.9	-39.4	-3.70%	-40.9	-42	2.60%
66756 SQBUTTE4 66751 CENTER 4	-39.4	-39.9	1.30%	-39.4	-40.3	2.10%	-39.4	-38.8	-1.50%	-39.4	-39.7	0.80%	-39.4	-40	1.60%	-39.4	-38.9	-1.40%	-39.4	-40.7	3.20%
66756 SQBUTTE4 66791 CENTER 3	92.6	91.8	-0.90%	92.6	91.7	-0.90%	92.6	90.9	-1.80%	92.6	92.3	0.30%	92.6	91.5	-1.10%	92.6	90.5	-2.20%	92.6	94.9	2.50%
63041 COAL CR4 63042 COAL TP4	-22.9	-23	0.30%	-22.9	-23	0.60%	-22.9	-22.9	0.20%	-22.9	-23	0.20%	-22.9	-22.9	0.40%	-22.9	-22.9	0.20%	-22.9	-23	0.50%
63041 COAL CR4 63049 STANTON4	-123.5	-123.5	0.50%	-122.9	-123.9	0.80%	-122.9	-122.8	-0.10%	-122.9	-123.3	0.30%	-122.9	-123.7	0.80%	-122.9	-122.8	-0.10%	-122.9	-123.5	0.40%
63041 COAL CR4 63381 UNDERWD4	142	142.6	0.50%	142	143	0.80%	142	141.8	-0.10%	142	142.3	0.30%	142	142.8	0.60%	142	141.8	-0.10%	142	142.6	0.40%
SUBTOTALS FOR: NDDC	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%
	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%
67105 LELAND03 66506 FTTHOMP3	129.1	130.5	1.10%	129.1	130.3	0.90%	129.1	133.2	3.20%	129.1	129.5	0.30%	129.1	130.8	1.30%	129.1	133.4	3.30%	129.1	127	-1.70%
67105 LELAND03 67180 GROTON 3	257.6	256.7	-0.30%	257.6	256.4	-0.40%	257.6	256.4	-0.50%	257.6	257.3	-0.10%	257.6	256.6	-0.40%	257.6	257.5	0.00%	257.6	255	-1.00%
67101 ANTELOP3 67120 BRDLAND3	194.2	194.1	0.00%	194.2	193.8	-0.20%	194.2	194.8	0.40%	194.2	194.1	0.00%	194.2	194.1	0.00%	194.2	195.5	0.70%	194.2	191.8	-1.20%
63314 BIGSTN3 66503 BLAIR 4	-75.3	-55.7	-26.00%	-75.3	-50.5	-33.00%	-75.3	-53.1	-29.40%	-75.3	-62.6	-16.90%	-75.3	-49.6	-34.10%	-75.3	-44.3	-41.20%	-75.3	-56.6	-24.90%
66554 MORRIS 4 66550 GRANITF4	-5.5	-0.6	-89.20%	-5.5	-1	-118.60%	-5.5	-0.8	-84.80%	-5.5	-0.9	-83.30%	-5.5	1.2	-121.70%	-5.5	-1	-119.20%	-5.5	-8.8	61.20%
63336 AUDUBON4 63053 HUBBARD4	106.2	109.1	2.80%	106.2	110.2	3.80%	106.2	107.6	1.40%	106.2	107.8	1.60%	106.2	109.9	3.50%	106.2	108.1	1.80%	106.2	102.6	-3.40%
66521 SULLYBT4 66519 OAH4 4	-72.6	-71.7	-1.20%	-72.6	-71.8	-1.00%	-72.6	-69.7	-4.00%	-72.6	-72.3	-0.40%	-72.6	-71.5	-1.50%	-72.6	-69.6	-4.10%	-72.6	-74.5	2.60%
63052 INMAN 4 61611 WINGRIV4	84.6	89.2	5.50%	84.6	90.9	7.50%	84.6	87.7	3.70%	84.6	87.2	3.10%	84.6	90.5	7.10%	84.6	88.5	4.60%	84.6	64.8	-23.30%
66470 BISON 4 66497 MAURINE4	-2.4	-1.9	-21.70%	-2.4	-1.9	-19.40%	-2.4	0.2	-109.50%	-2.4	-2.3	-5.90%	-2.4	-1.8	-26.40%	-2.4	-0.8	-66.10%	-2.4	-3.2	32.30%
66716 LAPORTE7 61640 BAOURA7	-2.1	-1.4	-31.00%	-2.1	-1.2	-44.70%	-2.1	-1.8	-11.70%	-2.1	-1.7	-18.40%	-2.1	-1.2	-40.10%	-2.1	-1.7	-16.00%	-2.1	-1.9	-9.90%
63222 ALEXAND7 60144 DGLASCO7	28.5	29.7	4.20%	28.5	30.1	5.70%	28.5	29.3	2.80%	28.5	29.3	2.90%	28.5	30	5.40%	28.5	29.5	3.60%	28.5	21.5	-24.50%
67327 ELLENDL7 67401 ABDNJCT7	-8.1	-7.5	-7.30%	-8.1	-7.5	-7.80%	-8.1	-7	-13.30%	-8.1	-7.8	-3.80%	-8.1	-7.3	-9.60%	-8.1	-6.5	-19.70%	-8.1	-9.6	18.30%
66432 EDGELEY7 66534 ORDWAY 7	-19.4	-19.4	-0.10%	-19.4	-19.5	0.40%	-19.4	-19	-2.10%	-19.4	-19.4	-0.10%	-19.4	-19.4	-0.30%	-19.4	-18.6	-4.10%	-19.4	-21	8.20%
66438 FORMAN 7 66522 SUMMIT7	-24	-23.5	-1.80%	-24	-23.5	-1.90%	-24	-23.2	-3.30%	-24	-23.7	-1.10%	-24	-23.4	-2.50%	-24	-22.3	-7.00%	-24	-25.6	6.80%
63311 CANBY 4 66550 GRANITF4	48.6	59.3	22.00%	48.6	62.8	29.00%	48.6	59	21.40%	48.6	57	17.20%	48.6	62.9	29.30%	48.6	62.6	28.70%	48.6	59.1	21.60%
62006 KERKHO 7 62005 KERKHO7	5.9	6.6	13.20%	5.9	6.9	17.80%	5.9	6.6	11.80%	5.9	7	19.90%	5.9	7	18.50%	5.9	6.8	16.50%	5.9	3.3	-43.80%
66752 DRAYTON4 67557 LETELER4	-248.6	-245.7	-1.20%	-248.6	-244.5	-1.70%	-248.6	-247.3	-0.60%	-248.6	-247.2	-0.60%	-248.6	-244.9	-1.50%	-248.6	-246.9	-0.70%	-248.6	-251.5	1.10%
63379 RUGBY 4 67523 GLENBOR4	34.8	36.9	6.00%	34.8	37.9	9.00%	34.8	35	0.60%	34.8	35.8	3.10%	34.8	37.4	7.60%	34.8	35.2	1.10%	34.8	34.7	-0.10%
63361 BIGSTN3 63057 WLLMAR3	199.6	221.2	10.80%	199.6	229.2	14.80%	199.6	217.9	9.20%	199.6	214.1	7.30%	199.6	228.3	14.40%	199.6	223.3	11.90%	199.6	217.2	8.80%
SUBTOTALS FOR: NDEX	631	705.9	11.90%	631	729.3	15.60%	631	705.8	11.90%	631	681.3	8.00%	631	729.6	15.60%	631	730.8	15.80%	631	624.5	-1.00%
	Difference =	75	95.60%	Difference =	98.4	95.40%	Difference =	74.8	95.60%	Difference =	50.3	100.60%	Difference =	98.6	95.60%	Difference =	99.8	95.60%	Difference =	-6.5	-6.50%
36406 WEM																					

Distribution Factor Analysis Transmission Alternative 3b

2009 Summer Peak Case
Generation to Generation Dispatct

		CMMPA		GRE		HCPD		HUC		MMPA		MRES		OTP								
SUBTOTALS FOR: QUADCITY_W		829.6	830.1	0.10%	829.6	829.1	-0.10%	829.6	830.6	0.10%	829.6	829.5	0.00%	829.6	834.1	0.50%	829.6	829.9	0.00%			
Difference =		0.5		0.70%	Difference =	-0.4	-0.40%	Difference =	1	1.30%	Difference =	0.2	0.30%	Difference =	-0.1	-0.10%	Difference =	4.5	4.50%	Difference =	0.3	0.30%
64831 GENTLMN3 64943 REDWILO3		275.9	276.6	0.30%	275.9	276.6	0.20%	275.9	272.9	-1.10%	275.9	275.9	0.00%	275.9	276.7	0.30%	275.9	276.8	0.30%	275.9	275.4	-0.20%
SUBTOTALS FOR: WNE_WKS		275.9	276.6	0.30%	275.9	276.6	0.20%	275.9	272.9	-1.10%	275.9	275.9	0.00%	275.9	276.7	0.30%	275.9	276.8	0.30%	275.9	275.4	-0.20%
Difference =		0.7		0.90%	Difference =	0.6	0.60%	Difference =	-3	-4.00%	Difference =	0	-0.10%	Difference =	0.8	0.80%	Difference =	0.8	0.80%	Difference =	-0.5	-0.50%
66756 SQBUTTE4 63049 STANTON4		-40.9	-39.6	-3.20%	-40.9	-39.2	-4.20%	-40.9	-39.8	-2.70%	-40.9	-40.3	-1.50%	-40.9	-39.3	-4.10%	-40.9	-39.4	-3.70%	-40.9	-42	2.60%
66756 SQBUTTE4 66751 CENTER 4		-39.4	-39.9	1.30%	-39.4	-40.3	2.10%	-39.4	-38.8	-1.50%	-39.4	-39.7	0.80%	-39.4	-40	1.60%	-39.4	-38.9	-1.40%	-39.4	-40.7	3.20%
66756 SQBUTTE4 66791 CENTER 3		92.6	91.8	-0.90%	92.6	91.7	-0.90%	92.6	90.9	-1.80%	92.6	92.3	-0.30%	92.6	91.5	-1.10%	92.6	90.5	-2.20%	92.6	94.9	2.50%
SUBTOTALS FOR: Y2DC		12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%
Difference =		0		0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%
60186 AS KING3 60304 EAU CL 3		327.6	329.2	0.50%	327.6	323.2	-1.30%	327.6	333.8	1.90%	327.6	325.7	-0.60%	327.6	327.1	-0.10%	327.6	334.4	2.10%	327.6	326.1	-0.40%
60105 PR ISLD3 61950 BYRON 3		-182.5	-164.1	-10.10%	-182.5	-192.9	5.70%	-182.5	-171.8	-5.90%	-182.5	-185.4	1.60%	-182.5	-173.4	-5.00%	-182.5	-168.8	-7.50%	-182.5	-185	1.40%
60192 BLUE LK3 60050 WLMRTHTP		-460.1	-462.5	0.50%	-460.1	-471.7	2.50%	-460.1	-452.7	-1.60%	-460.1	-462.4	0.50%	-460.1	-453.5	-1.40%	-460.1	-449.1	-2.40%	-460.1	-462.9	0.60%
60187 AS KING7 60325 WILLOWRV7		129.9	130.4	0.40%	129.9	129.3	-0.40%	129.9	130.6	0.60%	129.9	129.6	-0.20%	129.9	130	0.10%	129.9	130.7	0.70%	129.9	129.8	-0.10%
60238 REDROCK7 68966 GLENMONT		51.9	52.5	1.20%	51.9	50.7	-2.20%	51.9	52.7	1.60%	51.9	51.6	-0.60%	51.9	51.8	-0.10%	51.9	52.8	1.80%	51.9	51.9	0.00%
62234 LKMARN 7 60276 AIRLAKE7		53.6	53.3	-0.60%	53.6	54.4	1.50%	53.6	53.4	-0.40%	53.6	53.6	0.10%	53.6	39	-27.20%	53.6	53.3	-0.60%	53.6	53.7	0.20%
SUBTOTALS FOR: MNEX (INFO)		-79.7	-61.4	-23.00%	-79.7	-107	34.30%	-79.7	-54	-32.20%	-79.7	-87.3	9.50%	-79.7	-78.9	-1.00%	-79.7	-46.7	-41.40%	-79.7	-86.4	8.40%
Difference =		18.3		24.10%	Difference =	-27.3	-27.30%	Difference =	25.7	34.20%	Difference =	-7.6	-15.20%	Difference =	0.8	0.80%	Difference =	33	33.00%	Difference =	-6.7	-6.70%

Distribution Factor Analysis Transmission Alternative 4

2009 Summer Peak Case
Generation to Generation Dispatct

Interface Definition		CMMPA BGSII Case at 76 MW		GRE BGSII Case at 100 MW		HCPD BGSII Case at 75 MW		HUC BGSII Case at 50 MW		MMPA BGSII Case at 100 MW		MRES BGSII Case at 100 MW		OTP BGSII Case at 100 MW								
From Bus	To Bus	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference							
34093	ARNOLD 3 34018 HAZLTON3	381.2	390.4	2.40%	381.2	389.9	2.30%	381.2	375	-1.60%	381.2	384.5	0.90%	381.2	390	2.30%	381.2	374.5	-1.80%	381.2	384.9	1.00%
SUBTOTALS FOR: ARN-HAZLTN		381.2	390.4	2.40%	381.2	389.9	2.30%	381.2	375	-1.60%	381.2	384.5	0.90%	381.2	390	2.30%	381.2	374.5	-1.80%	381.2	384.9	1.00%
		Difference =	9.2	12.00%	Difference =	8.7	8.70%	Difference =	-6.2	-8.30%	Difference =	3.2	6.50%	Difference =	8.8	8.80%	Difference =	-6.7	-6.70%	Difference =	3.7	3.70%
64786	COOPER 3 59199 ST JOE 3	53.1	54.1	1.90%	53.1	53.9	1.40%	53.1	47.7	-10.30%	53.1	52.7	-0.80%	53.1	54.1	1.80%	53.1	54	1.60%	53.1	52.2	-1.70%
64786	COOPER 3 96309 7FAIRPT	62.5	63.3	1.20%	62.5	63.1	1.00%	62.5	58.4	-6.60%	62.5	63.2	0.40%	62.5	64	2.40%	62.5	64	2.40%	62.5	61.9	-1.00%
SUBTOTALS FOR: COOPER_S		115.6	117.4	1.60%	115.6	117	1.20%	115.6	106	-8.30%	115.6	114.9	-0.60%	115.6	117.3	1.50%	115.6	118	2.00%	115.6	114.1	-1.30%
		Difference =	1.8	2.40%	Difference =	1.4	1.40%	Difference =	-9.6	-12.80%	Difference =	-0.7	-1.40%	Difference =	1.7	1.70%	Difference =	2.3	2.30%	Difference =	-1.5	-1.50%
60304	EAU CL 3 92494 ARP 345	95.2	91.5	-3.90%	95.2	87.8	-7.80%	95.2	99.7	4.70%	95.2	92.4	-3.00%	95.2	90.1	-5.40%	95.2	99.3	4.30%	95.2	92.3	-3.10%
SUBTOTALS FOR: ECL-ARP		95.2	91.5	-3.90%	95.2	87.8	-7.80%	95.2	99.7	4.70%	95.2	92.4	-3.00%	95.2	90.1	-5.40%	95.2	99.3	4.30%	95.2	92.3	-3.10%
		Difference =	-3.7	-4.90%	Difference =	-7.4	-7.40%	Difference =	4.4	5.90%	Difference =	-2.9	-5.70%	Difference =	-5.2	-5.20%	Difference =	4.1	4.10%	Difference =	-3	-3.00%
65351	S3451 3 65354 S3454 3	80.2	81	1.00%	80.2	80.7	0.60%	80.2	87.3	8.90%	80.2	80.1	-0.20%	80.2	80.7	0.60%	80.2	82	2.20%	80.2	80.2	0.00%
65351	S3451 3 65359 S3459 3	27.8	29.6	6.60%	27.8	29.3	5.40%	27.8	35.3	27.30%	27.8	27.8	0.20%	27.8	29.3	5.40%	27.8	32.2	15.90%	27.8	27.9	0.30%
65451	S1251 5 65497 S1297 5	39.2	39.6	0.90%	39.2	39.5	0.70%	39.2	40.5	3.30%	39.2	39.2	0.00%	39.2	39.5	0.70%	39.2	40.2	2.60%	39.2	39.2	0.00%
SUBTOTALS FOR: FT_CAL_S		147.2	150.2	2.00%	147.2	149.5	1.50%	147.2	163.2	10.90%	147.2	147.1	-0.10%	147.2	149.5	1.50%	147.2	154.4	4.90%	147.2	147.3	0.10%
		Difference =	3	3.90%	Difference =	2.3	2.30%	Difference =	16	21.50%	Difference =	-0.1	-0.20%	Difference =	2.3	2.30%	Difference =	7.2	7.20%	Difference =	0.1	0.10%
64832	GENTLMN4 64909 N PLATT4	157.5	157.5	0.00%	157.5	157.5	0.00%	157.5	156	-0.90%	157.5	157.5	0.00%	157.5	157.5	0.00%	157.5	157.5	0.00%	157.5	157.5	0.00%
64832	GENTLMN4 64909 N PLATT4	157.9	157.9	0.00%	157.9	157.9	0.00%	157.9	156.5	-0.90%	157.9	158	0.00%	157.9	157.9	0.00%	157.9	158	0.00%	157.9	157.9	0.00%
64832	GENTLMN4 64909 N PLATT4	162.5	162.5	0.00%	162.5	162.5	0.00%	162.5	161	-0.90%	162.5	162.5	0.00%	162.5	162.5	0.00%	162.5	162.5	0.00%	162.5	162.5	0.00%
64831	GENTLMN3 64984 SWEET W3	274.1	274.2	0.00%	274.1	274.2	0.00%	274.1	268.9	-1.90%	274.1	274.2	0.00%	274.1	274.2	0.00%	274.1	274.5	0.20%	274.1	274.1	0.00%
64831	GENTLMN3 64984 SWEET W3	328.5	328.6	0.00%	328.5	328.6	0.00%	328.5	322.2	-1.90%	328.5	328.6	0.00%	328.5	328.6	0.00%	328.5	329	0.20%	328.5	328.5	0.00%
64831	GENTLMN3 64943 REDWIL03	277.1	277.9	0.30%	277.1	277.9	0.30%	277.1	274.1	-1.10%	277.1	277	-0.00%	277.1	278	0.30%	277.1	278.1	0.40%	277.1	276.7	-0.10%
SUBTOTALS FOR: GGS		1357.5	1358.5	0.10%	1357.5	1358.5	0.10%	1357.5	1338.7	-1.40%	1357.5	1357.8	0.00%	1357.5	1358.7	0.10%	1357.5	1359.6	0.20%	1357.5	1357.2	0.00%
		Difference =	1	1.30%	Difference =	1	1.00%	Difference =	-18.9	-25.10%	Difference =	0.2	0.50%	Difference =	1.1	1.10%	Difference =	2.1	2.10%	Difference =	-0.3	-0.30%
64933	PAULINE3 64902 MOORE 3	56.2	57.3	1.90%	56.2	57.4	2.00%	56.2	54.6	-3.00%	56.2	56.6	0.60%	56.2	57.5	2.20%	56.2	58.6	4.30%	56.2	56.2	-0.10%
64839	GR ISLD4 64780 COLMB W4	100.8	100.4	-0.40%	100.8	100.5	-0.30%	100.8	96.8	-4.00%	100.8	100.8	0.00%	100.8	100.5	-0.30%	100.8	100.4	-0.30%	100.8	100.7	-0.10%
66571	GR ISLD3 64896 MCCOOL 3	146.6	149.2	1.70%	146.6	149.2	1.80%	146.6	148.1	1.00%	146.6	147.3	0.40%	146.6	149.5	1.90%	146.6	151.9	3.60%	146.6	146.5	-0.10%
SUBTOTALS FOR: GRIS_LNC		303.7	306.9	1.10%	303.7	307.1	1.10%	303.7	299.4	-1.40%	303.7	304.7	0.30%	303.7	307.5	1.30%	303.7	311	2.40%	303.7	303.4	-0.10%
		Difference =	3.2	4.30%	Difference =	3.4	3.40%	Difference =	-4.2	-5.60%	Difference =	1	2.00%	Difference =	3.8	3.80%	Difference =	7.3	7.30%	Difference =	-0.3	-0.30%
57981	LACYGNE7 57965 W.GRDNR7	578.1	578	0.00%	578.1	578.1	0.00%	578.1	579.1	0.20%	578.1	578.3	0.00%	578.1	578	0.00%	578.1	579.2	0.20%	578.1	578.5	0.10%
57981	LACYGNE7 57968 STILLWEL7	720.7	720.8	0.00%	720.7	720.9	0.00%	720.7	721.2	0.10%	720.7	721	0.00%	720.7	720.8	0.00%	720.7	721.5	0.10%	720.7	721.1	0.10%
SUBTOTALS FOR: LACYGNE_N		1298.8	1298.7	0.00%	1298.8	1299	0.00%	1298.8	1300.3	0.10%	1298.8	1299.3	0.00%	1298.8	1298.8	0.00%	1298.8	1300.7	0.10%	1298.8	1299.7	0.10%
		Difference =	0	-0.10%	Difference =	0.2	0.20%	Difference =	1.5	2.00%	Difference =	0.5	1.00%	Difference =	0	0.00%	Difference =	1.9	1.90%	Difference =	0.9	0.90%
62234	LKMAR7 60276 AIRLAKE7	53.5	53.3	-0.30%	53.5	54.5	1.80%	53.5	53.4	-0.20%	53.5	53.6	0.20%	53.5	39.1	-26.90%	53.5	53.3	-0.30%	53.5	53.7	0.40%
SUBTOTALS FOR: LKM-WFB		53.5	53.3	-0.30%	53.5	54.5	1.80%	53.5	53.4	-0.20%	53.5	53.6	0.20%	53.5	39.1	-26.90%	53.5	53.3	-0.30%	53.5	53.7	0.40%
		Difference =	-0.2	-0.20%	Difference =	1	1.00%	Difference =	-0.1	-0.10%	Difference =	0.1	0.20%	Difference =	-14.4	-14.40%	Difference =	-0.2	-0.20%	Difference =	0.2	0.20%
60175	ROSEAU 4 67576 RICHER 4	-144.3	-144.7	0.30%	-144.3	-144.9	0.50%	-144.3	-144.5	0.10%	-144.3	-144.5	0.20%	-144.3	-144.6	0.40%	-144.3	-144.6	0.20%	-144.3	-144.4	0.10%
60173	ROSEAU2 67564 DORSEY 2	-1141.3	-1148.2	0.60%	-1141.3	-1151.3	0.90%	-1141.3	-1144.4	0.30%	-1141.3	-1144.6	0.30%	-1141.3	-1150.2	0.80%	-1141.3	-1145.4	0.40%	-1141.3	-1139.7	-0.10%
66752	DRAYTON4 67557 LETELERA4	-232.1	-228	-1.80%	-232.1	-226.4	-2.50%	-232.1	-230	-0.90%	-232.1	-230.2	-0.80%	-232.1	-227	-2.20%	-232.1	-229.4	-1.20%	-232.1	-234.1	0.90%
63379	RUGBY 4 67523 GLENBOR4	42.6	45.9	7.60%	42.6	47.3	11.10%	42.6	43.6	2.30%	42.6	44.2	3.70%	42.6	46.7	9.70%	42.6	44.2	3.70%	42.6	43.4	1.80%
SUBTOTALS FOR: MHX_N		-1475	-1475.2	0.00%	-1475	-1475.3	0.00%	-1475	-1475.2	0.00%	-1475	-1475.1	0.00%	-1475	-1475.3	0.00%	-1475	-1475.1	0.00%	-1475	-1474.8	0.00%
		Difference =	-0.1	-0.20%	Difference =	-0.2	-0.20%	Difference =	-0.2	-0.20%	Difference =	-0.1	-0.20%	Difference =	-0.2	-0.20%	Difference =	-0.1	-0.10%	Difference =	0.2	0.20%
67576	RICHER 4 60175 ROSEAU 4	146.7	147.2	0.30%	146.7	147.4	0.50%	146.7	146.9	0.10%	146.7	147	0.20%	146.7	147.4	0.40%	146.7	147	0.20%	146.7	146.9	0.10%
67564	DORSEY 2 60173 ROSEAU2	1158.1	1165.3	0.60%	1158.1	1168.5	0.90%	1158.1	1161.3	0.30%	1158.1	1161.6	0.30%	1158.1	1167.3	0.80%	1158.1	1162.4	0.40%	1158.1	1156.5	-0.10%
67557	LETELERA4 66752 DRAYTON4	236.4	232.2	-1.80%	236.4	230.4	-2.50%	236.4	234	-0.90%	236.4	234.4	-0.80%	236.4	231	-2.30%	236.4	233.5	-1.20%	236.4	238.5	0.90%
67523	GLENBOR4 63379 RUGBY 4	-42.2	-45.4	7.50%	-42.2	-46.9	11.00%	-42.2	-43.2	2.30%	-42.2	-43.8	3.70%	-42.2	-46.3	9.60%	-42.2	-43.8	3.70%	-42.2	-43	1.80%
SUBTOTALS FOR: MHX_S		1499	1499.3	0.00%	1499	1499.4	0.00%	1499	1499.2	0.00%	1499	1499.2	0.00%	1499	1499.4	0.00%	1499	1499.1	0.00%	1499	1498.8	0.00%
		Difference =	0.3	0.40%	Difference =	0.4	0.40%	Difference =	0.2	0.30%	Difference =	0.2	0.30%	Difference =	0.4	0.40%	Difference =	0.1	0.10%	Difference =	-0.2	-0.20%
68613	AUBURN4 67525 RESTON 4	42.2	42.1	-0.30%	42.2	42	-0.50%	4														

Distribution Factor Analysis Transmission Alternative 4

2009 Summer Peak Case
Generation to Generation Dispatc

		CMMPA			GRE			HCPD			HUC			MMPA			MRES			OTP		
64095 MNTZUMA3 64064 BONDRTN3	12.7	7.7	-39.00%	12.7	7.8	-38.70%	12.7	16.2	27.80%	12.7	11.6	-8.60%	12.7	7.8	-38.40%	12.7	19.3	52.50%	12.7	11.7	-7.40%	
SUBTOTALS FOR: MNTZUMA_W	12.7	7.7	-39.00%	12.7	7.8	-38.70%	12.7	16.2	27.80%	12.7	11.6	-8.60%	12.7	7.8	-38.40%	12.7	19.3	52.50%	12.7	11.7	-7.40%	
	Difference =	-4.9	-6.50%	Difference =	-4.9	-4.90%	Difference =	3.5	4.70%	Difference =	-1.1	-2.20%	Difference =	-4.9	-4.90%	Difference =	6.6	6.60%	Difference =	-0.9	-0.90%	
61702 LASKIN 7 61705 BABBITT7	63.4	63.4	0.00%	63.4	63.4	0.00%	63.4	63.4	-0.10%	63.4	63.4	0.00%	63.4	63.4	0.00%	63.4	63.4	-0.10%	63.4	63.4	0.10%	
61702 LASKIN 7 61722 FORBES 7	43.9	43.9	0.00%	43.9	43.9	0.10%	43.9	43.9	0.00%	43.9	43.9	0.00%	43.9	43.9	0.00%	43.9	43.9	-0.10%	43.9	43.9	0.00%	
61702 LASKIN 7 62451 LAKELND7	64.5	64.5	0.00%	64.5	64.5	0.00%	64.5	64.5	-0.10%	64.5	64.5	0.00%	64.5	64.5	0.00%	64.5	64.5	-0.10%	64.5	64.6	0.10%	
61702 LASKIN 7 61574 LASKNJCT	-74.7	-74.7	-0.10%	-74.7	-74.7	0.00%	-74.7	-74.6	-0.10%	-74.7	-74.7	0.00%	-74.7	-74.7	0.00%	-74.7	-74.6	-0.10%	-74.7	-74.8	0.10%	
61626 BOSWELL4 61625 BLCKBRY4	139.2	139.9	-0.20%	139.2	139.8	-0.30%	139.2	139.1	-0.10%	139.2	139.1	-0.10%	139.2	138.9	-0.20%	139.2	139	-0.10%	139.2	139.9	0.50%	
61626 BOSWELL4 61625 BLCKBRY4	135.5	135.2	-0.20%	135.5	135.1	-0.30%	135.5	135.4	-0.10%	135.5	135.4	-0.10%	135.5	135.2	-0.20%	135.5	135.3	-0.10%	135.5	136.2	0.50%	
61626 BOSWELL4 61627 SHANNON4	88.2	88.7	0.60%	88.2	89	0.90%	88.2	88.5	0.30%	88.2	88.4	0.20%	88.2	88.9	0.70%	88.2	88.6	0.40%	88.2	88.8	-1.60%	
61615 ARROWHWD4 61614 98L TAP4	54.6	53.5	-2.10%	54.6	53.3	-2.40%	54.6	53.3	-2.50%	54.6	54.4	-0.50%	54.6	53.1	-2.80%	54.6	53.1	-2.80%	54.6	57.3	4.90%	
61615 ARROWHWD4 61554 AWHD1JCT	154.7	154.6	-0.10%	154.7	154.5	-0.10%	154.7	154.4	-0.20%	154.7	154.6	0.00%	154.7	154.5	-0.10%	154.7	154.4	-0.20%	154.7	155.4	0.40%	
61615 ARROWHWD4 61556 AWHD2JCT	160.1	159.9	-0.10%	160.1	159.9	-0.10%	160.1	159.8	-0.20%	160.1	160	0.00%	160.1	159.9	-0.10%	160.1	159.8	-0.10%	160.1	160.8	0.40%	
61615 ARROWHWD4 61624 FORBES 4	-111.2	-111.4	0.20%	-111.2	-110.9	-0.30%	-111.2	-112.3	0.90%	-111.2	-111	-0.20%	-111.2	-111.3	0.10%	-111.2	-112.3	1.00%	-111.2	-110.8	-0.40%	
61615 ARROWHWD4 63055 BEARCK 4	56.8	58.1	2.30%	56.8	59.6	5.00%	56.8	56.8	-0.10%	56.8	57.8	1.80%	56.8	58.8	3.60%	56.8	56.9	0.20%	56.8	55.8	-1.80%	
SUBTOTALS FOR: MP_EXPORT	775	774.6	0.00%	775	776.4	0.20%	775	772	-0.40%	775	775.8	0.10%	775	775.2	0.00%	775	771.9	-0.40%	775	778.4	0.40%	
	Difference =	-0.3	-0.40%	Difference =	1.4	1.40%	Difference =	-3	-4.00%	Difference =	0.9	1.70%	Difference =	0.3	0.30%	Difference =	-3.1	-3.10%	Difference =	3.5	3.50%	
60105 PR ISLD3 61950 BYRON 3	-198.1	-184	-7.10%	-198.1	-214.4	8.20%	-198.1	-190.9	-3.70%	-198.1	-202.9	2.40%	-198.1	-194.6	-1.80%	-198.1	-189.2	-4.50%	-198.1	-203.6	2.80%	
60304 EAU CL 3 92494 ARP 345	95.2	91.5	-3.90%	95.2	87.8	-7.80%	95.2	99.7	4.70%	95.2	92.4	-3.00%	95.2	90.1	-5.40%	95.2	99.3	4.30%	95.2	92.3	-3.10%	
SUBTOTALS FOR: MWSI	-102.9	-92.5	-10.10%	-102.9	-126.5	23.00%	-102.9	-91.2	-11.40%	-102.9	-110.5	7.40%	-102.9	-104.5	1.60%	-102.9	-89.8	-12.70%	-102.9	-111.3	8.20%	
	Difference =	10.4	13.70%	Difference =	-23.7	-23.70%	Difference =	11.7	15.60%	Difference =	-7.6	-15.30%	Difference =	-1.7	-1.70%	Difference =	13.1	13.10%	Difference =	-8.5	-8.50%	
66756 SQBUTTE4 63049 STANTON4	-34.1	-32.3	-5.30%	-34.1	-31.7	-7.20%	-34.1	-32.8	-3.90%	-34.1	-33.2	-2.70%	-34.1	-31.8	-6.80%	-34.1	-32	-6.20%	-34.1	-34.8	1.80%	
66756 SQBUTTE4 66751 CENTER 4	-40.7	-41.5	2.00%	-40.7	-41.9	3.20%	-40.7	-40.4	-0.70%	-40.7	-41.1	1.10%	-40.7	-41.7	2.60%	-40.7	-40.9	0.60%	-40.7	-42.1	3.60%	
66756 SQBUTTE4 66791 CENTER 3	87	86	-1.10%	87	85.8	-1.40%	87	85.4	-1.80%	87	86.6	-0.50%	87	85.7	-1.50%	87	85.1	-2.10%	87	89.1	2.40%	
63041 COAL CR4 63042 COAL TP4	-23.1	-23.3	0.60%	-23.1	-23.4	0.90%	-23.1	-23.1	0.00%	-23.1	-23.2	0.30%	-23.1	-23.3	0.80%	-23.1	-23.2	0.10%	-23.1	-23.3	0.70%	
63041 COAL CR4 63049 STANTON4	-125	-126	0.80%	-125	-126.5	1.20%	-125	-125.1	0.10%	-125	-125.5	0.40%	-125	-126.3	1.00%	-125	-125.3	0.30%	-125	-125.8	0.70%	
63041 COAL CR4 63381 UNDERWD4	144.2	145.4	0.80%	144.2	145.9	1.20%	144.2	144.8	0.40%	144.2	144.8	0.40%	144.2	145.7	1.00%	144.2	144.6	0.30%	144.2	145.2	0.70%	
SUBTOTALS FOR: NDDC	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	
	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	
67105 LELAND03 66506 FTTHOMP3	136	137.4	1.00%	136	137.3	1.00%	136	139.9	2.90%	136	136.4	0.30%	136	137.7	1.30%	136	140.2	3.10%	136	133.8	-1.50%	
67105 LELAND03 67160 GROTON 3	259.7	258.1	-0.60%	259.7	257.5	-0.80%	259.7	257.7	-0.80%	259.7	259.1	-0.20%	259.7	257.7	-0.70%	259.7	258.8	-0.30%	259.7	256.6	-1.20%	
67101 ANTELOP3 67120 BRDLAND3	195.4	195.2	-0.10%	195.4	194.9	-0.20%	195.4	195.9	0.30%	195.4	195.3	0.00%	195.4	195.2	-0.10%	195.4	196.7	0.70%	195.4	193	-1.20%	
63361 BIGSTN3 66600 BLAIR 3	-57.9	-27.5	-52.60%	-57.9	-18.7	-67.70%	-57.9	-25.2	-56.60%	-57.9	-39.2	-32.40%	-57.9	-17.9	-69.10%	-57.9	-13.2	-77.30%	-57.9	-30.9	-46.70%	
66554 MORRIS 4 66550 GRANITF4	19.9	26.3	32.30%	19.9	28.4	42.90%	19.9	26.1	30.90%	19.9	26.3	32.30%	19.9	28.7	44.10%	19.9	28.5	42.90%	19.9	18.5	-7.30%	
63336 AUDUBON4 63053 HUBBARD4	118.7	122.5	3.20%	118.7	124	4.50%	118.7	120.9	1.80%	118.7	120.7	1.60%	118.7	123.5	4.10%	118.7	121.3	2.20%	118.7	115.4	-2.80%	
66521 SULLYBT4 66519 OAH4 4	-67.4	-66.5	-1.20%	-67.4	-66.6	-1.10%	-67.4	-64.6	-4.10%	-67.4	-67.1	-0.40%	-67.4	-66.3	-1.60%	-67.4	-64.5	-4.30%	-67.4	-69.3	2.90%	
63052 INMAN 4 61611 WINGRIV4	105.6	111.6	5.70%	105.6	113.9	7.80%	105.6	109.7	3.80%	105.6	108.8	3.00%	105.6	113.3	7.30%	105.6	110.4	4.50%	105.6	86.3	-18.40%	
66470 BISON 4 66497 MAURINE4	0.1	0.7	376.40%	0.1	0.7	359.00%	0.1	2.7	999.00%	0.1	0.3	106.60%	0.1	0.8	461.20%	0.1	1.7	999.00%	0.1	-0.6	-535.40%	
66716 LAPORTE7 61640 BAOURA7	0.8	1.7	117.50%	0.8	2	167.00%	0.8	1.2	58.40%	0.8	1.3	64.50%	0.8	1.9	151.40%	0.8	1.3	68.80%	0.8	1.1	39.30%	
63222 ALEXAND7 60144 DGLASCO7	34.5	36	4.20%	34.5	36.5	5.90%	34.5	35.5	2.90%	34.5	35.5	2.90%	34.5	36.4	5.50%	34.5	35.7	3.40%	34.5	27.6	-20.00%	
67327 ELLENDL7 67401 ABDNUCT7	-3.3	-2.8	-15.80%	-3.3	-2.7	-17.50%	-3.3	-2.4	-28.30%	-3.3	-3	-10.10%	-3.3	-2.6	-21.20%	-3.3	-2.4	-28.40%	-3.3	-4.9	47.50%	
66432 EDGELEY7 66534 ORDWAY 7	-17.4	-17.6	1.50%	-17.4	-17.8	2.60%	-17.4	-17.2	-0.70%	-17.4	-17.5	0.50%	-17.4	-17.7	1.80%	-17.4	-17	-2.20%	-17.4	-19.2	10.50%	
66438 FORMAN 7 66522 SUMMIT7	-19.9	-19.5	-1.90%	-19.9	-19.5	-2.10%	-19.9	-19.2	-3.50%	-19.9	-19.6	-1.50%	-19.9	-19.4	-2.60%	-19.9	-18.4	-7.60%	-19.9	-21.6	8.60%	
63311 CANBY 4 66550 GRANITF4	103.7	117.7	13.40%	103.7	122.3	17.90%	103.7	116.7	12.50%	103.7	115.1	11.00%	103.7	122.3	17.90%	103.7	121.1	16.70%	103.7	117.5	13.20%	
62006 KERKHO 7 62005 KERKHO7	9.9	10.8	9.60%	9.9	11.1	12.80%	9.9	10.8	9.20%	9.9	11.3	14.90%	9.9	11.2	13.50%	9.9	11.1	12.60%	9.9	7.5	-23.70%	
66752 DRAYTON4 67557 LETELER4	-236.4	-232.2	-1.80%	-236.4	-230.4	-2.50%	-236.4	-234.2	-0.90%	-236.4	-234.4	-0.80%	-236.4	-231	-2.30%	-236.4	-233.5	-1.20%	-236.4	-238.5	0.90%	
63379 RUGBY 4 67523 GLENBOR4	42.6	45.9	7.60%	42.6	47.3	11.10%	42.6	43.6	2.30%	42.6	44.2	3.70%	42.6	46.7	9.70%	42.6	44.2	3.70%	42.6	43.4	1.80%	
SUBTOTALS FOR: NDEX	624.6	697.6	11.70%	624.6	720.3	15.30%	624.6	697.8	11.70%	624.6	673.6	7.80%	624.6	720.6	15.40%	624.6	722	15.60%	624.6	615.6	-1.40%	
	Difference =	73	96.10%	Difference =	95.7	95.70%	Difference =	73.2	97.60%	Difference =	49	95.00%	Difference =	96.1	95.10%	Difference =	97.5	97.50%	Difference =	-9	-9.00%	
36406 WEMPL; B 39058 PAD 345	634.3	635.9	0.30%	634.3	637.3	0.50%	634.3	631.8	-0.40%	634.3	635.5	0.20%	634.3									

Distribution Factor Analysis Transmission Alternative 4

2009 Summer Peak Case
Generation to Generation Dispatct

	CMPA		Difference =	GRE	Difference =	HCPD	Difference =	HUC	Difference =	MMPA	Difference =	MRES	Difference =	OTP	Difference =						
	0.3	0.50%	-0.6	0.30%	0.9	1.20%	0.3	0.50%	-0.1	-0.10%	4.4	4.40%	0.3	0.30%							
64831 GENTLMN3 64943 REDWILO3	277.1	277.9	0.30%	277.1	277.9	0.30%	277.1	274.1	-1.10%	277.1	277	0.00%	277.1	278	0.30%	277.1	278.1	0.40%	277.1	276.7	-0.10%
SUBTOTALS FOR: WNE_WKS	277.1	277.9	0.30%	277.1	277.9	0.30%	277.1	274.1	-1.10%	277.1	277	0.00%	277.1	278	0.30%	277.1	278.1	0.40%	277.1	276.7	-0.10%
	Difference =	0.8	1.10%	Difference =	0.8	0.80%	Difference =	-2.9	-3.90%	Difference =	0	-0.10%	Difference =	0.9	0.90%	Difference =	1	1.00%	Difference =	-0.4	-0.40%
66756 SQBUTTE4 63049 STANTON4	-34.1	-32.3	-5.30%	-34.1	-31.7	-7.20%	-34.1	-32.8	-3.90%	-34.1	-33.2	-2.70%	-34.1	-31.8	-6.80%	-34.1	-32	-6.20%	-34.1	-34.8	1.80%
66756 SQBUTTE4 66751 CENTER 4	-40.7	-41.5	2.00%	-40.7	-41.9	3.20%	-40.7	-40.4	-0.70%	-40.7	-41.1	1.10%	-40.7	-41.7	2.60%	-40.7	-40.9	0.60%	-40.7	-42.1	3.60%
66756 SQBUTTE4 66791 CENTER 3	87	86	-1.10%	87	85.8	-1.40%	87	85.4	-1.80%	87	86.6	-0.50%	87	85.7	-1.50%	87	85.1	-2.10%	87	89.1	2.40%
SUBTOTALS FOR: Y2DC	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%
	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%
60186 AS KING3 60304 EAU CL 3	321	320.5	-0.20%	321	313.5	-2.30%	321	325.4	1.40%	321	318.1	-0.90%	321	317.7	-1.00%	321	325.4	1.40%	321	317.9	-1.00%
60105 PR ISLD3 61950 BYRON 3	-198.1	-184	-7.10%	-198.1	-214.4	8.20%	-198.1	-190.9	-3.70%	-198.1	-202.9	2.40%	-198.1	-194.6	-1.80%	-198.1	-189.2	-4.50%	-198.1	-203.6	2.80%
60192 BLUE LK3 60050 WLMRTHTP	-485	-494.5	2.00%	-485	-506.3	4.40%	-485	-483.4	-0.30%	-485	-490	1.00%	-485	-487.5	0.50%	-485	-481.7	-0.70%	-485	-492.5	1.50%
60187 AS KING7 60325 WILLOWRV7	129	129.2	0.20%	129	128	-0.80%	129	129.5	0.40%	129	128.6	-0.30%	129	128.7	-0.20%	129	129.5	0.40%	129	128.7	-0.20%
60238 REDROCK7 68966 GLENMONT	50.4	50.7	0.60%	50.4	48.8	-3.20%	50.4	50.9	1.10%	50.4	49.9	-0.90%	50.4	49.9	-1.00%	50.4	50.9	1.10%	50.4	50.1	-0.50%
62234 LKMARN 7 60276 AIRLAKE7	53.5	53.3	-0.30%	53.5	54.5	1.80%	53.5	53.4	-0.20%	53.5	53.6	0.20%	53.5	39.1	-26.90%	53.5	53.3	-0.30%	53.5	53.7	0.40%
SUBTOTALS FOR: MNEX (INFO)	-129.3	-124.8	-3.50%	-129.3	-175.9	36.00%	-129.3	-115.1	-11.00%	-129.3	-142.7	10.30%	-129.3	-146.7	13.40%	-129.3	-111.7	-13.70%	-129.3	-145.6	12.60%
	Difference =	4.5	5.90%	Difference =	-46.6	-46.60%	Difference =	14.3	19.00%	Difference =	-13.4	-26.70%	Difference =	-17.4	-17.40%	Difference =	17.7	17.70%	Difference =	-16.3	-16.30%

Distribution Factor Analysis Transmission Alternative 5

2009 Summer Peak Case
Generation to Generation Dispatct

Interface Definition		CMMPA BGSII Case at 76 MW		GRE BGSII Case at 100 MW		HCPD BGSII Case at 75 MW		HUC BGSII Case at 50 MW		MMPA BGSII Case at 100 MW		MRES BGSII Case at 100 MW		OTP BGSII Case at 100 MW	
From Bus	To Bus	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference
34093	ARNOLD 3 34018 HAZLTON3	382.8	2.20%	382.8	2.10%	382.8	-1.80%	382.8	0.80%	382.8	2.10%	382.8	-2.00%	382.8	0.80%
SUBTOTALS FOR: ARN-HAZLTN		382.8	11.30%	382.8	7.9%	382.8	-9.20%	382.8	5.80%	382.8	8.00%	382.8	-7.60%	382.8	3.20%
64786	COOPER 3 59199 ST JOE 3	54	1.80%	54	1.20%	54	-10.10%	54	1.50%	54	1.50%	54	1.40%	54	-1.70%
64786	COOPER 3 96039 7FAIRPT	63.1	1.20%	63.1	0.80%	63.1	-6.60%	63.1	1.00%	63.1	1.00%	63.1	2.20%	63.1	-1.00%
SUBTOTALS FOR: COOPER_S		117	1.50%	117	1.20%	117	-8.20%	117	1.20%	117	1.50%	117	1.90%	117	-1.30%
60304	EAU CL 3 92494 ARP 345	93.9	-3.50%	93.9	-7.20%	93.9	5.30%	93.9	-2.80%	93.9	-4.90%	93.9	5.20%	93.9	-2.80%
SUBTOTALS FOR: ECL-ARP		93.9	-4.30%	93.9	-6.70%	93.9	5.70%	93.9	-2.60%	93.9	-4.60%	93.9	4.90%	93.9	-2.60%
65351	S3451 3 65354 S3454 3	81.9	0.70%	81.9	0.30%	81.9	8.40%	81.9	-0.30%	81.9	0.20%	81.9	1.80%	81.9	-0.20%
65351	S3451 3 65359 S3459 3	29.6	5.20%	29.6	3.80%	29.6	24.60%	29.6	-0.30%	29.6	3.80%	29.6	13.60%	29.6	-0.30%
65451	S1251 5 65497 S1297 5	39.6	0.70%	39.6	0.50%	39.6	3.20%	39.6	0.00%	39.6	0.50%	39.6	2.40%	39.6	0.00%
SUBTOTALS FOR: FT_CAL_S		151.1	3.10%	151.1	1.60%	151.1	20.60%	151.1	-0.70%	151.1	1.50%	151.1	6.40%	151.1	-0.30%
64832	GENTLMN4 64909 N PLATT4	157.4	0.00%	157.4	0.00%	157.4	-0.90%	157.4	0.00%	157.4	0.00%	157.4	0.00%	157.4	0.00%
64832	GENTLMN4 64909 N PLATT4	157.9	0.00%	157.9	0.00%	157.9	-0.90%	157.9	0.00%	157.9	0.00%	157.9	0.00%	157.9	0.00%
64832	GENTLMN4 64909 N PLATT4	162.4	0.00%	162.4	0.00%	162.4	-0.90%	162.4	0.00%	162.4	0.00%	162.4	0.00%	162.4	0.00%
64831	GENTLMN3 64984 SWEET W3	273.8	0.00%	273.8	0.00%	273.8	-1.90%	273.8	0.00%	273.8	0.00%	273.8	0.00%	273.8	0.00%
64831	GENTLMN3 64984 SWEET W3	328.2	0.00%	328.2	0.10%	328.2	-1.90%	328.2	0.00%	328.2	0.00%	328.2	0.20%	328.2	0.00%
64831	GENTLMN3 64943 REDWIL03	276.9	0.30%	276.9	0.30%	276.9	-1.00%	276.9	0.00%	276.9	0.30%	276.9	0.40%	276.9	-0.10%
SUBTOTALS FOR: GGS		1356.6	1.40%	1356.6	1.10%	1356.6	-25.00%	1356.6	0.50%	1356.6	1.20%	1356.6	2.20%	1356.6	-0.20%
64933	PAULINE3 64902 MOORE 3	55.6	2.00%	55.6	2.20%	55.6	-2.90%	55.6	0.60%	55.6	2.30%	55.6	4.50%	55.6	0.00%
64839	GR ISLD4 64780 COLMB W4	100	-0.30%	100	-0.10%	100	-3.90%	100	0.10%	100	-0.10%	100	9.80%	100	0.00%
66571	GR ISLD3 64896 MCCOOL 3	145.1	1.47%	145.1	1.90%	145.1	1.10%	145.1	0.50%	145.1	1.48%	145.1	3.80%	145.1	0.00%
SUBTOTALS FOR: GRIS_LNC		300.7	4.60%	300.7	3.80%	300.7	-1.30%	300.7	2.20%	300.7	4.20%	300.7	7.80%	300.7	0.00%
57981	LACYGNE7 57965 W GRDNR7	577.7	0.00%	577.8	0.00%	577.8	0.20%	577.8	0.00%	577.8	0.00%	577.8	0.20%	577.8	0.10%
57981	LACYGNE7 57968 STILLWEL7	720.5	0.00%	720.5	0.00%	720.5	0.10%	720.5	0.00%	720.5	0.00%	720.5	0.10%	720.5	0.10%
SUBTOTALS FOR: LACYGNE_N		1298.2	-0.20%	1298.2	0.20%	1298.2	1.80%	1298.2	0.90%	1298.2	0.00%	1298.2	2.00%	1298.2	0.80%
62234	LKMARN 7 60276 AIRLAKE7	53.9	-0.40%	53.9	1.80%	53.9	-0.30%	53.9	0.20%	53.9	-26.80%	53.9	-0.40%	53.9	0.40%
SUBTOTALS FOR: LKM-WFB		53.9	-0.30%	53.9	0.90%	53.9	-0.20%	53.9	0.10%	53.9	-14.40%	53.9	-0.20%	53.9	0.20%
60175	ROSEAU 4 67576 RICHER 4	-144	0.30%	-144	0.50%	-144	0.20%	-144	0.20%	-144	0.40%	-144	0.20%	-144	0.10%
60173	ROSEAU2 67564 DORSEY 2	1137.2	0.60%	1137.2	0.90%	1137.2	-1137.2	1140.5	0.30%	-1137.2	-1146.1	0.80%	-1137.2	-1136	-0.10%
66752	DRAYTON4 67557 LETELERA4	-235.1	-1.80%	-235.1	-2.50%	-235.1	-1.00%	-235.1	-0.80%	-235.1	-2.30%	-235.1	-1.30%	-235.1	0.80%
63379	RUGBY 4 67523 GLENBOR4	41.4	4.47%	41.4	11.30%	41.4	2.40%	41.4	3.80%	41.4	45.5%	41.4	3.50%	41.4	4.23%
SUBTOTALS FOR: MHX_N		1474.9	-0.10%	1474.9	-0.30%	1474.9	-0.20%	1474.9	-0.10%	1474.9	-0.20%	1474.9	-0.20%	1474.9	0.10%
67576	RICHER 4 60175 ROSEAU 4	146.5	0.30%	146.5	0.50%	146.5	0.20%	146.5	0.20%	146.5	0.40%	146.5	0.20%	146.5	0.10%
67564	DORSEY 2 60173 ROSEAU2	1153.9	0.60%	1153.9	0.90%	1153.9	0.30%	1153.9	0.30%	1153.9	0.80%	1153.9	0.40%	1153.9	-0.10%
67557	LETELERA4 66752 DRAYTON4	239.5	-1.80%	239.5	-2.60%	239.5	-1.00%	239.5	-0.80%	239.5	-2.30%	239.5	-1.30%	239.5	0.80%
67523	GLENBOR4 63379 RUGBY 4	-41.1	4.47%	-41.1	11.20%	-41.1	2.40%	-41.1	3.70%	-41.1	45.1%	-41.1	3.50%	-41.1	4.19%
SUBTOTALS FOR: MHX_S		1498.8	0.30%	1498.8	0.50%	1498.8	0.30%	1498.8	0.20%	1498.8	0.30%	1498.8	0.30%	1498.8	0.00%
68613	AUBURN4 67525 RESTON 4	42.3	-0.30%	42.3	-0.50%	42.3	-0.10%	42.3	-0.20%	42.3	-0.40%	42.3	-0.10%	42.3	0.00%
68615	YORKTON4 67514 ROBLIN 4	-90.5	-0.10%	-90.5	-0.10%	-90.5	0.00%	-90.5	0.00%	-90.5	-0.10%	-90.5	-0.10%	-90.5	0.00%
68630	EBCAMPB4 67515 RALL 4	-6.3	-1.20%	-6.3	-1.70%	-6.3	-0.40%	-6.3	-0.60%	-6.3	-1.60%	-6.3	-0.80%	-6.3	0.10%
SUBTOTALS FOR: MH_SPC_E		-54.6	0.00%	-54.6	0.00%	-54.6	0.00%	-54.6	0.00%	-54.6	0.00%	-54.6	-0.10%	-54.6	0.00%
67525	RESTON 4 68613 AUBURN4	-42.1	-0.30%	-42.1	-0.50%	-42.1	-0.10%	-42.1	-0.20%	-42.1	-0.40%	-42.1	-0.10%	-42.1	0.00%
67514	ROBLIN 4 68615 YORKTON4	91.3	-0.10%	91.3	-0.10%	91.3	0.00%	91.3	0.00%	91.3	-0.10%	91.3	-0.10%	91.3	0.00%
67515	RALL 4 68630 EBCAMPB4	6.5	-1.20%	6.5	-1.60%	6.5	-0.40%	6.5	-0.60%	6.5	-1.50%	6.5	-0.80%	6.5	0.10%
SUBTOTALS FOR: MH_SPC_W		55.7	0.00%	55.7	0.00%	55.7	0.00%	55.7	0.00%	55.7	0.00%	55.7	-0.10%	55.7	0.00%
SUBTOTALS FOR: MH_SPC_E		0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	-0.10%	0	0.00%

Distribution Factor Analysis Transmission Alternative 5

2009 Summer Peak Case
Generation to Generation Dispatct

		CMMPA		GRE		HCPD		HUC		MMPA		MRES		OTP							
64095 MNTZUMA3 64064 BONDRTN3	10.5	6	-42.50%	10.5	6.1	-42.20%	10.5	14.5	38.10%	10.5	9.7	-7.80%	10.5	6.2	-40.50%	10.5	17.7	68.70%	10.5	9.8	-7.00%
SUBTOTALS FOR: MNTZUMA_W	10.5	6	-42.50%	10.5	6.1	-42.20%	10.5	14.5	38.10%	10.5	9.7	-7.80%	10.5	6.2	-40.50%	10.5	17.7	68.70%	10.5	9.8	-7.00%
	Difference =	-4.5	-5.90%	Difference =	-4.4	-4.40%	Difference =	4	5.30%	Difference =	-0.8	-1.60%	Difference =	-4.2	-4.20%	Difference =	7.2	7.20%	Difference =	-0.7	-0.70%
61702 LASKIN 7 61705 BABBITT7	63.4	63.4	0.00%	63.4	63.4	0.00%	63.4	63.4	-0.10%	63.4	63.4	0.00%	63.4	63.4	0.00%	63.4	63.4	-0.10%	63.4	63.5	0.10%
61702 LASKIN 7 61722 FORBES 7	43.9	43.9	0.00%	43.9	43.9	0.10%	43.9	43.9	-0.10%	43.9	43.9	0.00%	43.9	43.9	0.00%	43.9	43.9	-0.10%	43.9	43.9	-0.10%
61702 LASKIN 7 62451 LAKEINDT	64.5	64.5	0.00%	64.5	64.5	0.00%	64.5	64.5	-0.10%	64.5	64.5	0.00%	64.5	64.5	0.00%	64.5	64.5	-0.10%	64.5	64.6	0.10%
61702 LASKIN 7 61574 LASKNJCT	-74.8	-74.7	-0.10%	-74.8	-74.7	0.00%	-74.8	-74.7	-0.10%	-74.8	-74.8	0.00%	-74.8	-74.7	-0.10%	-74.8	-74.6	-0.20%	-74.8	-74.8	0.10%
61626 BOSWELL4 61625 BLCKBRY4	139.5	139.2	-0.20%	139.5	139.1	-0.30%	139.5	139.3	-0.10%	139.5	139.4	-0.10%	139.5	139.1	-0.30%	139.5	139.3	-0.20%	139.5	140.2	0.50%
61626 BOSWELL4 61625 BLCKBRY4	135.8	135.5	-0.20%	135.8	135.4	-0.30%	135.8	135.6	-0.10%	135.8	135.7	-0.10%	135.8	135.4	-0.30%	135.8	135.5	-0.20%	135.8	136.5	0.50%
61626 BOSWELL4 61627 SHANNON4	87.7	88.2	0.70%	87.7	88.5	0.90%	87.7	88	0.40%	87.7	87.9	0.20%	87.7	88.4	0.80%	87.7	88.1	0.50%	87.7	86.2	-1.60%
61615 ARROWHWD461614 98L TAP4	56.1	54.7	-2.30%	56.1	54.5	-2.70%	56.1	54.5	-2.80%	56.1	55.7	-0.60%	56.1	54.3	-3.20%	56.1	54.3	-3.20%	56.1	58.6	4.60%
61615 ARROWHWD461554 AWHD1JCT	154.9	154.8	-0.10%	154.9	154.7	-0.20%	154.9	154.6	-0.20%	154.9	154.9	0.00%	154.9	154.7	-0.10%	154.9	154.6	-0.20%	154.9	155.6	0.40%
61615 ARROWHWD461556 AWHD2JCT	160.3	160.2	-0.10%	160.3	160.1	-0.20%	160.3	160	-0.20%	160.3	160.3	0.00%	160.3	160.1	-0.10%	160.3	160	-0.20%	160.3	161	0.40%
61615 ARROWHWD461624 FORBES 4	-110.6	-110.9	0.30%	-110.6	-110.4	-0.20%	-110.6	-111.8	1.00%	-110.6	-110.5	-0.10%	-110.6	-110.8	0.10%	-110.6	-111.9	1.10%	-110.6	-110.3	-0.30%
61615 ARROWHWD463055 BEARCK 4	56.2	57.4	2.30%	56.2	58.9	5.00%	56.2	56.1	-0.10%	56.2	57.2	1.80%	56.2	58.2	3.60%	56.2	56.3	0.20%	56.2	55.1	-1.80%
SUBTOTALS FOR: MP_EXPORT	776.9	776.2	-0.10%	776.9	777.9	0.10%	776.9	773.5	-0.40%	776.9	777.6	0.10%	776.9	776.7	0.00%	776.9	773.3	-0.50%	776.9	780.1	0.40%
	Difference =	-0.6	-0.80%	Difference =	1	1.00%	Difference =	-3.4	-4.50%	Difference =	0.7	1.50%	Difference =	-0.1	-0.10%	Difference =	-3.6	-3.60%	Difference =	3.2	3.20%
60105 PR ISLD3 61950 BYRON 3	-202.4	-187.3	-7.50%	-202.4	-217.4	-7.50%	-202.4	-194.1	-4.10%	-202.4	-206.7	2.20%	-202.4	-197.6	-2.30%	-202.4	-191.9	-5.20%	-202.4	-207.1	2.40%
60304 EAU CL 3 92494 ARP 345	93.9	90.6	-3.50%	93.9	87.1	-7.20%	93.9	98.9	5.30%	93.9	91.2	-2.80%	93.9	89.3	-4.90%	93.9	98.7	5.20%	93.9	91.3	-2.80%
SUBTOTALS FOR: MWSI	-108.5	-96.7	-10.90%	-108.5	-130.3	-20.10%	-108.5	-95.2	-12.20%	-108.5	-115.5	6.50%	-108.5	-108.4	-0.10%	-108.5	-93.2	-14.10%	-108.5	-115.9	6.80%
	Difference =	11.8	15.50%	Difference =	-21.8	-21.80%	Difference =	13.3	17.70%	Difference =	-7.5	-14.10%	Difference =	0.1	0.10%	Difference =	15.3	15.30%	Difference =	-7.4	-7.40%
66756 SQBUTTE4 63049 STANTON4	-36.7	-34.7	-5.40%	-36.7	-34	-7.20%	-36.7	-35.1	-4.20%	-36.7	-35.7	-2.60%	-36.7	-34.1	-6.90%	-36.7	-34.5	-5.90%	-36.7	-37.1	1.20%
66756 SQBUTTE4 66751 CENTER 4	-41	-41.7	1.80%	-41	-42.2	2.90%	-41	-40.7	-0.90%	-41	-41.4	1.00%	-41	-41.9	2.30%	-41	-40.8	-0.60%	-41	-42.4	3.40%
66756 SQBUTTE4 66791 CENTER 3	89.9	88.7	-1.40%	89.9	88.4	-1.60%	89.9	88	-2.10%	89.9	89.4	-0.60%	89.9	88.3	-1.80%	89.9	87.5	-2.70%	89.9	91.8	2.10%
63041 COAL CR4 63042 COAL TP4	-23.2	-23.3	0.50%	-23.2	-23.4	0.90%	-23.2	-23.2	-0.10%	-23.2	-23.2	0.30%	-23.2	-23.3	0.70%	-23.2	-23.3	0.20%	-23.2	-23.3	0.60%
63041 COAL CR4 63049 STANTON4	-124.9	-125.9	0.80%	-124.9	-126.4	1.20%	-124.9	-125	0.10%	-124.9	-125.4	0.40%	-124.9	-126.1	1.00%	-124.9	-125.1	0.20%	-124.9	-125.7	0.60%
63041 COAL CR4 63381 UNDERWD4	144.2	145.3	0.80%	144.2	145.8	1.10%	144.2	144.3	0.10%	144.2	144.7	0.40%	144.2	145.6	1.00%	144.2	144.4	0.20%	144.2	145.1	0.60%
SUBTOTALS FOR: NDDC	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%
	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%
67105 LELAND03 66506 FTTHOMP3	132.6	134.3	1.30%	132.6	134.3	1.30%	132.6	137	3.30%	132.6	133.1	0.40%	132.6	134.8	1.60%	132.6	137.3	3.60%	132.6	130.9	-1.30%
67105 LELAND03 67180 GROTON 3	255.8	254.6	-0.50%	255.8	254.3	-0.60%	255.8	254.3	-0.60%	255.8	255.4	-0.10%	255.8	254.4	-0.50%	255.8	255.5	-0.10%	255.8	253.2	-1.00%
67101 ANTELOP3 67120 BRDLAND3	194	193.9	-0.10%	194	194.2	0.20%	194	194.7	0.30%	194	194	0.00%	194	193.9	-0.10%	194	195.4	1.00%	194	191.8	-1.10%
63314 BIGSTON4 66503 BLAIR 4	-1.4	26.9	-999.00%	-1.4	35.4	-999.00%	-1.4	28.2	-999.00%	-1.4	17.3	-999.00%	-1.4	35.9	-999.00%	-1.4	39.2	-999.00%	-1.4	24.5	-999.00%
63320 GMI GRV4 66550 GRANITF4	15.2	21.1	39.50%	15.2	23.1	52.00%	15.2	20.9	38.00%	15.2	21.2	39.70%	15.2	23.3	53.90%	15.2	23.1	52.50%	15.2	13.1	-13.30%
63336 AUDUBON4 63053 HUBBARD4	115.6	119.6	3.50%	115.6	121.2	4.90%	115.6	118.1	2.10%	115.6	117.7	1.80%	115.6	120.8	4.40%	115.6	118.6	2.60%	115.6	112.3	-2.90%
66521 SULLYBT4 66519 OAHE 4	-70.2	-69.1	-1.60%	-70.2	-69.1	-1.60%	-70.2	-67.2	-4.40%	-70.2	-69.8	-0.60%	-70.2	-68.8	-2.00%	-70.2	-67	-4.70%	-70.2	-71.8	2.30%
63052 INMAN 4 61611 WINGRIV4	99.7	106.1	6.50%	99.7	108.6	8.90%	99.7	104.3	4.60%	99.7	103	3.30%	99.7	108	8.30%	99.7	105.4	5.70%	99.7	80.6	-19.20%
66470 BISON 4 66497 MAURINE4	-1.1	-0.4	-61.20%	-1.1	-0.4	-61.40%	-1.1	1.6	-249.20%	-1.1	-0.9	-18.90%	-1.1	-0.3	-75.30%	-1.1	0.6	-158.70%	-1.1	-1.7	57.10%
66716 LAPORTE7 61640 BADOURA7	0.3	1.2	328.60%	0.3	1.6	465.40%	0.3	0.8	172.80%	0.3	0.8	178.20%	0.3	1.5	422.40%	0.3	0.8	170.20%	0.3	0.4	50.70%
63222 ALEXAND7 60144 DGLASCO7	33	34.5	4.80%	33	35.2	6.70%	33	34.1	3.60%	33	34	3.20%	33	35	6.30%	33	34.4	4.30%	33	26.1	-20.80%
67327 ELLENDL7 67401 ABDNUCT7	-6	-5.3	-12.90%	-6	-5.1	-14.80%	-6	-4.8	-20.50%	-6	-5.6	-7.20%	-6	-5	-17.00%	-6	-4.2	-29.70%	-6	-7.4	22.60%
66432 EDGELEY7 66534 ORDWAY 7	-19.2	-19.2	0.00%	-19.2	-19.3	0.90%	-19.2	-18.8	-1.90%	-19.2	-19.2	0.00%	-19.2	-19.2	0.00%	-19.2	-18.5	-3.60%	-19.2	-20.9	8.90%
66438 FORMAN 7 66522 SUMMIT7	-22.2	-21.7	-2.50%	-22.2	-21.6	-2.90%	-22.2	-21.3	-4.10%	-22.2	-21.9	-1.60%	-22.2	-21.5	-3.40%	-22.2	-20.4	-8.20%	-22.2	-23.8	7.10%
63311 CANBY 4 66550 GRANITF4	89.3	103.3	15.60%	89.3	107.8	20.70%	89.3	102.5	14.80%	89.3	100.4	12.40%	89.3	107.9	20.80%	89.3	106.9	19.80%	89.3	102.8	15.10%
62006 KERKHO 7 62005 KERKHO7	9.3	10.1	9.50%	9.3	10.4	12.50%	9.3	10.1	9.10%	9.3	10.7	15.10%	9.3	10.5	13.20%	9.3	10.4	12.50%	9.3	6.8	-26.30%
66752 DRAYTON4 67557 LETELER4	-239.5	-235.2	-1.80%	-239.5	-233.4	-2.60%	-239.5	-237.1	-1.00%	-239.5	-237.5	-0.80%	-239.5	-234	-2.30%	-239.5	-236.3	-1.30%	-239.5	-241.4	0.80%
63379 RUGBY 4 67523 GLENBOR4	41.4	44.7	7.80%	41.4	46.1	11.30%	41.4	42.4	2.40%	41.4	43	3.80%	41.4	45.5	9.90%	41.4	42.9	3.50%	41.4	42.3	2.00%
SUBTOTALS FOR: NDEX	626.3	699.7	11.70%	626.3	722.5	15.30%	626.3	699.8	11.70%	626.3	675.6	7.90%	626.3	722.8	15.40%	626.3	724.1	15.60%	626.3	617.8	-1.40%
	Difference =	73.3	96.50%	Difference =	96.1	96.10%	Difference =	73.5	95.00%	Difference =	49.3	95.60%	Difference =	96.4	95.40%	Difference =	97.8	97.00%	Difference =	-8.5	-8.50%
36406 WEIMPL; B 39058 PAD 345	635.4	636.7	0.20%	635.4	638	0.40%	635.4	632.6	-0.40%	635.4	636.4	0.20%	635.4	637.2	0.30%	635.4</					

Distribution Factor Analysis Transmission Alternative 5

2009 Summer Peak Case
Generation to Generation Dispatct

	CMMPA		Difference =	GRE	Difference =	HCPD	Difference =	HUC	Difference =	MMPA	Difference =	MRES	Difference =	OTP	Difference =						
	0.5	0.60%		-0.5	-0.50%	1	1.30%	0.3	0.60%	0	0.00%	4.4	4.40%	0.3	0.30%						
64831 GENTLMN3 64943 REDWILO3	276.9	277.8	0.30%	276.9	277.7	0.30%	276.9	274	-1.00%	276.9	276.9	0.00%	276.9	277.9	0.30%	276.9	278	0.40%	276.9	276.6	-0.10%
SUBTOTALS FOR: WNE_WKS	276.9	277.8	0.30%	276.9	277.7	0.30%	276.9	274	-1.00%	276.9	276.9	0.00%	276.9	277.9	0.30%	276.9	278	0.40%	276.9	276.6	-0.10%
	Difference =	0.9	1.20%	Difference =	0.8	0.80%	Difference =	-2.9	-3.80%	Difference =	0	0.00%	Difference =	1	1.00%	Difference =	1	1.00%	Difference =	-0.3	-0.30%
66756 SQBUTTE4 63049 STANTON4	-36.7	-34.7	-5.40%	-36.7	-34	-7.20%	-36.7	-35.1	-4.20%	-36.7	-35.7	-2.60%	-36.7	-34.1	-6.90%	-36.7	-34.5	-5.90%	-36.7	-37.1	1.20%
66756 SQBUTTE4 66751 CENTER 4	-41	-41.7	1.80%	-41	-42.2	2.90%	-41	-40.7	-0.90%	-41	-41.4	1.00%	-41	-41.9	2.30%	-41	-40.8	-0.60%	-41	-42.4	3.40%
66756 SQBUTTE4 66791 CENTER 3	89.9	88.7	-1.40%	89.9	88.4	-1.60%	89.9	88	-2.10%	89.9	89.4	-0.60%	89.9	88.3	-1.80%	89.9	87.5	-2.70%	89.9	91.8	2.10%
SUBTOTALS FOR: Y2DC	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%
	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%
60186 AS KING3 60304 EAU CL 3	319.3	319.2	0.00%	319.3	312.5	-2.10%	319.3	324.3	1.60%	319.3	316.6	-0.80%	319.3	316.6	-0.80%	319.3	324.5	1.60%	319.3	316.6	-0.80%
60105 PR ISLD3 61950 BYRON 3	-202.4	-187.3	-7.50%	-202.4	-217.4	7.50%	-202.4	-194.1	-4.10%	-202.4	-206.7	2.20%	-202.4	-197.6	-2.30%	-202.4	-191.9	-5.20%	-202.4	-207.1	2.40%
60192 BLUE LK3 60050 WLMRTHTP	-500.2	-508.4	1.60%	-500.2	-520	3.90%	-500.2	-497.2	-0.60%	-500.2	-504.7	0.90%	-500.2	-501	0.20%	-500.2	-494.9	-1.10%	-500.2	-506.8	1.30%
60187 AS KING7 60325 WILLOWRV7	128.8	129	0.20%	128.8	127.9	-0.70%	128.8	129.4	0.50%	128.8	128.4	-0.30%	128.8	128.6	-0.10%	128.8	129.4	0.50%	128.8	128.5	-0.20%
60238 REDROCK7 68966 GLENMONT	50.2	50.6	0.70%	50.2	48.7	-3.00%	50.2	50.8	1.20%	50.2	49.8	-0.90%	50.2	49.8	-0.80%	50.2	50.9	1.30%	50.2	50	-0.40%
62234 LKMARN 7 60276 AIRLAKE7	53.9	53.7	-0.40%	53.9	54.9	1.80%	53.9	53.8	-0.30%	53.9	54	0.20%	53.9	39.5	-26.80%	53.9	53.7	-0.40%	53.9	54.1	0.40%
SUBTOTALS FOR: MNEX (INFO)	-150.4	-143.1	-4.90%	-150.4	-193.5	28.60%	-150.4	-133	-11.60%	-150.4	-162.7	8.20%	-150.4	-164.2	9.20%	-150.4	-128.4	-14.70%	-150.4	-164.7	9.50%
	Difference =	7.3	9.60%	Difference =	-43.1	-43.10%	Difference =	17.4	23.20%	Difference =	-12.3	-24.60%	Difference =	-13.8	-13.80%	Difference =	22	22.00%	Difference =	-14.3	-14.30%

Distribution Factor Analysis

Transmission Alternative 6

2009 Summer Peak Case
Generation to Generation Dispatct

Interface Definition		CMMPA BGSII Case at 76 MW		GRE BGSII Case at 100 MW		HCPD BGSII Case at 75 MW		HUC BGSII Case at 50 MW		MMPA BGSII Case at 100 MW		MRES BGSII Case at 100 MW		OTP BGSII Case at 100 MW								
From Bus	To Bus	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference							
34093	ARNOLD 3 34018 HAZLTON3	384.8	393.4	2.20%	384.8	392.8	2.10%	384.8	378	-1.80%	384.8	387.8	0.80%	384.8	382.8	-2.10%	384.8	388.2	0.90%			
SUBTOTALS FOR: ARN-HAZLTN		384.8	393.4	2.20%	384.8	392.8	2.10%	384.8	378	-1.80%	384.8	387.8	0.80%	384.8	382.8	-2.10%	384.8	388.2	0.90%			
		Difference =	8.7	11.43%	Difference =	8	8.00%	Difference =	-6.8	-9.10%	Difference =	3	5.90%	Difference =	8	8.00%	Difference =	-7.6	-7.60%	Difference =	3.4	3.40%
64786	COOPER 3 59199 ST JOE 3	54.2	55.1	1.70%	54.2	54.9	1.40%	54.2	48.7	-10.10%	54.2	53.8	-0.70%	54.2	54.8	1.20%	54.2	53.2	-1.80%			
64786	COOPER 3 96039 7FAIRPT	63.2	64	1.10%	63.2	63.9	1.00%	63.2	59.1	-6.60%	63.2	63	-0.40%	63.2	64	1.10%	63.2	62.6	-1.00%			
SUBTOTALS FOR: COOPER_S		117.4	119.1	1.40%	117.4	118.8	1.20%	117.4	107.8	-8.20%	117.4	116.8	-0.50%	117.4	119.1	1.40%	117.4	115.8	-1.40%			
		Difference =	1.7	2.20%	Difference =	1.4	1.40%	Difference =	-9.6	-12.80%	Difference =	-0.6	-1.20%	Difference =	1.7	1.70%	Difference =	2	2.00%	Difference =	-1.6	-1.60%
60304	EAU CL 3 92494 ARP 345	92.4	89.1	-3.60%	92.4	85.6	-7.40%	92.4	97.4	5.40%	92.4	87.8	-2.90%	92.4	87.8	-5.00%	92.4	89.7	-3.00%			
SUBTOTALS FOR: ECL-ARP		92.4	89.1	-3.60%	92.4	85.6	-7.40%	92.4	97.4	5.40%	92.4	87.8	-2.90%	92.4	87.8	-5.00%	92.4	89.7	-3.00%			
		Difference =	-3.3	-4.40%	Difference =	-6.8	-8.80%	Difference =	5	6.50%	Difference =	-2.7	-5.30%	Difference =	-4.6	-4.60%	Difference =	4.8	4.80%	Difference =	-2.7	-2.70%
65351	S3451 3 65354 S3454 3	82.3	82.8	0.70%	82.3	82.6	0.30%	82.3	89.2	8.40%	82.3	82	-0.30%	82.3	82.5	0.30%	82.3	82.1	-0.20%			
65351	S3451 3 65359 S3459 3	30.2	31.8	5.20%	30.2	31.4	4.00%	30.2	37.5	24.20%	30.2	30.2	-0.20%	30.2	31.4	3.90%	30.2	30.2	-0.40%			
65451	S1251 5 65497 S1297 5	39.7	40	0.70%	39.7	39.9	0.60%	39.7	40.9	3.20%	39.7	39.7	0.00%	39.7	39.9	0.60%	39.7	39.6	-0.10%			
SUBTOTALS FOR: FT_CAL_S		152.2	154.6	1.60%	152.2	153.9	1.10%	152.2	167.6	10.10%	152.2	151.9	-0.20%	152.2	153.8	1.10%	152.2	151.8	-0.20%			
		Difference =	2.4	3.20%	Difference =	1.7	1.70%	Difference =	15.4	20.60%	Difference =	-0.3	-0.60%	Difference =	1.6	1.60%	Difference =	6.4	6.40%	Difference =	-0.4	-0.40%
64832	GENTLMN4 64909 N PLATT4	157.4	157.4	0.00%	157.4	157.4	0.00%	157.4	156	-0.90%	157.4	157.4	0.00%	157.4	157.4	0.00%	157.4	157.4	0.00%			
64832	GENTLMN4 64909 N PLATT4	157.9	157.8	0.00%	157.9	157.9	0.00%	157.9	156.4	-0.90%	157.9	157.9	0.00%	157.9	157.9	0.00%	157.9	157.9	0.00%			
64832	GENTLMN4 64909 N PLATT4	162.4	162.4	0.00%	162.4	162.4	0.00%	162.4	160.9	-0.90%	162.4	162.4	0.00%	162.4	162.4	0.00%	162.4	162.4	0.00%			
64831	GENTLMN3 64984 SWEET W3	273.8	273.9	0.00%	273.8	273.9	0.00%	273.8	268.6	-1.90%	273.8	273.9	0.00%	273.8	273.9	0.00%	273.8	273.9	0.00%			
64831	GENTLMN3 64984 SWEET W3	328.1	328.2	0.00%	328.1	328.3	0.00%	328.1	321.8	-1.90%	328.1	328.2	0.00%	328.1	328.3	0.00%	328.1	328.2	0.00%			
64831	GENTLMN3 64943 REDWIL03	277	277.9	0.30%	277	277.9	0.30%	277	274.1	-1.00%	277	277	0.00%	277	278	0.40%	277	276.6	-0.10%			
SUBTOTALS FOR: GGS		1356.6	1357.6	0.10%	1356.6	1357.7	0.10%	1356.6	1337.8	-1.40%	1356.6	1356.8	0.00%	1356.6	1357.8	0.10%	1356.6	1356.3	0.00%			
		Difference =	1.1	1.40%	Difference =	1.1	1.10%	Difference =	-18.7	-25.00%	Difference =	0.3	0.60%	Difference =	1.2	1.20%	Difference =	2.2	2.20%	Difference =	-0.3	-0.30%
64933	PAULINE3 64902 MOORE 3	55.7	56.8	2.00%	55.7	56.9	2.10%	55.7	54.1	-2.90%	55.7	56	0.60%	55.7	57	2.30%	55.7	58.2	4.40%			
64839	GR ISLD4 64780 COLMB W4	99.8	99.5	-0.30%	99.8	99.6	-0.20%	99.8	95.9	-3.90%	99.8	99.9	0.10%	99.8	99.6	-0.20%	99.8	99.8	0.00%			
66571	GR ISLD3 64896 MCCOOL 3	145.4	148.1	1.80%	145.4	148.2	1.90%	145.4	147.1	1.10%	145.4	146.1	0.50%	145.4	148.5	2.10%	145.4	150.9	3.80%			
SUBTOTALS FOR: GRIS_LNC		300.9	304.4	1.20%	300.9	304.7	1.30%	300.9	297	-1.30%	300.9	302	0.40%	300.9	305.1	1.40%	300.9	308.6	2.60%			
		Difference =	3.5	4.60%	Difference =	3.8	3.80%	Difference =	-3.9	-5.20%	Difference =	1.1	2.20%	Difference =	4.2	4.20%	Difference =	7.7	7.70%	Difference =	0	0.00%
57981	LACYGNE7 57965 W GRDNR7	577.7	577.7	0.00%	577.8	577.8	0.00%	577.8	578.8	0.20%	577.8	578	0.00%	577.8	577.7	-0.10%	577.8	578.3	0.10%			
57981	LACYGNE7 57968 STILLWEL7	720.6	720.6	0.00%	720.6	720.7	0.00%	720.6	721	0.10%	720.6	720.8	0.00%	720.6	721.4	0.10%	720.6	721	0.10%			
SUBTOTALS FOR: LACYGNE_N		1298.3	1298.3	0.00%	1298.4	1298.5	0.00%	1298.4	1299.8	0.10%	1298.4	1298.8	0.00%	1298.4	1298.3	0.00%	1298.4	1300.4	0.20%			
		Difference =	-0.1	-0.10%	Difference =	0.1	0.10%	Difference =	1.4	1.90%	Difference =	0.4	0.80%	Difference =	-0.1	-0.10%	Difference =	2	2.00%	Difference =	0.9	0.90%
62234	LKMAR7 60276 AIRLAKE7	53.8	53.6	-0.40%	53.8	54.7	1.80%	53.8	53.6	-0.30%	53.8	53.9	0.20%	53.8	53.6	-0.40%	53.8	54	0.40%			
SUBTOTALS FOR: LKM-WFB		53.8	53.6	-0.40%	53.8	54.7	1.80%	53.8	53.6	-0.30%	53.8	53.9	0.20%	53.8	53.6	-0.40%	53.8	54	0.40%			
		Difference =	-0.2	-0.30%	Difference =	0.9	0.90%	Difference =	-0.1	-0.20%	Difference =	0.1	0.20%	Difference =	-14.4	-14.40%	Difference =	-0.2	-0.20%	Difference =	0.2	0.20%
60175	ROSEAU 4 67576 RICHER 4	-144	-144.4	0.30%	-144	-144.6	0.50%	-144	-144.2	0.10%	-144	-144.2	0.20%	-144	-144.6	0.40%	-144	-144.1	0.10%			
60173	ROSEAU2 67564 DORSEY 2	-1136.8	-1143.8	0.60%	-1136.8	-1146.8	0.90%	-1136.8	-1139.9	0.30%	-1136.8	-1140.1	0.30%	-1136.8	-1145.7	0.80%	-1136.8	-1140.8	-0.10%			
66752	DRAYTON4 67557 LETELERA4	-235.8	-231.7	-1.70%	-235.8	-230	-2.40%	-235.8	-233.6	-0.90%	-235.8	-233.9	-0.80%	-235.8	-230.6	-2.20%	-235.8	-237.8	0.90%			
63379	RUGBY 4 67523 GLENBOR4	41.7	44.9	7.60%	41.7	46.4	11.10%	41.7	42.7	2.30%	41.7	43.3	3.70%	41.7	45.8	9.70%	41.7	43.1	3.20%			
SUBTOTALS FOR: MHX_N		-1474.8	-1475	0.00%	-1474.8	-1475.1	0.00%	-1474.8	-1475	0.00%	-1474.8	-1475	0.00%	-1474.8	-1474.9	0.00%	-1474.8	-1474.9	0.00%			
		Difference =	-0.2	-0.30%	Difference =	-0.3	-0.30%	Difference =	-0.2	-0.20%	Difference =	-0.2	-0.30%	Difference =	-0.2	-0.20%	Difference =	-0.1	-0.10%	Difference =	0.1	0.10%
67576	RICHER 4 60175 ROSEAU 4	146.4	146.9	0.30%	146.4	147.1	0.50%	146.4	146.6	0.10%	146.4	146.7	0.20%	146.4	147.1	0.40%	146.4	146.6	0.10%			
67564	DORSEY 2 60173 ROSEAU2	1153.5	1160.7	0.60%	1153.5	1163.8	0.90%	1153.5	1156.7	0.30%	1153.5	1156.9	0.30%	1153.5	1162.6	0.80%	1153.5	1157.7	0.40%			
67557	LETELERA4 66752 DRAYTON4	240.2	236	-1.80%	240.2	234.2	-2.50%	240.2	237.9	-0.90%	240.2	238.3	-0.80%	240.2	234.8	-2.20%	240.2	237.3	-1.20%			
67523	GLENBOR4 63379 RUGBY 4	-41.4	-44.5	7.50%	-41.4	-45.9	11.00%	-41.4	-42.3	2.30%	-41.4	-42.9	3.60%	-41.4	-45.4	9.60%	-41.4	-42.7	3.20%			
SUBTOTALS FOR: MHX_S		1498.8	1499.1	0.00%	1498.8	1499.2	0.00%	1498.8	1498.9	0.00%	1498.8	1499	0.00%	1498.8	1499.1	0.00%	1498.8	1498.9	0.00%			
		Difference =	0.4	0.50%	Difference =	0.5	0.50%	Difference =	0.2	0.30%	Difference =	0.2	0.40%	Difference =	0.4	0.40%	Difference =	0.2	0.20%	Difference =	0	0.00%
68613	AUBURN4 67525 RESTON4	42.3	42.1	-0.30%	42.3	42.1	-0.50%	42.3	42.2	-0.10%	42.3	42.2	-0.20%	42.3	42.1	-0.40%	42.3	42.2	-0.20%			
68615	YORKTON4 67514 ROBLIN 4	-90.5	-90.5	0.00%	-90.5	-90.4	-0.10%	-90.5	-90.5	0.00%	-90.5	-90.5	0.00%	-90.5	-90.5	0.00%	-90.5	-90.5	0.00%			
68630	EBCAMPB4 67515 RALL 4	-6.3	-6.2	-1.20%	-6.3	-6.2	-1.70%	-6.3	-6.3	-0.50%	-6.3	-6.3	-0.50%	-6.3	-6.2	-1.50%	-6.3	-6.3	-0.60%			
SUBTOTALS FOR: MH_SPC_E		-54.6	-54.6	0.00%	-54.6	-54.6	0.00%	-54.6	-54.6	0.00%	-54.6	-54.6	0.00%	-54.6	-54.6	0.00%	-54.6	-54.6	0.00%			
		Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%
67525	RESTON 4 68613 AUBURN4	-42.1	-42	-0.30%	-42.1	-41.9	-0.50%	-42.1	-42	-0.10%	-42.1	-42	-0.20%	-42.1	-41.9	-0.40%	-42.1					

Distribution Factor Analysis Transmission Alternative 6

2009 Summer Peak Case
Generation to Generation Dispatc

		CMMPA			GRE			HCPD			HUC			MMPA			MRES			OTP		
64095 MNTZUMA3	64064 BONDRTN3	9.2	4.7	-49.30%	9.2	4.7	-48.80%	9.2	13.1	43.20%	9.2	8.3	-9.30%	9.2	4.9	-47.10%	9.2	16.4	78.80%	9.2	8.5	-7.50%
SUBTOTALS FOR: MNTZUMA_W		9.2	4.7	-49.30%	9.2	4.7	-48.80%	9.2	13.1	43.20%	9.2	8.3	-9.30%	9.2	4.9	-47.10%	9.2	16.4	78.80%	9.2	8.5	-7.50%
Difference =		-4.5	-6.00%		-4.5	-4.50%		4	5.30%		-0.9	-1.70%		-4.3	-4.30%		7.2	7.20%		-0.7	-0.70%	
61702 LASKIN 7	61705 BABBITT7	63.4	63.4	0.00%	63.4	63.4	0.00%	63.4	63.4	-0.10%	63.4	63.4	0.00%	63.4	63.4	0.00%	63.4	63.4	-0.10%	63.4	63.5	0.10%
61702 LASKIN 7	61722 FORBES 7	43.9	43.9	0.00%	43.9	43.9	0.10%	43.9	43.9	-0.10%	43.9	43.9	0.00%	43.9	43.9	0.00%	43.9	43.9	-0.10%	43.9	43.9	-0.10%
61702 LASKIN 7	62451 LAKELND7	64.5	64.5	0.00%	64.5	64.5	0.00%	64.5	64.5	-0.10%	64.5	64.5	0.00%	64.5	64.5	0.00%	64.5	64.5	-0.10%	64.5	64.6	0.10%
61702 LASKIN 7	61574 LASKNJCT	-74.8	-74.7	-0.10%	-74.8	-74.8	0.00%	-74.8	-74.7	-0.10%	-74.8	-74.8	0.00%	-74.8	-74.7	-0.10%	-74.8	-74.7	-0.10%	-74.8	-74.9	0.10%
61626 BOSWELL4	61625 BLCKBRY4	139.5	139.2	-0.20%	139.5	139.1	-0.30%	139.5	139.3	-0.10%	139.5	139.4	-0.10%	139.5	139.1	-0.30%	139.5	139.3	-0.20%	139.5	140.2	0.50%
61626 BOSWELL4	61625 BLCKBRY4	135.8	135.5	-0.20%	135.8	135.4	-0.30%	135.8	135.6	-0.10%	135.8	135.7	-0.10%	135.8	135.4	-0.30%	135.8	135.6	-0.20%	135.8	136.5	0.50%
61626 BOSWELL4	61627 SHANNON4	87.6	88.2	0.60%	87.6	88.4	0.90%	87.6	88	0.40%	87.6	87.8	0.20%	87.6	88.3	0.80%	87.6	88.1	0.50%	87.6	86.2	-1.70%
61615 ARROWHWD4	61614 98L TAP4	56.4	55.1	-2.30%	56.4	54.9	-2.60%	56.4	54.8	-2.70%	56.4	56	-0.50%	56.4	54.9	-2.60%	56.4	54.6	-3.10%	56.4	59	-4.70%
61615 ARROWHWD4	61554 AWHD1JCT	155	154.9	-0.10%	155	154.8	-0.20%	155	154.7	-0.20%	155	155	0.00%	155	154.8	-0.10%	155	154.7	-0.20%	155	155.7	0.50%
61615 ARROWHWD4	61556 AWHD2JCT	160.4	160.3	-0.10%	160.4	160.2	-0.20%	160.4	160.1	-0.20%	160.4	160.4	0.00%	160.4	160.2	-0.10%	160.4	160.1	-0.20%	160.4	161.2	0.50%
61615 ARROWHWD4	61624 FORBES 4	-110.4	-110.6	0.30%	-110.4	-110.1	-0.20%	-110.4	-111.5	1.00%	-110.4	-110.2	-0.10%	-110.4	-110.5	0.10%	-110.4	-111.6	1.10%	-110.4	-110	-0.30%
61615 ARROWHWD4	63055 BEARCK 4	56.2	57.5	2.20%	56.2	59	4.90%	56.2	57.3	0.20%	56.2	57.3	1.80%	56.2	58.2	3.50%	56.2	56.3	0.20%	56.2	55.2	-1.90%
SUBTOTALS FOR: MP_EXPORT		777.7	777.1	-0.10%	777.7	778.8	0.10%	777.7	774.4	-0.40%	777.7	778.5	0.10%	777.7	777.6	0.00%	777.7	774.1	-0.50%	777.7	781.1	0.40%
Difference =		-0.6	-0.80%		1	1.00%		-3.4	-4.50%		0.8	1.50%		-0.1	-0.10%		-3.6	-3.60%		3.4	3.40%	
60105 PR ISLD3	61950 BYRON 3	-204.7	-189.6	-7.40%	-204.7	-219.8	-7.40%	-204.7	-196.4	-4.00%	-204.7	-209	2.10%	-204.7	-200.1	-2.30%	-204.7	-194.2	-5.10%	-204.7	-209.7	2.40%
60304 EAU CL 3	92494 ARP 345	92.4	89.1	-3.60%	92.4	85.6	-7.40%	92.4	97.4	5.40%	92.4	89.7	-2.90%	92.4	87.8	-5.00%	92.4	97.2	5.20%	92.4	89.7	-3.00%
SUBTOTALS FOR: MWSI		-112.3	-100.6	-10.50%	-112.3	-134.2	-19.50%	-112.3	-99.1	-11.80%	-112.3	-119.3	-6.20%	-112.3	-112.3	0.00%	-112.3	-97	-13.70%	-112.3	-120	6.90%
Difference =		11.8	15.50%		-21.9	-21.90%		13.2	17.70%		-7	-14.00%		0.1	0.10%		15.3	15.30%		-7.7	-7.70%	
66756 SQBUTTE4	63049 STANTON4	-37.4	-35.5	-5.00%	-37.4	-34.8	-6.80%	-37.4	-35.9	-3.90%	-37.4	-36.5	-2.40%	-37.4	-34.9	-6.50%	-37.4	-35.4	-5.30%	-37.4	-38	1.60%
66756 SQBUTTE4	66751 CENTER 4	-41.8	-42.6	1.90%	-41.8	-43	3.00%	-41.8	-41.5	-0.70%	-41.8	-42.2	1.10%	-41.8	-42.8	2.50%	-41.8	-41.6	-0.40%	-41.8	-43.3	3.60%
66756 SQBUTTE4	66791 CENTER 3	91.3	90.3	-1.20%	91.3	90.1	-1.40%	91.3	89.6	-1.90%	91.3	90.9	-0.50%	91.3	90	-1.50%	91.3	89.2	-2.40%	91.3	93.4	2.30%
63041 COAL CR4	63042 COAL TP4	-23.2	-23.4	0.60%	-23.2	-23.4	0.90%	-23.2	-23.2	-0.10%	-23.2	-23.3	0.30%	-23.2	-23.4	0.70%	-23.2	-23.2	0.00%	-23.2	-23.4	0.70%
63041 COAL CR4	63049 STANTON4	-125.2	-126.2	0.80%	-125.2	-126.7	1.20%	-125.2	-125.3	0.10%	-125.2	-125.7	0.40%	-125.2	-126.5	1.00%	-125.2	-125.4	0.20%	-125.2	-126	0.60%
63041 COAL CR4	63381 UNDERWD4	144.5	145.6	0.80%	144.5	146.2	1.10%	144.5	144.8	0.10%	144.5	145.1	0.40%	144.5	145.9	1.00%	144.5	144.7	0.10%	144.5	145.5	0.70%
SUBTOTALS FOR: NDDC		8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	-0.10%
Difference =		0	0.00%		0	0.00%		0	0.00%		0	0.00%		0	0.00%		0	0.00%		0	0.00%	
67105 LELAND03	66506 FTTHOMP3	131.4	133	1.30%	131.4	133	1.20%	131.4	135.7	3.30%	131.4	131.9	0.40%	131.4	133.4	1.60%	131.4	135.9	3.40%	131.4	129.5	-1.40%
67105 LELAND03	67180 GROTON 3	253.9	252.6	-0.50%	253.9	252.1	-0.70%	253.9	252.3	-0.60%	253.9	253.5	-0.20%	253.9	252.3	-0.60%	253.9	253.3	-0.20%	253.9	251.1	-1.10%
67101 ANTELOP3	62100 BRDLAND3	192.6	192.3	-0.10%	192.6	192	-0.30%	192.6	193.1	0.20%	192.6	192.5	-0.10%	192.6	192.3	-0.20%	192.6	193.7	0.60%	192.6	190.2	-1.30%
63314 BIGSTON4	66503 BLAIR 4	-14.5	11.1	-176.60%	-14.5	18.7	-228.60%	-14.5	12.7	-187.20%	-14.5	1.9	-113.10%	-14.5	19.2	-232.10%	-14.5	22.9	-257.70%	-14.5	9	-162.10%
63320 GMI GRV4	66550 GRANITF4	31.7	41.3	30.50%	31.7	44.4	40.20%	31.7	41	29.30%	31.7	40.6	28.00%	31.7	44.8	41.20%	31.7	44.4	40.20%	31.7	31.9	0.70%
63336 AUDUBON4	63053 HUBBARD4	114.1	117.9	3.30%	114.1	119.4	4.70%	114.1	116.3	2.00%	114.1	116	1.70%	114.1	118.9	4.30%	114.1	117	2.50%	114.1	110.3	-3.30%
66521 SULLYBT4	66519 OAH4 4	-71.4	-70.4	-1.40%	-71.4	-70.4	-1.40%	-71.4	-68.4	-4.20%	-71.4	-71.1	-0.50%	-71.4	-70.1	-1.80%	-71.4	-68.3	-4.30%	-71.4	-73.2	2.50%
63052 INMAN 4	61611 WINGRIV4	99.4	105.8	6.40%	99.4	108.1	8.80%	99.4	103.9	4.50%	99.4	102.6	3.20%	99.4	107.6	8.20%	99.4	105.1	5.70%	99.4	80.1	-19.40%
66470 BISON 4	66497 MAURINE4	-1.5	-0.9	-42.30%	-1.5	-0.9	-42.00%	-1.5	1.2	-178.40%	-1.5	-1.3	-12.50%	-1.5	-0.7	-52.00%	-1.5	0.2	-110.00%	-1.5	-2.2	45.90%
66716 LAPORTE7	61640 BAOURA7	-0.1	0.8	999.00%	-0.1	1.2	999.00%	-0.1	0.4	-622.40%	-0.1	0.4	-650.80%	-0.1	1.1	999.00%	-0.1	0.5	-810.90%	-0.1	0	-46.30%
63222 ALEXAND7	60144 DGLASCO7	32.8	34.3	4.70%	32.8	34.9	6.50%	32.8	33.9	3.40%	32.8	33.8	3.10%	32.8	34.8	6.10%	32.8	34.2	4.30%	32.8	25.8	-21.20%
67327 ELLENDL7	67401 ABDNUCT7	-6.8	-6.1	-10.30%	-6.8	-6	-11.60%	-6.8	-5.6	-17.10%	-6.8	-6.4	-5.60%	-6.8	-5.9	-13.80%	-6.8	-5.1	-25.00%	-6.8	-8.3	21.40%
66432 EDGELEY7	66534 ORDWAY 7	-20.1	-20.3	0.70%	-20.1	-19.9	1.50%	-20.1	-19.9	1.40%	-20.1	-20.2	0.30%	-20.1	-20.3	0.70%	-20.1	-19.5	-3.20%	-20.1	-22	9.10%
66438 FORMAN 7	66522 SUMMIT7	-23.1	-22.7	-2.10%	-23.1	-22.6	-2.20%	-23.1	-22.3	-3.60%	-23.1	-22.8	-1.30%	-23.1	-22.5	-2.80%	-23.1	-21.4	-7.40%	-23.1	-24.8	7.20%
63311 CANBY 4	66550 GRANITF4	80.1	93.1	16.30%	80.1	97.4	21.60%	80.1	92.5	15.40%	80.1	90.4	12.80%	80.1	97.5	21.70%	80.1	96.6	20.60%	80.1	92.5	15.50%
62006 KERKHO 7	62005 KERKHO7	23.7	25.6	8.00%	23.7	26.3	10.70%	23.7	25.5	7.30%	23.7	26.1	9.90%	23.7	26.3	10.90%	23.7	26.1	9.70%	23.7	23.8	0.20%
66752 DRAYTON4	67557 LETELER4	-240.2	-236	-1.80%	-240.2	-234.2	-2.50%	-240.2	-237.9	-0.90%	-240.2	-238.3	-0.80%	-240.2	-234.8	-2.20%	-240.2	-237.3	-1.20%	-240.2	-242.3	0.90%
63379 RUGBY 4	67523 GLENBOR4	41.7	44.9	7.60%	41.7	46.4	11.10%	41.7	42.7	2.30%	41.7	43.3	3.70%	41.7	45.8	9.70%	41.7	43.1	3.20%	41.7	42.5	1.90%
SUBTOTALS FOR: NDEX		623.6	696.6	11.70%	623.6	719.3	15.30%	623.6	696.8	11.70%	623.6	672.7	7.90%	623.6	719.6	15.40%	623.6	721.2	15.60%	623.6	614	-1.50%
Difference =		73	96.10%		95.7	95.70%		73.2	97.60%		49.1	95.10%		96	95.00%		97.6	97.60%		-9.6	-9.60%	
36406 WEMPL; B	39058 PAD 345	636.1	637.5	0.20%	636.1	638.8	0.40%	636.1	633.4	-0.40%	636.1	637.3	0.20%	636.1	639	0.30%	63					

Distribution Factor Analysis Transmission Alternative 6

2009 Summer Peak Case
Generation to Generation Dispatct

	CMMPA		Difference =	GRE	Difference =	HCPD	Difference =	HUC	Difference =	MMPA	Difference =	MRES	Difference =	OTP	Difference =						
	0.4	0.60%	-0.4	-0.40%	1	1.30%	0.4	0.80%	0	0.00%	4.5	4.50%	0.4	0.40%							
64831 GENTLMN3 64943 REDWILO3	277	277.9	0.30%	277	277.9	0.30%	277	274.1	-1.00%	277	277	0.00%	277	278	0.40%	277	278	0.40%	277	276.6	-0.10%
SUBTOTALS FOR: WNE_WKS	277	277.9	0.30%	277	277.9	0.30%	277	274.1	-1.00%	277	277	0.00%	277	278	0.40%	277	278	0.40%	277	276.6	-0.10%
Difference =	0.9	1.20%	0.9	0.90%	-2.9	-3.80%	0	0.10%	1	1.00%	1	1.00%	-0.4	-0.40%							
66756 SQBUTTE4 63049 STANTON4	-37.4	-35.5	-5.00%	-37.4	-34.8	-6.80%	-37.4	-35.9	-3.90%	-37.4	-36.5	-2.40%	-37.4	-34.9	-6.50%	-37.4	-35.4	-5.30%	-37.4	-38	1.60%
66756 SQBUTTE4 66751 CENTER 4	-41.8	-42.6	1.90%	-41.8	-43	3.00%	-41.8	-41.5	-0.70%	-41.8	-42.2	1.10%	-41.8	-42.8	2.50%	-41.8	-41.6	-0.40%	-41.8	-43.3	3.60%
66756 SQBUTTE4 66791 CENTER 3	91.3	90.3	-1.20%	91.3	90.1	-1.40%	91.3	89.6	-1.90%	91.3	90.9	-0.50%	91.3	90	-1.50%	91.3	89.2	-2.40%	91.3	93.4	2.30%
SUBTOTALS FOR: Y2DC	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%
Difference =	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%							
60186 AS KING3 60304 EAU CL 3	317.8	317.8	0.00%	317.8	311	-2.10%	317.8	322.9	1.60%	317.8	315.1	-0.80%	317.8	315.1	-0.80%	317.8	323	1.60%	317.8	315	-0.90%
60105 PR ISLD3 61950 BYRON 3	-204.7	-189.6	-7.40%	-204.7	-219.8	7.40%	-204.7	-196.4	-4.00%	-204.7	-209	2.10%	-204.7	-200.1	-2.30%	-204.7	-194.2	-5.10%	-204.7	-209.7	2.40%
60192 BLUE LK3 60050 WLMRTHTP	-496.1	-504.2	1.60%	-496.1	-515.7	4.00%	-496.1	-493.1	-0.60%	-496.1	-500.4	0.90%	-496.1	-496.8	0.20%	-496.1	-490.6	-1.10%	-496.1	-502.7	1.30%
60187 AS KING7 60325 WILLOWRV7	128.6	128.9	0.20%	128.6	127.7	-0.70%	128.6	129.2	0.50%	128.6	128.3	-0.30%	128.6	128.4	-0.10%	128.6	129.3	0.50%	128.6	128.3	-0.20%
60238 REDROCK7 68966 GLENMONT	50	50.4	0.80%	50	48.5	-3.00%	50	50.6	1.20%	50	49.6	-0.90%	50	49.6	-0.80%	50	50.7	1.30%	50	49.8	-0.40%
62234 LKMARN 7 60276 AIRLAKE7	53.8	53.6	-0.40%	53.8	54.7	1.80%	53.8	53.6	-0.30%	53.8	53.9	0.20%	53.8	39.3	-26.90%	53.8	53.6	-0.40%	53.8	54	0.40%
SUBTOTALS FOR: MNEX (INFO)	-150.6	-143.2	-4.90%	-150.6	-193.6	28.60%	-150.6	-133.2	-11.50%	-150.6	-162.6	8.00%	-150.6	-164.4	9.20%	-150.6	-128.3	-14.80%	-150.6	-165.2	9.70%
Difference =	7.3	9.60%	-43.1	-43.10%	17.4	23.20%	-12	-24.00%	-13.8	-13.80%	22.3	22.30%	-14.7	-14.70%							

Distribution Factor Analysis Transmission Alternative 7

2009 Summer Peak Case
Generation to Generation Dispatc

Interface Definition		CMMPA BGSII Case at 76 MW		GRE BGSII Case at 100 MW		HCPD BGSII Case at 75 MW		HUC BGSII Case at 50 MW		MMPA BGSII Case at 100 MW		MRES BGSII Case at 100 MW		OTP BGSII Case at 100 MW								
From Bus	To Bus	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference							
34093	ARNOLD 3 34018 HAZLT0N3	383.7	2.20%	383.7	2.10%	383.7	2.10%	383.7	1.80%	383.7	2.10%	383.7	2.00%	383.7	2.00%							
SUBTOTALS FOR: ARN-HAZLTN		383.7	2.20%	383.7	2.10%	383.7	2.10%	383.7	1.80%	383.7	2.10%	383.7	2.00%	383.7	2.00%							
		Difference =	8.6	11.30%	Difference =	8	8.00%	Difference =	-6.8	-9.10%	Difference =	2.9	5.70%	Difference =	-7.7	-7.70%	Difference =	3.4	3.40%			
64786	COOPER 3 59199 ST JOE 3	54.3	1.50%	54.3	1.10%	54.9	1.10%	54.3	-10.20%	54.3	53.8	-0.90%	54.3	55.1	1.50%	54.3	55	1.40%	54.3	53.2	-1.90%	
64786	COOPER 3 96039 7FAIRPT	63.3	1.00%	63.3	0.80%	63.3	0.80%	63.3	-6.70%	63.3	63	-0.50%	63.3	64	1.00%	63.3	64.7	2.20%	63.3	62.6	-1.10%	
SUBTOTALS FOR: COOPER_S		117.6	1.19%	117.6	1.10%	117.6	1.10%	117.6	-8.30%	117.6	116.8	-0.60%	117.6	119.1	1.30%	117.6	119.7	1.80%	117.6	115.8	-1.50%	
		Difference =	1.4	1.90%	Difference =	1.1	1.10%	Difference =	-9.8	-13.00%	Difference =	-0.8	-1.50%	Difference =	1.5	1.50%	Difference =	2.1	2.10%	Difference =	-1.8	-1.80%
60304	EAU CL 3 92494 ARP 345	93.4	-3.50%	93.4	-7.20%	86.7	-7.20%	93.4	5.30%	93.4	90.8	-2.80%	93.4	98.8	-4.80%	93.4	98.3	5.30%	93.4	90.7	-2.90%	
SUBTOTALS FOR: ECL-ARP		93.4	-3.50%	93.4	-6.70%	86.7	-6.70%	93.4	5.30%	93.4	90.8	-2.80%	93.4	98.8	-4.80%	93.4	98.3	5.30%	93.4	90.7	-2.90%	
		Difference =	-3.3	-4.30%	Difference =	-6.7	-6.70%	Difference =	5	6.60%	Difference =	-2.6	-5.20%	Difference =	-4.5	-4.50%	Difference =	4.9	4.90%	Difference =	-2.7	-2.70%
65351	S3451 3 65354 S3454 3	82.4	0.60%	82.4	0.20%	82.6	0.20%	82.4	8.30%	82.4	82.1	-0.30%	82.4	82.6	0.20%	82.4	83.9	1.80%	82.4	82.2	-0.30%	
65351	S3451 3 65359 S3459 3	30.2	4.90%	30.2	3.10%	31.3	3.70%	30.2	24.10%	30.2	30.1	-0.30%	30.2	31.4	3.80%	30.2	34.2	13.30%	30.2	30	-0.60%	
65451	S1251 5 65497 S1297 5	39.7	0.70%	39.7	0.50%	39.9	0.50%	39.7	3.10%	39.7	39.6	0.00%	39.7	39.9	0.60%	39.7	40.6	2.40%	39.7	39.6	-0.10%	
SUBTOTALS FOR: FT_CAL_S		152.3	1.50%	152.3	1.00%	153.8	1.00%	152.3	10.10%	152.3	151.9	-0.20%	152.3	153.8	1.00%	152.3	158.7	4.20%	152.3	151.8	-0.30%	
		Difference =	2.3	3.00%	Difference =	1.5	1.50%	Difference =	15.4	20.50%	Difference =	-0.4	-0.70%	Difference =	1.6	1.60%	Difference =	6.4	6.40%	Difference =	-0.4	-0.40%
64832	GENTLMN4 64909 N PLATT4	157.4	0.00%	157.4	0.00%	157.4	0.00%	157.4	-0.90%	157.4	157.4	0.00%	157.4	157.4	0.00%	157.4	157.4	0.00%	157.4	157.4	0.00%	
64832	GENTLMN4 64909 N PLATT4	157.8	0.00%	157.8	0.00%	157.8	0.00%	157.8	-0.90%	157.8	157.9	0.00%	157.8	157.8	0.00%	157.8	157.9	0.00%	157.8	157.8	0.00%	
64832	GENTLMN4 64909 N PLATT4	162.4	0.00%	162.4	0.00%	162.4	0.00%	162.4	-0.90%	162.4	162.4	0.00%	162.4	162.4	0.00%	162.4	162.4	0.00%	162.4	162.4	0.00%	
64831	GENTLMN3 64984 SWEET W3	273.8	0.00%	273.8	0.00%	273.8	0.00%	273.8	-1.90%	273.8	273.9	0.00%	273.8	273.9	0.00%	273.8	274.2	0.20%	273.8	273.8	0.00%	
64831	GENTLMN3 64984 SWEET W3	328.1	0.00%	328.1	0.10%	328.2	0.10%	328.1	-1.90%	328.1	328.2	0.00%	328.1	328.2	0.00%	328.1	328.6	0.20%	328.1	328.1	0.00%	
64831	GENTLMN3 64943 REDWIL03	277	0.30%	277	0.30%	277	0.30%	277	-1.10%	277	274	-1.10%	277	279.9	0.30%	277	278	0.40%	277	276.5	-0.20%	
SUBTOTALS FOR: GGS		1356.4	0.10%	1356.4	0.10%	1357.5	0.10%	1356.4	-1.40%	1356.4	1356.6	0.00%	1356.4	1357.6	0.10%	1356.4	1358.5	0.20%	1356.4	1356.1	0.00%	
		Difference =	1	1.40%	Difference =	1.1	1.10%	Difference =	-18.8	-25.00%	Difference =	0.2	0.50%	Difference =	1.2	1.20%	Difference =	2.2	2.20%	Difference =	-0.3	-0.30%
64933	PAULINE3 64902 MOORE 3	55.5	2.00%	55.5	2.20%	56.7	2.20%	55.5	-2.90%	55.5	55.8	0.60%	55.5	56.8	2.30%	55.5	58	4.40%	55.5	55.5	0.00%	
64839	GR ISLD4 64780 COLMB W4	99.7	-0.20%	99.7	-0.10%	99.6	-0.10%	99.7	-3.90%	99.7	99.8	0.10%	99.7	99.6	-0.10%	99.7	99.5	-0.20%	99.7	99.8	0.00%	
66571	GR ISLD3 64896 MCCOOL 3	145	1.80%	145	1.90%	147.8	1.90%	145	1.10%	145	145.7	0.50%	145	148	2.10%	145	150.5	3.80%	145	145	0.00%	
SUBTOTALS FOR: GRIS_LNC		300.2	1.20%	300.2	1.30%	304	1.30%	300.2	-1.30%	300.2	301.3	0.40%	300.2	304.4	1.40%	300.2	308	2.60%	300.2	300.2	0.00%	
		Difference =	3.5	4.60%	Difference =	3.8	3.80%	Difference =	-3.9	-5.20%	Difference =	1.1	2.20%	Difference =	4.2	4.20%	Difference =	7.7	7.70%	Difference =	0	0.00%
57981	LACYGNE7 57965 W.GRDNR7	577.7	0.00%	577.7	0.00%	577.8	0.00%	577.7	0.20%	577.7	578	0.00%	577.7	577.7	0.00%	577.7	578.9	0.20%	577.7	578.2	0.10%	
57981	LACYGNE7 57968 STILLWEL7	720.5	0.00%	720.5	0.00%	720.7	0.00%	720.5	0.10%	720.5	720.7	0.00%	720.5	721.3	0.10%	720.5	721.3	0.10%	720.5	720.9	0.10%	
SUBTOTALS FOR: LACYGNE_N		1298.2	0.00%	1298.2	0.00%	1298.5	0.00%	1298.2	0.10%	1298.2	1298.7	0.00%	1298.2	1298.2	0.00%	1298.2	1300.2	0.10%	1298.2	1299.2	0.10%	
		Difference =	0	0.00%	Difference =	0.2	0.20%	Difference =	1.5	1.90%	Difference =	0.5	1.00%	Difference =	0	0.00%	Difference =	1.9	1.90%	Difference =	0.9	0.90%
62234	LKMMARN 7 60276 AIRLAKE7	53.7	-0.40%	53.7	1.70%	54.7	1.70%	53.7	-0.30%	53.7	53.8	0.20%	53.7	53.9	-0.20%	53.7	53.5	-0.40%	53.7	53.9	0.40%	
SUBTOTALS FOR: LKM-WFB		53.7	-0.40%	53.7	1.70%	54.7	1.70%	53.7	-0.30%	53.7	53.8	0.20%	53.7	53.9	-0.20%	53.7	53.5	-0.40%	53.7	53.9	0.40%	
		Difference =	-0.2	-0.30%	Difference =	0.9	0.90%	Difference =	-0.2	-0.20%	Difference =	0.1	0.20%	Difference =	-14.5	-14.50%	Difference =	-0.2	-0.20%	Difference =	0.2	0.20%
60175	ROSEAU 4 67576 RICHER 4	-143.8	0.30%	-143.8	-0.50%	-144.5	-0.50%	-143.8	0.10%	-143.8	-144	0.20%	-143.8	-144.4	0.40%	-143.8	-144.1	0.20%	-143.8	-144	0.10%	
60173	ROSEAU2 67564 DORSEY 2	-1134.8	0.60%	-1134.8	0.90%	-1134.8	0.90%	-1134.8	-1137.7	-1134.8	-1137.9	0.30%	-1134.8	-1143.4	0.80%	-1134.8	-1138.6	0.30%	-1134.8	-1133.2	-0.10%	
66752	DRAYTON4 67557 LETELERA4	-237.1	-1.70%	-237.1	-2.40%	-231.5	-2.40%	-237.1	-0.90%	-237.1	-235	-0.80%	-237.1	-232	-2.10%	-237.1	-234.4	-1.20%	-237.1	-239.1	0.90%	
63379	RUGBY 4 67523 GLENBOR4	40.9	44	7.70%	40.9	45.4	11.20%	40.9	42.3	40.9	42.3	3.60%	40.9	44.9	9.80%	40.9	42.2	3.20%	40.9	41.6	1.90%	
SUBTOTALS FOR: MHX_N		-1474.8	-0.00%	-1474.8	-0.00%	-1475	-0.00%	-1474.8	-0.00%	-1474.8	-1474.9	0.00%	-1474.8	-1475.9	0.00%	-1474.8	-1474.9	0.00%	-1474.8	-1474.7	0.00%	
		Difference =	-0.2	-0.20%	Difference =	-0.2	-0.20%	Difference =	-0.1	-0.10%	Difference =	-0.1	-0.10%	Difference =	-0.2	-0.20%	Difference =	0	0.00%	Difference =	0.2	0.20%
67576	RICHER 4 60175 ROSEAU 4	146.3	0.30%	146.3	0.50%	146.9	0.50%	146.3	0.10%	146.3	146.5	0.20%	146.3	146.9	0.40%	146.3	146.5	0.20%	146.3	146.4	0.10%	
67564	DORSEY 2 60173 ROSEAU2	1151.4	0.60%	1151.4	0.90%	1161.5	0.90%	1151.4	0.30%	1151.4	1154.6	0.30%	1151.4	1160.4	0.80%	1151.4	1155.4	0.30%	1151.4	1149.8	-0.10%	
67557	LETELERA 66752 DRAYTON4	241.6	-1.70%	241.6	-2.40%	235.7	-2.40%	241.6	-0.90%	241.6	239.7	-0.80%	241.6	236.3	-2.20%	241.6	238.7	-1.20%	241.6	243.7	0.90%	
67523	GLENBOR4 63379 RUGBY 4	-40.5	43.6	7.60%	-40.5	45	11.10%	-40.5	42.3	-40.5	42	3.60%	-40.5	44.4	9.70%	-40.5	41.8	3.20%	-40.5	41.3	1.90%	
SUBTOTALS FOR: MHX_S		1498.8	0.00%	1498.8	0.00%	1499.1	0.00%	1498.8	0.00%	1498.8	1498.9	0.00%	1498.8	1499.1	0.00%	1498.8	1498.8	0.00%	1498.8	1498.7	0.00%	
		Difference =	0.3	0.40%	Difference =	0.4	0.40%	Difference =	0.1	0.10%	Difference =	0.1	0.20%	Difference =	0.3	0.30%	Difference =	0.1	0.10%	Difference =	-0.1	-0.10%
68613	AUBURN4 67525 RESTON 4	42.3	-0.30%	42.3	-0.50%	42.1	-0.50%	42.3	-0.10%	42.3	42.2	-0.10%	42.3	42.1	-0.40%	42.3	42.2	-0.20%	42.3	42.3	0.00%	
68615	YORKTON4 67514 ROBLIN 4	-90.6	-0.10%	-90.6	-0.10%	-90.5	-0.10%	-90.6	-0.50%	-90.6	-90.5	0.00%	-90.6	-90.5	0.00%	-90.6	-90.5	0.00%	-90.6	-90.5	0.00%	
68630	EBCAMPB4 67515 RALL 4	-6.3	-1.20%	-6.3	-1.70%	-6.2	-1.70%	-6.3	-0.50%	-6.3	-6.3	0.00%	-6.3	-6.2	-1.60%	-6.3	-6.3	-0.60%	-6.3	-6.3	0.10%	
S																						

Distribution Factor Analysis

Transmission Alternative 7

2009 Summer Peak Case
Generation to Generation Dispatct

		CMMPA		GRE		HCPD		HUC		MMPA		MRES		OTP							
64095 MNTZUMA3 64064 BONDRTN3	9.6	5.1	-46.50%	9.6	5.2	-46.00%	9.6	13.6	41.50%	9.6	8.7	-9.20%	9.6	5.3	-45.20%	9.6	16.9	76.00%	9.6	9	-6.60%
SUBTOTALS FOR: MNTZUMA_W	9.6	5.1	-46.50%	9.6	5.2	-46.00%	9.6	13.6	41.50%	9.6	8.7	-9.20%	9.6	5.3	-45.20%	9.6	16.9	76.00%	9.6	9	-6.60%
Difference =	-4.5	-5.90%	Difference =	-4.4	-4.40%	Difference =	4	5.30%	Difference =	-0.9	-1.80%	Difference =	-4.3	-4.30%	Difference =	7.3	7.30%	Difference =	-0.6	-0.60%	
61702 LASKIN 7 61705 BABBITT7	63.4	63.4	0.00%	63.4	63.4	0.00%	63.4	63.4	-0.10%	63.4	63.4	0.00%	63.4	63.4	0.00%	63.4	63.4	-0.10%	63.4	63.5	0.10%
61702 LASKIN 7 61722 FORBES 7	43.9	43.9	0.00%	43.9	43.9	0.10%	43.9	43.9	-0.10%	43.9	43.9	0.00%	43.9	43.9	0.00%	43.9	43.9	-0.10%	43.9	43.9	-0.10%
61702 LASKIN 7 62451 LAKEIND7	64.5	64.5	0.00%	64.5	64.5	0.00%	64.5	64.5	-0.10%	64.5	64.5	0.00%	64.5	64.5	0.00%	64.5	64.5	-0.10%	64.5	64.6	0.10%
61702 LASKIN 7 61574 LASKNJCT	-74.8	-74.7	-0.10%	-74.8	-74.8	0.00%	-74.8	-74.7	-0.10%	-74.8	-74.8	0.00%	-74.8	-74.7	-0.10%	-74.8	-74.7	-0.20%	-74.8	-74.9	0.10%
61626 BOSWELL4 61625 BLCKBRY4	139.6	139.3	-0.20%	139.6	139.1	-0.30%	139.6	139.4	-0.10%	139.6	139.5	-0.10%	139.6	139.2	-0.30%	139.6	139.3	-0.20%	139.6	140.3	0.50%
61626 BOSWELL4 61625 BLCKBRY4	135.8	135.5	-0.20%	135.8	135.4	-0.30%	135.8	135.6	-0.10%	135.8	135.7	-0.10%	135.8	135.5	-0.30%	135.8	135.6	-0.20%	135.8	136.5	0.50%
61626 BOSWELL4 61627 SHANNON4	87.5	88.1	0.60%	87.5	88.3	0.90%	87.5	87.9	0.40%	87.5	87.7	0.20%	87.5	88.3	0.80%	87.5	88	0.50%	87.5	86.1	-1.60%
61615 ARROWHWD461614 98L TAP4	56.6	55.3	-2.20%	56.6	55.1	-2.50%	56.6	55.1	-2.70%	56.6	56.3	-0.50%	56.6	55.1	-2.60%	56.6	54.8	-3.10%	56.6	59.2	4.70%
61615 ARROWHWD461554 AWHD1JCT	155.1	154.9	-0.10%	155.1	154.8	-0.20%	155.1	154.7	-0.20%	155.1	155	0.00%	155.1	154.8	-0.10%	155.1	154.7	-0.20%	155.1	155.8	0.50%
61615 ARROWHWD461556 AWHD2JCT	160.5	160.3	-0.10%	160.5	160.2	-0.20%	160.5	160.1	-0.20%	160.5	160.4	0.00%	160.5	160.2	-0.10%	160.5	160.1	-0.10%	160.5	161.2	0.50%
61615 ARROWHWD461624 FORBES 4	-110.3	-110.6	0.30%	-110.3	-110.1	-0.20%	-110.3	-111.4	1.00%	-110.3	-110.2	-0.10%	-110.3	-110.5	0.10%	-110.3	-111.5	1.10%	-110.3	-110	-0.30%
61615 ARROWHWD463055 BEARCK 4	55.8	57	2.20%	55.8	58.5	4.90%	55.8	55.6	-0.20%	55.8	56.7	1.70%	55.8	57.7	3.50%	55.8	55.8	0.10%	55.8	54.7	-1.90%
SUBTOTALS FOR: MP_EXPORT	777.5	778.9	-0.10%	777.5	778.5	0.10%	777.5	774.2	-0.40%	777.5	778.3	0.10%	777.5	777.4	0.00%	777.5	773.9	-0.50%	777.5	780.9	0.40%
Difference =	-0.6	-0.80%	Difference =	1	1.00%	Difference =	-3.3	-4.40%	Difference =	0.7	1.50%	Difference =	-0.1	-0.10%	Difference =	-3.6	-3.60%	Difference =	3.4	3.40%	
60105 PR ISLD3 61950 BYRON 3	-203	-187.9	-7.50%	-203	-218	-7.40%	-203	-194.7	-4.10%	-203	-207.2	2.10%	-203	-198.2	-2.40%	-203	-192.4	-5.20%	-203	-208	2.40%
60304 EAU CL 3 92494 ARP 345	93.4	90.1	-3.50%	93.4	86.7	-7.20%	93.4	98.3	5.30%	93.4	90.8	-2.80%	93.4	88.8	-4.80%	93.4	98.3	5.30%	93.4	90.7	-2.90%
SUBTOTALS FOR: MWSI	-109.7	-97.8	-10.80%	-109.7	-131.4	-19.80%	-109.7	-96.4	-12.10%	-109.7	-116.4	6.20%	-109.7	-109.3	-0.30%	-109.7	-94.2	-14.10%	-109.7	-117.3	7.00%
Difference =	11.9	15.60%	Difference =	-21.7	-21.70%	Difference =	13.3	17.70%	Difference =	-6.8	-13.50%	Difference =	0.3	0.30%	Difference =	15.5	15.50%	Difference =	-7.7	-7.70%	
66756 SQBUTTE4 63049 STANTON4	-38.1	-36.3	-4.80%	-38.1	-35.6	-6.50%	-38.1	-36.7	-3.70%	-38.1	-37.2	-2.20%	-38.1	-35.7	-6.20%	-38.1	-36.2	-5.00%	-38.1	-38.7	1.60%
66756 SQBUTTE4 66751 CENTER 4	-41.7	-42.5	1.90%	-41.7	-43	3.00%	-41.7	-41.5	-0.70%	-41.7	-42.2	1.10%	-41.7	-42.8	2.50%	-41.7	-41.6	-0.40%	-41.7	-43.2	3.60%
66756 SQBUTTE4 66791 CENTER 3	92.1	91	-1.10%	92.1	90.8	-1.30%	92.1	90.4	-1.80%	92.1	91.7	-0.40%	92.1	90.7	-1.40%	92.1	90	-2.30%	92.1	94.2	2.30%
63041 COAL CR4 63042 COAL TP4	-23.2	-23.3	0.60%	-23.2	-23.4	0.90%	-23.2	-23.2	-0.10%	-23.2	-23.2	0.30%	-23.2	-23.4	0.70%	-23.2	-23.2	0.00%	-23.2	-23.4	0.70%
63041 COAL CR4 63049 STANTON4	-125	-125.9	0.80%	-125	-126.4	1.20%	-125	-125.1	0.10%	-125	-125.5	0.40%	-125	-126.2	1.00%	-125	-125.2	0.20%	-125	-125.8	0.60%
63041 COAL CR4 63381 UNDERWD4	144.3	145.4	0.80%	144.3	145.9	1.10%	144.3	144.8	0.40%	144.3	144.8	0.40%	144.3	145.7	1.00%	144.3	144.5	0.10%	144.3	145.2	0.70%
SUBTOTALS FOR: NDDC	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%
Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	
67105 LELAND03 66506 FTTHOMP3	130.8	132.4	1.20%	130.8	132.4	1.20%	130.8	135	3.20%	130.8	131.2	0.40%	130.8	132.8	1.50%	130.8	135.3	3.40%	130.8	128.9	-1.40%
67105 LELAND03 67180 GROTON 3	253.7	252.4	-0.50%	253.7	251.8	-0.70%	253.7	252	-0.70%	253.7	253.2	-0.20%	253.7	252.1	-0.60%	253.7	253.1	-0.30%	253.7	250.9	-1.10%
67101 ANTELOP3 67120 BRDLAND3	192.3	192	-0.20%	192.3	191.6	-0.30%	192.3	192.7	0.20%	192.3	192.3	0.00%	192.3	191.9	-0.20%	192.3	193.4	0.60%	192.3	189.8	-1.30%
63314 BIGSTON4 66503 BLAIR 4	-23.2	1.9	-108.10%	-23.2	9.2	-139.80%	-23.2	3.5	-115.10%	-23.2	-7.3	-68.50%	-23.2	9.7	-142.00%	-23.2	13.6	-158.60%	-23.2	0.1	-100.50%
63320 6MI GRV4 66550 GRANITF4	-11.8	-5	-57.70%	-11.8	-2.9	-75.50%	-11.8	-4.9	-58.30%	-11.8	-5.5	-53.50%	-11.8	-2.5	-79.00%	-11.8	-2.2	-81.20%	-11.8	-12.8	7.00%
63336 AUDUBON4 63053 HUBBARD4	112.2	116	3.30%	112.2	117.5	4.60%	112.2	114.4	1.90%	112.2	114	1.60%	112.2	117	4.20%	112.2	115	2.50%	112.2	108.5	-3.40%
66521 SULLYBT4 66519 OAH4 4	-71.9	-70.9	-1.40%	-71.9	-70.9	-1.30%	-71.9	-68.9	-4.10%	-71.9	-71.6	-0.40%	-71.9	-70.6	-1.70%	-71.9	-68.8	-4.20%	-71.9	-73.6	2.50%
63052 INMAN 4 61611 WINGRIV4	97.2	103.4	6.40%	97.2	105.7	8.80%	97.2	101.5	4.50%	97.2	100.2	3.20%	97.2	105.1	8.20%	97.2	102.7	5.70%	97.2	77.8	-19.90%
66470 BISON 4 66497 MAURINE4	-1.7	-1.1	-36.00%	-1.7	-1.1	-35.20%	-1.7	1	-155.70%	-1.7	-1.6	-9.90%	-1.7	-1	-44.40%	-1.7	-0.1	-96.00%	-1.7	-2.4	40.70%
66716 LAPORTE7 61640 BAOURA7	-0.5	0.3	-163.70%	-0.5	0.7	-233.30%	-0.5	-0.1	-81.20%	-0.5	-0.1	-84.80%	-0.5	0.6	-210.50%	-0.5	0	-106.10%	-0.5	-0.5	-5.60%
63222 ALEXAND7 60144 DGLASCO7	30.9	32.3	4.70%	30.9	32.9	6.50%	30.9	31.9	3.40%	30.9	31.8	3.00%	30.9	32.8	6.10%	30.9	32.2	4.30%	30.9	23.9	-22.60%
67327 ELLENDL7 67401 ABDNUCT7	-7.1	-6.5	-9.50%	-7.1	-6.4	-10.70%	-7.1	-6	-16.10%	-7.1	-6.8	-5.00%	-7.1	-6.3	-12.60%	-7.1	-5.5	-23.50%	-7.1	-8.6	20.40%
66432 EDGELEY7 66534 ORDWAY 7	-20.4	-20.5	0.70%	-20.4	-20.7	1.60%	-20.4	-20.1	-1.30%	-20.4	-20.4	0.00%	-20.4	-20.5	0.80%	-20.4	-19.7	-3.00%	-20.4	-22.2	9.00%
66438 FORMAN 7 66522 SUMMIT7	-23.4	-23	-1.90%	-23.4	-23	-2.10%	-23.4	-22.6	-3.50%	-23.4	-23.2	-1.20%	-23.4	-22.8	-2.60%	-23.4	-21.7	-7.20%	-23.4	-25.1	7.10%
63311 CANBY 4 66550 GRANITF4	73.6	86.2	17.20%	73.6	90.4	22.80%	73.6	85.6	16.40%	73.6	83.5	13.50%	73.6	90.4	23.00%	73.6	89.6	21.80%	73.6	85.9	16.70%
62006 KERKHO 7 62005 KERKHO7	16.5	17.9	8.60%	16.5	18.3	11.40%	16.5	17.8	8.00%	16.5	18.4	11.50%	16.5	18.4	11.70%	16.5	18.2	10.70%	16.5	16.3	-0.90%
66752 DRAYTON4 67557 LETELER4	-241.6	-237.4	-1.70%	-241.6	-235.7	-2.40%	-241.6	-239.4	-0.90%	-241.6	-239.7	-0.80%	-241.6	-236.3	-2.20%	-241.6	-238.7	-1.20%	-241.6	-243.7	0.90%
63379 RUGBY 4 67523 WILLMOR4	40.9	44	7.70%	40.9	45.4	11.20%	40.9	41.8	2.30%	40.9	42.3	3.60%	40.9	44.9	9.80%	40.9	42.2	3.20%	40.9	41.6	1.90%
63320 6MI GRV4 63050 WILLMAR4	78	83	6.50%	78	84.8	8.80%	78	82.3	5.50%	78	82.6	6.00%	78	84.7	8.70%	78	83.6	7.30%	78	79.9	2.50%
SUBTOTALS FOR: NDEX	624.2	697.4	11.70%	624.2	720.1	15.40%	624.2	697.5	11.70%	624.2	673.4	7.90%	624.2	720.4	15.40%	624.2	722	15.70%	624.2	614.8	-1.50%
Difference =	73.2	96.30%	Difference =	95.9	95.50%	Difference =	73.3	97.70%	Difference =	49.1	95.30%	Difference =	96.2	95.20%	Difference =	97.8	97.60%	Difference =	-9.4	-9.40%	
36406 WEMPL; B 39058 PAD 345	637.2	637.2	0.20%	635.7	638.5	0.40%	635.7	633	-0.40%												

Distribution Factor Analysis

Transmission Alternative 7

2009 Summer Peak Case
Generation to Generation Dispatct

		CMMPA		GRE		HCPD		HUC		MMPA		MRES		OTP								
SUBTOTALS FOR: QUADCITY_W		829.6	830	0.10%	829.6	829	-0.10%	829.6	830.6	0.10%	829.6	829.5	0.00%	829.6	834.1	0.50%	829.6	829.9	0.00%			
Difference =		0.5		0.60%	Difference =	-0.6	-0.60%	Difference =	1	1.30%	Difference =	0.3	0.50%	Difference =	0	0.00%	Difference =	4.5	4.50%	Difference =	0.4	0.40%
64831 GENTLMN3	64943 REDWILO3	277	277.8	0.30%	277	277.7	0.30%	277	274	-1.10%	277	276.9	0.00%	277	277.9	0.30%	277	278	0.40%	277	276.5	-0.20%
SUBTOTALS FOR: WNE_WKS		277	277.8	0.30%	277	277.7	0.30%	277	274	-1.10%	277	276.9	0.00%	277	277.9	0.30%	277	278	0.40%	277	276.5	-0.20%
Difference =		0.8		1.10%	Difference =	0.8	0.80%	Difference =	-2.9	-3.90%	Difference =	0	-0.10%	Difference =	0.9	0.90%	Difference =	1	1.00%	Difference =	-0.4	-0.40%
66756 SQBUTTE4	63049 STANTON4	-38.1	-36.3	-4.80%	-38.1	-35.6	-6.50%	-38.1	-36.7	-3.70%	-38.1	-37.2	-2.20%	-38.1	-35.7	-6.20%	-38.1	-36.2	-5.00%	-38.1	-38.7	1.60%
66756 SQBUTTE4	66751 CENTER 4	-41.7	-42.5	1.90%	-41.7	-43	3.00%	-41.7	-41.5	-0.70%	-41.7	-42.2	1.10%	-41.7	-42.8	2.50%	-41.7	-41.6	-0.40%	-41.7	-43.2	3.60%
66756 SQBUTTE4	66791 CENTER 3	92.1	91	-1.10%	92.1	90.8	-1.30%	92.1	90.4	-1.80%	92.1	91.7	-0.40%	92.1	90.7	-1.40%	92.1	90	-2.30%	92.1	94.2	2.30%
SUBTOTALS FOR: Y2DC		12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%
Difference =		0		0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%
60186 AS KING3	60304 EAU CL 3	318.9	318.9	0.00%	318.9	312.1	-2.10%	318.9	323.9	1.60%	318.9	316.3	-0.80%	318.9	316.2	-0.80%	318.9	324.1	1.70%	318.9	316.1	-0.90%
60105 PR ISLD3	61950 BYRON 3	-203	-187.9	-7.50%	-203	-218	7.40%	-203	-194.7	-4.10%	-203	-207.2	2.10%	-203	-198.2	-2.40%	-203	-192.4	-5.20%	-203	-208	2.40%
60192 BLUE LK3	60050 WLMRTHTP	-494.1	-502	1.60%	-494.1	-513.5	3.90%	-494.1	-490.9	-0.60%	-494.1	-498.3	0.90%	-494.1	-494.6	0.10%	-494.1	-488.5	-1.10%	-494.1	-500.6	1.30%
60187 AS KING7	60325 WILLOWRV7	128.8	129	0.20%	128.8	127.9	-0.70%	128.8	129.4	0.50%	128.8	128.4	-0.30%	128.8	128.6	-0.10%	128.8	129.4	0.50%	128.8	128.5	-0.20%
60238 REDROCK7	68966 GLENMONT	50.2	50.6	0.80%	50.2	48.7	-3.00%	50.2	50.8	1.20%	50.2	49.8	-0.80%	50.2	49.8	-0.80%	50.2	50.8	1.30%	50.2	50	-0.40%
62234 LKMARN 7	60276 AIRLAKE7	53.7	53.5	-0.40%	53.7	54.7	1.70%	53.7	53.6	-0.30%	53.7	53.8	0.20%	53.7	39.3	-26.90%	53.7	53.5	-0.40%	53.7	53.9	0.40%
SUBTOTALS FOR: MNEX (INFO)		-145.6	-137.9	-5.30%	-145.6	-188.2	29.30%	-145.6	-128	-12.10%	-145.6	-157.2	8.00%	-145.6	-158.9	9.10%	-145.6	-123	-15.50%	-145.6	-160.1	10.00%
Difference =		7.7		10.10%	Difference =	-42.6	-42.60%	Difference =	17.6	23.40%	Difference =	-11.7	-23.30%	Difference =	-13.3	-13.30%	Difference =	22.6	22.60%	Difference =	-14.6	-14.60%

Distribution Factor Analysis

Transmission Alternative 8

2009 Summer Peak Case

Generation to Generation Dispatct

Interface Definition		CMMPA BGSII Case at 76 MW		GRE BGSII Case at 100 MW		HCPD BGSII Case at 75 MW		HUC BGSII Case at 50 MW		MMPA BGSII Case at 100 MW		MRES BGSII Case at 100 MW		OTP BGSII Case at 100 MW	
From Bus	To Bus	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference
34093	ARNOLD 3 34018 HAZLTON3	382.2	2.20%	382.2	2.00%	389.9	2.00%	382.2	-1.80%	382.2	0.70%	382.2	2.00%	382.2	-2.00%
SUBTOTALS FOR: ARN-HAZLTN		382.2	2.20%	382.2	2.00%	389.9	2.00%	382.2	-1.80%	382.2	0.70%	382.2	2.00%	382.2	-2.00%
		Difference =	8.4	11.03%	Difference =	7.7	7.70%	Difference =	-7	-8.30%	Difference =	2.6	5.30%	Difference =	7.7
64786	COOPER 3 59199 ST JOE 3	53.8	1.80%	53.8	1.30%	54.5	1.30%	48.4	-10.20%	53.8	53.6	-0.50%	53.8	54.8	1.70%
64786	COOPER 3 96039 7FAIRPT	63	1.20%	63	0.90%	63	0.90%	58.8	-6.60%	63	62.8	-0.30%	63	63.7	1.10%
SUBTOTALS FOR: COOPER_S		118.6	1.50%	118.6	1.10%	118.1	1.10%	107.2	-8.20%	116.8	116.4	-0.40%	116.8	118.5	1.40%
		Difference =	1.7	2.30%	Difference =	1.2	1.20%	Difference =	-9.6	-12.80%	Difference =	-0.4	-0.90%	Difference =	1.6
60304	EAU CL 3 92494 ARP 345	94.7	-3.30%	94.7	-6.90%	99.8	-6.90%	94.7	5.40%	94.7	92.3	-2.50%	94.7	90.3	-4.60%
SUBTOTALS FOR: ECL-ARP		94.7	-3.30%	94.7	-6.90%	99.8	-6.90%	94.7	5.40%	94.7	92.3	-2.50%	94.7	90.3	-4.60%
		Difference =	-3.1	-4.10%	Difference =	-6.5	-6.50%	Difference =	5.2	6.90%	Difference =	-2.4	-4.70%	Difference =	-4.3
65351	S3451 3 65354 S3454 3	82.3	0.70%	82.3	0.30%	82.5	0.30%	82.3	8.40%	82.3	82.1	-0.20%	82.3	82.5	0.30%
65351	S3451 3 65359 S3459 3	29.8	5.20%	29.8	3.10%	31	3.80%	29.8	24.50%	29.8	29.8	0.00%	29.8	31	3.90%
65451	S1251 5 65497 S1297 5	39.6	0.70%	39.6	0.60%	39.9	0.60%	40.8	3.20%	39.6	39.6	0.00%	39.6	40.5	2.30%
SUBTOTALS FOR: FT_CAL_S		151.7	1.60%	151.7	1.00%	153.3	1.00%	167.1	10.20%	151.7	151.5	-0.10%	151.7	153.3	1.00%
		Difference =	2.4	3.20%	Difference =	1.6	1.60%	Difference =	15.5	20.60%	Difference =	-0.2	-0.40%	Difference =	1.6
64832	GENTLMN4 64909 N PLATT4	157.4	0.00%	157.4	0.00%	157.4	0.00%	155.9	-0.90%	157.4	157.4	0.00%	157.4	157.4	0.00%
64832	GENTLMN4 64909 N PLATT4	157.8	0.00%	157.8	0.00%	157.8	0.00%	156.4	-0.90%	157.8	157.9	0.00%	157.8	157.8	0.00%
64832	GENTLMN4 64909 N PLATT4	162.4	0.00%	162.4	0.00%	162.4	0.00%	160.9	-0.90%	162.4	162.4	0.00%	162.4	162.4	0.00%
64831	GENTLMN3 64984 SWEET W3	273.8	0.00%	273.8	0.00%	273.8	0.00%	268.5	-1.90%	273.8	273.8	0.00%	273.8	273.8	0.00%
64831	GENTLMN3 64984 SWEET W3	328.1	0.00%	328.1	0.00%	328.2	0.00%	321.8	-1.90%	328.1	328.1	0.00%	328.1	328.6	0.20%
64831	GENTLMN3 64943 REDWIL03	276.6	0.30%	276.6	0.30%	277.5	0.30%	273.7	-1.10%	276.6	276.7	0.00%	276.6	277.6	0.40%
SUBTOTALS FOR: GGS		1356.1	0.10%	1357.1	0.10%	1357.1	0.10%	1337.3	-1.40%	1356.1	1356.3	0.00%	1356.1	1357.3	0.10%
		Difference =	1	1.40%	Difference =	1.1	1.10%	Difference =	-18.8	-25.00%	Difference =	0.3	0.50%	Difference =	1.2
64933	PAULINE3 64902 MOORE 3	55.2	2.00%	55.2	2.10%	56.3	2.10%	55.2	-3.00%	55.2	55.5	0.50%	55.2	56.5	2.30%
64839	GR ISLD4 64780 COLMB W4	99.8	-0.30%	99.8	-0.20%	99.6	-0.20%	99.8	-3.90%	99.8	99.9	0.10%	99.8	99.6	-0.20%
66571	GR ISLD3 64896 MCCOOL 3	144.3	1.80%	144.3	1.40%	147	1.90%	144.3	1.10%	144.3	145	0.50%	144.3	147.2	2.00%
SUBTOTALS FOR: GRIS_LNC		299.3	1.10%	299.3	1.20%	303	1.20%	295.3	-1.30%	299.3	300.3	0.30%	299.3	306.9	2.60%
		Difference =	3.4	4.50%	Difference =	3.7	3.70%	Difference =	-3.9	-5.30%	Difference =	1	2.00%	Difference =	4
57981	LACYGNE7 57965 W.GRDNR7	577.9	0.00%	577.9	0.00%	577.9	0.00%	578.8	0.20%	577.9	578	0.00%	577.9	577.9	0.00%
57981	LACYGNE7 57968 STILLWEL7	720.6	0.00%	720.6	0.00%	720.7	0.00%	721	0.10%	720.6	720.7	0.00%	720.6	721.4	0.10%
SUBTOTALS FOR: LACYGNE_N		1298.4	0.00%	1298.5	0.00%	1298.5	0.00%	1299.8	0.10%	1298.4	1298.7	0.00%	1298.4	1300.4	0.20%
		Difference =	-0.1	-0.20%	Difference =	0.1	0.10%	Difference =	1.4	1.80%	Difference =	0.3	0.70%	Difference =	-0.1
62234	LKMAR7 60276 AIRLAKE7	53.6	-0.40%	53.6	1.70%	53.6	1.70%	53.5	-0.30%	53.6	53.7	0.10%	53.6	53.4	-0.40%
SUBTOTALS FOR: LKM-WFB		53.6	-0.40%	53.6	1.70%	53.6	1.70%	53.5	-0.30%	53.6	53.7	0.10%	53.6	53.4	-0.40%
		Difference =	-0.2	-0.30%	Difference =	0.9	0.90%	Difference =	-0.2	-0.20%	Difference =	0.1	0.20%	Difference =	-14.5
60175	ROSEAU 4 67576 RICHER 4	-143.7	0.30%	-143.7	-0.40%	-143.3	0.40%	-143.9	0.10%	-143.7	-143.9	0.10%	-143.7	-143.9	0.20%
60173	ROSEAU2 67564 DORSEY 2	1132.4	0.60%	1132.4	0.80%	1132.4	0.80%	1135.1	0.20%	1132.4	1135.3	0.30%	1132.4	1140.8	0.70%
66752	DRAYTON4 67557 LETELERA4	-238.5	-1.60%	-238.5	-2.30%	-233	-2.30%	-236.5	-0.90%	-238.5	-236.9	-0.70%	-238.5	-235.9	-2.10%
63379	RUGBY 4 67523 GLENBOR4	39.8	7.70%	39.8	11.20%	44.3	11.20%	40.7	2.20%	39.8	41.2	3.50%	39.8	43.7	9.70%
SUBTOTALS FOR: MHX_N		1474.8	0.00%	1474.8	-0.20%	1475	-0.20%	1474.8	0.00%	1474.8	-1474.8	0.00%	1474.8	-1474.8	0.00%
		Difference =	-0.1	-0.10%	Difference =	-0.2	-0.20%	Difference =	0	-0.10%	Difference =	0	-0.20%	Difference =	0
67576	RICHER 4 60175 ROSEAU 4	146.1	0.30%	146.1	0.50%	146.1	0.50%	146.3	0.10%	146.1	146.3	0.20%	146.1	146.4	0.20%
67564	DORSEY 2 60173 ROSEAU2	1149	0.60%	1149	0.90%	1158.7	0.90%	1149	0.20%	1149	1152.6	0.80%	1149	1152.7	0.30%
67557	LETELE4 66752 DRAYTON4	243.1	-1.70%	243.1	-2.30%	243.1	-2.30%	240.9	-0.90%	243.1	241.3	-0.70%	243.1	237.9	-2.10%
67523	GLENBOR4 63379 RUGBY 4	-39.5	7.60%	-39.5	11.10%	-43.8	11.10%	-40.3	2.20%	-39.5	-40.8	3.50%	-39.5	-43.3	9.60%
SUBTOTALS FOR: MHX_S		1498.6	0.00%	1498.6	0.00%	1498.6	0.00%	1498.7	0.00%	1498.6	1498.7	0.00%	1498.6	1498.9	0.00%
		Difference =	0.2	0.30%	Difference =	0.4	0.40%	Difference =	0.1	0.10%	Difference =	0.1	0.20%	Difference =	0.3
68613	AUBURN4 67525 RESTON 4	42.4	-0.30%	42.4	-0.40%	42.2	-0.40%	42.3	-0.10%	42.4	42.3	-0.10%	42.4	42.3	-0.10%
68615	YORKTON4 67514 ROBUN 4	-90.6	-0.10%	-90.6	-0.10%	-90.5	-0.10%	-90.6	0.00%	-90.6	-90.5	0.00%	-90.6	-90.5	0.00%
68630	EBCAMPB4 67515 RALL 4	-6.4	-1.20%	-6.4	-1.70%	-6.3	-1.70%	-6.3	-0.40%	-6.4	-6.3	-0.50%	-6.4	-6.3	-1.50%
SUBTOTALS FOR: MH_SPC_E		-54.6	0.00%	-54.6	0.00%	-54.6	0.00%	-54.6	0.00%	-54.6	-54.6	0.00%	-54.6	-54.6	0.00%
		Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0
67525	RESTON 4 68613 AUBURN4	-42.2	-0.30%	-42.2	-0.40%	-42	-0.40%	-42.2	-0.10%	-42.2	-42.1	-0.40%	-42.2	-42.1	-0.10%
67514	ROBLIN 4 68615 YORKTON4	91.4	-0.10%	91.4	-0.10%	91.4	-0.10%	91.4	0.00%	91.4	91.3	-0.10%	91.4	91.3	-0.10%
67515	RALL 4 68630 EBCAMPB4	6.6	-1.10%	6.6	-1.60%	6.5	-1.60%	6.5	-0.40%	6.6	6.5	-0.50%	6.6	6.5	-1.40%
SUBTOTALS FOR: MH_SPC_W		55.8	0.00%	55.8	0.00%	55.7	0.00%	55.7	0.00%	55.8	55.8	0.00%	55.8	55.7	0.00%
		Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0

Distribution Factor Analysis Transmission Alternative 8

2009 Summer Peak Case
Generation to Generation Dispatch

		CMMPA			GRE			HCPD			HUC			MMPA			MRES			OTP		
64095 MNTZUMA3	64064 BONDRTN3	10.7	6.3	-40.90%	10.7	6.5	-39.40%	10.7	14.8	38.30%	10.7	9.8	-7.70%	10.7	6.5	-38.90%	10.7	18.1	69.60%	10.7	10.1	-5.60%
SUBTOTALS FOR: MNTZUMA_W		10.7	6.3	-40.90%	10.7	6.5	-39.40%	10.7	14.8	38.30%	10.7	9.8	-7.70%	10.7	6.5	-38.90%	10.7	18.1	69.60%	10.7	10.1	-5.60%
Difference =		-4.4	-5.70%		-4.2	-4.20%		4.1	5.50%		-0.8	-1.70%		-4.2	-4.20%		7.4	7.40%		-0.6	-0.60%	
61702 LASKIN 7	61705 BABBITT7	63.4	63.4	0.00%	63.4	63.4	0.00%	63.4	63.4	-0.10%	63.4	63.4	0.00%	63.4	63.4	0.00%	63.4	63.4	-0.10%	63.4	63.5	0.10%
61702 LASKIN 7	61722 FORBES 7	43.9	43.9	0.00%	43.9	43.9	0.10%	43.9	43.9	-0.10%	43.9	43.9	0.00%	43.9	43.9	0.00%	43.9	43.9	-0.10%	43.9	43.9	-0.10%
61702 LASKIN 7	62451 LAKEINDT	64.6	64.5	0.00%	64.6	64.5	0.00%	64.6	64.5	-0.10%	64.6	64.5	0.00%	64.6	64.5	0.00%	64.6	64.5	-0.10%	64.6	64.6	0.10%
61702 LASKIN 7	61574 LASKNJCT	-74.8	-74.8	-0.10%	-74.8	-74.8	0.00%	-74.8	-74.7	-0.10%	-74.8	-74.8	0.00%	-74.8	-74.8	-0.10%	-74.8	-74.7	-0.10%	-74.8	-74.9	0.10%
61626 BOSWELL4	61625 BLCKBRY4	139.7	139.4	-0.20%	139.7	139.3	-0.30%	139.7	139.5	-0.10%	139.7	139.6	-0.10%	139.7	139.3	-0.30%	139.7	139.4	-0.20%	139.7	140.4	0.50%
61626 BOSWELL4	61625 BLCKBRY4	136	135.7	-0.20%	136	135.6	-0.30%	136	135.8	-0.10%	136	135.9	-0.10%	136	135.6	-0.30%	136	135.7	-0.20%	136	136.7	0.50%
61626 BOSWELL4	61627 SHANNON4	87.3	87.8	0.60%	87.3	88.1	0.90%	87.3	87.7	0.40%	87.3	87.5	0.20%	87.3	88	0.80%	87.3	87.8	0.50%	87.3	85.9	-1.60%
61615 ARROWHWD4	61614 98L TAP4	57	55.8	-2.20%	57	55.6	-2.40%	57	55.5	-2.60%	57	56.8	-0.50%	57	55.3	-2.50%	57	55.3	-3.00%	57	59.7	4.70%
61615 ARROWHWD4	61554 AWHD1JCT	155.1	155	-0.10%	155.1	154.9	-0.20%	155.1	154.8	-0.20%	155.1	155.1	0.00%	155.1	154.9	-0.10%	155.1	154.8	-0.20%	155.1	155.8	0.50%
61615 ARROWHWD4	61556 AWHD2JCT	160.6	160.4	-0.10%	160.6	160.3	-0.20%	160.6	160.2	-0.20%	160.6	160.5	0.00%	160.6	160.3	-0.10%	160.6	160.2	-0.10%	160.6	161.3	0.50%
61615 ARROWHWD4	61624 FORBES 4	-110.4	-110.7	0.20%	-110.4	-110.1	-0.20%	-110.4	-111.5	1.00%	-110.4	-110.2	-0.10%	-110.4	-110.5	0.10%	-110.4	-111.6	1.10%	-110.4	-110	-0.30%
61615 ARROWHWD4	63055 BEARCK 4	55.1	56.3	2.10%	55.1	57.8	4.80%	55.1	55	-0.30%	55.1	56	1.80%	55.1	57	3.40%	55.1	55.1	0.00%	55.1	54	-2.00%
SUBTOTALS FOR: MP_EXPORT		777.5	776.9	-0.10%	777.5	778.5	0.10%	777.5	774.1	-0.40%	777.5	778.2	0.10%	777.5	777.3	0.00%	777.5	773.9	-0.50%	777.5	780.9	0.40%
Difference =		-0.6	-0.80%		1	1.00%		-3.4	-4.50%		0.7	1.40%		-0.2	-0.20%		-3.6	-3.60%		3.4	3.40%	
60105 PR ISLD3	61950 BYRON 3	-200.5	-185.1	-7.60%	-200.5	-215.2	-7.40%	-200.5	-192	-4.20%	-200.5	-204.3	1.90%	-200.5	-195.4	-2.50%	-200.5	-189.7	-5.40%	-200.5	-205.3	2.40%
60304 EAU CL 3	92494 ARP 345	94.7	91.6	-3.30%	94.7	88.2	-6.90%	94.7	99.8	5.40%	94.7	92.3	-2.50%	94.7	90.3	-4.60%	94.7	99.6	5.30%	94.7	92	2.80%
SUBTOTALS FOR: MWSI		-105.8	-93.6	-11.60%	-105.8	-127.1	-20.10%	-105.8	-92.2	-12.80%	-105.8	-112	-5.90%	-105.8	-105	-0.70%	-105.8	-90.1	-14.90%	-105.8	-113.3	7.10%
Difference =		12.2	16.10%		-21.3	-21.30%		13.6	18.10%		-6.3	-12.50%		0.8	0.80%		15.7	15.70%		-7.5	-7.50%	
66756 SQBUTTE4	63049 STANTON4	-38.7	-36.9	-4.60%	-38.7	-36.3	-6.20%	-38.7	-37.3	-3.50%	-38.7	-37.9	-2.10%	-38.7	-36.4	-5.90%	-38.7	-36.8	-4.80%	-38.7	-39.3	1.60%
66756 SQBUTTE4	66751 CENTER 4	-41.5	-42.3	1.90%	-41.5	-42.8	3.00%	-41.5	-41.2	-0.70%	-41.5	-42	1.00%	-41.5	-42.5	2.40%	-41.5	-41.4	-0.50%	-41.5	-43	3.60%
66756 SQBUTTE4	66791 CENTER 3	92.4	91.4	-1.10%	92.4	91.3	-1.30%	92.4	90.8	-1.80%	92.4	92.1	-0.40%	92.4	91.2	-1.40%	92.4	90.4	-2.20%	92.4	94.6	2.30%
63041 COAL CR4	63042 COAL TP4	-23.2	-23.3	0.50%	-23.2	-23.2	0.80%	-23.2	-23.2	-0.10%	-23.2	-23.2	0.30%	-23.2	-23.3	0.70%	-23.2	-23.2	0.00%	-23.2	-23.3	0.70%
63041 COAL CR4	63049 STANTON4	-124.7	-125.6	0.70%	-124.7	-126.1	1.10%	-124.7	-124.8	0.10%	-124.7	-125.1	0.40%	-124.7	-125.9	0.90%	-124.7	-124.8	0.10%	-124.7	-125.5	0.60%
63041 COAL CR4	63381 UNDERWD4	143.9	145	0.70%	143.9	145.5	1.10%	143.9	144	0.00%	143.9	144.5	0.40%	143.9	145.3	0.90%	143.9	144.1	0.10%	143.9	144.9	0.70%
SUBTOTALS FOR: NDDC		8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%
Difference =		0	0.00%		0	0.00%		0	0.00%		0	0.00%		0	0.00%		0	0.00%		0	0.00%	
67105 LELAND03	66506 FTTHOMP3	130.3	131.9	1.20%	130.3	131.8	1.20%	130.3	134.5	3.20%	130.3	130.8	0.40%	130.3	132.3	1.50%	130.3	134.7	3.40%	130.3	128.4	-1.50%
67105 LELAND03	67180 GROTON 3	254.1	252.8	-0.50%	254.1	252.3	-0.70%	254.1	252.5	-0.60%	254.1	253.6	-0.20%	254.1	252.5	-0.60%	254.1	253.5	-0.20%	254.1	251.3	-1.10%
67101 ANTELOP3	67120 BRDLAND3	192.4	192.1	-0.20%	192.4	191.8	-0.30%	192.4	192.8	0.20%	192.4	192.4	0.00%	192.4	192	-0.20%	192.4	193.5	0.60%	192.4	189.9	-1.30%
63314 BIGSTON4	66503 BLAIR 4	-25.8	-0.9	-96.40%	-25.8	6.4	-124.60%	-25.8	0.8	-102.90%	-25.8	-10.1	-60.80%	-25.8	6.9	-126.70%	-25.8	10.8	-141.90%	-25.8	-2.6	90.00%
63320 GMI GRV4	66550 GRANITF4	-20	-13.8	-31.10%	-20	-11.9	-40.50%	-20	-13.5	-32.30%	-20	-14.6	-27.00%	-20	-11.5	-42.50%	-20	-10.9	-45.30%	-20	-21.2	5.90%
63336 AUDUBON4	63053 HUBBARD4	110.9	114.6	3.30%	110.9	116	4.60%	110.9	113	1.90%	110.9	112.6	1.50%	110.9	115.6	4.20%	110.9	113.6	2.40%	110.9	107.1	-3.40%
66521 SULLYBT4	66519 OAH4	-72.2	-71.2	-1.30%	-72.2	-71.3	-1.30%	-72.2	-69.2	-4.10%	-72.2	-71.9	-0.40%	-72.2	-70.9	-1.70%	-72.2	-69.2	-4.20%	-72.2	-73.9	2.50%
63052 INMAN 4	61611 WINGRIV4	95.2	101.3	6.40%	95.2	103.6	8.80%	95.2	99.5	4.50%	95.2	98.2	3.10%	95.2	103	8.20%	95.2	100.6	5.70%	95.2	75.9	-20.30%
66470 BISON 4	66497 MAURINE4	-1.9	-1.3	-32.10%	-1.9	-1.3	-31.10%	-1.9	0.8	-140.30%	-1.9	-1.7	-8.90%	-1.9	-1.2	-39.40%	-1.9	-0.3	-85.90%	-1.9	-2.6	36.90%
66716 LAPORTE7	61640 BAOURA7	-0.8	0	-103.70%	-0.8	0.4	-147.20%	-0.8	-0.4	-51.20%	-0.8	-0.4	-52.40%	-0.8	0.3	-133.00%	-0.8	-0.3	-66.70%	-0.8	-0.8	-3.20%
63222 ALEXAND7	60144 DGLASCO7	30.7	32.2	4.70%	30.7	32.8	6.50%	30.7	31.8	3.40%	30.7	31.7	3.10%	30.7	32.6	6.10%	30.7	32.1	4.30%	30.7	23.8	-22.60%
67327 ELLENDL7	67401 ABDNUCT7	-7.3	-6.6	-9.20%	-7.3	-6.5	-10.30%	-7.3	-6.1	-15.70%	-7.3	-6.9	-4.70%	-7.3	-6.4	-12.20%	-7.3	-5.6	-23.00%	-7.3	-8.7	20.10%
66432 EDGELEY7	66534 ORDWAY 7	-20.3	-20.5	0.70%	-20.3	-20.6	1.50%	-20.3	-20.1	-1.30%	-20.3	-20.4	0.40%	-20.3	-20.5	0.80%	-20.3	-19.7	-3.10%	-20.3	-22.2	9.00%
66438 FORMAN 7	66522 SUMMIT7	-23.5	-23	-1.90%	-23.5	-23	-2.10%	-23.5	-22.7	-3.40%	-23.5	-23.2	-1.10%	-23.5	-22.9	-2.60%	-23.5	-21.8	-7.20%	-23.5	-25.2	7.10%
63311 CANBY 4	66550 GRANITF4	73.5	86.1	17.30%	73.5	90.3	22.90%	73.5	85.5	16.40%	73.5	83.3	13.40%	73.5	90.4	23.00%	73.5	89.5	21.90%	73.5	85.8	16.80%
62006 KERKHO 7	62005 KERKHO7	16.5	17.9	8.50%	16.5	18.3	11.20%	16.5	17.8	7.90%	16.5	18.3	11.20%	16.5	18.4	11.60%	16.5	18.2	10.60%	16.5	16.3	-0.90%
66752 DRAYTON4	67557 LETELER4	-243.1	-239	-1.70%	-243.1	-237.3	-2.30%	-243.1	-240.9	-0.90%	-243.1	-241.3	-0.70%	-243.1	-237.9	-2.10%	-243.1	-240.3	-1.10%	-243.1	-245.2	0.90%
63379 RUGBY 4	67523 GLENBOR4	39.8	42.9	7.70%	39.8	44.3	11.20%	39.8	40.7	2.20%	39.8	41.2	3.50%	39.8	43.7	9.70%	39.8	41	3.10%	39.8	40.5	1.80%
63320 GMI GRV4	63050 WILLMAR4	95.8	102.2	6.70%	95.8	104.6	9.10%	95.8	101.1	5.50%	95.8	102.2	6.70%	95.8	104.4	9.00%	95.8	102.7	7.20%	95.8	98.3	2.60%
SUBTOTALS FOR: NDEX		624.4	697.6	11.70%	624.4	720.4	15.40%	624.4	697.7	11.70%	624.4	673.6	7.90%	624.4	720.7	15.40%	624.4	722.2	15.70%	624.4	615	-1.50%
Difference =		73.2	95.40%		96	96.00%		73.4	97.60%		49.2	95.30%		96.3	95.30%		97.8	97.60%		-9.4		

Distribution Factor Analysis Transmission Alternative 8

2009 Summer Peak Case
Generation to Generation Dispatc

		CMMPA		GRE		HCPD		HUC		MMPA		MRES		OTP														
SUBTOTALS FOR: QUADCITY_W		829.8	830.3	0.10%	829.8	829.3	-0.10%	829.8	830.8	0.10%	829.8	829.9	0.00%	829.8	834.4	0.50%	829.8	830.2	0.00%									
Difference =		0.4		0.60%	Difference =	-0.5		-0.50%	Difference =	1		1.30%	Difference =	0.2		0.50%	Difference =	0		0.00%	Difference =	4.5		4.50%	Difference =	0.3		0.30%
64831 GENTLMN3	64943 REDWILO3	276.6	277.5	0.30%	276.6	277.5	0.30%	276.6	273.7	-1.10%	276.6	276.7	0.00%	276.6	277.6	0.40%	276.6	276.2	-0.10%									
SUBTOTALS FOR: WNE_WKS		276.6	277.5	0.30%	276.6	277.5	0.30%	276.6	273.7	-1.10%	276.6	276.7	0.00%	276.6	277.6	0.40%	276.6	276.2	-0.10%									
Difference =		0.9		1.20%	Difference =	0.8		0.80%	Difference =	-2.9		-3.90%	Difference =	0.1		0.10%	Difference =	1		1.00%	Difference =	1		1.00%	Difference =	-0.4		-0.40%
66756 SQBUTTE4	63049 STANTON4	-38.7	-36.9	-4.60%	-38.7	-36.3	-6.20%	-38.7	-37.3	-3.50%	-38.7	-37.9	-2.10%	-38.7	-36.4	-5.90%	-38.7	-39.3	1.60%									
66756 SQBUTTE4	66751 CENTER 4	-41.5	-42.3	1.90%	-41.5	-42.8	3.00%	-41.5	-41.2	-0.70%	-41.5	-42	1.00%	-41.5	-42.5	2.40%	-41.5	-43	3.60%									
66756 SQBUTTE4	66791 CENTER 3	92.4	91.4	-1.10%	92.4	91.3	-1.30%	92.4	90.8	-1.80%	92.4	92.1	-0.40%	92.4	91.2	-1.40%	92.4	94.6	2.30%									
SUBTOTALS FOR: Y2DC		12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%									
Difference =		0		0.00%	Difference =	0		0.00%	Difference =	0		0.00%	Difference =	0		0.00%	Difference =	0		0.00%	Difference =	0		0.00%				
60186 AS KING3	60304 EAU CL 3	320.1	320.3	0.00%	320.1	313.6	-2.00%	320.1	325.3	1.60%	320.1	317.7	-0.80%	320.1	317.7	-0.80%	320.1	317.4	-0.90%									
60105 PR ISLD3	61950 BYRON 3	-200.5	-185.1	-7.60%	-200.5	-215.2	7.40%	-200.5	-192	-4.20%	-200.5	-204.3	1.90%	-200.5	-195.4	-2.50%	-200.5	-205.3	2.40%									
60192 BLUE LK3	60050 WLMRTHTP	-490.5	-498.2	1.60%	-490.5	-509.6	3.90%	-490.5	-487.2	-0.70%	-490.5	-494.3	0.80%	-490.5	-490.7	0.00%	-490.5	-496.9	1.30%									
60187 AS KING7	60325 WILLOWRV7	128.9	129.2	0.20%	128.9	128.1	-0.70%	128.9	129.6	0.50%	128.9	128.6	-0.30%	128.9	128.8	-0.10%	128.9	128.7	-0.20%									
60238 REDROCK7	68966 GLENMONT	50.5	50.9	0.80%	50.5	49.1	-2.90%	50.5	51.2	1.30%	50.5	50.2	-0.70%	50.5	50.2	-0.70%	50.5	50.3	-0.40%									
62234 LKMARN 7	60276 AIRLAKE7	53.6	53.4	-0.40%	53.6	54.6	1.70%	53.6	53.5	-0.30%	53.6	53.7	0.10%	53.6	39.2	-27.00%	53.6	53.8	0.40%									
SUBTOTALS FOR: MNEX (INFO)		-137.7	-129.5	-6.00%	-137.7	-179.6	30.40%	-137.7	-119.7	-13.10%	-137.7	-148.5	7.80%	-137.7	-150.2	9.00%	-137.7	-152	10.40%									
Difference =		8.2		10.80%	Difference =	-41.8		-41.80%	Difference =	18		24.00%	Difference =	-10.8		-21.50%	Difference =	-12.4		-12.40%	Difference =	23.1		23.10%	Difference =	-14.3		-14.30%

Distribution Factor Analysis Transmission Alternative 9

2009 Summer Peak Case
Generation to Generation Dispatct

Interface Definition From Bus To Bus		CMMPA		GRE		HCPD		HUC		MMPA		MRES		OTP								
		Base Case with Xmsn at 76 MW	Difference	Base Case with Xmsn at 100 MW	Difference	Base Case with Xmsn at 75 MW	Difference	Base Case with Xmsn at 50 MW	Difference	Base Case with Xmsn at 100 MW	Difference	Base Case with Xmsn at 100 MW	Difference	Base Case with Xmsn at 100 MW	Difference							
34093 ARNOLD 3 34018 HAZLTON3		382.3	390.5	2.10%	382.3	389.6	1.90%	382.3	375.1	-1.90%	382.3	384.8	0.70%	382.3	389.8	2.00%	382.3	374.3	-2.10%	382.3	385.4	0.80%
SUBTOTALS FOR: ARN-HAZLTN		382.3	390.5	2.10%	382.3	389.6	1.90%	382.3	375.1	-1.90%	382.3	384.8	0.70%	382.3	389.8	2.00%	382.3	374.3	-2.10%	382.3	385.4	0.80%
		Difference =	8.2	10.70%	Difference =	7.2	7.20%	Difference =	-7.2	-9.60%	Difference =	2.5	5.10%	Difference =	7.5	7.50%	Difference =	-8	-8.00%	Difference =	3.1	3.10%
64786 COOPER 3 59199 ST JOE 3		53.8	54.7	1.60%	53.8	54.5	1.30%	53.8	48.4	-10.10%	53.8	53.5	-0.50%	53.8	54.6	1.50%	53.8	54.5	1.40%	53.8	52.8	-1.80%
64786 COOPER 3 96309 7FAIRPT		63	63.6	1.10%	63	63.5	0.80%	63	58.8	-6.60%	63	62.8	-0.20%	63	63.6	1.00%	63	64.4	2.20%	63	62.3	-1.00%
SUBTOTALS FOR: COOPER_S		116.8	118.3	1.30%	116.8	118	1.00%	116.8	107.2	-8.20%	116.8	116.3	-0.30%	116.8	118.2	1.20%	116.8	118.9	1.80%	116.8	115.2	-1.40%
		Difference =	1.5	2.00%	Difference =	1.2	1.20%	Difference =	-9.5	-12.70%	Difference =	-0.4	-0.80%	Difference =	1.4	1.40%	Difference =	2.2	2.20%	Difference =	-1.6	-1.60%
60304 EAU CL 3 92494 ARP 345		95	92.1	-3.10%	95	89.9	-6.40%	95	100.2	5.50%	95	92.7	-2.40%	95	90.9	-4.30%	95	100.1	5.40%	95	92.5	-2.60%
SUBTOTALS FOR: ECL-ARP		95	92.1	-3.10%	95	89.9	-6.40%	95	100.2	5.50%	95	92.7	-2.40%	95	90.9	-4.30%	95	100.1	5.40%	95	92.5	-2.60%
		Difference =	-2.9	-3.80%	Difference =	-6.1	-6.10%	Difference =	5.3	7.00%	Difference =	-2.2	-4.50%	Difference =	-4.1	-4.10%	Difference =	5.1	5.10%	Difference =	-2.4	-2.40%
65351 S3451 3 65354 S3454 3		82	82.5	0.70%	82	82.2	0.30%	82	89.9	8.50%	82	81.8	-0.20%	82	82.2	0.20%	82	83.5	1.80%	82	81.8	-0.20%
65351 S3451 3 65359 S3459 3		29.6	31	4.90%	29.6	30.7	3.60%	29.6	36.9	24.70%	29.6	29.6	0.00%	29.6	30.7	3.70%	29.6	33.6	13.50%	29.6	29.4	-0.60%
65451 S1251 5 65497 S1297 5		39.5	39.8	0.70%	39.5	39.7	0.50%	39.5	40.8	3.20%	39.5	39.5	0.00%	39.5	39.8	0.50%	39.5	40.5	2.40%	39.5	39.5	-0.10%
SUBTOTALS FOR: FT_CAL_S		151.1	153.4	1.50%	151.1	152.6	1.00%	151.1	166.6	10.20%	151.1	150.9	-0.10%	151.1	152.6	1.00%	151.1	157.5	4.30%	151.1	150.7	-0.30%
		Difference =	2.3	3.00%	Difference =	1.5	1.50%	Difference =	15.5	20.60%	Difference =	-0.2	-0.40%	Difference =	1.5	1.50%	Difference =	6.4	6.40%	Difference =	-0.4	-0.40%
64832 GENTLMN4 64909 N PLATT4		157.4	157.4	0.00%	157.4	157.4	0.00%	157.4	156	-0.90%	157.4	157.4	0.00%	157.4	157.4	0.00%	157.4	157.4	0.00%	157.4	157.4	0.00%
64832 GENTLMN4 64909 N PLATT4		157.9	157.8	0.00%	157.9	157.9	0.00%	157.9	156.4	-0.90%	157.9	157.9	0.00%	157.9	157.9	0.00%	157.9	157.9	0.00%	157.9	157.9	0.00%
64832 GENTLMN4 64909 N PLATT4		162.4	162.4	0.00%	162.4	162.4	0.00%	162.4	160.9	-0.90%	162.4	162.4	0.00%	162.4	162.4	0.00%	162.4	162.4	0.00%	162.4	162.4	0.00%
64831 GENTLMN3 64984 SWEET W3		273.8	273.9	0.00%	273.8	273.9	0.00%	273.8	268.5	-1.90%	273.8	273.9	0.00%	273.8	273.9	0.00%	273.8	274.2	0.20%	273.8	273.8	0.00%
64831 GENTLMN3 64984 SWEET W3		328.1	328.2	0.00%	328.1	328.2	0.00%	328.1	321.8	-1.90%	328.1	328.2	0.00%	328.1	328.2	0.00%	328.1	328.6	0.20%	328.1	328.2	0.00%
64831 GENTLMN3 64943 REDWIL03		276.8	277.6	0.30%	276.8	277.5	0.30%	276.8	273.8	-1.10%	276.8	276.8	0.00%	276.8	277.6	0.30%	276.8	277.7	0.30%	276.8	276.3	-0.20%
SUBTOTALS FOR: GGS		1356.3	1357.2	0.10%	1356.3	1357.3	0.10%	1356.3	1337.5	-1.40%	1356.3	1356.5	0.00%	1356.3	1357.4	0.10%	1356.3	1358.4	0.20%	1356.3	1356	0.00%
		Difference =	1	1.30%	Difference =	1	1.00%	Difference =	-18.8	-25.10%	Difference =	0.3	0.60%	Difference =	1.1	1.10%	Difference =	2.1	2.10%	Difference =	-0.3	-0.30%
64933 PAULINE3 64902 MOORE 3		55.4	56.4	1.90%	55.4	56.5	2.00%	55.4	53.7	-3.00%	55.4	55.7	0.60%	55.4	56.6	2.10%	55.4	57.8	4.30%	55.4	55.3	-0.10%
64839 GR ISLD4 64780 COLMB W4		99.9	99.6	-0.20%	99.9	99.7	-0.10%	99.9	96	-3.90%	99.9	99.9	0.10%	99.9	99.7	-0.10%	99.9	99.7	-0.20%	99.9	99.9	0.00%
66571 GR ISLD3 64896 MCCOOL 3		144.7	147.2	1.70%	144.7	147.2	1.70%	144.7	146.2	-1.00%	144.7	145.4	0.50%	144.7	147.5	1.90%	144.7	150	3.60%	144.7	144.6	-0.10%
SUBTOTALS FOR: GRIS_LNC		300	303.2	1.10%	300	303.4	1.10%	300	295.9	-1.40%	300	301.1	0.40%	300	303.8	1.30%	300	307.4	2.50%	300	299.8	-0.10%
		Difference =	3.2	4.30%	Difference =	3.4	3.40%	Difference =	-4.1	-5.50%	Difference =	1.1	2.20%	Difference =	3.8	3.80%	Difference =	7.5	7.50%	Difference =	-0.2	-0.20%
57981 LACYGNE7 57965 W GRDNR7		577.8	577.8	0.00%	577.9	577.8	0.00%	577.9	578.8	0.20%	577.9	578	0.00%	577.9	577.8	0.00%	577.9	579	0.20%	577.9	578.3	0.10%
57981 LACYGNE7 57968 STILLWEL7		720.5	720.6	0.00%	720.5	720.7	0.00%	720.5	721	0.10%	720.5	720.7	0.00%	720.5	720.6	0.00%	720.5	721.4	0.10%	720.5	721	0.10%
SUBTOTALS FOR: LACYGNE_N		1298.4	1298.4	0.00%	1298.4	1298.5	0.00%	1298.4	1299.8	0.10%	1298.4	1298.8	0.00%	1298.4	1298.4	0.00%	1298.4	1300.4	0.20%	1298.4	1299.3	0.10%
		Difference =	0	0.00%	Difference =	0.1	0.10%	Difference =	1.4	1.80%	Difference =	0.4	0.70%	Difference =	0	0.00%	Difference =	2	2.00%	Difference =	0.9	0.90%
62234 LKMAR7 60276 AIRLAKE7		53.4	53.1	-0.50%	53.4	53.3	1.70%	53.4	53.2	-0.30%	53.4	53.4	0.10%	53.4	38.9	-27.10%	53.4	53.2	-0.40%	53.4	53.6	0.30%
SUBTOTALS FOR: LKM-WFB		53.4	53.1	-0.50%	53.4	53.3	1.70%	53.4	53.2	-0.30%	53.4	53.4	0.10%	53.4	38.9	-27.10%	53.4	53.2	-0.40%	53.4	53.6	0.30%
		Difference =	-0.2	-0.30%	Difference =	0.9	0.90%	Difference =	-0.1	-0.20%	Difference =	0.1	0.10%	Difference =	-14.4	-14.40%	Difference =	-0.2	-0.20%	Difference =	0.2	0.20%
60175 ROSEAU 4 67576 RICHER 4		-143.7	-144.1	0.30%	-143.7	-144.3	0.40%	-143.7	-143.9	0.10%	-143.7	-143.9	0.10%	-143.7	-144.2	0.40%	-143.7	-143.9	0.20%	-143.7	-143.8	0.10%
60173 ROSEAU2 67564 DORSEY 2		-1132.8	-1139	0.50%	-1132.8	-1141.8	0.80%	-1132.8	-1135.4	0.20%	-1132.8	-1135.8	0.30%	-1132.8	-1140.7	0.70%	-1132.8	-1136.2	0.30%	-1132.8	-1131	-0.20%
66752 DRAYTON4 67557 LETELERA4		-238.2	-234.6	-1.50%	-238.2	-233.1	-2.10%	-238.2	-236.3	-0.80%	-238.2	-236.5	-0.70%	-238.2	-233.6	-1.90%	-238.2	-235.8	-1.00%	-238.2	-240.4	0.90%
63379 RUGBY 4 67523 GLENBOR4		40	42.8	7.10%	40	44.1	10.40%	40	40.7	1.80%	40	41.4	3.50%	40	43.6	9.10%	40	41	2.60%	40	40.6	1.50%
SUBTOTALS FOR: MHX_N		-1474.7	-1474.9	0.00%	-1474.7	-1475	0.00%	-1474.7	-1474.9	0.00%	-1474.7	-1474.8	0.00%	-1474.7	-1474.9	0.00%	-1474.7	-1474.9	0.00%	-1474.7	-1474.6	0.00%
		Difference =	-0.2	-0.20%	Difference =	-0.3	-0.30%	Difference =	-0.1	-0.20%	Difference =	-0.1	-0.20%	Difference =	-0.2	-0.20%	Difference =	-0.2	-0.20%	Difference =	0.1	0.10%
67576 RICHER 4 60175 ROSEAU 4		146.1	146.6	0.30%	146.1	146.8	0.40%	146.1	146.3	0.10%	146.1	146.4	0.10%	146.1	146.7	0.40%	146.1	146.4	0.20%	146.1	146.3	0.10%
67564 DORSEY 2 60173 ROSEAU2		1149.4	1155.8	0.60%	1149.4	1158.6	0.80%	1149.4	1152.1	0.20%	1149.4	1152.5	0.30%	1149.4	1157.6	0.70%	1149.4	1152.9	0.30%	1149.4	1147.5	-0.20%
67557 LETELERA 66752 DRAYTON4		242.7	238.9	-1.50%	242.7	237.4	-2.20%	242.7	240.7	-0.80%	242.7	240.9	-0.70%	242.7	237.9	-2.00%	242.7	240.2	-1.00%	242.7	245	1.00%
67523 GLENBOR4 63379 RUGBY 4		-39.6	-42.4	7.00%	-39.6	-43.7	10.30%	-39.6	-40.4	1.80%	-39.6	-41	3.40%	-39.6	-43.2	9.00%	-39.6	-40.7	2.60%	-39.6	-40.2	1.50%
SUBTOTALS FOR: MHX_S		1498.6	1498.9	0.00%	1498.6	1499	0.00%	1498.6	1498.8	0.00%	1498.6	1498.7	0.00%	1498.6	1499	0.00%	1498.6	1498.8	0.00%	1498.6	1498.5	0.00%
		Difference =	0.3	0.40%	Difference =	0.4	0.40%	Difference =	0.2	0.20%	Difference =	0.1	0.30%	Difference =	0.3	0.30%	Difference =	0.2	0.20%	Difference =	-0.1	-0.10%
68613 AUBURN4 67525 RESTON 4		42.3	42.2	-0.30%	42.3	42.2	-0.40%	42.3	42.3	-0.10%	42.3	42.3	-0.10%	42.3	42.2	-0.40%	42.3	42.3	-0.10%	42.3	42.3	0.00%
68615 YORKTON4 67514 ROBUN 4		-90.6	-90.5	-0.10%	-90.6	-90.5	-0.10%	-90.6	-90.6	0.00%	-90.6	-90.5	0.00%	-90.6	-90.5	-0.10%	-90.6	-90.5	-0.10%	-90.6	-90.6	0.00%
68630 EBCAMPB4 67515 RALL 4		-6.3	-6.3	-1.00%	-6.3	-6.3	-1.50%	-6.3	-6.3	-0.30%	-6.3	-6.3	-0.50%	-6.3	-6.3	-1.30%	-6.3	-6.3	-0.40%	-6.3	-6.4	0.20%
SUBTOTALS FOR: MH_SPC_E		-54.6	-54.6	0.00%	-54.6	-54.6	0.00%	-54.6	-54.6	0.00%	-54.6	-54.6	0.00%	-54.6	-54.6	0.00%	-54.6	-54.6	0.00%	-54.6	-54.6	0.00%
		Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%
67525 RESTON 4 68613 AUBURN4		-42.2	-42	-0.30%	-42.2	-42	-0.40%	-42.2	-42.1													

Distribution Factor Analysis Transmission Alternative 9

2009 Summer Peak Case
Generation to Generation Dispatc

		CMMPA			GRE			HCPD			HUC			MMPA			MRES			OTP		
64095 MNTZUMA3 64064 BONDRT3	10.9	6.7	-38.10%	10.9	6.9	-36.30%	10.9	15.1	38.40%	10.9	10.1	-7.50%	10.9	6.9	-36.30%	10.9	18.4	69.40%	10.9	10.5	-3.60%	
SUBTOTALS FOR: MNTZUMA_W	10.9	6.7	-38.10%	10.9	6.9	-36.30%	10.9	15.1	38.40%	10.9	10.1	-7.50%	10.9	6.9	-36.30%	10.9	18.4	69.40%	10.9	10.5	-3.60%	
Difference =	-4.1	-5.40%	Difference =	-4	-4.00%	Difference =	4.2	5.60%	Difference =	-0.8	-1.60%	Difference =	-4	-4.00%	Difference =	7.5	7.50%	Difference =	-0.4	-0.40%		
61702 LASKIN 7 61705 BABBITT7	63.4	63.4	0.00%	63.4	63.4	0.00%	63.4	63.4	-0.10%	63.4	63.4	0.00%	63.4	63.4	0.00%	63.4	63.4	-0.10%	63.4	63.5	0.10%	
61702 LASKIN 7 61722 FORBES 7	43.9	43.9	0.00%	43.9	43.9	0.10%	43.9	43.9	-0.10%	43.9	43.9	0.00%	43.9	43.9	0.00%	43.9	43.9	-0.10%	43.9	43.9	-0.10%	
61702 LASKIN 7 62451 LAKEIND7	64.5	64.5	0.00%	64.5	64.5	0.00%	64.5	64.5	-0.10%	64.5	64.5	0.00%	64.5	64.5	0.00%	64.5	64.5	-0.10%	64.5	64.6	0.10%	
61702 LASKIN 7 61574 LASKNJCT	-74.8	-74.7	-0.10%	-74.8	-74.8	0.00%	-74.8	-74.7	-0.10%	-74.8	-74.8	0.00%	-74.8	-74.7	-0.10%	-74.8	-74.7	-0.10%	-74.8	-74.9	0.10%	
61626 BOSWELL4 61625 BLCKBRY4	139.6	139.4	-0.20%	139.6	139.3	-0.30%	139.6	139.5	-0.10%	139.6	139.5	-0.10%	139.6	139.3	-0.20%	139.6	139.4	-0.10%	139.6	140.4	0.50%	
61626 BOSWELL4 61625 BLCKBRY4	135.9	135.7	-0.20%	135.9	135.6	-0.30%	135.9	135.7	-0.10%	135.9	135.8	-0.10%	135.9	135.6	-0.20%	135.9	135.7	-0.10%	135.9	136.6	0.50%	
61626 BOSWELL4 61627 SHANNON4	87.4	87.9	0.60%	87.4	88.1	0.80%	87.4	87.7	0.40%	87.4	87.5	0.20%	87.4	88	0.70%	87.4	87.8	0.50%	87.4	85.9	-1.70%	
61615 ARROWHWD461614 98L TAP4	56.8	55.6	-2.10%	56.8	55.5	-2.30%	56.8	55.3	-2.50%	56.8	56.5	-0.50%	56.8	55.4	-2.40%	56.8	55.1	-2.90%	56.8	59.5	4.80%	
61615 ARROWHWD461554 AWHD1JCT	155.1	155	-0.10%	155.1	154.9	-0.10%	155.1	154.8	-0.20%	155.1	155.1	0.00%	155.1	154.9	-0.10%	155.1	154.8	-0.20%	155.1	155.8	0.50%	
61615 ARROWHWD461556 AWHD2JCT	160.5	160.4	-0.10%	160.5	160.3	-0.10%	160.5	160.2	-0.20%	160.5	160.5	0.00%	160.5	160.3	-0.10%	160.5	160.2	-0.20%	160.5	161.2	0.50%	
61615 ARROWHWD461624 FORBES 4	-110.5	-110.8	0.30%	-110.5	-110.3	-0.20%	-110.5	-111.6	1.00%	-110.5	-110.4	-0.10%	-110.5	-110.7	0.10%	-110.5	-111.7	1.10%	-110.5	-110.2	-0.30%	
61615 ARROWHWD463055 BEARCK 4	55.2	56.3	1.90%	55.2	57.7	4.50%	55.2	55.2	0.00%	55.2	56.1	1.60%	55.2	57	3.20%	55.2	55.1	-0.10%	55.2	54	-2.10%	
SUBTOTALS FOR: MP_EXPORT	777.1	776.4	-0.10%	777.1	778	0.10%	777.1	773.7	-0.40%	777.1	777.7	0.10%	777.1	776.9	0.00%	777.1	773.5	-0.50%	777.1	780.4	0.40%	
Difference =	-0.7	-0.90%	Difference =	0.9	0.90%	Difference =	-3.4	-4.50%	Difference =	0.6	1.20%	Difference =	-0.2	-0.20%	Difference =	-3.6	-3.60%	Difference =	3.3	3.30%		
60105 PR ISLD3 61950 BYRON 3	-199.7	-183.9	-7.90%	-199.7	-213.8	-7.00%	-199.7	-191.1	-4.30%	-199.7	-203.5	1.90%	-199.7	-194.2	-2.80%	-199.7	-188.7	-5.50%	-199.7	-204.3	2.30%	
60304 EAU CL 3 92494 ARP 345	95	92.1	-3.10%	95	89.9	-6.20%	95	100.2	5.50%	95	92.7	-2.40%	95	90.9	-4.30%	95	100.1	5.40%	95	92.5	-2.60%	
SUBTOTALS FOR: MWSI	-104.8	-91.8	-12.30%	-104.8	-124.9	-19.20%	-104.8	-90.8	-13.30%	-104.8	-110.7	5.70%	-104.8	-103.3	-1.40%	-104.8	-88.6	-15.40%	-104.8	-111.7	6.60%	
Difference =	12.9	17.60%	Difference =	-20.1	-20.10%	Difference =	14	16.60%	Difference =	-6	-11.90%	Difference =	1.4	1.40%	Difference =	16.1	16.10%	Difference =	-7	-7.00%		
66756 SQBUTTE4 63049 STANTON4	-38.5	-36.8	-4.40%	-38.5	-36.2	-5.90%	-38.5	-37.2	-3.40%	-38.5	-37.7	-2.10%	-38.5	-36.3	-5.60%	-38.5	-36.7	-4.60%	-38.5	-39.2	1.80%	
66756 SQBUTTE4 66751 CENTER 4	-41.5	-42.2	1.80%	-41.5	-42.7	2.80%	-41.5	-41.2	-0.80%	-41.5	-41.9	1.00%	-41.5	-42.5	2.30%	-41.5	-41.3	-0.60%	-41.5	-43	3.50%	
66756 SQBUTTE4 66791 CENTER 3	92.2	91.3	-1.00%	92.2	91.1	-1.20%	92.2	90.6	-1.80%	92.2	91.8	-0.40%	92.2	91	-1.30%	92.2	90.2	-2.20%	92.2	94.4	2.30%	
63041 COAL CR4 63042 COAL TP4	-23.2	-23.3	0.50%	-23.2	-23.4	0.80%	-23.2	-23.2	-0.10%	-23.2	-23.2	0.30%	-23.2	-23.3	0.60%	-23.2	-23.2	-0.10%	-23.2	-23.3	0.60%	
63041 COAL CR4 63049 STANTON4	-124.7	-125.6	0.70%	-124.7	-126	1.00%	-124.7	-124.7	0.00%	-124.7	-125.2	0.40%	-124.7	-125.8	0.90%	-124.7	-124.8	0.10%	-124.7	-125.4	0.60%	
63041 COAL CR4 63381 UNDERWD4	144	145	0.70%	144	145.5	1.00%	144	144	0.00%	144	144.5	0.40%	144	145.2	0.90%	144	144.1	0.10%	144	144.9	0.60%	
SUBTOTALS FOR: NDDC	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	-0.10%	
Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%		
67105 LELAND03 66506 FTTHOMP3	130.8	132.3	1.20%	130.8	132.2	1.10%	130.8	135	3.20%	130.8	131.3	0.40%	130.8	132.6	1.40%	130.8	135.1	3.30%	130.8	128.9	-1.50%	
67105 LELAND03 67160 GROTON 3	254	252.8	-0.50%	254	252.3	-0.60%	254	252.4	-0.60%	254	253.5	-0.20%	254	252.5	-0.60%	254	253.5	-0.20%	254	251.3	-1.10%	
67101 ANTELOP3 67120 BRDLAND3	192.4	192.2	-0.10%	192.4	191.9	-0.30%	192.4	192.9	0.30%	192.4	191.9	-0.10%	192.4	192.1	-0.20%	192.4	193.6	0.60%	192.4	190	-1.20%	
63314 BIGSTON4 66503 BLAIR 4	-24.8	-0.2	-99.30%	-24.8	7	-128.40%	-24.8	1.5	-106.20%	-24.8	-9.1	-63.20%	-24.8	7.5	-130.30%	-24.8	11.5	-146.30%	-24.8	-1.7	-93.10%	
63320 GMI GRV4 66550 GRANITF4	-21.1	-14.4	-31.80%	-21.1	-12.3	-41.50%	-21.1	-14.3	-32.30%	-21.1	-15.7	-25.50%	-21.1	-12	-43.00%	-21.1	-11.6	-45.00%	-21.1	-22	4.40%	
63336 AUDUBON4 63053 HUBBARD4	111.3	114.7	3.00%	111.3	116	4.20%	111.3	113.2	1.80%	111.3	113	1.50%	111.3	115.6	3.90%	111.3	113.8	2.20%	111.3	107.3	-3.60%	
66521 SULLYBT4 66519 OAH4 4	-71.8	-70.9	-1.30%	-71.8	-71	-1.20%	-71.8	-69	-4.00%	-71.8	-71.5	-0.40%	-71.8	-70.7	-1.60%	-71.8	-68.9	-4.10%	-71.8	-73.8	2.50%	
63052 INMAN 4 61611 WINGRIV4	95.8	101.5	6.00%	95.8	103.7	8.20%	95.8	99.8	4.20%	95.8	98.8	3.10%	95.8	103.1	7.70%	95.8	100.9	5.30%	95.8	76.2	-20.40%	
66470 BISON 4 66497 MAURINE4	-1.7	-1.1	-33.70%	-1.7	-1.2	-32.10%	-1.7	0.9	-153.10%	-1.7	-1.5	-10.50%	-1.7	-1	-40.40%	-1.7	-0.1	-92.60%	-1.7	-2.4	40.90%	
66716 LAPORTE7 61640 BAOURA7	-0.7	0	-106.40%	-0.7	0.4	-151.10%	-0.7	-0.4	-51.20%	-0.7	-0.3	-57.70%	-0.7	0.3	-136.70%	-0.7	-0.2	-67.50%	-0.7	-0.8	1.20%	
63222 ALEXAND7 60144 DGLASCO7	30.9	32.3	4.40%	30.9	32.8	6.10%	30.9	31.9	3.20%	30.9	31.8	3.00%	30.9	32.7	5.80%	30.9	32.1	4.10%	30.9	23.9	-22.70%	
67327 ELLENDL7 67401 ABDNUCT7	-7.1	-6.5	-9.40%	-7.1	-6.4	-10.40%	-7.1	-6	-15.80%	-7.1	-6.8	-5.00%	-7.1	-6.3	-12.20%	-7.1	-5.5	-23.20%	-7.1	-8.6	20.40%	
66432 EDGELEY7 66534 ORDWAY 7	-20.3	-20.4	0.60%	-20.3	-20.6	1.30%	-20.3	-20	-1.40%	-20.3	-20.3	0.30%	-20.3	-20.4	0.70%	-20.3	-19.6	-3.20%	-20.3	-22.1	8.90%	
66438 FORMAN 7 66522 SUMMIT7	-23.4	-23	-2.00%	-23.4	-22.9	-2.10%	-23.4	-22.6	-3.50%	-23.4	-23.1	-1.20%	-23.4	-22.8	-2.60%	-23.4	-21.7	-7.20%	-23.4	-25.1	7.10%	
63311 CANBY 4 66550 GRANITF4	72.5	85.5	18.00%	72.5	89.8	23.90%	72.5	84.9	17.10%	72.5	82.3	13.60%	72.5	89.9	24.00%	72.5	88.9	22.70%	72.5	85	17.30%	
62006 KERKHO 7 62005 KERKHO7	16.4	17.8	8.90%	16.4	18.3	11.90%	16.4	17.7	8.20%	16.4	18.2	11.30%	16.4	18.4	12.20%	16.4	18.2	11.10%	16.4	16.3	-0.70%	
66752 DRAYTON4 67557 LETELER4	-242.7	-238.9	-1.50%	-242.7	-247.4	-2.20%	-242.7	-240.7	-0.80%	-242.7	-240.9	-0.70%	-242.7	-237.9	-2.00%	-242.7	-240.2	-1.00%	-242.7	-245	1.00%	
63379 RUGBY 4 67523 GLENBOR4	40	42.8	7.10%	40	44.1	10.40%	40	40.7	1.80%	40	41.4	3.50%	40	43.6	9.10%	40	41	2.60%	40	40.6	1.50%	
63320 GMI GRV4 63050 WILLMAR4	94.1	101.1	7.40%	94.1	103.7	10.20%	94.1	99.9	6.10%	94.1	100.5	6.80%	94.1	103.5	10.00%	94.1	101.6	7.90%	94.1	96.9	2.90%	
SUBTOTALS FOR: NDEX	624.4	697.8	11.70%	624.4	720.5	15.40%	624.4	697.9	11.80%	624.4	673.7	7.90%	624.4	720.8	15.40%	624.4	722.3	15.70%	624.4	615.1	-1.50%	
Difference =	73.4	96.50%	Difference =	96.1	96.10%	Difference =	73.5	95.00%	Difference =	49.3	95.50%	Difference =	96.4	95.40%	Difference =	97.9	97.50%	Difference =	-9.3	-9.30%		
36406 WEMPL; B 39058 PAD 345	635	636.3	0.20%	635	637.5	0.40%	635	632.2	-0.50%	635	636	0.20%	635	636.								

Distribution Factor Analysis Transmission Alternative 9

2009 Summer Peak Case
Generation to Generation Dispatct

		CMMPA		GRE		HCPD		HUC		MMPA		MRES		OTP								
SUBTOTALS FOR: QUADCITY_W		830.1	830.7	0.10%	830.1	829.7	-0.10%	830.1	831.1	0.10%	830.1	830.2	0.00%	830.1	834.7	0.60%	830.1	830.6	0.10%			
Difference =			0.6	0.80%	Difference =	-0.4	-0.40%	Difference =	1	1.30%	Difference =	0.2	0.40%	Difference =	0.1	0.10%	Difference =	4.6	4.60%	Difference =	0.5	0.50%
64831 GENTLMN3	64943 REDWILO3	276.8	277.6	0.30%	276.8	277.5	0.30%	276.8	273.8	-1.10%	276.8	276.8	0.00%	276.8	277.6	0.30%	276.8	276.3	-0.20%			
SUBTOTALS FOR: WNE_WKS		276.8	277.6	0.30%	276.8	277.5	0.30%	276.8	273.8	-1.10%	276.8	276.8	0.00%	276.8	277.6	0.30%	276.8	276.3	-0.20%			
Difference =			0.8	1.10%	Difference =	0.7	0.70%	Difference =	-2.9	-3.90%	Difference =	0	0.10%	Difference =	0.8	0.80%	Difference =	0.9	0.90%	Difference =	-0.4	-0.40%
66756 SQBUTTE4	63049 STANTON4	-38.5	-36.8	-4.40%	-38.5	-36.2	-5.90%	-38.5	-37.2	-3.40%	-38.5	-37.7	-2.10%	-38.5	-36.3	-5.60%	-38.5	-36.7	-4.60%	-38.5	-39.2	1.80%
66756 SQBUTTE4	66751 CENTER 4	-41.5	-42.2	1.80%	-41.5	-42.7	2.80%	-41.5	-41.2	-0.80%	-41.5	-41.9	1.00%	-41.5	-42.5	2.30%	-41.5	-41.3	-0.60%	-41.5	-43	3.50%
66756 SQBUTTE4	66791 CENTER 3	92.2	91.3	-1.00%	92.2	91.1	-1.20%	92.2	90.6	-1.80%	92.2	91.8	-0.40%	92.2	91	-1.30%	92.2	90.2	-2.20%	92.2	94.4	2.30%
SUBTOTALS FOR: Y2DC		12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%
Difference =			0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%
60186 AS KING3	60304 EAU CL 3	320.7	321.1	0.10%	320.7	314.6	-1.90%	320.7	326	1.70%	320.7	318.4	-0.70%	320.7	318.5	-0.70%	320.7	326.2	1.70%	320.7	318.2	-0.80%
60105 PR ISLD3	61950 BYRON 3	-199.7	-183.9	-7.90%	-199.7	-213.8	7.00%	-199.7	-191.1	-4.30%	-199.7	-203.5	1.90%	-199.7	-194.2	-2.80%	-199.7	-188.7	-5.50%	-199.7	-204.3	2.30%
60192 BLUE LK3	60050 WLMRTHTP	-453.9	-462.9	2.00%	-453.9	-474.6	4.60%	-453.9	-454.5	0.20%	-453.9	-454.7	0.20%	-453.9	-459.6	1.30%	-453.9	-453.6	-0.10%	-453.9	-459.1	1.20%
60187 AS KING7	60325 WILLOWRV7	129	129.4	0.30%	129	128.2	-0.60%	129	129.7	0.50%	129	128.7	-0.20%	129	128.9	-0.10%	129	129.7	0.50%	129	128.8	-0.20%
60238 REDROCK7	68966 GLENMONT	50.6	51	0.80%	50.6	49.1	-2.90%	50.6	51.2	1.30%	50.6	50.2	-0.70%	50.6	50.3	-0.70%	50.6	51.3	1.40%	50.6	50.4	-0.30%
62234 LKMARN 7	60276 AIRLAKE7	53.4	53.1	-0.50%	53.4	54.3	1.70%	53.4	53.2	-0.30%	53.4	53.4	0.10%	53.4	38.9	-27.10%	53.4	53.2	-0.40%	53.4	53.6	0.30%
SUBTOTALS FOR: MNEX (INFO)		99.9	-92.3	-7.70%	99.9	-142.1	42.20%	99.9	-85.5	-14.50%	99.9	-107.4	7.50%	99.9	-117.2	17.30%	99.9	-82	-18.00%	99.9	-112.4	12.50%
Difference =			7.7	10.10%	Difference =	-42.2	-42.20%	Difference =	14.4	19.30%	Difference =	-7.4	-14.90%	Difference =	-17.3	-17.30%	Difference =	18	18.00%	Difference =	-12.5	-12.50%

Distribution Factor Analysis Transmission Alternative 9b

2009 Summer Peak Case
Generation to Generation Dispatct

Interface Definition		CMMPA BGSII Case at 76 MW		GRE BGSII Case at 100 MW		HCPD BGSII Case at 75 MW		HUC BGSII Case at 50 MW		MMPA BGSII Case at 100 MW		MRES BGSII Case at 100 MW		OTP BGSII Case at 100 MW	
From Bus	To Bus	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference	Base Case with Xmsn	Difference
34093	ARNOLD 3 34018 HAZLTON3	380.6	388.7	2.10%	380.6	387.8	1.90%	380.6	373.4	-1.90%	380.6	387.9	1.90%	380.6	383.8
SUBTOTALS FOR: ARN-HAZLTN		380.6	388.7	2.10%	380.6	387.8	1.90%	380.6	373.4	-1.90%	380.6	387.9	1.90%	380.6	383.8
		Difference =	8	10.50%	Difference =	7.2	7.20%	Difference =	-7.3	-9.70%	Difference =	7.3	7.30%	Difference =	3.2
64786	COOPER 3 59199 ST JOE 3	54.6	55.6	1.70%	54.6	55.3	1.10%	54.6	49.2	-10.00%	54.6	55.6	1.70%	54.6	53.5
64786	COOPER 3 96039 7FAIRPT	63.5	64.3	1.10%	63.5	64	0.80%	63.5	59.4	-6.60%	63.5	64.2	1.10%	63.5	62.8
SUBTOTALS FOR: COOPER_S		118.2	119.9	1.40%	118.2	119.3	0.90%	118.2	108.5	-8.20%	118.2	119.8	1.40%	118.2	116.3
		Difference =	1.7	2.20%	Difference =	1.1	1.10%	Difference =	-9.7	-12.90%	Difference =	1.6	1.60%	Difference =	-1.8
60304	EAU CL 3 92494 ARP 345	94.7	91.9	-3.00%	94.7	88.6	-6.40%	94.7	100.1	5.70%	94.7	90.7	-4.20%	94.7	92.2
SUBTOTALS FOR: ECL-ARP		94.7	91.9	-3.00%	94.7	88.6	-6.40%	94.7	100.1	5.70%	94.7	90.7	-4.20%	94.7	92.2
		Difference =	-2.8	-3.70%	Difference =	-6.1	-6.10%	Difference =	5.4	7.20%	Difference =	-2.4	-4.70%	Difference =	-2.5
65351	S3451 3 65354 S3454 3	82.8	83.3	0.70%	82.8	83	0.30%	82.8	89.7	8.30%	82.8	83	0.30%	82.8	82.5
65351	S3451 3 65359 S3459 3	30.4	31.9	4.90%	30.4	31.5	3.40%	30.4	37.7	23.90%	30.4	31.5	3.60%	30.4	30.2
65451	S1251 5 65497 S1297 5	39.7	40	0.70%	39.7	39.9	0.50%	39.7	40.9	3.10%	39.7	39.9	0.50%	39.7	39.7
SUBTOTALS FOR: FT_CAL_S		152.9	155.2	1.50%	152.9	154.3	1.00%	152.9	168.3	10.10%	152.9	154.4	1.00%	152.9	152.4
		Difference =	2.3	3.10%	Difference =	1.5	1.50%	Difference =	15.4	20.50%	Difference =	1.5	1.50%	Difference =	-0.5
64832	GENTLMN4 64909 N PLATT4	157.4	157.3	0.00%	157.4	157.4	0.00%	157.4	155.9	-0.90%	157.4	157.4	0.00%	157.4	157.4
64832	GENTLMN4 64909 N PLATT4	157.8	157.8	0.00%	157.8	157.8	0.00%	157.8	156.4	-0.90%	157.8	157.8	0.00%	157.8	157.8
64832	GENTLMN4 64909 N PLATT4	162.4	162.4	0.00%	162.4	162.4	0.00%	162.4	160.9	-0.90%	162.4	162.4	0.00%	162.4	162.4
64831	GENTLMN3 64984 SWEET W3	273.7	273.7	0.00%	273.7	273.8	0.00%	273.7	268.4	-1.90%	273.7	273.7	0.00%	273.7	273.7
64831	GENTLMN3 64984 SWEET W3	327.9	328	0.00%	327.9	328.1	0.00%	327.9	321.6	-1.90%	327.9	328.1	0.00%	327.9	328
64831	GENTLMN3 64943 REDWIL03	276.9	277.8	0.30%	276.9	277.6	0.30%	276.9	274	-1.10%	276.9	277.8	0.30%	276.9	276.4
SUBTOTALS FOR: GGS		1356	1357	0.10%	1356	1357	0.10%	1356	1337.2	-1.40%	1356	1357.2	0.10%	1356	1355.7
		Difference =	1	1.30%	Difference =	1	1.00%	Difference =	-18.8	-25.10%	Difference =	1.1	1.10%	Difference =	-0.3
64933	PAULINE3 64902 MOORE 3	55.1	56.2	1.90%	55.1	56.2	1.90%	55.1	53.5	-3.00%	55.1	56.3	2.20%	55.1	55.1
64839	GR ISLD4 64780 COLMB W4	99.6	99.4	-0.30%	99.6	99.5	-0.10%	99.6	95.7	-3.90%	99.6	99.5	-0.20%	99.6	99.7
66571	GR ISLD3 64896 MCCOOL 3	144.2	146.7	1.70%	144.2	146.7	1.70%	144.2	145.7	1.00%	144.2	147	1.90%	144.2	144.1
SUBTOTALS FOR: GRIS_LNC		299	302.2	1.10%	299	302.4	1.10%	299	294.9	-1.40%	299	300	0.40%	299	298.8
		Difference =	3.2	4.20%	Difference =	3.4	3.40%	Difference =	-4.1	-5.50%	Difference =	3.8	3.80%	Difference =	-0.2
57981	LACYGNE7 57965 W.GRDNR7	577.6	577.4	0.00%	577.6	577.6	0.00%	577.6	578.5	0.20%	577.6	577.4	0.00%	577.6	578.1
57981	LACYGNE7 57968 STILLWEL7	720.3	720.3	0.00%	720.3	720.5	0.00%	720.3	720.7	0.10%	720.3	720.3	0.00%	720.3	720.8
SUBTOTALS FOR: LACYGNE_N		1297.9	1297.7	0.00%	1297.9	1298.1	0.00%	1297.9	1299.3	0.10%	1297.9	1297.7	0.00%	1297.9	1298.9
		Difference =	-0.1	-0.20%	Difference =	0.1	0.10%	Difference =	1.4	1.90%	Difference =	0.3	0.60%	Difference =	1
62234	LKMAR7 60276 AIRLAKE7	54.4	54.2	-0.50%	54.4	55.3	1.60%	54.4	54.2	-0.30%	54.4	39.9	-26.60%	54.4	54.6
SUBTOTALS FOR: LKM-WFB		54.4	54.2	-0.50%	54.4	55.3	1.60%	54.4	54.2	-0.30%	54.4	39.9	-26.60%	54.4	54.6
		Difference =	-0.3	-0.30%	Difference =	0.9	0.90%	Difference =	-0.2	-0.20%	Difference =	-14.5	-14.50%	Difference =	0.2
60175	ROSEAU 4 67576 RICHER 4	-143.7	-144.1	0.30%	-143.7	-144.3	0.40%	-143.7	-143.8	0.10%	-143.7	-144.2	0.40%	-143.7	-143.8
60173	ROSEAU2 67564 DORSEY 2	-1132.7	-1138.8	0.50%	-1132.7	-1141.5	0.80%	-1132.7	-1135.2	0.20%	-1132.7	-1140.5	0.70%	-1132.7	-1130.8
66752	DRAYTON4 67557 LETELERA4	-238.4	-234.8	-1.50%	-238.4	-233.3	-2.10%	-238.4	-236.5	-0.80%	-238.4	-233.8	-1.90%	-238.4	-240.6
63379	RUGBY 4 67523 GLENBOR4	40	42.8	7.00%	40	44.1	10.20%	40	40.7	1.70%	40	43.6	8.90%	40	40.6
SUBTOTALS FOR: MHX_N		-1474.8	-1474.9	0.00%	-1474.8	-1475	0.00%	-1474.8	-1474.9	0.00%	-1474.8	-1474.9	0.00%	-1474.8	-1474.6
		Difference =	-0.2	-0.20%	Difference =	-0.2	-0.20%	Difference =	-0.1	-0.20%	Difference =	-0.2	-0.20%	Difference =	0.2
67576	RICHER 4 60175 ROSEAU 4	146.1	146.6	0.30%	146.1	146.7	0.40%	146.1	146.3	0.10%	146.1	146.7	0.40%	146.1	146.3
67564	DORSEY 2 60173 ROSEAU2	1149.3	1155.6	0.50%	1149.3	1158.4	0.80%	1149.3	1151.9	0.20%	1149.3	1157.3	0.70%	1149.3	1147.3
67557	LETELERA4 66752 DRAYTON4	242.9	239.1	-1.50%	242.9	237.6	-2.20%	242.9	241	-0.80%	242.9	238.1	-1.90%	242.9	245.2
67523	GLENBOR4 63379 RUGBY 4	-39.7	-42.4	6.90%	-39.7	-43.7	10.10%	-39.7	-40.3	1.70%	-39.7	-43.2	8.80%	-39.7	-40.2
SUBTOTALS FOR: MHX_S		1498.6	1498.9	0.00%	1498.6	1499	0.00%	1498.6	1498.8	0.00%	1498.6	1499	0.00%	1498.6	1498.5
		Difference =	0.3	0.30%	Difference =	0.4	0.40%	Difference =	0.1	0.20%	Difference =	0.3	0.30%	Difference =	-0.1
68613	AUBURN4 67525 RESTON 4	42.3	42.2	-0.30%	42.3	42.2	-0.40%	42.3	42.3	-0.10%	42.3	42.2	-0.40%	42.3	42.4
68615	YORKTON4 67514 ROBUN 4	-90.6	-90.5	-0.10%	-90.6	-90.5	-0.10%	-90.6	-90.6	0.00%	-90.6	-90.5	-0.10%	-90.6	-90.6
68630	EBCAMPB4 67515 RALL 4	-6.4	-6.3	-1.00%	-6.4	-6.3	-1.50%	-6.4	-6.3	-0.30%	-6.4	-6.3	-1.30%	-6.4	-6.4
SUBTOTALS FOR: MH_SPC_E		-54.6	-54.6	0.00%	-54.6	-54.6	0.00%	-54.6	-54.6	0.00%	-54.6	-54.6	0.00%	-54.6	-54.6
		Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0
67525	RESTON 4 68613 AUBURN4	-42.2	-42.1	-0.30%	-42.2	-42	-0.40%	-42.2	-42.1	-0.10%	-42.2	-42	-0.40%	-42.2	-42.2
67514	ROBUN 4 68615 YORKTON4	91.4	91.3	-0.10%	91.4	91.4	0.00%	91.4	91.4	0.00%	91.4	91.3	-0.10%	91.4	91.4
67515	RALL 4 68630 EBCAMPB4	6.6	6.5	-1.00%	6.6	6.5	-1.50%	6.6	6.5	-0.30%	6.6	6.5	-1.30%	6.6	6.6
SUBTOTALS FOR: MH_SPC_W		55.8	55.7	0.00%	55.8	55.7	0.00%	55.8	55.8	0.00%	55.8	55.7	0.00%	55.8	55.7
		Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0

Distribution Factor Analysis

Transmission Alternative 9b

2009 Summer Peak Case
Generation to Generation Dispatc

		CMMPA			GRE			HCPD			HUC			MMPA			MRES			OTP		
64095	MNTZUMA3 64064 BONDRTN3	10.1	5.9	-41.10%	10.1	6.2	-38.20%	10.1	14.3	42.10%	10.1	9.3	-7.50%	10.1	6.3	-37.60%	10.1	17.7	76.20%	10.1	9.6	-4.30%
SUBTOTALS FOR: MNTZUMA_W		10.1	5.9	-41.10%	10.1	6.2	-38.20%	10.1	14.3	42.10%	10.1	9.3	-7.50%	10.1	6.3	-37.60%	10.1	17.7	76.20%	10.1	9.6	-4.30%
Difference =		-4.1	-5.40%		-3.8	-3.80%		4.2	5.60%		-0.8	-1.50%		-3.8	-3.80%		7.7	7.70%		-0.4	-0.40%	
61702	LASKIN 7 61705 BABBITT7	63.5	63.4	0.00%	63.5	63.4	0.00%	63.5	63.4	-0.10%	63.5	63.4	0.00%	63.5	63.4	0.00%	63.5	63.4	-0.10%	63.5	63.5	0.10%
61702	LASKIN 7 61722 FORBES 7	43.9	43.9	0.00%	43.9	43.9	0.00%	43.9	43.9	-0.10%	43.9	43.9	0.00%	43.9	43.9	0.00%	43.9	43.9	-0.10%	43.9	43.9	-0.10%
61702	LASKIN 7 62451 LAKELND7	64.6	64.5	0.00%	64.6	64.5	0.00%	64.6	64.5	-0.10%	64.6	64.5	0.00%	64.6	64.5	0.00%	64.6	64.5	-0.10%	64.6	64.6	0.10%
61702	LASKIN 7 61574 LASKNJCT	-74.8	-74.8	-0.10%	-74.8	-74.8	0.00%	-74.8	-74.7	-0.10%	-74.8	-74.8	0.00%	-74.8	-74.8	-0.10%	-74.8	-74.7	-0.10%	-74.8	-74.9	0.10%
61626	BOSWELL4 61625 BLCKBRY4	139.7	139.4	-0.20%	139.7	139.3	-0.30%	139.7	139.5	-0.10%	139.7	139.6	-0.10%	139.7	139.3	-0.20%	139.7	139.4	-0.20%	139.7	140.4	0.50%
61626	BOSWELL4 61625 BLCKBRY4	135.9	135.7	-0.20%	135.9	135.6	-0.30%	135.9	135.8	-0.10%	135.9	135.8	-0.10%	135.9	135.6	-0.20%	135.9	135.7	-0.10%	135.9	136.6	0.50%
61626	BOSWELL4 61627 SHANNON4	87.3	87.9	0.60%	87.3	88.1	0.80%	87.3	87.7	0.40%	87.3	87.5	0.20%	87.3	88	0.70%	87.3	87.8	0.50%	87.3	85.9	-1.70%
61615	ARROWHWD461614 98L TAP4	57.1	56	-2.00%	57.1	55.8	-2.20%	57.1	55.7	-2.50%	57.1	56.8	-0.50%	57.1	55.8	-2.40%	57.1	55.4	-2.90%	57.1	59.8	4.80%
61615	ARROWHWD461554 AWH01JCT	155.1	155	-0.10%	155.1	154.9	-0.10%	155.1	154.8	-0.20%	155.1	155.1	0.00%	155.1	155	-0.10%	155.1	154.8	-0.20%	155.1	155.9	0.50%
61615	ARROWHWD461556 AWH02JCT	160.6	160.4	-0.10%	160.6	160.3	-0.10%	160.6	160.2	-0.20%	160.6	160.5	0.00%	160.6	160.4	-0.10%	160.6	160.2	-0.20%	160.6	161.3	0.50%
61615	ARROWHWD461624 FORBES 4	-110.1	-110.4	0.30%	-110.1	-109.9	-0.20%	-110.1	-111.2	1.00%	-110.1	-109.9	-0.10%	-110.1	-110.2	0.10%	-110.1	-111.3	1.10%	-110.1	-109.7	-0.30%
61615	ARROWHWD463055 BEARCK 4	55	56	1.90%	55	57.4	4.40%	55	54.7	-0.50%	55	55.9	1.70%	55	56.6	3.10%	55	54.8	-0.20%	55	53.8	-2.10%
SUBTOTALS FOR: MP_EXPORT		777.7	777	-0.10%	777.7	778.6	0.10%	777.7	774.3	-0.40%	777.7	778.4	0.10%	777.7	777.5	0.00%	777.7	774	-0.50%	777.7	781.1	0.40%
Difference =		-0.7	-0.90%		0.9	0.90%		-3.4	-4.60%		0.7	1.40%		-0.2	-0.20%		-3.7	-3.70%		3.3	3.30%	
60105	PR ISLD3 61950 BYRON 3	-199	-182.8	-8.10%	-199	-212.5	-6.80%	-199	-189.9	-4.60%	-199	-203	2.00%	-199	-192.9	-3.00%	-199	-187.5	-5.80%	-199	-203.5	2.20%
60304	EAU CL 3 92494 ARP 345	94.7	91.9	-3.00%	94.7	85.6	-6.40%	94.7	100.1	5.70%	94.7	92.4	-2.50%	94.7	90.7	-4.20%	94.7	100	5.60%	94.7	92.2	-2.70%
SUBTOTALS FOR: MWSI		-104.3	-90.9	-12.80%	-104.3	-123.9	-18.80%	-104.3	-89.8	-13.80%	-104.3	-110.6	-6.10%	-104.3	-102.2	-2.00%	-104.3	-87.5	-16.10%	-104.3	-111.3	6.70%
Difference =		13.4	17.60%		-19.6	-19.60%		14.4	19.30%		-6.3	-12.70%		2.1	2.10%		16.8	16.80%		-7	-7.00%	
66756	SQBUTTE4 63049 STANTON4	-38.7	-37	-4.30%	-38.7	-36.4	-5.80%	-38.7	-37.4	-3.30%	-38.7	-37.8	-2.10%	-38.7	-36.5	-5.50%	-38.7	-36.9	-4.60%	-38.7	-39.3	1.80%
66756	SQBUTTE4 66751 CENTER 4	-41.6	-42.4	1.70%	-41.6	-42.8	2.80%	-41.6	-41.3	-0.80%	-41.6	-42.1	1.00%	-41.6	-42.6	2.20%	-41.6	-41	-0.60%	-41.6	-43.1	3.50%
66756	SQBUTTE4 66791 CENTER 3	92.5	91.6	-1.00%	92.5	91.5	-1.20%	92.5	90.9	-1.80%	92.5	92.2	-0.40%	92.5	91.3	-1.30%	92.5	90.5	-2.20%	92.5	94.7	2.30%
63041	COAL CR4 63042 COAL TP4	-23.2	-23.3	0.50%	-23.2	-23.4	0.80%	-23.2	-23.2	-0.10%	-23.2	-23.2	0.30%	-23.2	-23.2	0.00%	-23.2	-23.2	-0.10%	-23.2	-23.3	0.60%
63041	COAL CR4 63049 STANTON4	-124.8	-125.6	0.70%	-124.8	-126	1.00%	-124.8	-124.8	0.00%	-124.8	-125.2	0.40%	-124.8	-125.8	0.90%	-124.8	-124.9	0.10%	-124.8	-125.5	0.60%
63041	COAL CR4 63381 UNDERWD4	144	145	0.70%	144	145.5	1.00%	144	144	0.00%	144	144.6	0.40%	144	145.3	0.90%	144	144.1	0.10%	144	144.9	0.60%
SUBTOTALS FOR: NDDC		8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%	8.3	8.3	0.00%
Difference =		0	0.00%		0	0.00%		0	0.00%		0	0.00%		0	0.00%		0	0.00%		0	0.00%	
67105	LELAND03 66506 FTTHOMP3	130.1	131.6	1.20%	130.1	131.5	1.10%	130.1	134.2	3.20%	130.1	130.5	0.40%	130.1	132	1.50%	130.1	134.4	3.40%	130.1	128.1	-1.50%
67105	LELAND03 67160 GROTON 3	254	252.8	-0.50%	254	252.4	-0.60%	254	252.5	-0.60%	254	253.5	-0.20%	254	252.6	-0.60%	254	253.5	-0.20%	254	251.3	-1.10%
67101	ANTELOP3 67120 BRDLAND3	192.2	192	-0.10%	192.2	191.7	-0.30%	192.2	192.7	0.30%	192.2	192.1	-0.10%	192.2	192	-0.10%	192.2	193.4	0.60%	192.2	189.8	-1.20%
63314	BIGSTON4 66503 BLAIR 4	-26.2	-1.5	-94.30%	-26.2	5.7	-121.80%	-26.2	0.2	-100.90%	-26.2	-10.5	-59.90%	-26.2	6.3	-123.90%	-26.2	10.2	-139.10%	-26.2	-3.1	-88.30%
63320	6MI GRV4 66550 GRANITF4	-20.1	-13.3	-33.60%	-20.1	-11.3	-44.00%	-20.1	-13.3	-34.00%	-20.1	-14.7	-26.80%	-20.1	-11	-45.40%	-20.1	-10.6	-47.40%	-20.1	-21	4.50%
63336	AJDOBUN4 63053 HUBBARD4	111	114.4	3.00%	111	115.7	4.20%	111	112.9	1.70%	111	112.7	1.50%	111	115.3	3.90%	111	113.5	2.20%	111	107.1	-3.60%
66521	SULLYBT4 66519 OAH4 4	-72.4	-71.4	-1.30%	-72.4	-71.5	-1.20%	-72.4	-69.4	-4.00%	-72.4	-72	-0.40%	-72.4	-71.2	-1.60%	-72.4	-69.4	-4.10%	-72.4	-74.1	2.50%
63052	INMAN 4 61611 WINGRIV4	95.3	101	6.00%	95.3	103.1	8.20%	95.3	99.3	4.20%	95.3	98.3	3.10%	95.3	102.6	7.70%	95.3	100.4	5.30%	95.3	75.7	-20.50%
66470	BISON 4 66497 MAURINE4	-2	-1.4	-29.60%	-2	-1.4	-27.80%	-2	0.7	-134.00%	-2	-1.8	-8.90%	-2	-1.3	-36.20%	-2	-0.4	-81.60%	-2	-2.7	36.30%
66716	LAPORTE7 61640 BADOURA7	-0.8	0	-98.50%	-0.8	0.3	-140.00%	-0.8	-0.4	-46.90%	-0.8	-0.4	-54.30%	-0.8	0.2	-127.70%	-0.8	-0.3	-61.80%	-0.8	-0.8	1.50%
63222	ALEXAND7 60144 DGLASCOT7	30.7	32.1	4.40%	30.7	32.6	6.10%	30.7	31.7	3.20%	30.7	31.7	3.00%	30.7	32.5	5.80%	30.7	32	4.00%	30.7	23.7	-22.50%
67327	ELENDL7 67401 ABDNJCT7	-7.4	-6.7	-9.10%	-7.4	-6.6	-10.10%	-7.4	-6.2	-15.50%	-7.4	-7	-4.80%	-7.4	-6.5	-12.00%	-7.4	-5.7	-22.70%	-7.4	-8.8	19.90%
66432	EDGELEY7 66534 ORDWAY 7	-20.4	-20.5	0.50%	-20.4	-20.7	1.30%	-20.4	-20.1	-1.40%	-20.4	-20.5	0.40%	-20.4	-20.5	0.60%	-20.4	-20.4	-3.20%	-20.4	-22.2	8.90%
66438	FORMAN 7 66522 SUMMIT7	-23.6	-23.1	-2.00%	-23.6	-23.1	-2.10%	-23.6	-23.6	-3.50%	-23.6	-23.3	-1.20%	-23.6	-22.9	-2.70%	-23.6	-21.9	-7.20%	-23.6	-25.2	7.00%
63311	CANBY 4 66550 GRANITF4	73.6	86.7	17.80%	73.6	91	23.70%	73.6	86	16.80%	73.6	83.5	13.40%	73.6	91	23.60%	73.6	90.1	22.30%	73.6	86.2	17.10%
62006	KERKHO 7 62005 KERKHO7	16.3	17.8	9.00%	16.3	18.3	11.90%	16.3	17.7	8.20%	16.3	18.2	11.30%	16.3	18.3	12.20%	16.3	18.2	11.10%	16.3	16.2	0.70%
66752	DRAYTON4 67557 LETELER4	-242.9	-239.1	-1.50%	-242.9	-237.6	-2.20%	-242.9	-241	-0.80%	-242.9	-241.1	-0.70%	-242.9	-238.1	-1.90%	-242.9	-240.4	-1.60%	-242.9	-245.2	1.00%
63379	RUGBY 4 67523 GLENBOR4	40	42.8	7.00%	40	44.1	10.20%	40	40.7	1.70%	40	41.4	3.50%	40	43.6	8.90%	40	44.1	11.00%	40	40.6	1.50%
63320	6MI GRV4 63050 WILLMAR4	96.5	105.5	7.30%	96.5	106.1	10.00%	96.5	102.2	5.90%	96.5	102.8	6.60%	96.5	105.8	9.70%	96.5	103.9	7.70%	96.5	99.3	2.90%
SUBTOTALS FOR: NDEX		624.3	697.6	11.80%	624.3	720.4	15.40%	624.3	697.7	11.80%	624.3	673.5	-7.90%	624.3	720.7	15.50%	624.3	722.2	15.70%	624.3	615	-1.50%
Difference =		73.4	96.50%		96.1	96.10%		73.5	97.90%		49.3	98.60%		96.5	96.50%		97.9	97.90%		-9.3	-9.30%	

Distribution Factor Analysis Transmission Alternative 9b

2009 Summer Peak Case
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		CMMPA		GRE		HCPD		HUC		MMPA		MRES		OTP								
SUBTOTALS FOR: QUADCITY_W		828.6	829.1	0.10%	828.6	828.3	0.00%	828.6	828.9	0.00%	828.6	828.8	0.00%	828.6	833.2	0.60%	828.6	829	0.00%			
Difference =		0.5		0.70%	Difference =	-0.3	-0.30%	Difference =	1	1.30%	Difference =	0.4	0.70%	Difference =	0.2	0.20%	Difference =	4.6	4.60%	Difference =	0.4	0.40%
64831 GENTLMN3	64943 REDWILO3	276.9	277.8	0.30%	276.9	277.6	0.30%	276.9	274	-1.10%	276.9	277	0.00%	276.9	277.8	0.30%	276.9	277.9	0.40%	276.9	276.4	-0.20%
SUBTOTALS FOR: WNE_WKS		276.9	277.8	0.30%	276.9	277.6	0.30%	276.9	274	-1.10%	276.9	277	0.00%	276.9	277.8	0.30%	276.9	277.9	0.40%	276.9	276.4	-0.20%
Difference =		0.8		1.10%	Difference =	0.7	0.70%	Difference =	-2.9	-3.90%	Difference =	0.1	0.20%	Difference =	0.9	0.90%	Difference =	1	1.00%	Difference =	-0.5	-0.50%
66756 SQBUTTE4	63049 STANTON4	-38.7	-37	-4.30%	-38.7	-36.4	-5.80%	-38.7	-37.4	-3.30%	-38.7	-37.8	-2.10%	-38.7	-36.5	-5.50%	-38.7	-36.9	-4.60%	-38.7	-39.3	1.80%
66756 SQBUTTE4	66751 CENTER 4	-41.6	-42.4	1.70%	-41.6	-42.8	2.80%	-41.6	-41.3	-0.80%	-41.6	-42.1	1.00%	-41.6	-42.6	2.20%	-41.6	-41.4	-0.60%	-41.6	-43.1	3.50%
66756 SQBUTTE4	66791 CENTER 3	92.5	91.6	-1.00%	92.5	91.5	-1.20%	92.5	90.9	-1.80%	92.5	92.2	-0.40%	92.5	91.3	-1.30%	92.5	90.5	-2.20%	92.5	94.7	2.30%
SUBTOTALS FOR: Y2DC		12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%	12.2	12.2	0.00%
Difference =		0		0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%	Difference =	0	0.00%
60186 AS KING3	60304 EAU CL 3	319.3	319.8	0.20%	319.3	313.3	-1.90%	319.3	324.8	1.70%	319.3	316.9	-0.80%	319.3	317.3	-0.60%	319.3	325	1.80%	319.3	316.8	-0.80%
60105 PR ISLD3	61950 BYRON 3	-199	-182.8	-8.10%	-199	-212.5	6.80%	-199	-189.9	-4.60%	-199	-203	2.00%	-199	-192.9	-3.00%	-199	-187.5	-5.80%	-199	-203.5	2.20%
60192 BLUE LK3	60050 WLMRTHTP	-489.6	-495.6	1.20%	-489.6	-506	3.40%	-489.6	-485	-0.90%	-489.6	-493.7	0.80%	-489.6	-487.6	-0.40%	-489.6	-482.1	-1.50%	-489.6	-495.2	1.10%
60187 AS KING7	60325 WILLOWRV7	128.7	129.1	0.30%	128.7	127.9	-0.60%	128.7	129.4	0.50%	128.7	128.4	-0.30%	128.7	128.6	-0.10%	128.7	129.4	0.50%	128.7	128.5	-0.20%
60238 REDROCK7	68966 GLENMONT	50.5	51	0.90%	50.5	49.1	-2.80%	50.5	51.2	1.30%	50.5	50.1	-0.70%	50.5	50.2	-0.70%	50.5	51.2	1.40%	50.5	50.3	-0.30%
62234 LKMARN 7	60276 AIRLAKE7	54.4	54.2	-0.50%	54.4	55.3	1.60%	54.4	54.2	-0.30%	54.4	54.5	0.10%	54.4	39.9	-26.80%	54.4	54.2	-0.50%	54.4	54.6	0.30%
SUBTOTALS FOR: MNEX (INFO)		-135.6	-124.4	-8.20%	-135.6	-173	27.60%	-135.6	-115.4	-14.90%	-135.6	-146.7	8.20%	-135.6	-144.5	6.50%	-135.6	-109.8	-19.00%	-135.6	-148.4	9.40%
Difference =		11.2		14.70%	Difference =	-37.4	-37.40%	Difference =	20.2	27.00%	Difference =	-11.1	-22.10%	Difference =	-8.9	-8.90%	Difference =	25.8	25.80%	Difference =	-12.8	-12.80%

APPENDIX G

**Delivery Service Requests Submitted to MISO
As Part of the Big Stone II Project**

EXHIBIT B
to System Impact Study Agreement

Transmission Service Requests Comprising the Study

TSR AREF Number	Customer	Increment	Service Type	Capacity	POR	Source	POD	Sink	Comment
75772450	UPLS	Yearly	Network	1 MW	OTP	Bigstone	ALTW	ALTW.CMPA	
75772451	UPLS	Yearly	Network	2 MW	OTP	Bigstone	ALTW	ALTW.CMPA	
75772452	UPLS	Yearly	Network	1 MW	OTP	Bigstone	NSP	NSP.CMPA	Verify Service Type
75772454	UPLS	Yearly	Network	2 MW	OTP	Bigstone	NSP	NSP.CMPA	Verify Service Type
75772456	UPLS	Yearly	Network	3 MW	OTP	Bigstone	NSP	NSP.CMPA	Verify Service Type
75772460	UPLS	Yearly	Network	4 MW	OTP	Bigstone	NSP	NSP.CMPA	Verify Service Type
75772461	UPLS	Yearly	Network	5 MW	OTP	Bigstone	NSP	NSP.CMPA	Verify Service Type
75772462	UPLS	Yearly	Network	10 MW	OTP	Bigstone	NSP	NSP.CMPA	Verify Service Type
75772463	UPLS	Yearly	Network	2 MW	OTP	Bigstone	NSP	OTP.NSP	POD should be OTP
75772465	UPLS	Yearly	Network	4 MW	OTP	Bigstone	NSP	OTP.NSP	POD should be OTP
75772468	UPLS	Yearly	Network	6 MW	OTP	Bigstone	NSP	OTP.NSP	POD should be OTP
75772470	UPLS	Yearly	Network	1 MW	OTP	Bigstone	GRE	GRE	Verify Service Type
75772474	UPLS	Yearly	Network	2 MW	OTP	Bigstone	GRE	GRE	Verify Service Type
75772478	UPLS	Yearly	Network	3 MW	OTP	Bigstone	GRE	GRE	Verify Service Type
75772483	UPLS	Yearly	Network	4 MW	OTP	Bigstone	GRE	GRE	Verify Service Type
75772487	UPLS	Yearly	Network	25 MW	OTP	Bigstone	SMP	SMP	Verify Service Type
75772490	UPLS	Yearly	Network	50 MW	OTP	Bigstone	SMP	SMP	Verify Service Type
75772455	GRE	Yearly	P-t-P	80 MW	OTP	Bigstone	GRE	GREC	
75772469	GRE	Yearly	P-t-P	50 MW	OTP	Bigstone	GRE	GREC	
75772477	GRE	Yearly	P-t-P	40 MW	OTP	Bigstone	GRE	GREC	
75772486	GRE	Yearly	P-t-P	20 MW	OTP	Bigstone	GRE	GREC	
75772492	GRE	Yearly	P-t-P	10 MW	OTP	Bigstone	GRE	GREC	
75772457	MRES	Yearly	P-t-P	35 MW	OTP	Bigstone	WAUE	WAUE	
75772466	MRES	Yearly	P-t-P	25 MW	OTP	Bigstone	WAUE	WAUE	
75772475	MRES	Yearly	P-t-P	10 MW	OTP	Bigstone	WAUE	WAUE	
75772481	MRES	Yearly	P-t-P	5 MW	OTP	Bigstone	WAUE	WAUE	
75772484	MRES	Yearly	P-t-P	3 MW	OTP	Bigstone	WAUE	WAUE	
75772493	MRES	Yearly	P-t-P	1 MW	OTP	Bigstone	WAUE	WAUE	
75772583	MRES	Yearly	P-t-P	2 MW	OTP	Bigstone	WAUE	WAUE	
75772459	MRES	Yearly	P-t-P	1 MW	OTP	Bigstone	WAUE	WAUE.MRES	
75772464	MRES	Yearly	P-t-P	2 MW	OTP	Bigstone	WAUE	WAUE.MRES	
75772472	MRES	Yearly	P-t-P	3 MW	OTP	Bigstone	WAUE	WAUE.MRES	
75772476	MRES	Yearly	P-t-P	4 MW	OTP	Bigstone	WAUE	WAUE.MRES	
75772479	MRES	Yearly	P-t-P	5 MW	OTP	Bigstone	WAUE	WAUE.MRES	
75772482	MRES	Yearly	P-t-P	15 MW	OTP	Bigstone	WAUE	WAUE.MRES	
75772485	MRES	Yearly	P-t-P	25 MW	OTP	Bigstone	WAUE	WAUE.MRES	
75772491	MRES	Yearly	P-t-P	50 MW	OTP	Bigstone	WAUE	WAUE.MRES	
75772495	MRES	Yearly	P-t-P	100 MW	OTP	Bigstone	WAUE	WAUE.MRES	
75772522	MRES	Yearly	P-t-P	1 MW	OTP	Bigstone	OTP	OTP.MRES	
75772525	MRES	Yearly	P-t-P	2 MW	OTP	Bigstone	OTP	OTP.MRES	
75772595	MRES	Yearly	P-t-P	3 MW	OTP	Bigstone	OTP	OTP.MRES	
75772467	MRES	Yearly	P-t-P	4 MW	OTP	Bigstone	OTP	OTP.MRES	
75772473	MRES	Yearly	P-t-P	10 MW	OTP	Bigstone	OTP	OTP.MRES	
75772480	MRES	Yearly	P-t-P	20 MW	OTP	Bigstone	OTP	OTP.MRES	
75772488	MRES	Yearly	P-t-P	40 MW	OTP	Bigstone	OTP	OTP.MRES	
75772494	MRES	Yearly	P-t-P	70 MW	OTP	Bigstone	OTP	OTP.MRES	
75772496	MRES	Yearly	Network	82 MW	OTP	Bigstone	ALTW	ALTW.MRES	
75772498	MRES	Yearly	P-t-P	10 MW	OTP	Bigstone	NSP	NSP.MELR	
75772501	MRES	Yearly	P-t-P	5 MW	OTP	Bigstone	NSP	NSP.MELR	
75772504	MRES	Yearly	P-t-P	4 MW	OTP	Bigstone	NSP	NSP.MELR	
75772508	MRES	Yearly	P-t-P	3 MW	OTP	Bigstone	NSP	NSP.MELR	
75772512	MRES	Yearly	P-t-P	2 MW	OTP	Bigstone	NSP	NSP.MELR	
75772514	MRES	Yearly	P-t-P	1 MW	OTP	Bigstone	NSP	NSP.MELR	
75772499	MRES	Yearly	P-t-P	1 MW	OTP	Bigstone	MP	MP.STPL	
75772502	MRES	Yearly	P-t-P	2 MW	OTP	Bigstone	MP	MP.STPL	
75772505	MRES	Yearly	P-t-P	3 MW	OTP	Bigstone	MP	MP.STPL	
75772500	MRES	Yearly	P-t-P	4 MW	OTP	Bigstone	NSP	NSP.HILL	
75772506	MRES	Yearly	P-t-P	3 MW	OTP	Bigstone	NSP	NSP.HILL	
75772510	MRES	Yearly	P-t-P	2 MW	OTP	Bigstone	NSP	NSP.HILL	
75772515	MRES	Yearly	P-t-P	1 MW	OTP	Bigstone	NSP	NSP.HILL	
75772507	MRES	Yearly	P-t-P	10 MW	OTP	Bigstone	MP	MP.WDNA	
75772511	MRES	Yearly	P-t-P	1 MW	OTP	Bigstone	MP	MP.WDNA	
75772513	MRES	Yearly	P-t-P	2 MW	OTP	Bigstone	MP	MP.WDNA	
75772517	MRES	Yearly	P-t-P	3 MW	OTP	Bigstone	MP	MP.WDNA	
75772519	MRES	Yearly	P-t-P	4 MW	OTP	Bigstone	MP	MP.WDNA	
75772518	MRES	Yearly	P-t-P	30 MW	OTP	Bigstone	NSP	NSP	
75772521	MRES	Yearly	P-t-P	30 MW	OTP	Bigstone	NSP	NSP	
75772524	MRES	Yearly	P-t-P	20 MW	OTP	Bigstone	NSP	NSP	
75772597	MRES	Yearly	P-t-P	10 MW	OTP	Bigstone	NSP	NSP	
75772527	MRES	Yearly	P-t-P	4 MW	OTP	Bigstone	NSP	NSP	
75772529	MRES	Yearly	P-t-P	3 MW	OTP	Bigstone	NSP	NSP	
75772530	MRES	Yearly	P-t-P	2 MW	OTP	Bigstone	NSP	NSP	
75772531	MRES	Yearly	P-t-P	1 MW	OTP	Bigstone	NSP	NSP	
75772520	MRES	Yearly	P-t-P	10 MW	OTP	Bigstone	NSP	NSP.SAUK	
75772526	MRES	Yearly	P-t-P	4 MW	OTP	Bigstone	NSP	NSP.SAUK	
75772532	MRES	Yearly	P-t-P	3 MW	OTP	Bigstone	MPW	NSP.SAUK	POD should be NSP
75772533	MRES	Yearly	P-t-P	2 MW	OTP	Bigstone	NSP	NSP.SAUK	
75772534	MRES	Yearly	P-t-P	1 MW	OTP	Bigstone	NSP	NSP.SAUK	
75772535	MRES	Yearly	P-t-P	10 MW	OTP	Bigstone	NSP	NSP.STJM	
75772538	MRES	Yearly	P-t-P	5 MW	OTP	Bigstone	NSP	NSP.STJM	
75772539	MRES	Yearly	P-t-P	4 MW	OTP	Bigstone	NSP	NSP.STJM	
75772540	MRES	Yearly	P-t-P	2 MW	OTP	Bigstone	NSP	NSP.STJM	
75772541	MRES	Yearly	P-t-P	3 MW	OTP	Bigstone	NSP	NSP.STJM	
75772542	MRES	Yearly	P-t-P	1 MW	OTP	Bigstone	NSP	NSP.STJM	
75772471	MMPA	Yearly	P-t-P	25 MW	OTP	Bigstone	NSP	NSP.MMPA	
75772503	MMPA	Yearly	P-t-P	25 MW	OTP	Bigstone	NSP	NSP.MMPA	
75772523	MMPA	Yearly	P-t-P	50 MW	OTP	Bigstone	NSP	NSP.MMPA	
75772544	MMPA	Yearly	P-t-P	25 MW	OTP	Bigstone	NSP	NSP.MMPA	
75772546	MMPA	Yearly	P-t-P	25 MW	OTP	Bigstone	NSP	NSP.MMPA	
75772560	OTPW	Yearly	Network	50 MW	OTP	Bigstone	OTP	OTP	
75772562	OTPW	Yearly	Network	50 MW	OTP	Bigstone	OTP	OTP	
75772564	OTPW	Yearly	Network	25 MW	OTP	Bigstone	OTP	OTP	
75772565	OTPW	Yearly	Network	5 MW	OTP	Bigstone	OTP	OTP	
75772566	OTPW	Yearly	Network	5 MW	OTP	Bigstone	OTP	OTP	
75772567	OTPW	Yearly	Network	5 MW	OTP	Bigstone	OTP	OTP	
75772568	OTPW	Yearly	Network	5 MW	OTP	Bigstone	OTP	OTP	
75772569	OTPW	Yearly	Network	5 MW	OTP	Bigstone	OTP	OTP	
75773986	HUC	Yearly	P-t-P	50 MW	OTP	Bigstone	GRE	GREC	