

Appendix 10A

Minnesota's Final Consultation Report



Minnesota Pollution Control Agency

TO: Participants in the Northern Class I Areas Consultation Process

RE: Northern Class I Areas Consultation Conclusion

As you are aware, Minnesota is home to two federal Class I areas, Voyageurs National Park (VNP) and the Boundary Waters Canoe Area Wilderness (BWCAW), located in the northern portion of the state. Under the federal Regional Haze Rule (40 CFR 51.300-309), the State of Minnesota is required to work to improve visibility in these two areas, with a goal of no man-made visibility impairment by 2064.

Under the portion of the Regional Haze regulations at 40 CFR 51.308(d)(1)(iv), states with Class I areas are required to develop reasonable progress goals (RPG) for visibility improvement at their Class I areas and associated measures to meet those goals, in consultation with any other State or Tribe that may reasonably cause or contribute to visibility impairment in those areas. This letter provides information on how Minnesota intends to address the reasonable progress goals, identification of the states that cause or contribute to visibility impairment in Minnesota's Class I areas, and our expectations for continued coordination with those states on haze-reducing strategies.

Beginning in 2004 and 2005, a number of discussions were held between state and tribal representatives in the upper Midwest concerning air quality planning to address regional haze in the four Class I areas in Michigan and Minnesota. Formal discussions geared toward the State Implementation Plans (SIP) consultation requirements began in July 2006, in a conference call among representatives from Iowa, Michigan, Minnesota, North Dakota, Wisconsin, the Mille Lacs and Leech Lake bands of Ojibwe, and Federal Land Managers (FLM), Regional Planning Organization (RPO) and U.S. Environmental Protection Agency (EPA) personnel. It was decided that other potentially contributing states should be asked to participate in the consultation process, and that consultation should continue through ongoing conference calls during the development of the regional haze SIP. Minutes of the conference calls and other documentation can be found on the Lake Michigan Air Directors Consortium/Midwest Regional Planning Organization (LADCO/MRPO) Web site.¹

The group consulted on technical information, producing a document entitled *Regional Haze in the Upper Midwest: Summary of Technical Information*, which lays out the basic sources that cause and contribute to haze in the four Northern Class I areas, as agreed to by all the participating states.²

¹ http://www.ladco.org/Regional_haze_consultation.htm

² <http://www.ladco.org/Final%20Technical%20Memo%20-%20Version%205d1.pdf>

Based on the technical information contained in this document and other supporting analyses, Minnesota has determined that, in addition to Minnesota, Illinois, Iowa, Missouri, North Dakota, and Wisconsin are significant contributors to visibility impairment in VNP and the BWC AW. Attachment 1 to this letter provides a summary of how Minnesota reached this conclusion.³

The Minnesota Pollution Control Agency (MPCA) has not yet completed modeling to determine the RPG for these two Class I Areas. However, because of the varying timelines and different non-attainment issues impacting Minnesota and other contributing states, Minnesota intends to submit a RPG resulting from implementation of the minimum interim control measures Minnesota would consider to be reasonable. This decision reflects the need for more in-depth analysis before additional control measures can be determined to be reasonable. The RPG would be revised in the Five Year SIP Assessment to reflect final control measures.

In addition to on-the-books controls, such as the Clean Air Interstate Rule (CAIR), Minnesota expects the RPG to reflect Best Available Retrofit Technology (BART) determinations in Minnesota and surrounding states (where known), the plan for a 30 percent reduction in combined sulfur dioxide (SO_2) and nitrogen oxides (NO_x) emissions in Northeastern Minnesota, voluntary emission reductions planned by Minnesota utilities beyond those predicted from CAIR, and, where known, any additional control measures undertaken in other states for regional haze or attainment purposes. The MPCA expects that the modeling information needed to set the RPG would be available by October 2007.

Minnesota commits to evaluating additional control measures and implementing those that are reasonable under the four factors listed in 40 CFR 51.308(d)(1)(i)(A) in the 2008 SIP. Minnesota expects that additional control measures may be found to be reasonable, and commits to including a plan for implementation of those additional reasonable measures in the Five Year SIP Assessment. Minnesota asks the five other significantly contributing states to make these same commitments for further evaluation and implementation of reasonable control measures.

In particular, Minnesota asks Iowa, Missouri, North Dakota, and Wisconsin to evaluate further reductions of SO_2 from electric generating units (EGU) in order to reduce SO_2 emissions by 2018 to a rate that is more comparable to the rate projected in 2018 for Minnesota, approximately 0.25 lbs/mmBtu. Minnesota believes that Illinois is already in the process of meeting this goal. Emission reductions in Wisconsin are particularly important, as Wisconsin is the highest contributor outside Minnesota to visibility impairment in Minnesota's Class I areas.

Minnesota also asks North Dakota to evaluate the potential for reductions of NO_x from EGUs due to predicted higher NO_x emission rates compared with Minnesota and other contributing states. Illinois, Missouri, and Wisconsin are in the process of evaluating NO_x emission

³ Minnesota is relying primarily on data analysis and technical work done by MRPO and CENRAP.

reductions for their ozone SIPs. Minnesota would expect these three states to share information on the NO_x controls being undertaken as part of those ozone SIPs.

Minnesota acknowledges that each state is in a unique position; for example, North Dakota has a different regulatory background and a different fuel mix than other contributing states.

Minnesota's use of emission rates to point towards areas where additional emission control strategies should be investigated does not mean that Minnesota expects all the contributing states to achieve the same emission rates. However, the contributing states with higher emission rates should evaluate potential control measures, and should, in their initial SIPs or Five Year SIP Assessments, show either enforceable plans to reduce emissions or a rationale for why such emission reductions are not reasonable (e.g., an overly high cost in \$/ton or \$/deciview, or lack of visibility improvement).

Minnesota, in turn, also commits to a more detailed review of potential emission reductions from large Industrial, Commercial, and Institutional (ICI) Boilers and other point sources (such as reciprocating engines and turbines) with regulations or permit limits developed by 2013 and included in the Five Year SIP Assessment if control measures on these source categories appear to be reasonable. Minnesota asks the five contributing states to make a similar commitment.

It is the intent of Minnesota to proceed with the development and submittal of a Regional Haze Plan which includes the aforementioned RPG and expectations for contributing states. Minnesota commits to continuing work with the other states to review and analyze potential region-wide control strategies and emission reductions plans and to continue on-going assessments of progress towards visibility improvement goals.

Minnesota asks that any additional control measures found to be reasonable will be included in each state's SIP or Five Year SIP Assessment in an enforceable form. This will ensure that the control measures are on track to be implemented by the 2018 deadline for submittal of SIPs covering the second phase of the Regional Haze process.

Minnesota believes that the consultations conducted to date satisfy the consultation process requirements, providing for consistency between state SIPs and allowing each state to move forward with SIP preparation and submittal. As necessary, Minnesota will engage in future consultation to address any issues identified in the review of the Regional Haze SIPs, any additional technical information, and to ensure continued coordinated efforts among the Midwestern states.

Attached to this letter is an outline of the reasonable progress discussion to appear in our SIP and additional supporting tables and graphs.

In order to document the consultation process, the MPCA is asking that the State and Tribal recipients of this letter respond within 30 days with a letter documenting that these consultations have taken place to the satisfaction of your State or Tribe, or detailing areas where additional

consultation should occur. Those states that Minnesota has identified as additional contributing states should respond with your agreement or disagreement with the determination of contributing states and the additional controls strategies that will be evaluated.

Thank you for your participation and contributions in this consultation process. Your time and efforts are appreciated. If you require additional information regarding this matter, please contact John Seltz at 651-296-7801 or john.seltz@pca.state.mn.us.

Sincerely,

Brad Moore
Commissioner

Attachment 1: Supporting Technical Information – Determination of Contributing States

Minnesota used the LADCO 2002 – 2003 Trajectory Analyses and the LADCO 2018 PSAT analysis, using a 5% threshold of contribution from either analysis to either of Minnesota’s Class I areas, to define a contributing state. Based on this information, the States identified as contributing to visibility impairment in Minnesota’s Class I Areas are: Minnesota, Wisconsin, Illinois, Iowa, Missouri, and North Dakota.

The table below documents the percent contribution to visibility impairment by the States that have participated in the Northern Class I consultation process, estimated from 2000 – 2003 LADCO trajectory analysis, with supporting information from the CENRAP 2002 PSAT model of the 20% worst days.⁴

State Impacts on Minnesota’s Class I Areas – Baseline Period

LADCO Trajectory Analyses (2000-2003)		CENRAP PSAT Modeling (2002)	
	BWCAW	VNP	BWCAW
Michigan	0.7%	1.6%	2.6%
Minnesota	37.6%	36.9%	25.4%
Wisconsin	11.1%	9.7%	8.6%
Illinois	2.7%	1.2%	7.3%
Indiana	1.2%		3.8%
Iowa	7.4%	10.2%	3.9%
Missouri	3.3%	0.3%	2.7%
N. Dakota	5.9%	7.1%	4.8%
TOTAL	69.9%	67.0%	59.2%
			53.1%

The following table documents the percent contribution from these same states projected for the future based on LADCO’s 2018 Particulate Matter Source Apportionment Technology (PSAT) analysis, with supporting information from the CENRAP 2018 PSAT model of the 20% worst days.⁵ Although in some cases the percentage impacts predicted by CENRAP are lower than those predicted by the MRPO PSAT analysis (Iowa, Missouri), the identified states remain the higher contributors. The relative order of contributing states does not change much between 2002 and 2018.

⁴ Environ. (2007, July 18). *CENRAP PSAT Visualization Tool*. (Corrected Version). Available on the CENRAP Projects webpage

⁵ Ibid.

State Impacts on Minnesota's Class I Areas – Future Year (2018 PSAT)

LADCO PSAT Modeling (2018)		CENRAP PSAT Modeling (2018)	
	BWCAW	VNP	BWCAW
Michigan	2.6%	1.3%	2.2%
Minnesota	30.5%	35.0%	19.8%
Wisconsin	10.4%	6.3%	6.0%
Illinois	5.2%	3.0%	3.7%
Indiana	2.9%	1.6%	1.8%
Iowa	7.6%	7.4%	2.9%
Missouri	5.2%	4.3%	2.3%
N. Dakota	5.7%	10.3%	3.7%
TOTAL	70.1%	69.2%	42.5%
			33.3%

The states with contributions over 5% to the Class I areas in these analyses generally match well with the impacting states shown in the Area of Influence (AOI) analysis done by Alpine Geophysics for CENRAP.

AOIs for Minnesota's Class I Areas⁶



⁶ Stella, G.M et al. (2006, May 9). *CENRAP Regional Haze Control Strategy Analysis Plan*. Prepared by Alpine Geophysics. Available on the CENRAP Projects webpage <http://www.cenrap.org/projects.asp>

Attachment 2: Outline of an Approach to Defining Reasonable Progress for Minnesota Class I Areas in the Minnesota Regional Haze SIP

Under EPA rules, Minnesota has a responsibility to set a Reasonable Progress Goal (RPG) for visibility in the Boundary Waters and Voyageurs Park. Because the states that contribute to our Class I areas will submit their SIPs at different times, Minnesota sets forth the following proposal for setting a RPG for our two Class I areas. This document lays out the elements that we plan to include.

Minnesota's Long Term Strategy section will include those control strategies which we plan to undertake and which we consider to be reasonable. It will also include any known controls that are being undertaken in the nearby states, particularly the five states (IL, WI, ND, IA, and MO) that have been identified as contributors to BWCAW and VNP.

- Minnesota's LTS Contains
 - BART
 - For Minnesota: Minimal emission reductions
 - As known for other states
 - CAIR and resulting EGU reductions
 - For Minnesota
 - As known for other states
 - Control strategies for PM_{2.5} and Ozone attainment SIPs
 - As known for other states
 - Other federal on-the-books (OTB) controls:
 - Tier II for on-highway mobile sources
 - Heavy-duty diesel (2007) engine standards
 - Low sulfur fuel standards
 - Federal control programs for nonroad mobile sources
 - Additional Emission Limitations
 - NE Minnesota Plan (30% reduction in combined SO₂/NO_x as a fair share)
 - Additional voluntary reductions as a result of MN Statutes 216B.1692 (emission reduction rider)
 - Anything known for other states
 - Other long term strategy (LTS) Components (without specific emission reductions)
 - Measures to mitigate emissions from construction
 - Source retirement and replacement
 - Smoke management for prescribed burns in Minnesota

After documenting all the components of the LTS, Minnesota will lay out the RPG determined for the best and worst days at VNP and BWCAW.

Reasonable Progress Goals

Once determined, the RPG submitted in Minnesota's SIP will represent an interim, minimum visibility improvement Minnesota would consider to be reasonable, and contain emission reductions resulting from the elements of the long term strategy.

At this time, Minnesota believes that this is an appropriate goal because other impacting states are working on a multi-SIP approach and have yet to determine what reductions are reasonable in their states for both haze and attainment purposes. Although we cannot compel the states to undertake reductions, Minnesota would expect further emissions reductions than are documented here, resulting in larger visibility improvement. Minnesota intends to revise the RPG for 2018 in the Five Year SIP Assessment, in order to reflect the additional control strategies found to be reasonable.

Steps in Reviewing Control Strategies and Revising RPG

In reviewing additional control strategies to determine those that are reasonable under the Regional Haze rule, Minnesota will focus on strategies that will result in emission reductions in those states that are significant contributors to visibility impairment in either BWCAW or VNP: Minnesota, Wisconsin, Iowa, N. Dakota, Missouri and Illinois.

The MPCA commits to further evaluation of reasonable control strategies that are possible within Minnesota. Minnesota will work with the other contributing states through their submittals of the first haze SIP and through 2013 to develop reasonable control strategies.

In the Five Year SIP Assessment, the MPCA would submit enforceable documents for any additional control measures found to be reasonable within Minnesota. In addition, that report would contain a listing of the additional control measures to be implemented by the other contributing states. Minnesota would then submit modeling that includes all these enforceable measures and would revise the 2018 RPG to reflect the larger degree of visibility improvement expected from the chosen control strategies.

Specific Control Strategies to Be Reviewed

Minnesota will use the EC/R five factor analysis report, the control cost analysis carried out by Alpine Geophysics for CENRAP and the CENRAP Control Sensitivity Model run to identify reasonable region-wide emission reduction strategies. (*See Attachment 3*).

The specific strategies that at this time appear to potentially be reasonable, and Minnesota's expectation for each of these strategies for other states, are outlined below.

EGU SO₂ Reductions

Minnesota will ask the contributing states to look at their EGU emissions of SO₂; Minnesota will particularly focus on possible reductions in states with emission rates that appear to be higher than the average among the Midwestern states. Since contributor states face a variety of regulatory demands and fuel types, it may not be possible to attain uniform emission performance. An emission rate of about 0.25 lb/mmBTU should be achievable in a cost-effective manner; this is the level being achieved in Minnesota and Illinois, and the EC/R report

shows that the “EGU1” scenario, a 0.15 lb/mmBTU emission rate, is generally achievable in the Midwest at a reasonable \$/ton figure. (See Attachment 3).

Minnesota asks the identified states to demonstrate that reductions are occurring or being undertaken that will allow the state to reach at least the 0.25 lb/mmBTU emission rate, or to describe in their SIPs or Five-Year SIP Assessments why further reductions of SO₂ from EGU are not reasonable. Further reductions may not be reasonable due to the cost of implementation in \$/ton or \$/deciview or lack of impact on visibility impairment, but they should be evaluated.

At present, it appears as though Illinois has planned or proposed reductions that appear reasonable. It appears that more cost effective reductions are possible in Iowa, Missouri, North Dakota, and Wisconsin. Since Wisconsin is the largest non-Minnesota contributor to Minnesota’s Class I areas, their efforts to reduce EGU SO₂ emissions are particularly important.

EGU NO_x Reductions

Wisconsin, Missouri, and Illinois have already reduced NO_x emissions to alleviate ozone standard violations, and Iowa appears to already have relatively low EGU NO_x emissions.

Minnesota will ask North Dakota to look at their EGU emissions of NO_x and to describe in their SIP or Five-Year SIP Assessment why further reductions of NO_x from EGU are not reasonable. Again, an emission rate of approximately 0.25 lb/mmBTU appears to be a reasonable benchmark. Further reductions may not be reasonable due to the cost of implementation in \$/ton or \$/deciview or lack of impact on visibility impairment, but they should be evaluated.

ICI Boiler Emission Reductions

Minnesota will commit to a more detailed review of potential NO_x and SO₂ reductions from large ICI boilers. Regulations or permit limits will be developed by 2013 if significant cost effective reductions prove feasible from this sector. Minnesota will expect the five contributing states to make at least this level of commitment.

Other Point Source Emission Reductions

Reciprocating engines and turbines appear to be a sector with potential cost effective NO_x controls. Minnesota commits to review this sector in more detail and if, after consideration of planned federal control programs, cost effective reductions appear feasible, Minnesota commits to develop regulations or permit limits for major sources by 2013. Minnesota will expect the five contributing states to make a similar commitment.

Mobile Source Emission Reductions

There appear to be relatively few cost effective NO_x controls for transportation available to states. Minnesota commits to work with LADCO states to implement appropriate cost effective NO_x controls to improve visibility and lower ozone levels in non-attainment areas.

NO_x Modeling, Ammonia, Agricultural Sources

It is not appropriate to commit to control of ammonia sources at this time. However, there is a clear need to improve 1) our understanding of the role of ammonia in haze formation, 2) our understanding of potential ammonia controls, and 3) the accuracy of particulate nitrate

predictions. Minnesota does not consider it our responsibility to conduct such research. Minnesota therefore encourages EPA and the regional planning organizations to continue work in these areas and commits to work with EPA and the RPOs to these ends.

Timeline for Reviewing Control Strategies

Minnesota commits to reviewing these control strategies on such a timeline that the 2013 SIP Report will include the four factor analysis for these control strategies, and that any control strategies deemed to be reasonable will be in place with an enforceable document (state rule, order, or permit conditions). Although any control measures ultimately deemed to be reasonable may not be fully implemented by 2013, they will be clearly “on the way” and the SIP Report will include estimates of emission reductions and projected 2018 visibility conditions.

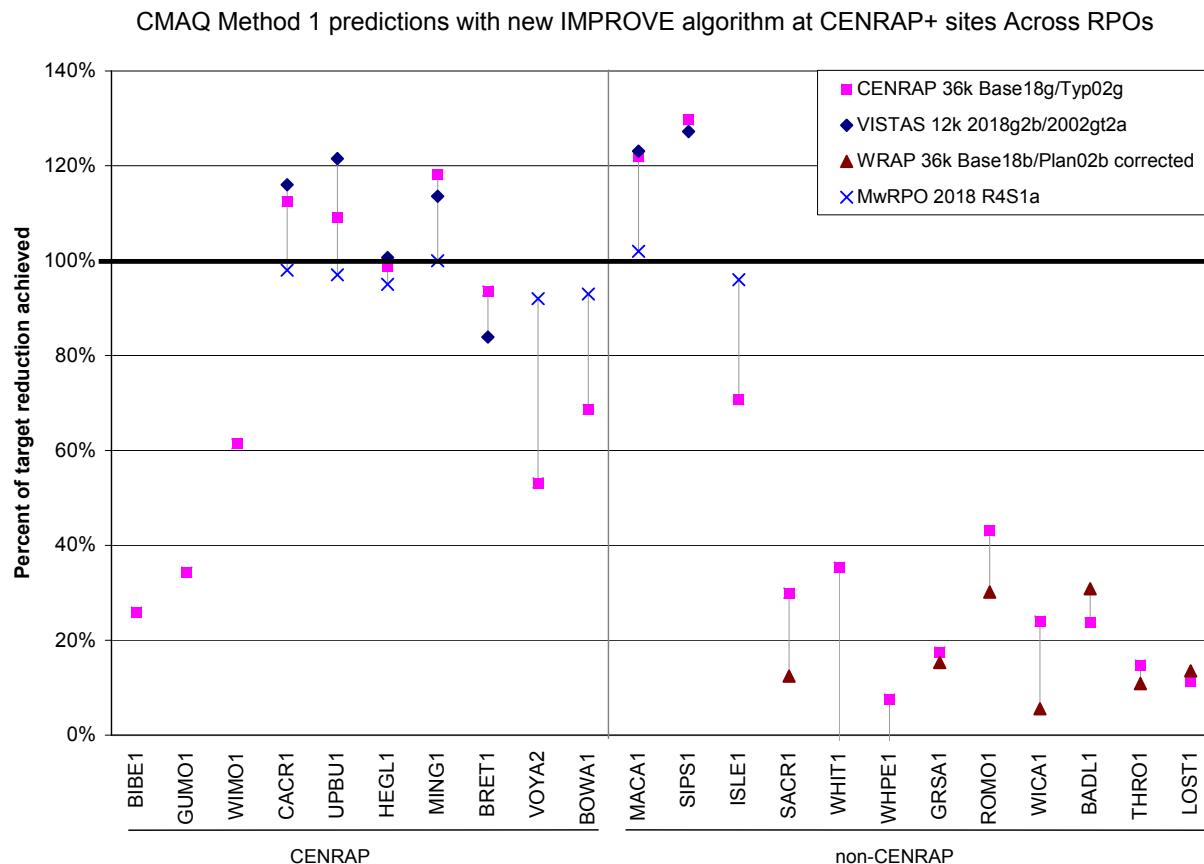
Acknowledging that most states are far along in the process of writing their Regional Haze SIPs, Minnesota would expect that all other contributing states would commit to a timeline that would allow reasonable predictions of the emission reductions and visibility improvement by 2018 from those states in the 2013 SIP Report.

Attachment 3: Supporting Technical Information – Need for Additional Control Strategies

Although there are some fairly major differences in the degree of visibility improvement expected at VNP and BWCAW due to on- the- books controls, projections by both CENRAP and Midwest RPO show that Minnesota's Class I areas are not yet projected to meet the Uniform Rate of Progress, as shown in the graph below.⁷ In this graph, the URP is the “target reduction.”

EPA’s recent guidance on determining the reasonable progress goal (RPG) indicates that states may set a RPG that provides for more, less, or equivalent improvement as the URP. However, the guidance continues to emphasize that an analysis of control strategies with the four factors is necessary; Minnesota believes this is particularly true in light of the lesser degree of visibility improvement shown from on- the- books controls in Minnesota’s Class I Areas.

The EGU 2018 Summary table, following, shows projected 2018 EGU SO₂ and NOX emissions. Highlighted cells indicate specific states and pollutants of concerns, where Minnesota has requested evaluation of potential reasonable control measures.⁸



⁷ Morris, R. (2007, July 24). *CENRAP Emissions and Modeling Technical Support Document*, Prepared by Environ. Presentation Given at CENRAP Workgroup/POG Meeting.

⁸ Provided by Midwest RPO from the IPM 3.0 base run and edits made by certain states.

EGU Summary for 2018

	Heat Input (MMBTU/year)	Scenario	SO2 (tons/year)	SO2 % Reduction (From 2001 - 03 Average)	SO2 (lb/MMBTU)	NOx (tons/year)	NOx % Reduction (From 2001 - 03 Average)	NOx (lb/MMBTU)
IL	980,197,198	2001 - 2003 (average)	362,417		0.74	173,296		0.35
	1,310,188,544	IPM3.0 (base)	277,337	23.5	0.423	70,378	59.4	0.107
		IPM3.0 - will do	140,296	61.3	0.214	62,990	63.7	0.096
		IPM3.0 - may do	140,296	61.3	0.214	62,990	63.7	0.096
IA	390,791,671	2001 - 2003 (average)	131,080		0.67	77,935		0.40
	534,824,314	IPM3.0 (base)	115,938	11.6	0.434	59,994	23.0	0.224
		IPM3.0 - will do	115,938	11.6	0.434	59,994	23.0	0.224
		IPM3.0 - may do	100,762	23.1	0.377	58,748	24.6	0.220
MN	401,344,495	2001 - 2003 (average)	101,605		0.50	85,955		0.42
	447,645,758	IPM3.0 (base)	61,739	39.2	0.276	41,550	51.7	0.186
		IPM3.0 - will do	54,315	46.5	0.243	49,488	42.4	0.221
		IPM3.0 - may do	51,290	49.5	0.229	39,085	54.5	0.175
MO	759,902,542	2001 - 2003 (average)	241,375		0.63	143,116		0.37
	893,454,905	IPM3.0 (base)	243,684	(1.0)	0.545	72,950	49.0	0.163
		IPM3.0 - will do	237,600	1.6	0.532	72,950	49.0	0.163
		IPM3.0 - may do	237,600	1.6	0.532	72,950	49.0	0.163
ND	339,952,821	2001 - 2003 (average)	145,096		0.85	76,788		0.45
	342,685,501	IPM3.0 (base)	41,149	71.6	0.240	44,164	42.5	0.258
		IPM3.0 - will do	56,175	61.3	0.328	58,850	23.4	0.343
		IPM3.0 - may do	56,175	61.3	0.328	58,850	23.4	0.343
WI	495,475,007	2001 - 2003 (average)	191,137		0.77	90,703		0.36
	675,863,447	IPM3.0 (base)	127,930	33.1	0.379	56,526	37.7	0.167
		IPM3.0 - will do	150,340	21.3	0.445	55,019	39.3	0.163
		IPM3.0 - may do	62,439	67.3	0.185	46,154	49.1	0.137

Minnesota also used the cost-curve analysis performed for CENRAP by Alpine Geophysics, originally included in the *CENRAP Regional Haze Control Strategy Analysis Plan* and updated in March 2007, to determine which states might have additional reasonable control strategies. The cost curves were used to perform a modeling run (the “Control Sensitivity Run”) in order to determine the visibility improvement that could result from implementing certain control strategies.⁹

The following tables show which point sources are controlled in the CENRAP states that the MPCA has identified as contributing to visibility impairment in BWCAW and VNP (Iowa, Minnesota, Missouri) under the following assumptions: 1) a cost less than \$5000/ton, and 2) facility emissions divided by the facility’s distance from any Class I area, is greater than or equal to five (often called the Q/5D criteria). The tables include sources that are within Q/5D of either VNP or BWCAW.

The report prepared for the MPCA and Midwest RPO by EC/R, entitled “Reasonable Progress for Class I Areas in the Northern Midwest – Factor Analysis,” also provides documentation that the various control strategies mentioned in Attachment 2 are likely to be reasonable, at least for some states. A summary table follows the tables of units controlled in the CENRAP control sensitivity run.¹⁰

⁹ Information on the Control Sensitivity run is available on CENRAP’s Project website, <http://www.cenrap.org/projects.asp>, under the link entitled *Results from Control Sensitivity Run, Base18Gc1 - Cost Curve Criteria of 5k per ton, Q over 5D*

¹⁰ Battye, W. et al (2007, July 18). Reasonable Progress for Class I Areas in the Northern Midwest – Factor Analysis. Prepared for MPCA and MRPO by EC/R. http://www.ladco.org/MRPO%20Report_071807.pdf. See Table 6.5-3, page 110.

NO_x Controls, Q/5D for BWCAW and VNP

State	County	Plant Name	Point ID	Source Type for Control	Control Measure	Tons Reduced	Annualized Cost (\$2005)	Cost Per Ton Reduced
Iowa	Woodbury	MIDAMERICAN ENERGY CO. - GEORGE NEAL NOR	148766	Utility Boiler - Coal/Wall	SCR	3739	\$5,252,502	\$1,405
Iowa	Woodbury	MIDAMERICAN ENERGY CO. - GEORGE NEAL SOU	147140	Utility Boiler - Coal/Wall - Other Coal	LNBO	1191	\$2,900,440	\$2,435
Iowa	Wapello	IPL - OTTUMWA GENERATING STATION	143977	Utility Boiler - Coal/Tangential	SCR	4708	\$13,000,038	\$2,761
Iowa	Pottawattamie	MIDAMERICAN ENERGY CO. - COUNCIL BLUFFS	143798	Utility Boiler - Coal/Wall - Other Coal	LNBO	671	\$2,960,866	\$4,413
Minnesota	Cook	MINNESOTA POWER - TACONITE HARBOR ENERGY	EU001	Utility Boiler - Coal/Tangential	SCR	411	\$1,536,959	\$3,737
Minnesota	Cook	MINNESOTA POWER - TACONITE HARBOR ENERGY	EU002	Utility Boiler - Coal/Tangential	SCR	411	\$1,574,337	\$3,828
Minnesota	Cook	MINNESOTA POWER - TACONITE HARBOR ENERGY	EU003	Utility Boiler - Coal/Tangential	SCR	411	\$1,592,948	\$3,873
Minnesota	Itasca	MINNESOTA POWER INC - BOSWELL ENERGY CTR	EU004	Utility Boiler - Coal/Tangential - POD10	LNC3	806	\$1,413,275	\$1,753
Minnesota	Itasca	MINNESOTA POWER INC - BOSWELL ENERGY CTR	EU003	Utility Boiler - Coal/Tangential - POD10	LNC3	600	\$884,162	\$1,474
Minnesota	Koochiching	Boise Cascade Corp - International Falls	EU320	Sulfate Pulping - Recovery Furnaces	SCR	361	\$939,170	\$2,603
Minnesota	St. Louis	MINNESOTA POWER INC - LASKIN ENERGY CTR	EU001	Utility Boiler - Coal/Tangential	SCR	1064	\$1,346,571	\$1,265
Minnesota	St. Louis	MINNESOTA POWER INC - LASKIN ENERGY CTR	EU002	Utility Boiler - Coal/Tangential	SCR	1063	\$1,346,571	\$1,267
Minnesota	St. Louis	EVTAC Mining - Fairlane Plant	EU042	ICI Boilers - Coke	SCR	1365	\$3,142,325	\$2,302
Minnesota	Sherburne	NSP - SHERBURNE GENERATING PLANT	EU002	Utility Boiler - Coal/Tangential - POD10	LNC3	998	\$1,873,316	\$1,877
Minnesota	Sherburne	NSP - SHERBURNE GENERATING PLANT	EU001	Utility Boiler - Coal/Tangential - POD10	LNC3	701	\$1,880,449	\$2,682
Missouri	Pike	HOLCIM (US) INC- CLARKSVILLE	16745	Cement Manufacturing - Wet	Mid-Kiln Firing	1808	\$149,510	\$83
Missouri	Randolph	ASSOCIATED ELECTRIC COOPERATIVE INC-THOM	17575	Utility Boiler - Coal/Wall - Other Coal	LNBO	682	\$3,114,256	\$4,563

SO₂ Controls, Q/5D for BWCAW or VNP

State	County	Plant Name	Point ID	Source Type for Control	Control Measure	Tons Reduced	Annualized Cost (\$2005)	Cost Per Ton Reduced
Iowa	Muscatine	CENTRAL IOWA POWER COOP. - FAIR STATION	100125	Utility Boilers - Medium Sulfur Content	FGD Wet Scrubber	4504	\$5,854,468	\$1,300
Iowa	Woodbury	MIDAMERICAN ENERGY CO. - GEORGE NEAL NOR	148766	Utility Boilers - Medium Sulfur Content	FGD Wet Scrubber	11440	\$20,886,351	\$1,826
Iowa	Woodbury	MIDAMERICAN ENERGY CO. - GEORGE NEAL NOR	148765	Utility Boilers - Medium Sulfur Content	FGD Wet Scrubber	7020	\$13,365,237	\$1,904
Iowa	Woodbury	MIDAMERICAN ENERGY CO. - GEORGE NEAL SOU	147140	Utility Boilers - Medium Sulfur Content	FGD Wet Scrubber	14255	\$35,558,570	\$2,494
Iowa	Wapello	IPL - OTTUMWA GENERATING STATION	143977	Utility Boilers - Medium Sulfur Content	FGD Wet Scrubber	15894	\$40,687,209	\$2,560
Iowa	Louisa	MIDAMERICAN ENERGY CO. - LOUISA STATION	147281	Utility Boilers - Medium Sulfur Content	FGD Wet Scrubber	12964	\$36,698,267	\$2,831
Iowa	Pottawattamie	MIDAMERICAN ENERGY CO. - COUNCIL BLUFFS	143798	Utility Boilers - Medium Sulfur Content	FGD Wet Scrubber	12141	\$36,299,373	\$2,990
Iowa	Des Moines	IPL - BURLINGTON GENERATING STATION	145381	Utility Boilers - Medium Sulfur Content	FGD Wet Scrubber	5384	\$17,059,783	\$3,169
Iowa	Allamakee	IPL - LANSING GENERATING STATION	145136	Utility Boilers - Medium Sulfur Content	FGD Wet Scrubber	5926	\$19,213,055	\$3,242
Iowa	Clinton	IPL - M.L. KAPP GENERATING STATION	144559	Utility Boilers - Medium Sulfur Content	FGD Wet Scrubber	5036	\$17,331,069	\$3,441
Iowa	Linn	IPL - PRAIRIE CREEK GENERATING STATION	144096	Utility Boilers - Medium Sulfur Content	FGD Wet Scrubber	3753	\$13,730,673	\$3,658
Minnesota	Itasca	MINNESOTA POWER INC - BOSWELL ENERGY CTR	EU001	Utility Boilers - Medium Sulfur Content	FGD Wet Scrubber	2329	\$9,472,980	\$4,068
Minnesota	Itasca	MINNESOTA POWER INC - BOSWELL ENERGY CTR	EU002	Utility Boilers - Medium Sulfur Content	FGD Wet Scrubber	2315	\$9,472,980	\$4,092
Minnesota	Itasca	MINNESOTA POWER INC - BOSWELL ENERGY CTR	EU004	Utility Boilers - Medium Sulfur Content	FGD Wet Scrubber	7403	\$30,486,914	\$4,118
Missouri	Clay	INDEPENDENCE POWER AND LIGHT-MISSOURI CI	5430	Utility Boilers - Very High Sulfur Content	FGD Wet Scrubber	8058	\$6,232,581	\$774
Missouri	Franklin	AMERENUE-LABADIE PLANT	6964	Utility Boilers - Medium Sulfur Content	FGD Wet Scrubber	14741	\$34,190,931	\$2,319

State	County	Plant Name	Point ID	Source Type for Control	Control Measure	Tons Reduced	Annualized Cost (\$2005)	Cost Per Ton Reduced
Missouri	Franklin	AMERENUE-LABADIE PLANT	7408	Utility Boilers - Medium Sulfur Content	FGD Wet Scrubber	14988	\$34,874,750	\$2,327
Missouri	Franklin	AMERENUE-LABADIE PLANT	7262	Utility Boilers - Medium Sulfur Content	FGD Wet Scrubber	14912	\$34,874,750	\$2,339
Missouri	Jefferson	AMERENUE-RUSH ISLAND PLANT	11565	Utility Boilers - Medium Sulfur Content	FGD Wet Scrubber	13979	\$32,994,250	\$2,360
Missouri	Franklin	AMERENUE-LABADIE PLANT	7087	Utility Boilers - Medium Sulfur Content	FGD Wet Scrubber	14285	\$34,019,977	\$2,382
Missouri	Henry	KANSAS CITY POWER & LIGHT CO-MONTROSE GE	7847	Utility Boilers - Medium Sulfur Content	FGD Wet Scrubber	6362	\$15,425,097	\$2,425
Missouri	Henry	KANSAS CITY POWER & LIGHT CO-MONTROSE GE	7849	Utility Boilers - Medium Sulfur Content	FGD Wet Scrubber	6191	\$15,134,675	\$2,445
Missouri	Jefferson	AMERENUE-RUSH ISLAND PLANT	11563	Utility Boilers - Medium Sulfur Content	FGD Wet Scrubber	13276	\$32,994,250	\$2,485
Missouri	Henry	KANSAS CITY POWER & LIGHT CO-MONTROSE GE	7848	Utility Boilers - Medium Sulfur Content	FGD Wet Scrubber	5928	\$14,840,835	\$2,504
Missouri	St. Louis	AMERENUE-MERAMEC PLANT	21421	Utility Boilers - Medium Sulfur Content	FGD Wet Scrubber	8494	\$21,733,761	\$2,559
Missouri	St. Louis	ANHEUSER-BUSCH INC-ST. LOUIS	20274	Bituminous/Subbituminous Coal (Industrial Boilers)	SDA	1996	\$5,303,934	\$2,658
Missouri	Platte	KANSAS CITY POWER & LIGHT CO-IATAN GENER	16912	Utility Boilers - Medium Sulfur Content	FGD Wet Scrubber	14332	\$38,179,875	\$2,664
Missouri	Jackson	AQUILA INC-SIBLEY GENERATING STATION	9953	Utility Boilers - Medium Sulfur Content	FGD Wet Scrubber	9166	\$24,430,935	\$2,665
Missouri	St. Louis	AMERENUE-MERAMEC PLANT	21423	Utility Boilers - Medium Sulfur Content	FGD Wet Scrubber	7081	\$19,721,240	\$2,785
Missouri	Randolph	ASSOCIATED ELECTRIC COOPERATIVE INC-THOM	17575	Utility Boilers - Medium Sulfur Content	FGD Wet Scrubber	9469	\$38,179,875	\$4,032
Missouri	New Madrid	ASSOCIATED ELECTRIC COOPERATIVE INC-NEW	14944	Utility Boilers - Medium Sulfur Content	FGD Wet Scrubber	8132	\$33,051,234	\$4,064
Missouri	New Madrid	ASSOCIATED ELECTRIC COOPERATIVE INC-NEW	14942	Utility Boilers - Medium Sulfur Content	FGD Wet Scrubber	8026	\$33,051,234	\$4,118
Missouri	Jefferson	DOE RUN COMPANY-HERCULANEUM SMELTER	11722	Primary Metals Industry	Sulfuric Acid Plant	10653	\$46,396,391	\$4,355

Table 6.5-3. Summary of Visibility Impacts and Cost Effectiveness of Potential Control Measures

Emission category	Control strategy	Region	Pollutant	Average estimated visibility improvement for the four Midwest Class I areas (deciviews)	Cost effectiveness (\$/ton)	Cost effectiveness per visibility improvement (\$million/deciview)
EGU	EGU1	3-State	SO2	0.32	1,540	2,249
			NOX	0.06	2,037	2,585
		9-State	SO2	0.74	1,743	2,994
			NOX	0.17	1,782	2,332
	EGU2	3-State	SO2	0.41	1,775	2,281
			NOX	0.09	3,016	3,604
		9-State	SO2	0.85	1,952	3,336
			NOX	0.24	2,984	4,045
ICI boilers	ICI1	3-State	SO2	0.055	2,992	1,776
			NOX	0.043	2,537	1,327
		9-State	SO2	0.084	2,275	2,825
			NOX	0.068	1,899	2,034
		ICI Workgroup	SO2	0.089	2,731	1,618
			NOX	0.055	3,814	1,993
			SO2	0.136	2,743	3,397
			NOX	0.080	2,311	2,473
			NOX	0.015	538	282
Reciprocating engines and turbines	Reciprocating engines emitting 100 tons/year or more	9-State	NOX	0.052	506	542
		Turbines emitting 100 tons/year or more	3-State	NOX	0.008	754
		9-State	NOX	0.007	754	395
		Reciprocating engines emitting 10 tons/year or more	3-State	NOX	0.037	1,286
		9-State	NOX	0.073	1,023	673
		Turbines emitting 10 tons/year or more	3-State	NOX	0.011	1,023
		9-State	NOX	0.012	800	419
		NOX	0.012	819	880	880
Agricultural sources	10% reduction	3-State	NH3	0.10	31 - 2,700	8 - 750
		9-State	NH3	0.16	31 - 2,700	18 - 1,500
	15% reduction	3-State	NH3	0.15	31 - 2,700	8 - 750
		9-State	NH3	0.25	31 - 2,700	18 - 1,500
Mobile sources	Low-NOX Reflash	3-State	NOX	0.007	241	516
		9-State	NOX	0.010	241	616
	MCDI	3-State	NOX	0.015	10,697	7,595
		9-State	NOX	0.015	2,408	4,146
	Anti-Idling	3-State	NOX	0.009	(430) - 1,700	(410) - 1,600
		9-State	NOX	0.006	(430) - 1,700	(410) - 1,600
	Cetane Additive Program	3-State	NOX	0.009	4,119	3,155
		9-State	NOX	0.008	4,119	10,553

Attachment 4: Organizations Participating in Northern Class I Consultation Process

States and Provinces

Illinois Environmental Protection Agency
Indiana Department of Environmental Management
Iowa Department of Natural Resources
Michigan Department of Environmental Quality
Minnesota Pollution Control Agency
Missouri Department of Natural Resources
North Dakota Department of Health
Wisconsin Department of Natural Resources
Ontario Ministry of the Environment

Tribes

Leech Lake Band of Ojibwe
Fond du Lac Band of Lake Superior Chippewa
Mille Lacs Band of Ojibwe
Upper and Lower Sioux Community
Red Lake Band of Chippewa
Grand Portage Band of Chippewa
Nottawaseppi Huron Band of Potawatomi

Regional Planning Organizations

Midwest Regional Planning Organization
Central Regional Air Planning Association

Federal Government

USDA Forest Service
U.S. Fish and Wildlife Service
National Park Service
USDA Forest Service
Environmental Protection Agency, Region 5

Appendix 10B

Conceptual Model - Causes of Haze in Seney Wilderness Area

Conceptual Model - Causes of Haze in Seney Wilderness Area (SENE1)

Regional sulfate and sulfate transported from the eastern United States are the major causes of haze in the Seney Wilderness Area during the warm seasons. Secondary nitrate from the central U.S. is responsible for most of the haze in the cold seasons.

As shown in Figure 1, Seney Wilderness Area is located in Michigan's Upper Peninsula. The IMPROVE site is located at an elevation of 78 m MSL. Based on all the valid aerosol measurements during 2000-2004 in SENE1, the average PM_{2.5} mass concentration is 5.0 µg/m³. The average total light extinction coefficient (B_{ext}) is 51.6 Mm⁻¹ (Visual Range ~ 122 Km; Deciview ~ 14). The average contributions of the major aerosol components to Seney haze are particulate sulfate 42.0%, nitrate 16.2%, organic matter (OMC) 11.8%, elemental carbon (light absorbing carbon, LAC) 3.7%, fine soil 0.5%, sea salt 0.2%, and coarse mass (CM) 2.3%.

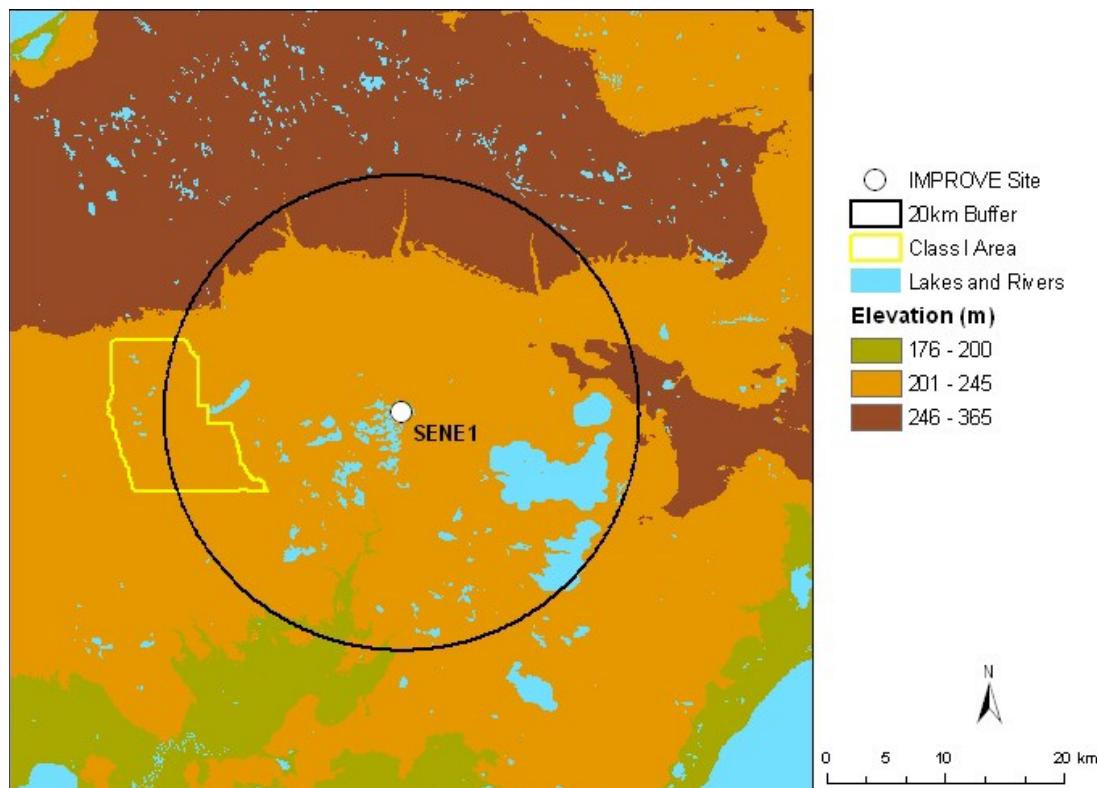


Figure 1. Terrain and land features surrounding the Seney Wilderness Area

Sulfate is the largest aerosol contributor to light extinction during the 20% worst days, with a contribution of ~ 51%. Nitrate also contributes about 23% to light extinction during the 20% worst visibility days. Figure 2 suggests that the highest occurrence of the 20% worst days happened in the summer from June to August, in which ~ 30% of the sampling days are the 20% haziest days at Seney. As shown in Figure 3, in the 20% worst

visibility days, sulfate is the largest aerosol contributor to haze during the warm months (with a contribution of more than 60% from April to September), while nitrate is the largest contributor during the cold months (with a contribution of ~ 40 - 70% during January to March and November to December). Figure 4 indicates that during the 20% best days, air usually comes from north of the site; while during the 20% worst haze days, air usually comes from south of the site.

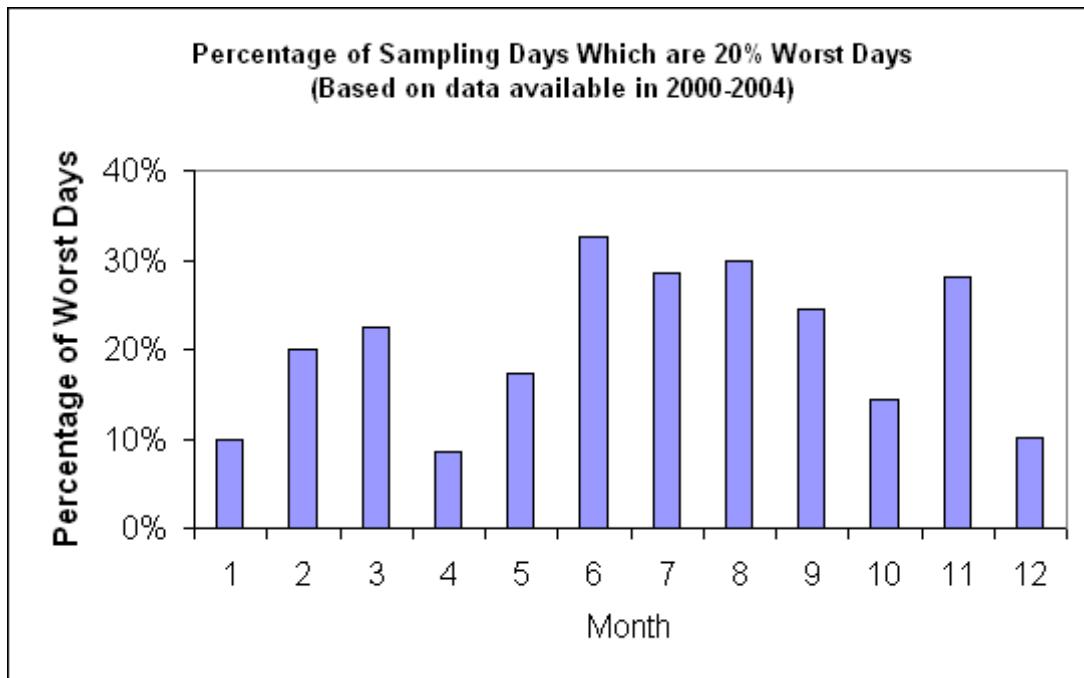


Figure 2. Percentage of sampling days that are 20% worst days in each month

Based on the PMF receptor modeling, eight source factors are identified for SENE1. Figure 5 illustrates the contribution of each PMF resolved source factor to PM_{2.5} mass at the site. Sulfate-rich secondary aerosol is the biggest contributor to PM_{2.5} mass, with a contribution of ~43%, followed by biomass burning smoke (20%), and nitrate-rich secondary (14%). Difference maps of the PMF factor score weighted and un-weighted residence times (Figure 6) suggest that secondary sulfate mainly transports from Midwest states, while smoke is mostly from biomass burning close-by and secondary nitrate is mostly from the central U.S.

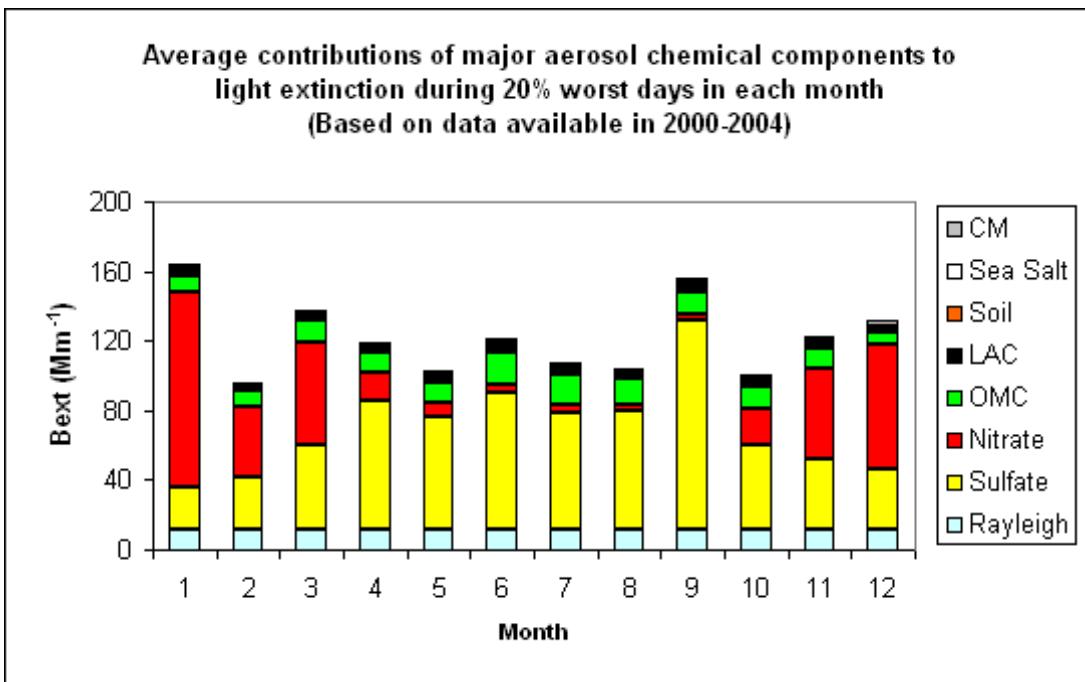


Figure 3. Average contributions of major aerosol chemical components to light extinction during 20% worst days in each month

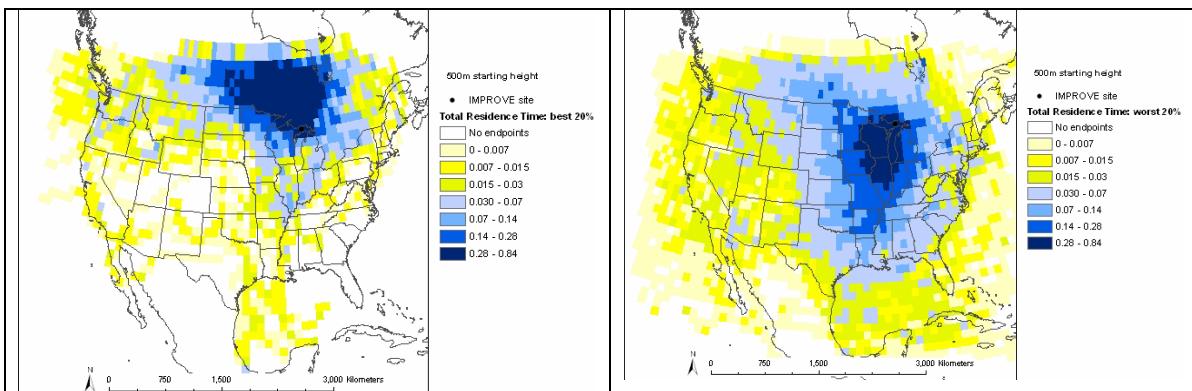


Figure 4. Normalized residence time for 20% best (left) and 20% worst (right) days (air mostly transported from the blue area under the given sampling days)

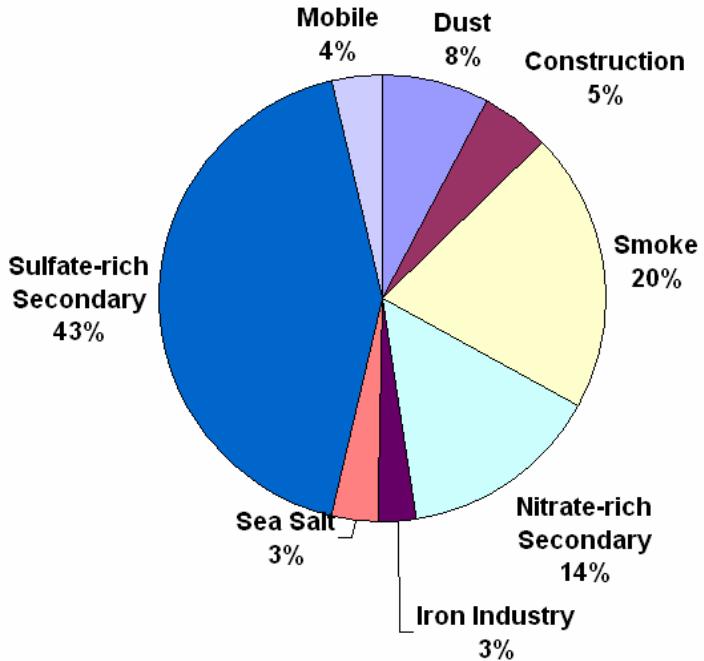


Figure 5. Average contributions of PMF resolved source factors to PM2.5 mass concentration.

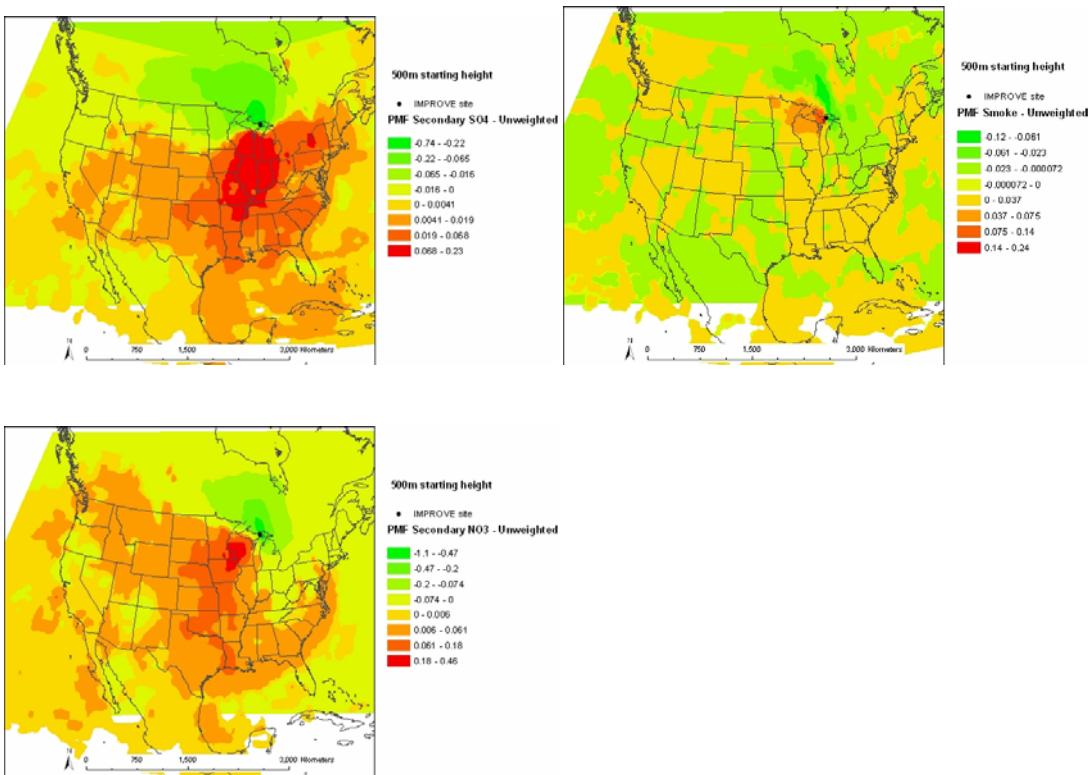
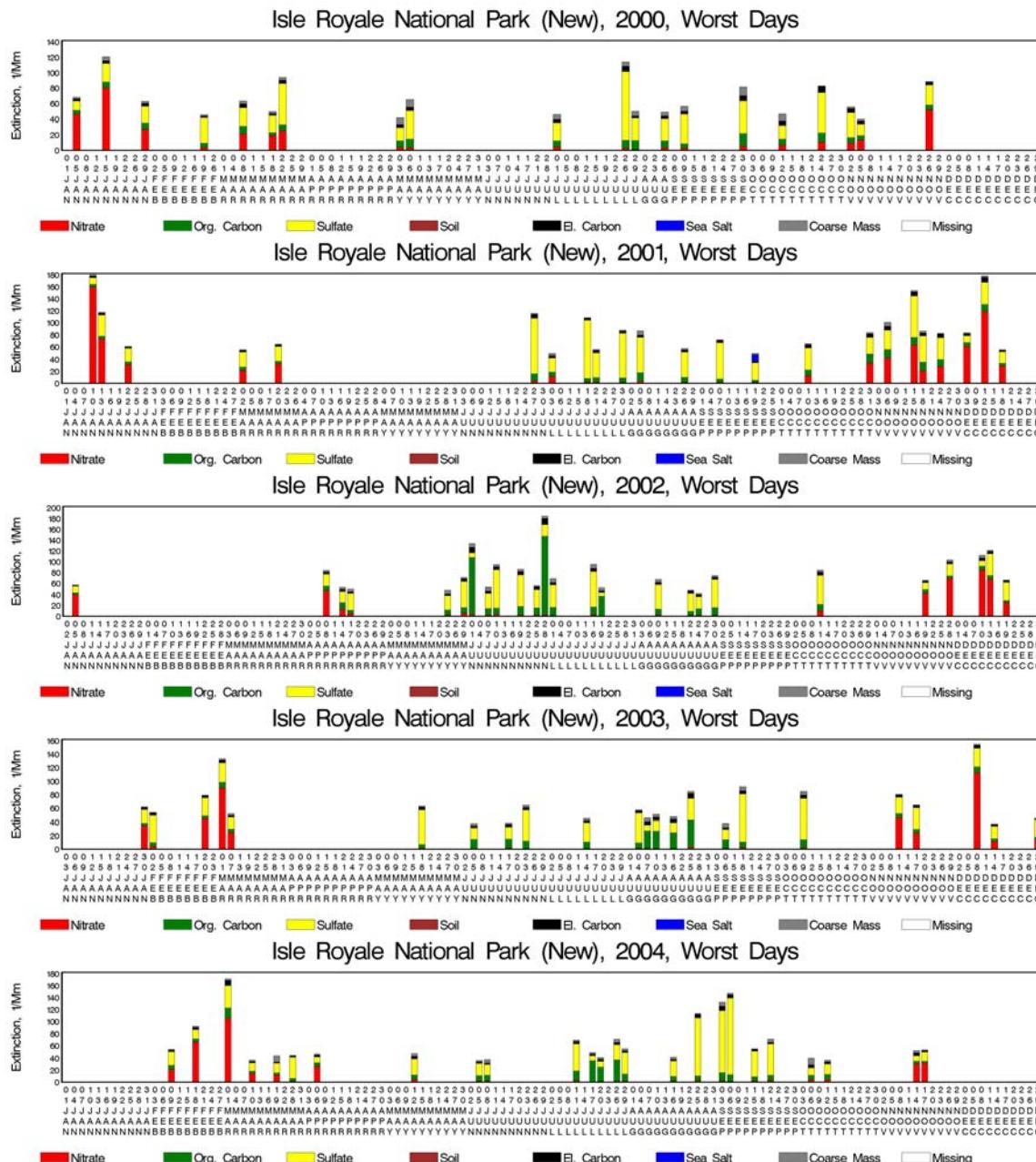


Figure 6. Difference maps of the PMF source factor (sulfate-rich secondary source factor on the top left, biomass smoke source factor on the top right, and nitrate-rich secondary on the bottom left) weighted and un-weighted residence times.

Appendix 10C

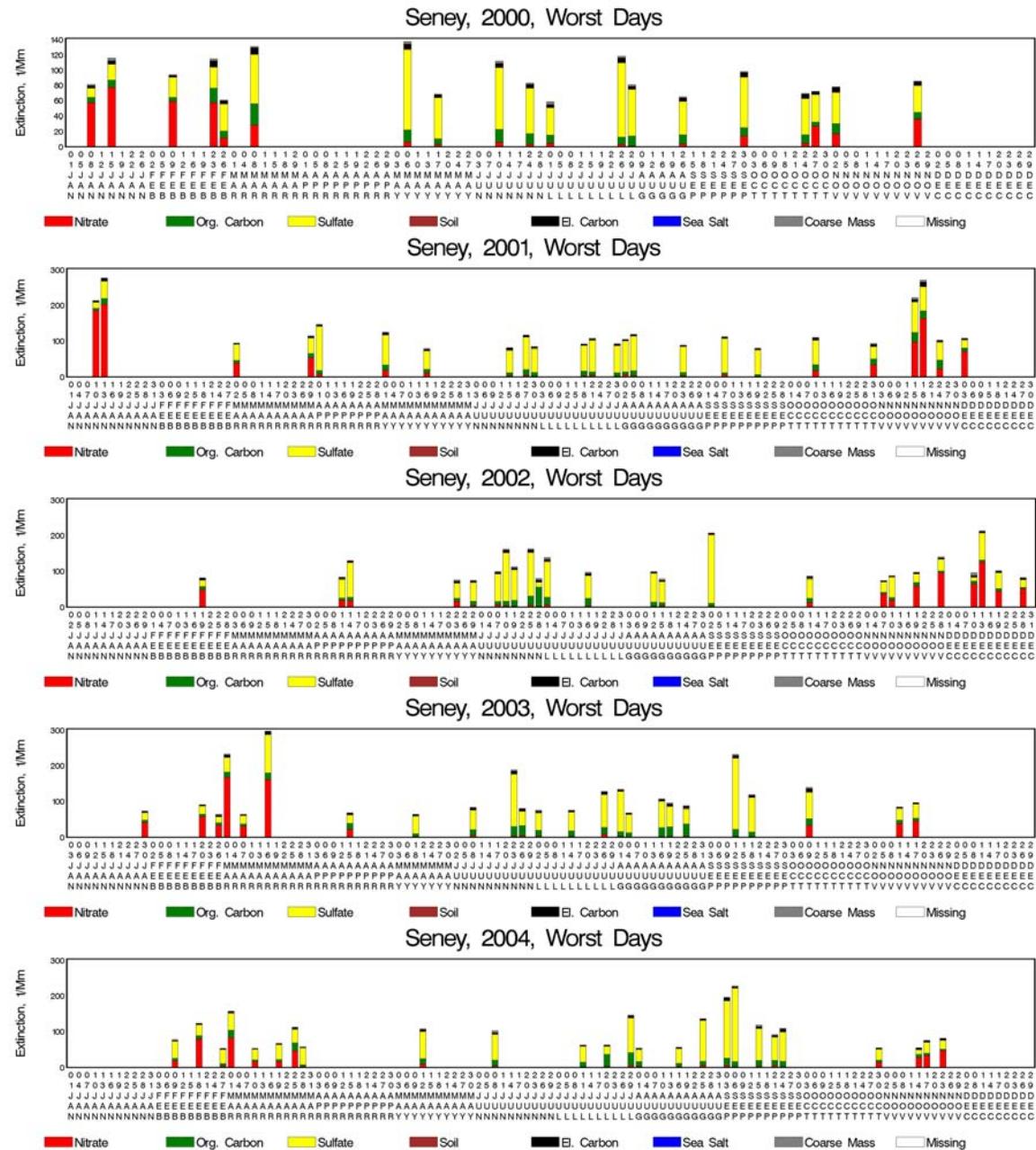
Seney And Isle Royale Area Visibility Information

Isle Royale National Park – 20% Worst Visibility Days

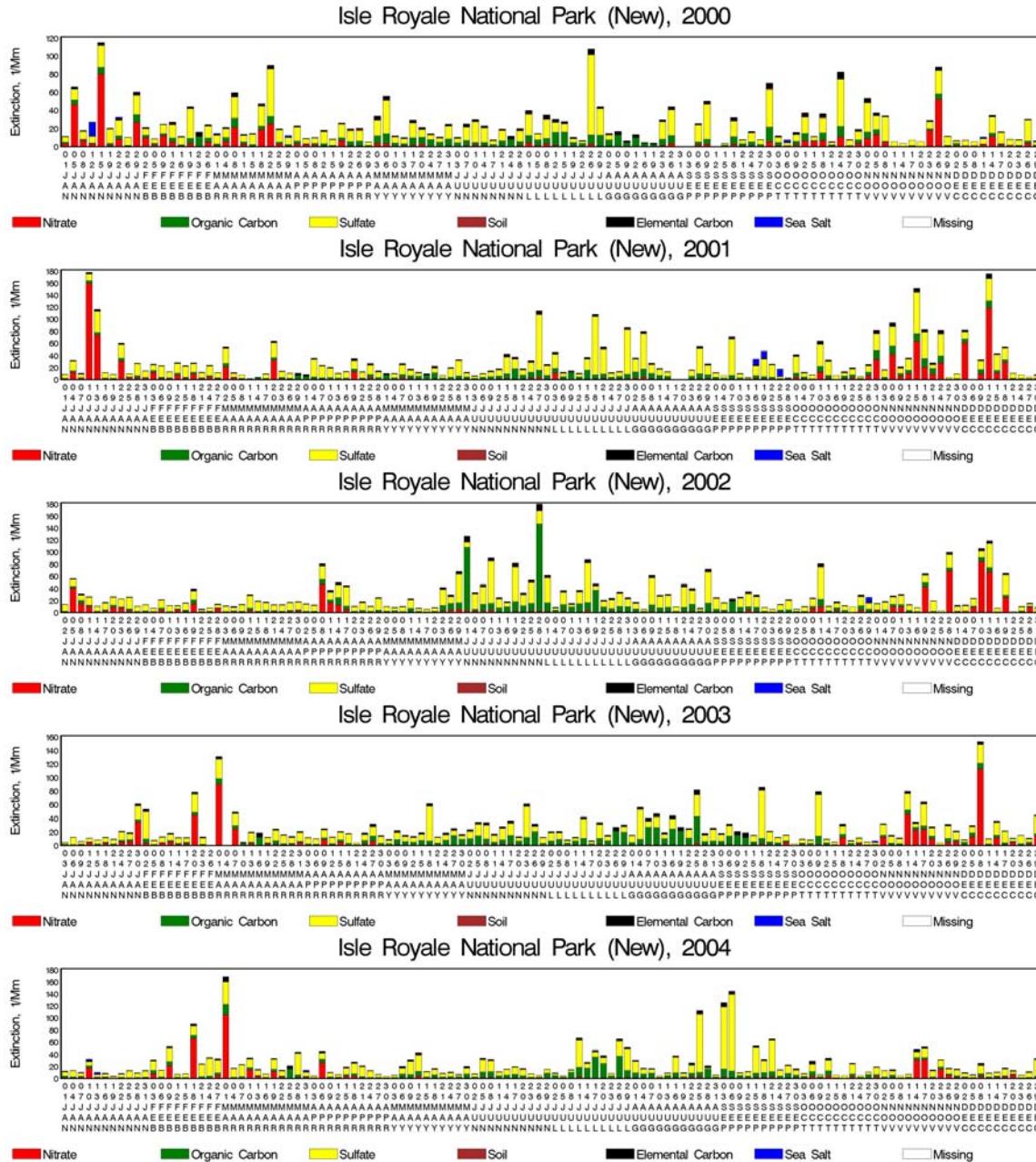


Note, possible fire impact days include June 10 and 28, 2002, July 19, 2002, and July 17, 2004 (i.e., days with very high OC concentrations)

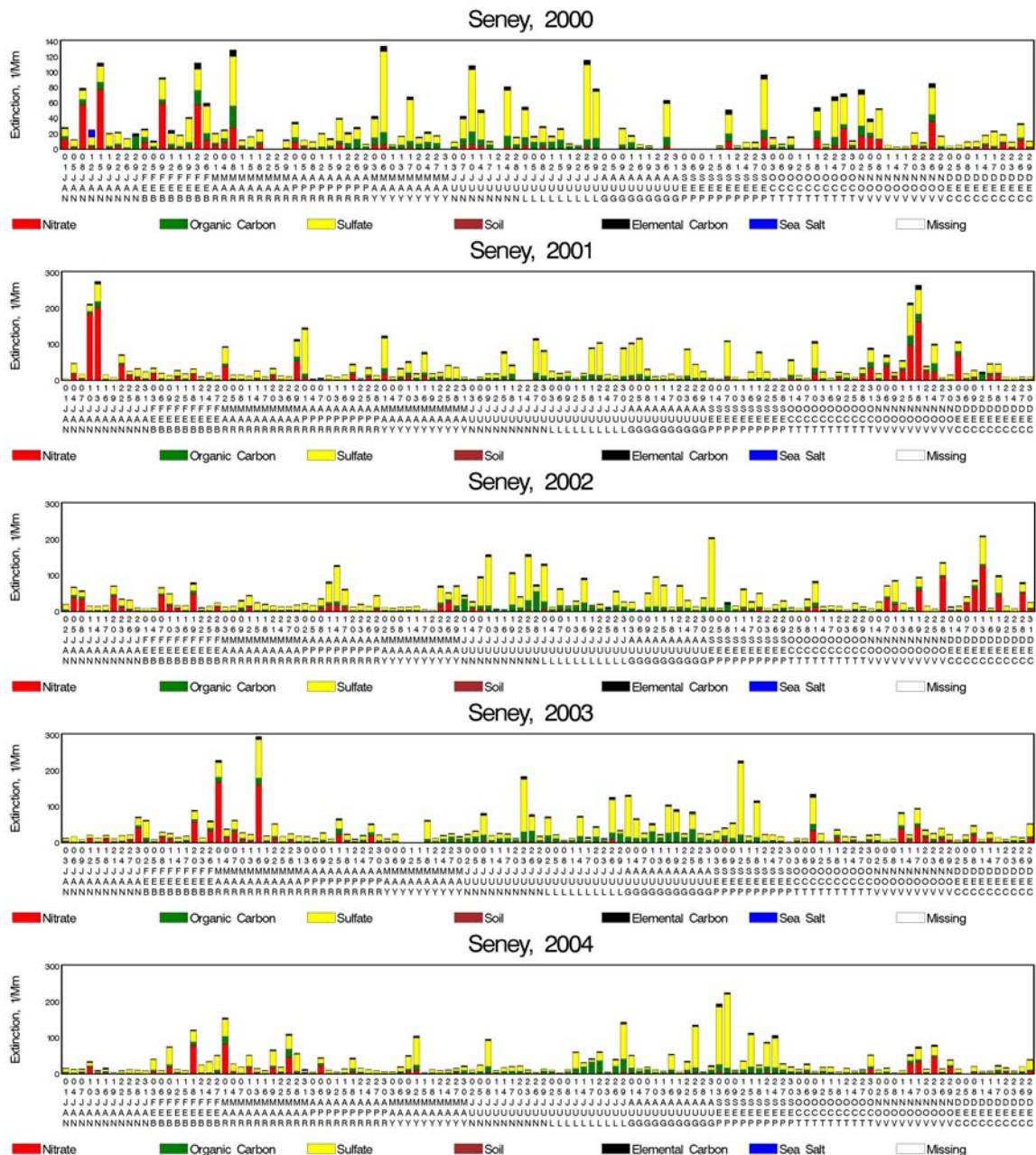
Seney National Wildlife Refuge – 20% Worst Visibility Days



Isle Royale National Park – All Days



Seney National Wildlife Refuge – All Days



Appendix 10D

**Calpuff Modeling, Q/D And Visibility
For Isle Royale**

Back trajectory analysis indicate where air is most likely and least likely to come from on the 20% worst days. As indicated in Figures 10.2.b, Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri and Wisconsin have the majority of impact for the worst 20% days at Isle Royale.

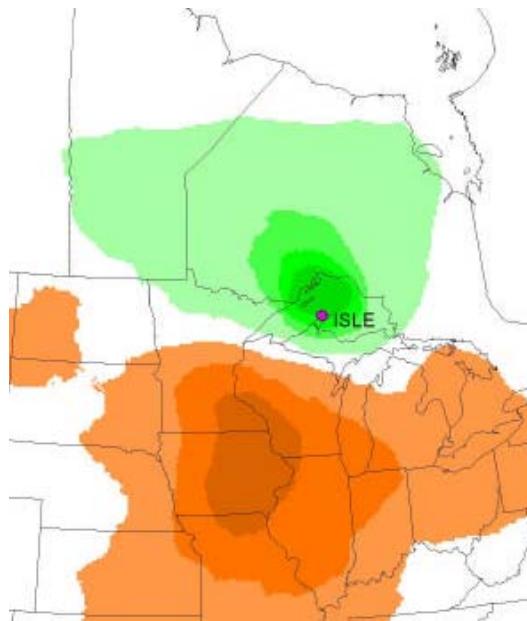


Figure 10.2.b: Composite back trajectories for Isle Royale for the 20% worst days. Orange is where the air is most likely to come from and green is where it is least likely to come from.

Table 1. Calpuff modeling for Isle Royale, includes only facilities located in the state of Michigan.

ISLE ROYALE CLASS I AREA

FACILITY	SRN	1/(M-m)
WISCONSIN ELECTRIC POWER COMPANY	B4261	0.775
EMPIRE IRON MINING PARTNERSHIP	B1827	0.766
Tilden Mining Company L.C.	B4885	0.209
STONE CONTAINER CORPORATION	A5754	0.205
J. H. Campbell Plant	B2835	0.088
DETROIT EDISON/MONROE POWER	B2816	0.084
ESCANABA PAPER COMPANY	A0884	0.067
Marquette Board of Light & Power	B1833	0.064
Neenah Paper - Michigan, Inc.	B1470	0.046
Lafarge North America - Alpena Plant	B1477	0.040
Karn - Weadock Facility	B2840	0.039
ST MARYS CEMENT INC	B1559	0.033
ESCANABA POWER PLANT	B1573	0.025
B. C. Cobb Plant	B2836	0.024
INTERNATIONAL PAPER CO	B7192	0.021
GREAT LAKES GAS TRANSMISSION STATION #8	N3760	0.017
DETROIT EDISON TRENTON CHANNEL	B2811	0.017
GREAT LAKES GAS TRANSMISSION STATION #7	N2168	0.015
ST. CLAIR / BELLE RIVER POWER PLANT	B2796	0.015
J.R. WHITING CO	B2846	0.013
ANR Pipeline Company - Bridgman Compressor Station	N5575	0.011
Holland BPW, Generating Station & WWTP	B2357	0.008
MANISTIQUE PAPERS INC	A6475	0.008
DETROIT EDISON RIVER ROUGE	B2810	0.007
HOLCIM (US) INC.	B1743	0.007
Packaging Corporation of America - Filer City Mill	B3692	0.006
Martin Marietta Magnesia Specialties, LLC	A3900	0.006
TES FILER CITY STATION	N1685	0.006
S. D. Warren, Muskegon, MI, Operations	A4203	0.006
Traverse City Light and Power Bayside Power Plant	B4257	0.005
Eckert & Moores Park Station	B2647	0.004
General Chemical Industrial Products Inc.	B1821	0.004
ANR Pipeline Company - Hamilton Compressor Station	N5574	0.004
Morton Salt Specialty Magnesia	B1824	0.004
MENOMINEE PAPER COMPANY	B1855	0.003
MERIT ENERGY CO. - Manistee Sulfur Plant	B6013	0.003
Louisiana-Pacific Corporation	N1315	0.003
U S STEEL GREAT LAKES WORKS	A7809	0.003
Michigan State University	K3249	0.002
Lansing Board of Water & Light, Erickson Station	B4001	0.002
Decorative Panels International, Inc	B1476	0.002
DETROIT EDISON GREENWOOD ENERGY CENTER	B6145	0.001
Midland Cogeneration Venture	B6527	0.001
J. B. Sims Generating Station	B1976	0.001
ANR Pipeline Co - Woolfolk Compressor Station	B7220	0.001

FACILITY	SRN	1/(M-m)
FARWELL COMPRESSOR STATION NO 12	N5581	0.001
Pharmacia & Upjohn Co LLC, a subsidiary of Pfizer	B3610	0.001
ANR-Coldsprings/ Blue Lake Gas Storage Company	B7198	0.001
DEARBORN INDUSTRIAL GENERATION	N6631	0.001
GREAT LAKES GAS TRANSMISSION STATION #9	N3759	0.001
East Jordan Iron Works	A0767	0.001
GUARDIAN INDUSTRIES	B1877	0.001
Michigan Sugar Company - Carrollton Factory	B2874	0.001
Merit Energy Company. - Mayfield 23	B5587	0.001
Harbor Beach Power Plant	B2815	0.001
Reed City Compressor Station	B3721	0.001
Merit Energy Co. - Brown 7	B5589	0.001
KINROSS CORRECTIONAL FACILITY	N2955	0.001
WYANDOTTE DEPT MUNI POWER	B2132	0.001
MARATHON ASHLAND PETROLEUM	A9831	0.001
White Pigeon Paper Company	B2024	0.001
GENERAL MOTORS CORPORATION - ORION ASSEMBLY	B7227	0.001
GREAT LAKES TISSUE	B1563	0.001
Great Lakes Gas Transmission Station #11	B8573	0.001
Viking Energy of McBain	N1160	0.001
ANR Pipeline Company Lincoln Compressor Station	N5586	0.001
Delphi Saginaw Steering Systems, Holland Road	A6175	0.000
GRAPHIC PACKAGING INTERNATIONAL, INC.	B1678	0.000
Michigan Sugar Company - Sebewaing Factory	B2873	0.000
Aztec Producing Company, Inc.	B7093	0.000
Steelcase Inc. - Grand Rapids Complex	N0980	0.000
HILLMAN POWER CO	N1266	0.000
GREAT LAKES GAS TRANSMISSION STATION #10	N3758	0.000
Muskegon River Compressor Station	N2901	0.000
TAGGART COMPRESSOR STATION	N3392	0.000
JAGUAR ENERGY, FREDERIC 15 GAS PLANT	B7222	0.000
MERIT ENERGY CO. - OTSEGO LAKE 34	N0200	0.000
Michigan Sugar Company, Caro Factory	B2875	0.000
Pharmacia & Upjohn Company LLC	B4288	0.000
CMS ANTRIM GAS L.L.C.	N2940	0.000
Michigan Power Limited Partnership	N4975	0.000
QUICKSILVER RESOURCES INC. - P-LEASE	N3190	0.000
MERIT ENERGY CO. - KALKASKA GAS PLANT	B4292	0.000
Cadillac Renewable Energy Facility	N1395	0.000
Ludlow Coated Products	B2013	0.000
GRAYLING GENERATING STATION LTD PTNR	N2388	0.000
Overisel Compressor Station	N5792	0.000
ABBOTT LABORATORIES-ROSS PRODUCTS DIVISION	A6380	0.000
SEVERSTAL NORTH AMERICA, INC.	A8640	0.000
GMC-MFD Grand Blanc Metal Fab Plant	B1610	0.000
VIKING ENERGY OF LINCOLN, INC.	N0890	0.000
CONSUMERS ENERGY COMPANY- WHITE PIGEON CO	N5573	0.000

FACILITY	SRN	1/(M-m)
Hanson Brick - Michigan Plant	A6497	0.000
GM POWERTRAIN GROUP - SAGINAW METAL CASTING	B1991	0.000
Michigan Sugar Company, Croswell Factory	B2876	0.000
E.B. EDDY PAPER INC.	B6420	0.000
MI SO CENTRAL POWER AGENCY	B6611	0.000
SUMMIT ESSEXVILLE INC	N0827	0.000
CARGILL SALT	A6240	0.000
DETROIT WASTEWATER TREATMENT PLANT	B2103	0.000
CARMEUSE LIME/ RIVER ROUGE	B2169	0.000
DETROIT THERMAL BEACON HEATING PLANT	B2814	0.000
General Motors Pontiac Site Operations	B4032	0.000
BELLE RIVER COMPRESSOR STATION	B6478	0.000
GREATER DETROIT RESOURCE RECOVERY	M4148	0.000
MUSKEGON DEVELOPMENT--HEADQUARTERS OIL FIELD	N0924	0.000
KINDER MORGAN CO	N6626	0.000
The Dow Chemical Company U.S.A., Midland	A4033	0.000
DETROIT DIESEL CORPORATION	A8638	0.000
Michigan Sugar Company - Bay City	B1493	0.000
QUANEX CORP MACSTEEL DIVISION	B4306	0.000
MID MICHIGAN GAS STORAGE CO - CAPAC	B6481	0.000
ST. CLAIR COMPRESSOR STATION	B6637	0.000
Central Michigan University	K2460	0.000
Kent County Waste to Energy Facility	N1604	0.000
ADA COGENERATION	N1784	0.000
Great Lakes Gas Transmission Station #13	N3818	0.000
Howell Compressor Station	N5572	0.000
Menasha Packaging Company, LLC, Otsego Mill	A0023	0.000
Kellogg USA Inc.	A0563	0.000
IPMC AQUISITION LLC	A7051	0.000
FORD MOTOR CO/ WAYNE COMPLEX	A8650	0.000
General Motors Corporation - Van Slyke Complex	B1606	0.000
DETROIT PUBLIC LIGHTING	B2185	0.000
CARMEUSE/DETROIT LIME	B3520	0.000
GM Technical Center	B4049	0.000
CENTRAL WAYNE ENERGY RECOVERY	B4281	0.000
Hyperion Energy, Rich Field Gas Plant	B5462	0.000
Western Michigan University	K2131	0.000
UNIVERSITY OF MI	M0675	0.000
GENERAL MOTORS HAMTRAMCK	M4199	0.000
FORD MOTOR CO ELM ST BOILERHOUSE	M4764	0.000
EQ-SITE #2	M4782	0.000
DaimlerChrysler Technology Center	N1436	0.000
ONYX-ARBOR HILLS LANDFILL	N2688	0.000
GENESEE POWER STATION LIMITED PARTNERSHIP	N3570	0.000
FREEDOM COMPRESSOR STATION	N3920	0.000

Table 2. Top 30 facilities contributing to decreased visibility at Seney, includes facilities in and out of state.

Area	Deciviews	State	County	Facility ID	Facility Name
ISLE1	0.83927	MI	Marquette	B4261	WI_Electric
ISLE1	0.50708	MI	Ottawa	B2835	JH_Campbell
ISLE1	0.44585	MN	Sherburne	2714100004	NSP
ISLE1	0.43193	WI	Sheboygan	480033080	WPL_Alliant
ISLE1	0.35391	WI	Brown	405032870	FortJames
ISLE1	0.34702	MN	Itasca	2708100004	MinnesotaPower_Bos
ISLE1	0.33165	WI	Columbia	111003080	Alliant
ISLE1	0.27882	MN	Cook	2703100001	MinnesotaPower_Tac
ISLE1	0.23289	IL	Will	197809AAO	MidwestGen
ISLE1	0.22347	WI	Outagamie	445031180	Intl_Paper
ISLE1	0.17458	MI	Marquette	B4885	TildenMining
ISLE1	0.16985	MI	Alpena	B1477	LaFarge
ISLE1	0.16743	ND	Mercer	11	NA
ISLE1	0.16559	ND	Oliver	1	NA
ISLE1	0.15244	ND	McLean	17	NA
ISLE1	0.14597	MI	St_Clair	B2796	BelleRiver
ISLE1	0.14482	IN	Spencer	20	IN_MI_Power
ISLE1	0.13599	MI	Monroe	B2816	Detroit_Ed
ISLE1	0.13172	MI	Bay	B2840	Kam_Weadock
ISLE1	0.11052	ND	Mercer	4	NA
ISLE1	0.10953	ND	Mercer	1	NA
ISLE1	0.1088	MN	StLouis	2713700005	US_Steel
ISLE1	0.07696	MN	StLouis	2713700113	EVTAC_Mining
ISLE1	0.06756	IN	Jefferson	1	IKEC
ISLE1	0.05745	MN	StLouis	2713700063	KeewatinTaconite
ISLE1	0.05186	IL	Massac	127855AAC	ElectricEnergyInc
ISLE1	0.04685	IN	Floyd	4	PSI_EnergyGallagher
ISLE1	0.03674	MI	Marquette	B1827	EmpireIronMining
ISLE1	0.03061	MN	StLouis	2713700061	HibbingTaconite
ISLE1	0.02097	MN	StLouis	2713700062	IspatInlandMining
ISLE1	0.0194	OH	Clemont	1413100008	Cinergy
sum = 6.1					

Table 3 2018 Q/d EGUs for Isle Royale for facilities in and out of state.

Obs	State ID	State Name	County ID	County Name	Facility ID	Facility Name	X grid	Y Grid	Min Dist (km)	Class I Area	Q/d for Nox	Nox Emis (tons/day)	Q/d for SO2	SO2 Emis (tons/day)	Nox Emis Rank	Nox Q/d Rank	SO2 Emis Rank	SO2 Q/d Rank
1	26	Mich	103	Marquette	B4261	Wisconsin Electric	736.05	769.94	113	ISLE1	0.141	16	0.342	38.8	113	1	129	2
2	26	Mich	147	St_Clair	B2796	St. Clair / Belle	1175.6	406.81	681	ISLE1	0.088	60.2	0.367	249.6	14	4	2	1
3	27	Minn	141	Sherburne	2714100004	Nsp - Sherburne Ge	242.98	601.12	498	ISLE1	0.109	54.3	0.146	73	20	2	45	13
4	18	Indi	147	Spencer	20	Indiana Michigan P	868.79	-182.36	1062	ISLE1	0.056	59.1	0.183	193.9	15	11	4	8
5	27	Minn	61	Itasca	2706100004	Minnesota Power In	250.45	815.4	420	ISLE1	0.056	23.5	0.176	73.8	67	10	44	9
6	55	Wisc	11	Buffalo	606034110	Dairyland Power Co	412.92	490.06	450	ISLE1	0.049	21.9	0.172	77.3	75	15	39	10
7	55	Wisc	117	Sheboygan	460033090	Wp & L Alliant Ene	726.01	448.45	416	ISLE1	0.047	19.5	0.158	66	89	16	58	12
8	17	Illi	197	Will	197809AAO	Midwest Generation	754.82	201.22	665	ISLE1	0.043	28.3	0.169	112.2	52	19	16	11
9	55	Wisc	21	Columbia	111003090	Alliant Energy-Col	604.68	417.45	448	ISLE1	0.036	16	0.198	88.7	115	29	30	6
10	55	Wisc	73	Marathon	737009020	Wis Public Service	581.37	565	308	ISLE1	0.042	13	0.133	41	143	20	118	15
11	29	Miss	71	Franklin	3	Amerenue-Labadie P	533.09	-140.88	1011	ISLE1	0.034	34.7	0.216	218.7	43	31	3	5
12	13	Geor	207	Monroe	20700008	Georgia Power Comp	1227.2	-681.37	1640	ISLE1	0.036	58.4	0.197	322.4	17	30	1	7
13	21	Kent	145	McCracken	2114500006	Tva-Environmental	725.03	-282.55	1145	ISLE1	0.052	59.1	0.091	104.4	16	13	19	27
14	26	Mich	115	Monroe	B2816	Detroit Edison/Mon	1122.4	293.92	726	ISLE1	0.029	21.1	0.253	183.6	78	42	5	4
15	26	Mich	139	Ottawa	B2835	J. H. Campbell Pla	875.41	374.7	528	ISLE1	0.028	14.9	0.304	160.7	127	45	6	3
16	18	Indi	73	Jasper	8	Nipsco - R.M. Scha	829.67	180.7	699	ISLE1	0.031	21.8	0.136	95.4	76	35	25	14
17	31	Nebr	111	Lincoln	19	Nppd Gerald Gentle	-346	127.9	1251	ISLE1	0.054	67.2	0.078	98.2	11	12	22	41
18	27	Minn	31	Cook	2703100001	Minnesota Power -	456.12	868.74	212	ISLE1	0.036	7.7	0.091	19.3	237	28	230	28
19	20	Kans	107	Linn	5	Kansas City Power	204.64	-180.37	1140	ISLE1	0.101	114.9	0.066	75.7	2	3	41	58
20	40	Okla	101	Muskogee	1209	Og&E	153.25	-468.02	1425	ISLE1	0.044	63.4	0.068	96.8	12	18	24	55
21	38	Nort	57	Mercer	11	Antelope Valley	-366.4	829.12	1035	ISLE1	0.034	34.8	0.075	77.9	42	32	37	45
22	17	Illi	197	Will	197810AAK	Midwest Generation	739.33	216.94	648	ISLE1	0.025	16.4	0.110	71.4	106	56	47	21
23	29	Miss	183	St_Charles	1	Amerenue-Sioux Pla	577.43	-98.68	964	ISLE1	0.024	23.5	0.113	108.5	66	59	17	20
24	26	Mich	17	Bay	B2840	Karn - Weadock Fac	1054	480.5	542	ISLE1	0.024	12.7	0.129	69.7	145	63	49	16
25	26	Mich	163	Wayne	B2810	Detroit Edison Riv	1135	338.82	700	ISLE1	0.028	19.5	0.085	59.2	88	47	68	34
26	5	Arka	63	Independen	506300042	Entergy Ark-Indepe	492.48	-457.61	1330	ISLE1	0.038	50.8	0.062	81.9	23	22	34	62
27	40	Okla	131	Rogers	212	Public Svc Co Of O	116	-394.96	1372	ISLE1	0.037	50.3	0.065	89.7	24	27	28	59
28	55	Wisc	9	Brown	405031990	Wi Public Service	711.56	538.78	325	ISLE1	0.031	10.1	0.069	22.4	193	37	211	53
29	38	Nort	65	Oliver	1	Milton R Young	-320.9	792.72	992	ISLE1	0.069	68.5	0.049	48.5	10	6	95	86
30	26	Mich	163	Wayne	B2811	Detroit Edison Tre	1132	321.47	711	ISLE1	0.021	15.1	0.113	80.1	124	74	36	19
31	48	Texa	449	Titus	3	Monticello Stm Ele	183.02	-764.16	1696	ISLE1	0.023	39.7	0.088	148.9	31	65	12	31
32	10	Dela	5	Sussex	1000500001	Indian River Gener	1865.7	68.12	1436	ISLE1	0.025	36.5	0.075	107.1	38	54	18	46
33	55	Wisc	79	Milwaukee	241007800	Wis Electric Power	735.39	372.57	493	ISLE1	0.024	11.8	0.081	39.9	163	62	122	38
34	21	Kent	177	Muhlenberg	2117700006	Tva Paradise Steam	881.29	-254.8	1136	ISLE1	0.020	22.4	0.119	135	72	85	13	18
35	22	Loui	77	Pointe_Cou	5	La Generating Llc/	541.11	-1012.9	1878	ISLE1	0.022	41.6	0.083	156.2	29	69	7	35
36	46	Sout	51	Grant	1001	Big Stone	38.52	588.77	686	ISLE1	0.061	41.9	0.045	31	27	9	158	95
37	48	Texa	401	Rusk	11	Martin Lake Electr	228.94	-855.56	1772	ISLE1	0.031	54.6	0.058	103.6	18	39	20	70
38	19	Iowa	179	Wapello	90-07-001	Ipl - Ottumwa Gene	370.37	130.73	789	ISLE1	0.024	19.1	0.073	57.3	92	60	74	49
39	21	Kent	41	Carroll	2104100010	Kentucky Utilities	1030.3	-70.65	999	ISLE1	0.020	20.2	0.091	90.6	83	80	26	30
40	39	Ohio	113	Montgomery	857780013	Dp&L, O.H. Hutchin	1080.8	32.2	926	ISLE1	0.022	20.1	0.081	74.6	84	71	42	39

Obs	State ID	State Name	County ID	County Name	Facility ID	Facility Name	X grid	Y Grid	Min Dist	Class I Area	Q/d for Nox	Nox Emis (tons/day)	Q/d for SO2	SO2 Emis (tons/day)	Nox Emis Rank	Nox Q/d Rank	SO2 Emis. Rank	SO2 Q/d Rank
41	54	West	79	Putnam	6	Appalachian Power	1309.8	-59.75	1122	ISLE1	0.024	26.9	0.072	81.2	57	61	35	50
42	19	Iowa	193	Woodbury	97-04-010	Midamerican Energy	50.9	257.79	863	ISLE1	0.022	19.2	0.077	66.5	90	67	56	44
43	20	Kans	149	Pottawatom	1	Westar Energy, Inc	76.41	-78.82	1111	ISLE1	0.067	74.3	0.043	47.4	8	7	99	104
44	31	Nebr	55	Douglas	2	Omaha Public Power	87.56	147.4	920	ISLE1	0.030	27.6	0.057	52.4	54	40	86	74
45	35	New	45	San_Juan	2	Four Corners	-1017	-302.17	2048	ISLE1	0.062	127.9	0.042	86.5	1	8	31	107
46	18	Indi	89	Lake	117	Nipsco - Dean H. M	792.89	223.83	649	ISLE1	0.021	13.4	0.079	51.2	138	77	88	40
47	5	Arka	69	Jefferson	506900110	Entergy Ark-White	444.95	-604.3	1482	ISLE1	0.019	27.8	0.091	134.8	53	92	14	29
48	55	Wisc	3	Ashland	802033320	Northern States Po	470.9	749.06	227	ISLE1	0.021	4.7	0.073	16.5	328	76	252	48
49	18	Indi	29	Dearborn	2	American Electric	1040.1	-31.95	967	ISLE1	0.025	24.1	0.060	57.8	62	58	71	67
50	40	Okla	97	Mayes	799	Grand River Dam Au	152.96	-420.36	1381	ISLE1	0.033	45.3	0.046	63.1	26	33	65	94
51	31	Nebr	131	Otoe	36	Oppd Nebraska City	102.73	69.51	973	ISLE1	0.031	30.1	0.046	45	48	38	107	89
52	18	Indi	43	Floyd	4	Psi Energy - Galla	968.21	-132.21	1037	ISLE1	0.022	22.5	0.067	69.9	71	72	48	56
53	19	Iowa	115	Louisa	58-07-001	Midamerican Energy	491.15	161.82	721	ISLE1	0.022	16	0.064	46	114	68	105	61
54	17	Illi	97	Lake	097190AAC	Midwest Generation	737.64	294.2	571	ISLE1	0.019	10.8	0.078	44.3	176	89	109	42
55	30	Mont	87	Rosebud	14	Colstrip	-745.5	692.28	1424	ISLE1	0.070	99.4	0.035	50.2	3	5	89	127
56	19	Iowa	155	Pottawatta	78-01-026	Midamerican Energy	96.67	131.21	927	ISLE1	0.023	21.8	0.059	54.9	77	64	80	69
57	29	Miss	189	St_Louis	10	Amerenue-Meramec P	577.8	-155.79	1021	ISLE1	0.020	20.4	0.071	72.3	82	82	46	52
58	54	West	33	Harrison	15	Monongahela Power	1420.2	62.14	1097	ISLE1	0.026	28.7	0.050	55.1	51	52	79	82
59	29	Miss	175	Randolph	1	Associated Electri	372.28	-40.81	949	ISLE1	0.023	22.2	0.057	54.2	73	66	81	73
60	17	Illi	179	Tazewell	179801AAA	Midwest Generation	623.59	83.59	779	ISLE1	0.015	11.8	0.109	85.2	161	120	33	22
61	39	Ohio	81	Jefferson	641160017	W. H. Sammis Plant	1370.1	182.63	976	ISLE1	0.037	36.4	0.036	35.3	39	24	143	123
62	1	Alab	127	Walker	1	Alabama Power Comp	905.95	-655.15	1535	ISLE1	0.021	32.7	0.056	86	45	73	32	75
63	38	Nort	57	Mercer	1	Leland Olds	-333.9	817.63	1003	ISLE1	0.045	45.6	0.033	33.2	25	17	152	137
64	1	Alab	73	Jefferson	10730011	Alabama Power Comp	918.55	-655.58	1537	ISLE1	0.014	20.8	0.098	151.2	80	130	10	25
65	38	Nort	55	McLean	17	Coal Creek	-315	827.45	984	ISLE1	0.016	15.6	0.077	76.1	120	112	40	43
66	26	Mich	121	Muskegon	B2836	B. C. Cobb Plant	867.65	412.1	491	ISLE1	0.015	7.2	0.085	41.9	246	122	116	33
67	29	Miss	99	Jefferson	16	Amerenue-Rush Isla	585.2	-185.06	1049	ISLE1	0.014	14.6	0.086	90.2	130	125	27	32
68	18	Indi	51	Gibson	13	Psi Energy - Gibso	800.1	-139.75	1009	ISLE1	0.021	21.1	0.049	49.7	79	75	91	84
69	18	Indi	167	Vigo	21	Psi Energy - Wabas	816.7	-9.44	883	ISLE1	0.020	18	0.050	43.7	96	78	110	83
70	17	Illi	31	Cook	031600AIN	Midwest Generation	740.23	258.24	607	ISLE1	0.017	10.1	0.064	39	194	102	128	60
71	39	Ohio	31	Coshocton	616000000	Conesville Power P	1273.1	126.55	951	ISLE1	0.017	15.9	0.060	57.5	116	100	72	65
72	35	New	45	San_Juan	902	San Juan	-1004	-291.61	2031	ISLE1	0.038	77.5	0.033	66.3	7	23	57	143
73	40	Okla	103	Noble	1211	Og&E	-4.49	-392.21	1422	ISLE1	0.026	37.4	0.039	55.6	35	51	78	115
74	19	Iowa	5	Allamakee	03-03-001	Ipl - Lansing Gene	470.71	385.08	515	ISLE1	0.019	9.8	0.054	27.6	198	90	180	79
75	18	Indi	77	Jefferson	1	Ikec - Clifty Cree	996.96	-75.84	993	ISLE1	0.012	12	0.100	99.2	158	146	21	24
76	26	Mich	115	Monroe	B2846	J.R. Whiting Co	1115.6	281.92	732	ISLE1	0.016	12	0.060	43.6	159	105	111	68
77	17	Illi	137	Morgan	137805AAA	Ameren Energy Gene	573.75	-11.93	878	ISLE1	0.017	14.5	0.058	51.2	131	103	87	71
78	56	Wyom	37	Sweetwater	1002	Jim Bridger	-972.4	254.8	1749	ISLE1	0.052	90.1	0.029	50	4	14	90	160
79	27	Minn	109	Olmsted	2710900011	Rochester Public U	362.62	455.63	508	ISLE1	0.016	8.1	0.061	30.9	230	110	159	64
80	39	Ohio	85	Lake	243160009	Cleveland Electric	1279.1	291.75	835	ISLE1	0.020	17	0.045	37.4	103	79	135	97
81	48	Texa	161	Freestone	2	Big Brown	89.59	-907.29	1860	ISLE1	0.013	23.6	0.081	151.3	64	141	9	37

Obs	State ID	State Name	County ID	County Name	Facility ID	Facility Name	X grid	Y Grid	Min Dist	Class I Area	Q/d for Nox	Nox Emis (tons/day)	Q/d for SO2	SO2 Emis (tons/day)	Nox Emis Rank	Nox Q/d Rank	SO2 Emis. Rank	SO2 Q/d Rank
82	42	Penn	123	Warren	421230004	Reliant Energy Mid	1461.5	347.07	945	ISLE1	0.014	13	0.067	63.5	142	127	64	57
83	19	Iowa	193	Woodbury	97-04-011	Midamerican Energy	52.64	255.39	864	ISLE1	0.016	14	0.055	47.5	135	108	98	76
84	26	Mich	65	Ingham	B2647	Eckert & Moores Pa	1011	370.28	598	ISLE1	0.019	11.1	0.046	27.6	173	93	181	91
85	29	Miss	83	Henry	1	Kansas City Power	266.4	-182.27	1118	ISLE1	0.016	18.2	0.052	58.2	95	107	70	80
86	42	Penn	7	Beaver	420070005	Pa Power Co/Bruce	1385.8	197.02	978	ISLE1	0.015	14.9	0.057	56.2	128	116	75	72
87	47	Tenn	161	Stewart	11	Tva Cumberland Fos	832.73	-356.9	1229	ISLE1	0.014	17.5	0.060	74	101	123	43	66
88	13	Geor	15	Bartow	1500011	Georgia Power Comp	1108	-577.91	1505	ISLE1	0.018	27.5	0.045	67.5	55	96	54	96
89	54	West	61	Monongalia	1	Monongahela Power	1447.5	102.18	1088	ISLE1	0.032	35	0.029	31.3	40	34	157	158
90	26	Mich	103	Marquette	B1833	Marquette Board Of	736.83	764.5	118	ISLE1	0.019	2.2	0.043	5.1	476	91	398	103
91	17	Illi	21	Christian	021814AAB	Kincaid Generation	640.02	-18.93	880	ISLE1	0.012	10.4	0.074	64.8	183	148	62	47
92	39	Ohio	1	Adams	701000007	Dp&L, J.M. Stuart	1146.6	-66.91	1044	ISLE1	0.015	15.9	0.054	56.1	117	118	76	78
93	39	Ohio	61	Hamilton	1431350093	Cinergy Corp Miami	1044.5	-28.04	965	ISLE1	0.017	16.1	0.043	41.9	109	99	115	101
94	12	Flor	17	Citrus	170004	Progress Energy Fl	1400.3	-1117.6	2110	ISLE1	0.014	29.8	0.054	114.4	50	124	15	77
95	1	Alab	71	Jackson	8	Tva - Widows Creek	1021.5	-503.21	1409	ISLE1	0.009	13.2	0.106	149.4	140	179	11	23
96	21	Kent	111	Jefferson	127	Lou Gas & Elec, Mi	964.53	-156.68	1060	ISLE1	0.009	10	0.092	97.3	196	178	23	26
97	17	Illi	79	Jasper	079808AAA	Ameren Energy Gene	757.13	-86.21	951	ISLE1	0.018	17.5	0.041	39.1	100	94	126	110
98	18	Indi	125	Pike	2	Ipl Petersburg Gen	842.68	-117.98	994	ISLE1	0.012	11.5	0.069	68.3	167	151	52	54
99	29	Miss	165	Platte	7	Kansas City Power	172.78	-58.96	1045	ISLE1	0.016	16.3	0.046	47.8	107	115	96	93
100	17	Illi	127	Massac	127855AAC	Electric Energy In	730.42	-276.69	1139	ISLE1	0.013	15.1	0.052	58.7	126	132	69	81
101	32	Neva	3	Clark	P001	Mohave	-1586	-385.32	2576	ISLE1	0.031	80.3	0.025	64.2	6	36	63	178
102	8	Colo	81	Moffat	18	Craig	-890.3	103.31	1733	ISLE1	0.030	51.8	0.021	37.1	22	41	137	199
103	47	Tenn	85	Humphreys	11	Tva Johnsonville F	807.5	-400.68	1269	ISLE1	0.007	9.2	0.121	153.1	207	230	8	17
104	38	Nort	57	Mercer	12	Coyote	-365.6	812.34	1035	ISLE1	0.037	38	0.015	15.6	33	26	261	242
105	49	Utah	15	Emery	10237	Hunter (Emery)	-1199	1.37	2056	ISLE1	0.027	54.6	0.017	35.7	19	49	142	224
106	56	Wyom	9	Converse	1	Dave Johnston	-712.4	349.12	1472	ISLE1	0.028	41.8	0.015	22.6	28	44	209	241
107	56	Wyom	31	Platte	1	Laramie River	-646.5	261.76	1445	ISLE1	0.037	53.2	0.013	18.4	21	25	238	266
108	37	Nort	35	Catawba	3703500073	Duke Energy Corpor	1439.2	-361.13	1445	ISLE1	0.026	38.2	0.012	17	32	50	247	282
109	55	Wisc	123	Vernon	663020930	Dairyland Power Co	499.22	413.37	478	ISLE1	0.005	2.4	0.082	39.2	461	298	124	36
110	53	Wash	41	Lewis	10	Centralia	-1953	1030.3	2627	ISLE1	0.027	71.5	0.012	30.3	9	48	163	286
111	49	Utah	27	Millard	10327	Intermountain	-1324	59.6	2148	ISLE1	0.029	62.4	0.009	20.2	13	43	222	318
112	4	Ariz	5	Coconino	4	Navajo	-1269	-242	2230	ISLE1	0.039	86.8	0.006	13.2	5	21	286	371
113	47	Tenn	165	Sumner	25	Tva Gallatin Fossi	944.61	-353.49	1245	ISLE1	0.028	34.8	0.005	6.5	41	46	372	389

Table 4. 2018 Q/d for non-EGUs for Isle Royale in and out of state.

Obs		State ID	State Name	County ID	County Name	Facility ID	Facility Name	X grid	Y Grid	Min Dist	Class I Area	Q/d for Nox	Nox Emis (tons/day)	Q/d for SO2	SO2 Emis (tons/day)	Nox Emis. Rank	Nox Q/d Rank	SO2 Emis. Rank	SO2 Q/d Rank
1	26	Mich	7	Alpena	B1477	LAFARGE NORTH AMER	1064.79	642.46	453 ISLE1	0.06	27.2	0.137	61.9	9	4	10	2		
2	26	Mich	103	Marquette	B4885	TILDEN MINING COMP	717.88	752.31	119 ISLE1	0.164	19.5	0.059	7	21	1	254	11		
3	18	Indi	127	Porter	1	BETHLEHEM STEEL CO	816.81	225.57	652 ISLE1	0.038	24.7	0.073	47.9	12	10	18	4		
4	55	Wisc	9	Brown	405032870	Fort James Operati	711.36	532.24	331 ISLE1	0.034	11.3	0.104	34.5	73	14	32	3		
5	18	Indi	79	Jennings	2	MUSCATATUCK STATE	983.64	-43.09	957 ISLE1	0.035	33.7	0.055	53	4	12	12	12		
6	26	Mich	131	Ontonagon	A5754	STONE CONTAINER CO	585.66	788.16	110 ISLE1	0.025	2.8	0.051	5.6	590	16	295	14		
7	55	Wisc	69	Lincoln	735008010	PACKAGING CORPORAT	556.13	626.3	260 ISLE1	0.019	4.8	0.072	18.8	333	26	75	5		
8	26	Mich	41	Delta	A0884	ESCANABA PAPER COM	768.76	686.2	202 ISLE1	0.053	10.7	0.038	7.7	81	6	235	25		
9	55	Wisc	87	Outagamie	445031180	INTERNATIONAL PAPE	694.55	508.2	354 ISLE1	0.016	5.7	0.061	21.4	250	31	66	9		
10	29	Miss	163	Pike	1	HOLCIM (US) INC-CL	517.79	-51.92	925 ISLE1	0.023	21.7	0.041	38.1	16	20	28	21		
11	26	Mich	29	Charlevoix	B1559	CEMEX, INC.	913.95	648.93	324 ISLE1	0.035	11.4	0.036	11.6	71	13	142	30		
12	35	New	43	Sandoval	350430005	RIO RANCHO FACILIT	-873.64	-482.1	2045 ISLE1	0.016	33.4	0.051	103.7	5	30	3	15		
13	18	Indi	89	Lake	121	U S STEEL CO GARY	800.33	221.74	653 ISLE1	0.026	16.7	0.032	20.8	37	15	70	33		
14	36	New	1	Albany	4012400001	LAFARGE BUILDING M	1875.55	517.3	1255 ISLE1	0.015	18.6	0.059	73.6	27	40	7	10		
15	17	Illi	31	Cook	031012ABI	CORN PRODUCTS INTE	757.27	234.85	632 ISLE1	0.016	10.2	0.045	28.2	95	32	45	18		
16	19	Iowa	33	Cerro_Gord	17-01-005	LEHIGH CEMENT COMP	306.72	359.46	618 ISLE1	0.016	9.8	0.048	29.4	98	34	41	17		
17	55	Wisc	141	Wood	772009480	Stora Enso No. Ame	572.9	514.1	360 ISLE1	0.015	5.4	0.039	14.1	284	39	114	24		
18	19	Iowa	33	Cerro_Gord	17-01-009	HOLCIM (US) INC. -	307.38	358.1	619 ISLE1	0.019	11.9	0.026	16.3	60	23	92	41		
19	55	Wisc	85	Oneida	744008100	RHINELANDER PAPER	590.04	650.4	225 ISLE1	0.018	4	0.027	6	415	28	285	40		
20	48	Texa	331	Milam	1	ALCOA SANDOW PLANT	-6.64	-1048.6	2025 ISLE1	0.011	22.8	0.07	140.8	15	64	2	6		
21	27	Minn	137	St_Louis	2713700113	EVTAC Mining - Fai	332.38	817.67	339 ISLE1	0.015	5.2	0.029	9.8	291	35	175	36		
22	47	Tenn	163	Sullivan	3	EASTMAN CHEMICAL C	1282.39	-283.13	1298 ISLE1	0.012	15.3	0.05	64.5	42	62	9	16		
23	19	Iowa	45	Clinton	23-01-006	ADM CORN PROCESSIN	559.9	222.35	648 ISLE1	0.02	12.9	0.021	13.5	54	22	118	61		
24	27	Minn	37	Dakota	2703700011	Flint Hills Resour	313.1	536.07	481 ISLE1	0.019	9	0.021	10	120	25	173	60		
25	27	Minn	137	St_Louis	2713700005	US Steel Corp - Mi	329.2	844.37	339 ISLE1	0.119	40.4	0.016	5.3	1	2	307	85		
26	31	Nebr	25	Cass	2	Ash Grove Cement C	70.4	111.58	959 ISLE1	0.016	15.3	0.021	19.9	41	33	71	62		
27	19	Iowa	163	Scott	82-04-005	LAFARGE NORTH AMER	522.89	179.92	696 ISLE1	0.011	7.5	0.03	21.1	158	67	68	34		
28	19	Iowa	113	Linn	57-01-080	ADM CORN PROCESSIN	437.9	226	675 ISLE1	0.014	9.4	0.021	14.4	111	46	109	57		
29	17	Illi	179	Tazewell	179060ACR	WILLIAMS ETHANOL S	616.71	86.4	776 ISLE1	0.009	7	0.04	31.1	177	84	37	22		

Obs	State ID	State Name	County ID	County Name	Facility ID	Facility Name	X grid	Y Grid	Min Dist	Class I Area	Q/d for Nox	Nox Emis (tons/day)	Q/d for SO2	SO2 Emis (tons/day)	Nox Emis. Rank	Nox Q/d Rank	SO2 Emis. Rank	SO2 Q/d Rank
30	39	Ohio	141	Ross	671010028	MW CUSTOM PAPERS L	1196.53	14.78	997	ISLE1	0.008	8.1	0.053	52.5	135	98	13	13
31	55	Wisc	75	Marinette	438039360	Stora Enso No. Ame	699.42	675.24	188	ISLE1	0.01	1.9	0.027	5	817	74	318	39
32	22	Loui	19	Calcasieu	16	CITGO PETROLEUM CO	354.5	-1083.4	1969	ISLE1	0.013	26.2	0.019	38.4	11	50	27	66
33	21	Kent	19	Boyd	2101900004	MARATHON ASHLAND P	1245.07	-80.57	1104	ISLE1	0.013	14.2	0.021	22.9	48	53	58	63
34	48	Texa	245	Jefferson	18	BEAUMONT REFINERY	284	-1098.2	1996	ISLE1	0.01	20.4	0.026	51.9	19	72	14	45
35	38	Nort	57	Mercer	65	GREAT PLAINS SYNFU	-366.4	822.14	1035	ISLE1	0.012	12.5	0.021	21.7	55	59	65	59
36	55	Wisc	141	Wood	772010690	Domtar A. W. Corp-	564.3	500.64	375	ISLE1	0.01	3.6	0.028	10.4	459	80	168	38
37	47	Tenn	107	McMinn	12	BOWATER NEWSPRINT	1106.02	-447.1	1379	ISLE1	0.012	16.3	0.021	29	39	61	43	58
38	26	Mich	103	Marquette	B1827	EMPIRE IRON MINING	721.86	753.57	120	ISLE1	0.087	10.4	0.011	1.4	89	3	652	117
39	18	Indi	89	Lake	316	ISPAT INLAND INC.	789.68	225.78	647	ISLE1	0.023	15.1	0.013	8.5	44	21	209	101
40	29	Miss	186	Ste_Genevi	1	MISSISSIPPI LIME C	604.82	-201.25	1064	ISLE1	0.01	10.5	0.022	22.9	85	75	57	56
41	17	Illi	143	Peoria	143065AJE	ARCHER DANIELS MID	620.28	100.05	762	ISLE1	0.011	8.1	0.02	15.1	137	68	101	65
42	17	Illi	197	Will	197090AAI	CITGO PETROLEUM CO	739.52	218.57	646	ISLE1	0.009	5.7	0.022	14.3	253	85	112	53
43	37	Nort	87	Haywood	3708700159	BLUE RIDGE PAPER P	1273.03	-395.75	1395	ISLE1	0.011	15.1	0.017	24	43	66	54	73
44	22	Loui	101	St_Mary	5	COLUMBIAN CHEM CO/	539.96	-1130.4	1995	ISLE1	0.008	16.8	0.024	47	36	91	22	50
45	26	Mich	163	Wayne	A7809	NATIONAL STEEL COR	1135.07	339.67	700	ISLE1	0.014	9.6	0.014	9.7	105	48	178	94
46	17	Illi	197	Will	197800AAA	EXXONMOBIL OIL COR	731.72	191.95	672	ISLE1	0.01	6.6	0.017	11.6	202	78	140	72
47	51	Virg	580	Covington_	3	MEADWESTVACO PACKA	1479.42	-104.98	1261	ISLE1	0.007	8.3	0.038	48.2	131	124	17	27
48	36	New	55	Monroe	8261400205	KODAK PARK DIVISIO	1554.15	520.79	949	ISLE1	0.006	5.4	0.065	61.7	278	155	11	8
49	18	Indi	93	Lawrence	2	LEHIGH CEMENT COMP	908.36	-87.24	978	ISLE1	0.012	11.8	0.012	12	64	57	134	110
50	26	Mich	115	Monroe	B1743	HOLCIM (US) INC.	1095.18	301.31	704	ISLE1	0.006	4.1	0.038	26.6	401	151	48	29
51	17	Illi	119	Madison	119813AAI	NATIONAL STEEL COR	593.44	-122.12	986	ISLE1	0.01	10	0.012	11.5	97	73	146	112
52	36	New	39	Greene	4192600021	ST LAWRENCE CEMENT	1877.11	479.42	1268	ISLE1	0.009	11	0.013	16.6	74	88	89	103
53	55	Wisc	141	Wood	772010140	Stora Enso No. Ame	569.27	510.68	364	ISLE1	0.015	5.3	0.009	3.3	286	41	422	150
54	24	Mary	5	Baltimore	005-0147	BETHLEHEM STEEL	1745	111.32	1312	ISLE1	0.01	13	0.011	14.8	51	76	104	118
55	27	Minn	137	St_Louis	2713700063	Keewatin Taconite	341.99	853.46	326	ISLE1	0.059	19.4	0.007	2.3	23	5	499	193
56	55	Wisc	9	Brown	405032210	PROCTER & GAMBLE P	712.19	536.92	327	ISLE1	0.007	2.2	0.016	5.3	724	119	309	81
57	39	Ohio	3	Allen	302020012	PREMCOR REFINING G	1077.33	156.38	815	ISLE1	0.008	6.2	0.013	10.9	220	106	154	97
58	18	Indi	89	Lake	3	BP PRODUCTS NORTH	786.62	226.25	646	ISLE1	0.024	15.6	0.007	4.6	40	19	337	186
59	48	Texa	201	Harris	39	DEER PARK PLANT	181.22	-1140.9	2060	ISLE1	0.009	18.8	0.011	21.9	26	83	64	125

Obs	State ID	State Name	County ID	County Name	Facility ID	Facility Name	X grid	Y Grid	Min Dist	Class I Area	Q/d for Nox	Nox Emis (tons/day)	Q/d for SO2	SO2 Emis (tons/day)	Nox Emis. Rank	Nox Q/d Rank	SO2 Emis. Rank	SO2 Q/d Rank
60	54	West	51	Marshall	2	PPG INDUSTRIES, IN	1368.77	92.13	1040	ISLE1	0.005	5.3	0.033	34.6	288	188	31	31
61	48	Texa	233	Hutchinson	15	BORGER REFINERY	-393.25	-467.47	1700	ISLE1	0.005	9.1	0.023	39.1	117	170	26	51
62	24	Mary	1	Allegany	001-0011	WESTVACO FINE PAPE	1523.36	92.53	1150	ISLE1	0.005	5.4	0.043	49.5	281	209	15	19
63	48	Texa	139	Ellis	22	HOLCIM (TEXAS) LP	2.71	-830.73	1818	ISLE1	0.011	19.3	0.008	14.6	24	69	107	167
64	48	Texa	167	Galveston	1	TEXAS CITY REFINER	202.52	-1179	2092	ISLE1	0.009	19.5	0.009	17.8	22	82	77	158
65	17	Illi	99	La_Salle	099816AAF	LONE STAR INDUSTRI	660.86	171.62	689	ISLE1	0.006	3.8	0.016	10.8	427	162	156	86
66	55	Wisc	31	Douglas	816009590	MURPHY OIL USA	375.35	752.08	313	ISLE1	0.005	1.7	0.016	5	895	169	319	83
67	39	Ohio	17	Butler	1409010006	AK STEEL CORPORATI	1074.3	17.69	936	ISLE1	0.007	6.1	0.01	9.7	223	127	176	127
68	28	Miss	59	Jackson	2805900058	CHEVRON PRODUCTS C	805.08	-1022.4	1888	ISLE1	0.007	12.9	0.01	18.6	53	117	76	138
69	19	Iowa	139	Muscatine	70-01-004	GRAIN PROCESSING C	493.3	171.15	712	ISLE1	0.004	3.1	0.039	27.9	539	234	47	23
70	54	West	3	Berkeley	6	CAPITOL CEMENT COR	1615.47	106.66	1211	ISLE1	0.01	11.6	0.007	9	67	79	196	180
71	55	Wisc	73	Marathon	737009570	MOSINEE PAPER CORP	576.5	554.53	320	ISLE1	0.006	1.9	0.011	3.7	821	150	392	114
72	45	Sout	75	Orangeburg	1860-0005	HOLCIM:HOLLY HILL	1533.29	-599.62	1697	ISLE1	0.006	10.9	0.01	17.2	77	132	83	133
73	48	Texa	139	Ellis	2	NORTH TEXAS CEMENT	-0.39	-829.74	1818	ISLE1	0.006	10.9	0.01	18.9	75	145	74	128
74	47	Tenn	163	Sullivan	22	WILLAMETTE INDUSTR	1280.28	-281.22	1296	ISLE1	0.006	8.3	0.01	12.6	132	134	129	139
75	51	Virg	23	Botetourt	3	ROANOKE CEMENT COM	1486.06	-140.6	1293	ISLE1	0.007	8.4	0.009	11.9	129	128	135	147
76	28	Miss	87	Lowndes	2808700025	HOLNAM INC, ARTESI	776.03	-700.15	1565	ISLE1	0.007	10.6	0.008	13.1	84	118	124	161
77	18	Indi	17	Cass	5	ESSROC CEMENT CORP	886.86	133.3	760	ISLE1	0.006	4.7	0.009	7	341	136	253	145
78	26	Mich	121	Muskegon	A4203	S. D. WARREN, MUSK	863.45	407.17	494	ISLE1	0.009	4.3	0.007	3.4	382	87	410	194
79	27	Minn	137	St_Louis	2713700061	Hibbing Taconite C	312.33	829.93	357	ISLE1	0.051	18.2	0.005	1.7	30	8	573	273
80	18	Indi	19	Clark	8	ESSROC CEMENT CORP	973.34	-115.29	1023	ISLE1	0.005	5.4	0.012	12.7	285	175	128	107
81	37	Nort	117	Martin	3711700069	WEYERHAEUSER COMPA	1802.13	-257.21	1592	ISLE1	0.008	13.1	0.007	11.3	50	94	151	188
82	17	Illi	119	Madison	119090AAA	TOSCOPEPETRO CORP	597.73	-106.12	970	ISLE1	0.009	8.5	0.007	6.3	127	86	275	204
83	17	Illi	115	Macon	115015AAE	ARCHER DANIELS MID	688.52	16.11	845	ISLE1	0.013	11.3	0.006	4.6	72	49	331	242
84	56	Wyom	37	Sweetwater	5603700048	SODIUM PRODUCTS	-1057.5	253.95	1829	ISLE1	0.006	11.9	0.008	15.1	61	131	100	162
85	18	Indi	129	Posey	2	GE PLASTICS MT. VE	792.71	-187.85	1056	ISLE1	0.006	6.5	0.009	9.2	209	142	189	152
86	1	Alab	103	Morgan	10	SOLUTIA, INC	909.72	-543.84	1425	ISLE1	0.005	6.5	0.016	23.1	205	219	56	82
87	5	Arka	3	Ashley	500300013	GEORGIA-PACIFIC CO	483.48	-742.27	1614	ISLE1	0.007	10.9	0.007	11.7	78	120	137	185
88	55	Wisc	87	Outagamie	445030960	Stora Enso No. Ame	688.7	507.13	354	ISLE1	0.005	1.6	0.013	4.6	911	217	339	105
89	42	Penn	95	Northhampto	420950006	HERCULES CEMENT CO	1805.85	300.02	1268	ISLE1	0.006	7.1	0.008	10.2	176	161	171	166

Obs	State ID	State Name	County ID	County Name	Facility ID	Facility Name	X grid	Y Grid	Min Dist	Class I Area	Q/d for Nox	Nox Emis (tons/day)	Q/d for SO2	SO2 Emis (tons/day)	Nox Emis. Rank	Nox Q/d Rank	SO2 Emis. Rank	SO2 Q/d Rank
90	48	Texa	245	Jefferson	4	PORT ARTHUR REFINE	295.78	-1122.4	2018	ISLE1	0.007	15.1	0.006	12.2	45	108	131	220
91	51	Virg	101	King_Willi	1	STONE CONTAINER CO	1758.92	-76.26	1438	ISLE1	0.005	7.3	0.009	13.2	168	189	119	146
92	38	Nort	105	Williams	270	TIOGA GAS PLANT	-483.02	945.64	1154	ISLE1	0.008	9.5	0.006	6.3	107	92	274	243
93	47	Tenn	65	Hamilton	3070	SIGNAL MOUNTAIN CE	1055.41	-474.82	1391	ISLE1	0.008	10.6	0.006	8	83	105	226	235
94	28	Miss	77	Lawrence	2807700007	GEORGIA PACIFIC CO	656.91	-904.14	1765	ISLE1	0.006	10.5	0.007	11.8	88	148	136	197
95	54	West	51	Marshall	11	VENCO MOUNDSVILLE	1369.32	103.48	1032	ISLE1	0.004	3.8	0.025	26.2	426	304	49	46
96	42	Penn	95	Northampto	420950012	KEYSTONE PORTLAND	1796.01	293.91	1262	ISLE1	0.005	6.5	0.008	9.6	203	178	182	178
97	48	Texa	139	Ellis	9	MIDLOTHIAN PLANT	-2.46	-836.27	1825	ISLE1	0.009	17.2	0.005	8.8	31	81	203	276
98	13	Geor	115	Floyd	11500021	INLAND PAPERBOARD	1069.64	-568.38	1485	ISLE1	0.005	7.6	0.008	11.3	151	183	150	175
99	42	Penn	73	Lawrence	420730024	CEMEX INC/WAMPUM C	1388.73	225.03	961	ISLE1	0.005	4.3	0.01	9.3	377	222	188	140
100	45	Sout	41	Florence	1040-0003	STONE CONTAINER FL	1573.22	-495.26	1630	ISLE1	0.006	9.2	0.006	10.6	116	158	162	205
101	17	Illi	31	Cook	ORD	O'Hare Airport	748.32	256.51	610	ISLE1	0.051	31.2	0.003	2.1	7	7	522	358
102	46	Sout	103	Pennington	28.1121-02	GCC DACOTAH	-500.27	470.86	1232	ISLE1	0.017	20.8	0.004	4.5	18	29	347	337
103	22	Loui	19	Calcasieu	69	VENCO/LAKE CHARLES	354.38	-1087.5	1974	ISLE1	0.003	6.5	0.038	74.9	208	349	6	28
104	22	Loui	89	St_Charles	79	SHELL CHEMICAL LP/	639.64	-1087.8	1949	ISLE1	0.019	37	0.003	6.8	2	24	264	355
105	51	Virg	670	Hopewell_C	26	HONEYWELL NYLON IN	1724.53	-110.82	1435	ISLE1	0.024	35	0.003	4.9	3	18	325	362
106	54	West	73	Pleasants	6	CABOT CORPORATION-	1333.59	40.93	1056	ISLE1	0.003	3.3	0.028	29.8	494	374	40	37
107	16	Idah	29	Caribou	2900001	P4 PRODUCTION LLC	-1184.4	393.32	1911	ISLE1	0.003	6	0.025	47.2	234	370	21	48
108	26	Mich	43	Dickinson	B7192	INTERNATIONAL PAPE	701.73	678.23	186	ISLE1	0.025	4.6	0.003	0.5	356	17	1000	405
109	27	Minn	137	St_Louis	2713700062	Ispat Inland Minin	344.47	852.92	324	ISLE1	0.044	14.2	0.002	0.7	47	9	924	455
110	29	Miss	99	Jefferson	2	RC CEMENT COMPANY	577.69	-182.41	1047	ISLE1	0.014	14.4	0.002	2.3	46	47	498	444
111	27	Minn	53	Hennepin	27053X MSP	MINNEAPOLIS-ST PAU	298.25	547.7	485	ISLE1	0.018	8.8	0.002	0.9	122	27	825	491
112	42	Penn	41	Cumberland	420410013	PPG IND INC/WORKS	1665.79	196.8	1198	ISLE1	0.014	17.1	0.001	1.5	33	43	614	608
113	48	Texa	485	Wichita	15	WORKS NO 4	-143.17	-664.17	1728	ISLE1	0.014	24	1E-03	1.7	13	45	581	698
114	22	Loui	39	Evangeline	1	CABOT CORPORATION/	456.09	-1015.5	1888	ISLE1	0.002	3.1	0.026	49.4	519	713	16	44
115	48	Texa	227	Howard	2	BIG SPRING CARBON	-416.53	-847.53	2024	ISLE1	0.002	3.1	0.024	47.9	544	779	19	49
116	22	Loui	47	Iberville	8	DOW CHEMICAL CO/LA	557.14	-1058.1	1922	ISLE1	0.014	27.4	7E-04	1.3	8	42	660	817
117	17	Illi	197	Will	197803AAK	CHICAGO CARBON CO	740.81	220.67	644	ISLE1	1E-03	0.6	0.025	16.4	2000	1000	91	47
118	22	Loui	33	East_Baton	21	GREAT LAKES CARBON	554.41	-1028.3	1893	ISLE1	9E-04	1.7	0.043	81.4	905	1000	5	20
119	1	Alab	53	Escambia	7	EXXONMOBIL PRODUCT	920.59	-943.87	1822	ISLE1	5E-04	0.9	0.026	47.8	1000	2000	20	43

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120	47	Tenn	163	Sullivan	7	SEAMAN CORPORATION	1314.19	-273.47	1305	ISLE1	0.015	20	1E-04	0.1	20	37	2000	2000
121	21	Kent	91	Hancock	2109100004	CENTURY ALUMINUM O	890.34	-177.37	1062	ISLE1	4E-04	0.4	0.03	31.9	2000	2000	34	35
122	28	Miss	67	Jones	2806700010	TRANSCONTINENTAL G	753	-875.43	1738	ISLE1	0.015	26.7	7E-05	0.1	10	36	2000	2000
123	29	Miss	93	Iron	8	DOE RUN COMPANY-GL	554.08	-259.61	1126	ISLE1	2E-04	0.3	0.175	196.9	3000	3000	1	1
124	48	Texa	39	Brazoria	41	PLANT B	157.03	-1224	2147	ISLE1	0.015	32.3	1E-05	0	6	38	4000	4000
125	51	Virg	11	Appomattox	11	TRANSCO STATION 17	1587.14	-134.93	1355	ISLE1	0.014	18.9	0	0	25	44	5000	5000
126	29	Miss	99	Jefferson	3	DOE RUN COMPANY-HE	575.2	-171.7	1037	ISLE1	8E-05	0.1	0.069	72	6000	6000	8	7
127	17	Illi	31	Cook	031600AMC	LTV STEEL CO	780.85	227.97	643	ISLE1	0.036	23.3	0	0	14	11	10000	10000
128	28	Miss	121	Rankin	2812100036	PURSUE ENERGY CORP	662.47	-843.93	1705	ISLE1	1E-05	0	0.026	44.7	10000	10000	24	42
129	4	Ariz	7	Gila	40072435	ASARCO - RAY COMPL	-1271	-590.46	2422	ISLE1	.	.	0.038	92.7	30000	30000	4	26
130	18	Indi	89	Lake	383	COKENERGY INC.	791.75	227.82	645	ISLE1	.	.	0.033	21.3	30000	60000	67	32

Appendix 10E

**Calpuff Modeling, Q/D And Visibility
For Seney**

For Seney, Illinois, Indiana, Iowa, Michigan, Missouri and Wisconsin have the majority of the 20% worst day; same as indicated by the PSAT analysis (see Figure 10.2.c).

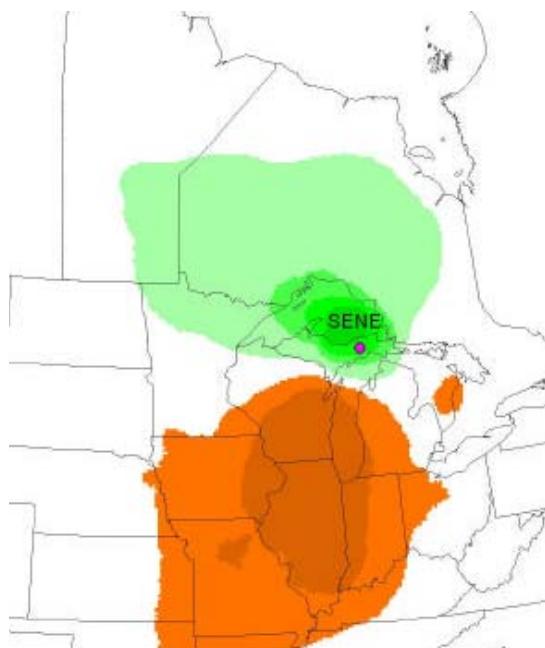


Figure 10.2.c: Composite back trajectories for Seney for the 20% worst days.
Orange is where the air is most likely to come from and green is where it is least
likely to come from.

Table 1. Calpuff modeling for Seney, includes only facilities located in the state of Michigan.

SENEY CLASS I AREA

FACILITY	SRN	1/(M-m)
WISCONSIN ELECTRIC POWER COMPANY	B4261	0.565
EMPIRE IRON MINING PARTNERSHIP	B1827	0.494
J. H. Campbell Plant	B2835	0.493
ESCANABA PAPER COMPANY	A0884	0.316
Karn - Weadock Facility	B2840	0.311
ST MARYS CEMENT INC	B1559	0.187
B. C. Cobb Plant	B2836	0.182
Tilden Mining Company L.C.	B4885	0.148
ESCANABA POWER PLANT	B1573	0.128
MANISTIQUE PAPERS INC	A6475	0.120
Neenah Paper - Michigan, Inc.	B1470	0.077
Eckert & Moores Park Station	B2647	0.075
Lafarge North America - Alpena Plant	B1477	0.068
ANR Pipeline Company - Bridgman Compressor Station	N5575	0.067
DETROIT EDISON/MONROE POWER	B2816	0.063
INTERNATIONAL PAPER CO	B7192	0.047
TES FILER CITY STATION	N1685	0.038
Packaging Corporation of America - Filer City Mill	B3692	0.038
Lansing Board of Water & Light, Erickson Station	B4001	0.037
Marquette Board of Light & Power	B1833	0.037
Holland BPW, Generating Station & WWTP	B2357	0.036
Martin Marietta Magnesia Specialties, LLC	A3900	0.035
Michigan State University	K3249	0.034
S. D. Warren, Muskegon, MI, Operations	A4203	0.030
ANR Pipeline Company - Hamilton Compressor Station	N5574	0.028
Midland Cogeneration Venture	B6527	0.026
Traverse City Light and Power Bayside Power Plant	B4257	0.024
DETROIT EDISON TRENTON CHANNEL	B2811	0.024
ST. CLAIR / BELLE RIVER POWER PLANT	B2796	0.024
Morton Salt Specialty Magnesia	B1824	0.024
General Chemical Industrial Products Inc.	B1821	0.023
Harbor Beach Power Plant	B2815	0.017
GREAT LAKES GAS TRANSMISSION STATION #8	N3760	0.017
FARWELL COMPRESSOR STATION NO 12	N5581	0.016
MENOMINEE PAPER COMPANY	B1855	0.016
STONE CONTAINER CORPORATION	A5754	0.016
DETROIT EDISON RIVER ROUGE	B2810	0.013
MERIT ENERGY CO. - Manistee Sulfur Plant	B6013	0.013
Michigan Sugar Company - Carrollton Factory	B2874	0.011
ANR Pipeline Co - Woolfolk Compressor Station	B7220	0.010
GREAT LAKES GAS TRANSMISSION STATION #9	N3759	0.010
J.R. WHITING CO	B2846	0.009
ANR-Coldsprings/ Blue Lake Gas Storage Company	B7198	0.009
Michigan Sugar Company - Sebewaing Factory	B2873	0.008
ANR Pipeline Company Lincoln Compressor Station	N5586	0.008

FACILITY	SRN	1/(M-m)
Michigan Sugar Company, Caro Factory	B2875	0.008
Delphi Saginaw Steering Systems, Holland Road	A6175	0.008
HOLCIM (US) INC.	B1743	0.007
U S STEEL GREAT LAKES WORKS	A7809	0.007
Pharmacia & Upjohn Co LLC, a subsidiary of Pfizer	B3610	0.007
J. B. Sims Generating Station	B1976	0.007
Reed City Compressor Station	B3721	0.006
Muskegon River Compressor Station	N2901	0.006
Louisiana-Pacific Corporation	N1315	0.005
Merit Energy Company. - Mayfield 23	B5587	0.005
DETROIT EDISON GREENWOOD ENERGY CENTER	B6145	0.005
TAGGART COMPRESSOR STATION	N3392	0.004
Viking Energy of McBain	N1160	0.004
CONSUMERS ENERGY COMPANY- WHITE PIGEON CO	N5573	0.004
GRAPHIC PACKAGING INTERNATIONAL, INC.	B1678	0.004
Merit Energy Co. - Brown 7	B5589	0.003
East Jordan Iron Works	A0767	0.003
Steelcase Inc. - Grand Rapids Complex	N0980	0.003
Decorative Panels International, Inc	B1476	0.003
MERIT ENERGY CO. - KALKASKA GAS PLANT	B4292	0.003
GREAT LAKES GAS TRANSMISSION STATION #7	N2168	0.003
Cadillac Renewable Energy Facility	N1395	0.003
Michigan Power Limited Partnership	N4975	0.003
MI SO CENTRAL POWER AGENCY	B6611	0.003
KINROSS CORRECTIONAL FACILITY	N2955	0.003
White Pigeon Paper Company	B2024	0.002
Hanson Brick - Michigan Plant	A6497	0.002
Pharmacia & Upjohn Company LLC	B4288	0.002
DEARBORN INDUSTRIAL GENERATION	N6631	0.002
Aztec Producing Company, Inc.	B7093	0.002
KINDER MORGAN CO	N6626	0.002
GENERAL MOTORS CORPORATION - ORION ASSEMBLY	B7227	0.002
GUARDIAN INDUSTRIES	B1877	0.002
CMS ANTRIM GAS L.L.C.	N2940	0.002
GM POWERTRAIN GROUP - SAGINAW METAL CASTING	B1991	0.002
Overisel Compressor Station	N5792	0.002
Great Lakes Gas Transmission Station #11	B8573	0.002
GREAT LAKES GAS TRANSMISSION STATION #10	N3758	0.002
GMC-MFD Grand Blanc Metal Fab Plant	B1610	0.002
HILLMAN POWER CO	N1266	0.002
GRAYLING GENERATING STATION LTD PTNR	N2388	0.001
Great Lakes Gas Transmission Station #13	N3818	0.001
MARATHON ASHLAND PETROLEUM	A9831	0.001
QUICKSILVER RESOURCES INC. - P-LEASE	N3190	0.001
GREAT LAKES TISSUE	B1563	0.001
General Motors Pontiac Site Operations	B4032	0.001
MERIT ENERGY CO. - OTSEGO LAKE 34	N0200	0.001
SUMMIT ESSEXVILLE INC	N0827	0.001

FACILITY	SRN	1/(M-m)
VIKING ENERGY OF LINCOLN, INC.	N0890	0.001
WYANDOTTE DEPT MUNI POWER	B2132	0.001
Kellogg USA Inc.	A0563	0.001
Michigan Sugar Company - Bay City	B1493	0.001
JAGUAR ENERGY, FREDERIC 15 GAS PLANT	B7222	0.001
The Dow Chemical Company U.S.A., Midland	A4033	0.001
Howell Compressor Station	N5572	0.001
Michigan Sugar Company, Croswell Factory	B2876	0.001
General Motors Corporation - Van Slyke Complex	B1606	0.001
Ludlow Coated Products	B2013	0.001
ABBOTT LABORATORIES-ROSS PRODUCTS DIVISION	A6380	0.001
BELLE RIVER COMPRESSOR STATION	B6478	0.001
Kent County Waste to Energy Facility	N1604	0.001
MID MICHIGAN GAS STORAGE CO - CAPAC	B6481	0.001
Western Michigan University	K2131	0.001
ADA COGENERATION	N1784	0.001
GENESEE POWER STATION LIMITED PARTNERSHIP	N3570	0.001
QUANEX CORP MACSTEEL DIVISION	B4306	0.001
E.B. EDDY PAPER INC.	B6420	0.001
SEVERSTAL NORTH AMERICA, INC.	A8640	0.000
Central Michigan University	K2460	0.000
Menasha Packaging Company, LLC, Otsego Mill	A0023	0.000
UNIVERSITY OF MI	M0675	0.000
CARGILL SALT	A6240	0.000
MUSKEGON DEVELOPMENT--HEADQUARTERS OIL FIELD	N0924	0.000
DETROIT THERMAL BEACON HEATING PLANT	B2814	0.000
Hyperion Energy, Rich Field Gas Plant	B5462	0.000
ST. CLAIR COMPRESSOR STATION	B6637	0.000
GREATER DETROIT RESOURCE RECOVERY	M4148	0.000
DaimlerChrysler Technology Center	N1436	0.000
DETROIT DIESEL CORPORATION	A8638	0.000
FORD MOTOR CO/ WAYNE COMPLEX	A8650	0.000
DETROIT WASTEWATER TREATMENT PLANT	B2103	0.000
EQ-SITE #2	M4782	0.000
ONYX-ARBOR HILLS LANDFILL	N2688	0.000
FREEDOM COMPRESSOR STATION	N3920	0.000
CARMEUSE LIME/ RIVER ROUGE	B2169	0.000
CARMEUSE/DETROIT LIME	B3520	0.000
GENERAL MOTORS HAMTRAMCK	M4199	0.000
DETROIT PUBLIC LIGHTING	B2185	0.000
CENTRAL WAYNE ENERGY RECOVERY	B4281	0.000
IPMC AQUISITION LLC	A7051	0.000
GM Technical Center	B4049	0.000
FORD MOTOR CO ELM ST BOILERHOUSE	M4764	0.000

Table 2. Top 30 facilities contributing to decreased visibility at Seney, includes facilities in and out of state.

Area	Deciviews	State	County	Facility ID	Facility Name
SENE1	0.76837	MI	Ottawa	B2835	JH_Campbell
SENE1	0.50992	IL	Will	197809AAO	MidwestGen
SENE1	0.47144	WI	Sheboygan	480033090	WPL_Alliant
SENE1	0.40775	MI	St_Clair	B2796	BelleRiver
SENE1	0.34743	WI	Columbia	111003090	Alliant
SENE1	0.32325	IN	Spencer	20	IN_Mi_Power
SENE1	0.32295	MI	Monroe	B2816	Detroit_Ed
SENE1	0.30828	MI	Alpena	B1477	LaFarge
SENE1	0.29421	MN	Sherburne	2714100004	NSP
SENE1	0.29202	WI	Brown	405032870	FortJames
SENE1	0.27039	MI	Bay	B2840	Kam_Weadock
SENE1	0.22242	MI	Marquette	B4261	WI_Electric
SENE1	0.19289	WI	Outagamie	445031180	Intl_Paper
SENE1	0.18886	IN	Jefferson	1	IKEC
SENE1	0.14692	MN	Itasca	2706100004	MinnesotaPower_Bos
SENE1	0.11993	IN	Floyd	4	PSI_EnergyGallagher
SENE1	0.11411	ND	Mercer	11	NA
SENE1	0.10921	MI	Marquette	B4885	TildenMining
SENE1	0.10301	ND	McLean	17	NA
SENE1	0.10086	IL	Massac	127866AAC	ElectricEnergyInc
SENE1	0.09836	ND	Oliver	1	NA
SENE1	0.07361	ND	Mercer	4	NA
SENE1	0.06732	ND	Mercer	1	NA
SENE1	0.06681	MI	Marquette	B1827	EmpireIronMining
SENE1	0.06078	OH	Clemont	1413100008	Cinergy
SENE1	0.04868	MN	Cook	2703100001	MinnesotaPower_Tac
SENE1	0.02468	MN	StLouis	2713700005	US_Steel
SENE1	0.02044	MN	StLouis	2713700113	EVTAC_Mining
SENE1	0.01312	MN	StLouis	2713700063	KeewatinTaconite
SENE1	0.00874	MN	StLouis	2713700061	HibbingTaconite
SENE1	0.00535	MN	StLouis	2713700062	IspatInlandMining
sum = 6.1					

Table 3 2018 Q/d EGUs for Seney for facilities in and out of state.

Obs	Stat	State	Count	County	Facility ID	Facility Name	X grid	Y Grid	Min Dist (km)	Class I Area	Q/d for Nox	Nox Emissions (tons/day)	Q/d for SO2	SO2 Emissions (tons/day)	Nox Emis. Rank	Nox Q/d Rank	SO2 Emis. Rank	SO2 Q/d Rank
	e ID	Name	y ID	Name														
1	26	Mich	147	St_Clair	B2796	St. Clair / Belle	1175.59	406.81	473	SENE1	0.127	60.2	0.528	249.6	14	2	2	1
2	26	Mich	103	Marquette	B4261	Wisconsin Electric	736.05	769.94	115	SENE1	0.139	16	0.336	38.8	113	1	129	4
3	18	Indi	147	Spencer	20	Indiana Michigan P	868.79	-182.36	932	SENE1	0.063	59.1	0.208	193.9	15	6	4	8
4	55	Wisc	117	Sheboygan	460033090	Wp & L Alliant Ene	726.01	448.45	325	SENE1	0.060	19.5	0.203	66	89	8	58	10
5	17	Illi	197	Will	197809AAO	Midwest Generation	754.82	201.22	556	SENE1	0.051	28.3	0.202	112.2	52	12	16	11
6	26	Mich	115	Monroe	B2816	Detroit Edison/Mon	1122.4	293.92	531	SENE1	0.040	21.1	0.346	183.6	78	22	5	3
7	26	Mich	139	Ottawa	B2835	J. H. Campbell Pla	875.41	374.7	375	SENE1	0.040	14.9	0.428	160.7	127	23	6	2
8	27	Minn	141	Sherburne	2714100004	Nsp - Sherburne Ge	242.98	601.12	624	SENE1	0.087	54.3	0.117	73	20	4	45	26
9	13	Geor	207	Monroe	20700008	Georgia Power Comp	1227.24	-681.37	1480	SENE1	0.039	58.4	0.218	322.4	17	25	1	6
10	55	Wisc	11	Buffalo	606034110	Dairyland Power Co	412.92	490.06	508	SENE1	0.043	21.9	0.152	77.3	75	18	39	14
11	55	Wisc	21	Columbia	111003090	Alliant Energy-Col	604.68	417.45	412	SENE1	0.039	16	0.215	88.7	115	28	30	7
12	29	Miss	71	Franklin	3	Amerenue-Labadie P	533.09	-140.88	945	SENE1	0.037	34.7	0.232	218.7	43	34	3	5
13	55	Wisc	73	Marathon	737009020	Wis Public Service	581.37	565	325	SENE1	0.040	13	0.126	41	143	21	118	18
14	26	Mich	17	Bay	B2840	Karn - Weadock Fac	1053.98	480.5	338	SENE1	0.038	12.7	0.206	69.7	145	31	49	9
15	21	Kent	145	McCracken	2114500006	Tva-Environmental	725.03	-282.55	1039	SENE1	0.057	59.1	0.100	104.4	16	11	19	31
16	18	Indi	73	Jasper	8	Nipsco - R.M. Scha	829.67	180.7	569	SENE1	0.038	21.8	0.168	95.4	76	30	25	12
17	27	Minn	61	Itasca	2706100004	Minnesota Power In	250.45	815.4	603	SENE1	0.039	23.5	0.122	73.8	67	27	44	20
18	26	Mich	163	Wayne	B2810	Detroit Edison Riv	1134.99	338.82	500	SENE1	0.039	19.5	0.118	59.2	88	26	68	23
19	55	Wisc	9	Brown	405031990	Wi Public Service	711.56	538.78	252	SENE1	0.040	10.1	0.089	22.4	193	20	211	39
20	17	Illi	197	Will	197810AAK	Midwest Generation	739.33	216.94	543	SENE1	0.030	16.4	0.131	71.4	106	44	47	17
21	20	Kans	107	Linn	5	Kansas City Power	204.64	-180.37	1131	SENE1	0.102	114.9	0.067	75.7	2	3	41	60
22	26	Mich	163	Wayne	B2811	Detroit Edison Tre	1131.97	321.47	513	SENE1	0.030	15.1	0.156	80.1	124	51	36	13
23	31	Nebr	111	Lincoln	19	Nppd Gerald Gentle	-346.04	127.9	1347	SENE1	0.050	67.2	0.073	98.2	11	14	22	55
24	40	Okla	101	Muskogee	1209	Og&E	153.25	-468.02	1402	SENE1	0.045	63.4	0.069	96.8	12	17	24	58
25	55	Wisc	79	Milwaukee	241007800	Wis Electric Power	735.39	372.57	393	SENE1	0.030	11.8	0.101	39.9	163	47	122	30
26	29	Miss	183	St_Charles	1	Amerenue-Sioux Pla	577.43	-98.68	890	SENE1	0.026	23.5	0.122	108.5	66	62	17	21
27	5	Arka	63	Independen	506300042	Entergy Ark-Indepe	492.48	-457.61	1258	SENE1	0.040	50.8	0.065	81.9	23	19	34	65
28	10	Dela	5	Sussex	1000500001	Indian River Gener	1865.68	68.12	1223	SENE1	0.030	36.5	0.088	107.1	38	49	18	40
29	39	Ohio	113	Montgomery	857780013	Dp&L, O.H. Hutchin	1080.83	32.7	753	SENE1	0.027	20.1	0.099	74.6	84	61	42	32
30	54	West	79	Putnam	6	Appalachian Power	1309.75	-59.75	931	SENE1	0.029	26.9	0.087	81.2	57	53	35	42
31	40	Okla	131	Rogers	212	Public Svc Co Of O	116	-394.96	1359	SENE1	0.037	50.3	0.066	89.7	24	33	28	63
32	21	Kent	41	Carroll	2104100010	Kentucky Utilities	1030.26	-70.65	839	SENE1	0.024	20.2	0.108	90.6	83	71	26	27
33	18	Indi	89	Lake	117	Nipsco - Dean H. M	792.89	223.83	528	SENE1	0.025	13.4	0.097	51.2	138	65	88	33
34	21	Kent	177	Muhlenberg	2117700006	Tva Paradise Steam	881.29	-254.8	1004	SENE1	0.022	22.4	0.134	135	72	87	13	15
35	18	Indi	29	Dearborn	2	American Electric	1040.07	-31.95	804	SENE1	0.030	24.1	0.072	57.8	62	46	71	56
36	54	West	33	Harrison	15	Monongahela Power	1420.24	62.14	893	SENE1	0.032	28.7	0.062	55.1	51	38	79	70
37	26	Mich	121	Muskegon	B2836	B. C. Cobb Plant	867.65	412.1	338	SENE1	0.021	7.2	0.124	41.9	246	90	116	19
38	48	Texa	449	Titus	3	Monticello Stm Ele	183.02	-764.16	1654	SENE1	0.024	39.7	0.090	148.9	31	73	12	38
39	48	Texa	401	Rusk	11	Martin Lake Electr	228.94	-855.56	1720	SENE1	0.032	54.6	0.060	103.6	18	39	20	72
40	18	Indi	43	Floyd	4	Psi Energy - Galla	968.21	-132.21	889	SENE1	0.025	22.5	0.079	69.9	71	67	48	49
41	17	Illi	97	Lake	097190AAC	Midwest Generation	737.64	294.2	468	SENE1	0.023	10.8	0.095	44.3	176	83	109	35

Obs	State ID	County Name	Facility ID	Facility Name	X grid	Y Grid	Min Dist	Class I Area	Q/d for Nox	Nox Emissions (tons/day)	Q/d for SO2	SO2 Emissions (tons/day)	Nox Emis. Rank	Nox Q/d Rank	SO2 Emis. Rank	SO2 Q/d Rank
42	26 Mich	65 Ingham	B2647	Eckert & Moores Pa	1010.99	370.28	412	SENE1	0.027	11.1	0.067	27.6	173	60	181	59
43	22 Loui	77 Pointe_Cou	5	La Generating Llc/	541.11	-1012.94	1789	SENE1	0.023	41.6	0.087	156.2	29	80	7	41
44	38 Nort	57 Mercer	11	Antelope Valley	-366.36	829.12	1218	SENE1	0.029	34.8	0.064	77.9	42	54	37	67
45	19 Iowa	179 Wapello	90-07-001	Ipl - Ottumwa Gene	370.37	130.73	782	SENE1	0.024	19.1	0.073	57.3	92	70	74	53
46	39 Ohio	81 Jefferson	641160017	W. H. Sammis Plant	1370.12	182.63	769	SENE1	0.047	36.4	0.046	35.3	39	16	143	107
47	20 Kans	149 Pottawatom	1	Westar Energy, Inc	76.41	-78.82	1133	SENE1	0.066	74.3	0.042	47.4	8	5	99	121
48	26 Mich	115 Monroe	B2846	J.R. Whiting Co	1115.57	281.92	538	SENE1	0.022	12	0.081	43.6	159	85	111	46
49	35 New	45 San_Juan	2	Four Corners	-1017.45	-302.17	2143	SENE1	0.060	127.9	0.040	86.5	1	9	31	123
50	38 Nort	65 Oliver	1	Milton R Young	-320.89	792.72	1171	SENE1	0.058	68.5	0.041	48.5	10	10	95	122
51	39 Ohio	85 Lake	243160009	Cleveland Electric	1279.13	291.75	628	SENE1	0.027	17	0.060	37.4	103	59	135	73
52	5 Arka	69 Jefferson	506900110	Entergy Ark-White	444.95	-604.3	1413	SENE1	0.020	27.8	0.095	134.8	53	102	14	34
53	17 Illi	179 Tazewell	179801AAA	Midwest Generation	623.59	83.59	703	SENE1	0.017	11.8	0.121	85.2	161	114	33	22
54	31 Nebr	55 Douglas	2	Omaha Public Power	87.56	147.4	971	SENE1	0.028	27.6	0.054	52.4	54	55	86	82
55	29 Miss	189 St_Louis	10	Amerenue-Meramec P	577.8	-155.79	945	SENE1	0.022	20.4	0.077	72.3	82	89	46	51
56	40 Okla	97 Mayes	799	Grand River Dam Au	152.96	-420.36	1361	SENE1	0.033	45.3	0.046	63.1	26	37	65	104
57	19 Iowa	115 Louisa	58-07-001	Midamerican Energy	491.15	161.82	688	SENE1	0.023	16	0.067	46	114	81	105	61
58	39 Ohio	31 Coshocton	616000000	Conesville Power P	1273.11	126.55	753	SENE1	0.021	15.9	0.076	57.5	116	91	72	52
59	29 Miss	175 Randolph	1	Associated Electri	372.28	-40.81	923	SENE1	0.024	22.2	0.059	54.2	73	72	81	75
60	46 Sout	51 Grant	1001	Big Stone	38.52	588.77	827	SENE1	0.051	41.9	0.037	31	27	13	158	135
61	1 Alab	127 Walker	1	Alabama Power Comp	905.95	-655.15	1405	SENE1	0.023	32.7	0.061	86	45	79	32	71
62	17 Illi	31 Cook	031600AIN	Midwest Generation	740.23	258.24	503	SENE1	0.020	10.1	0.078	39	194	100	128	50
63	19 Iowa	193 Woodbury	97-04-010	Midamerican Energy	50.9	257.79	938	SENE1	0.020	19.2	0.071	66.5	90	95	56	57
64	42 Penn	123 Warren	421230004	Reliant Energy Mid	1461.47	347.07	732	SENE1	0.018	13	0.087	63.5	142	110	64	43
65	18 Indi	167 Vigo	21	Psi Energy - Wabas	816.7	-9.44	759	SENE1	0.024	18	0.058	43.7	96	78	110	77
66	42 Penn	7 Beaver	420070005	Pa Power Co/Bruce	1385.78	197.02	770	SENE1	0.019	14.9	0.073	56.2	128	103	75	54
67	18 Indi	51 Gibson	13	Psi Energy - Gibso	800.1	-139.75	890	SENE1	0.024	21.1	0.056	49.7	79	77	91	80
68	31 Nebr	131 Otoe	36	Oppd Nebraska City	102.73	69.51	1010	SENE1	0.030	30.1	0.045	45	48	50	107	110
69	1 Alab	73 Jefferson	10730011	Alabama Power Comp	918.55	-655.58	1406	SENE1	0.015	20.8	0.108	151.2	80	134	10	28
70	18 Indi	77 Jefferson	1	Ikec - Clifty Cree	996.96	-75.84	838	SENE1	0.014	12	0.118	99.2	158	139	21	24
71	19 Iowa	155 Pottawatta	78-01-026	Midamerican Energy	96.67	131.21	974	SENE1	0.022	21.8	0.056	54.9	77	86	80	79
72	29 Miss	99 Jefferson	16	Amerenue-Rush Isla	585.2	-185.06	971	SENE1	0.015	14.6	0.093	90.2	130	130	27	36
73	30 Mont	87 Rosebud	14	Colstrip	-745.47	692.28	1596	SENE1	0.062	99.4	0.031	50.2	3	7	89	159
74	54 West	61 Monongalia	1	Monongahela Power	1447.46	102.18	881	SENE1	0.040	35	0.036	31.3	40	24	157	145
75	39 Ohio	1 Adams	701000007	Dp&L, J.M. Stuart	1146.62	-66.91	868	SENE1	0.018	15.9	0.065	56.1	117	107	76	66
76	17 Illi	137 Morgan	137805AAA	Ameren Energy Gene	573.75	-11.93	809	SENE1	0.018	14.5	0.063	51.2	131	109	87	68
77	47 Tenn	161 Stewart	11	Tva Cumberland Fos	832.73	-356.9	1106	SENE1	0.016	17.5	0.067	74	101	121	43	62
78	55 Wisc	79 Milwaukee	241007690	Wis Electric Power	744.78	352.32	410	SENE1	0.020	8.2	0.053	21.8	228	99	213	84
79	39 Ohio	61 Hamilton	1431350093	Cinergy Corp Miami	1044.54	-28.04	801	SENE1	0.020	16.1	0.052	41.9	109	98	115	89
80	40 Okla	103 Noble	1211	Og&E	-4.49	-392.21	1425	SENE1	0.026	37.4	0.039	55.6	35	63	78	127
81	13 Geor	15 Bartow	1500011	Georgia Power Comp	1107.98	-577.91	1352	SENE1	0.020	27.5	0.050	67.5	55	96	54	95
82	19 Iowa	5 Allamakee	03-03-001	Ipl - Lansing Gene	470.71	385.08	525	SENE1	0.019	9.8	0.053	27.6	198	105	180	88
83	35 New	45 San_Juan	902	San Juan	-1003.78	-291.61	2125	SENE1	0.036	77.5	0.031	66.3	7	35	57	161

Obs	State ID	County Name	Facility ID	Facility Name	X grid	Y Grid	Min Dist	Class I Area	Q/d for Nox	Nox Emissions (tons/day)	Q/d for SO2	SO2 Emissions (tons/day)	Nox Emis. Rank	Nox Q/d Rank	SO2 Emis. Rank	SO2 Q/d Rank
84	56 Wyom	37 Sweetwater	1002	Jim Bridger	-972.43	254.8	1888	SENE1	0.048	90.1	0.027	50	4	15	90	181
85	17 Illi	79 Jasper	079808AAA	Ameren Energy Gene	757.13	-86.21	840	SENE1	0.021	17.5	0.047	39.1	100	94	126	103
86	18 Indi	125 Pike	2	Ipl Petersburg Gen	842.68	-117.98	867	SENE1	0.013	11.5	0.079	68.3	167	150	52	48
87	17 Illi	21 Christian	021814AAB	Kincaid Generation	640.02	-18.93	796	SENE1	0.013	10.4	0.081	64.8	183	154	62	45
88	48 Texa	161 Freestone	2	Big Brown	89.59	-907.29	1822	SENE1	0.013	23.6	0.083	151.3	64	156	9	44
89	29 Miss	83 Henry	1	Kansas City Power	266.4	-182.27	1099	SENE1	0.017	18.2	0.053	58.2	95	115	70	85
90	12 Flor	17 Citrus	170004	Progress Energy Fl	1400.33	-1117.57	1946	SENE1	0.015	29.8	0.059	114.4	50	128	15	74
91	38 Nort	57 Mercer	1	Leland Olds	-333.88	817.63	1185	SENE1	0.038	45.6	0.028	33.2	25	29	152	176
92	27 Minn	31 Cook	2703100001	Minnesota Power -	456.12	868.74	411	SENE1	0.019	7.7	0.047	19.3	237	104	230	101
93	21 Kent	111 Jefferson	127	Lou Gas & Elec, Mi	964.53	-156.68	913	SENE1	0.011	10	0.107	97.3	196	178	23	29
94	54 West	51 Marshall	5	Ohio Power - Mitch	1369.32	103.48	829	SENE1	0.015	12.3	0.059	48.6	153	133	94	76
95	26 Mich	103 Marquette	B1833	Marquette Board Of	736.83	764.5	114	SENE1	0.020	2.2	0.045	5.1	476	101	398	109
96	38 Nort	55 McLean	17	Coal Creek	-314.98	827.45	1167	SENE1	0.013	15.6	0.065	76.1	120	148	40	64
97	39 Ohio	13 Belmont	607130015	R. E. Burger Plant	1371.93	112.83	823	SENE1	0.024	19.6	0.037	30.1	87	75	166	139
98	17 Illi	127 Massac	127855AAC	Electric Energy In	730.42	-276.69	1033	SENE1	0.015	15.1	0.057	58.7	126	137	69	78
99	1 Alab	71 Jackson	8	Tva - Widows Creek	1021.51	-503.21	1264	SENE1	0.010	13.2	0.118	149.4	140	191	11	25
100	39 Ohio	53 Gallia	627010056	Gavin Power Plant	1276.05	-13.25	874	SENE1	0.020	17.8	0.043	37.5	99	97	133	119
101	26 Mich	41 Delta	ORIS900426	Generic Unit	778.82	701.52	85	SENE1	0.030	2.6	0.025	2.2	429	45	474	193
102	18 Indi	91 La_Porte	21	Michigan City	833.07	236.91	512	SENE1	0.009	4.8	0.091	46.5	323	208	100	37
103	47 Tenn	85 Humphreys	11	Tva Johnsonville F	807.5	-400.68	1151	SENE1	0.008	9.2	0.133	153.1	207	230	8	16
104	32 Neva	3 Clark	P001	Mohave	-1586.4	-385.32	2687	SENE1	0.030	80.3	0.024	64.2	6	48	63	204
105	37 Nort	35 Catawba	3703500073	Duke Energy Corpor	1439.23	-361.13	1257	SENE1	0.030	38.2	0.014	17	32	43	247	282
106	38 Nort	57 Mercer	12	Coyote	-365.63	812.34	1217	SENE1	0.031	38	0.013	15.6	33	41	261	288
107	56 Wyom	31 Platte	1	Laramie River	-646.48	261.76	1573	SENE1	0.034	53.2	0.012	18.4	21	36	238	304
108	55 Wisc	123 Vernon	663020930	Dairyland Power Co	499.22	413.37	485	SENE1	0.005	2.4	0.081	39.2	461	313	124	47
109	4 Ariz	5 Coconino	4	Navajo	-1269.44	-242	2339	SENE1	0.037	86.8	0.006	13.2	5	32	286	383
110	47 Tenn	165 Sumner	25	Tva Gallatin Fossi	944.61	-353.49	1107	SENE1	0.031	34.8	0.006	6.5	41	40	372	380
111	42 Penn	63 Indiana	420630002	Seward	1505.09	194.39	859	SENE1	0.031	26.8	0.000	0	58	42	555	555

Table 4. 2018 Q/d for non-EGUs for Seney in and out of state.

Obs	State ID	State Name	Count y ID	County Name	Facility ID	Facility Name	X grid	Y Grid	Min Dist (km)	Class I Area	Q/d for Nox	Nox Emis (tons/day)	Q/d for SO2	SO2 Emis (tons/day)	Nox Emis. Rank	Nox Q/d Rank	SO2 Emis. Rank	SO2 Q/d Rank
1	26	Mich	7	Alpena	B1477	Lafarge North Amer	1064.8	642.46	240	SENE1	0.11307	27.2	0.2575	61.9	9	2	10	1
2	26	Mich	29	Charlevoix	B1559	Cemex, Inc.	913.95	648.93	119	SENE1	0.09562	11.4	0.0974	11.6	71	4	142	4
3	26	Mich	41	Delta	A0884	Escanaba Paper Com	768.76	686.2	102	SENE1	0.10491	10.7	0.0757	7.7	81	3	235	7
4	18	Indi	127	Porter	1	Bethlehem Steel Co	816.81	225.57	525	SENE1	0.04705	24.7	0.0914	47.9	12	8	18	5
5	55	Wisc	9	Brown	405032870	Fort James Operati	711.36	532.24	257	SENE1	0.04395	11.3	0.134	34.5	73	10	32	3
6	26	Mich	103	Marquette	B4885	Tilden Mining Comp	717.88	752.31	132	SENE1	0.14853	19.5	0.0531	7	21	1	254	18
7	18	Indi	79	Jennings	2	Muscatahuck State	983.64	-43.09	804	SENE1	0.04191	33.7	0.0659	53	4	11	12	12
8	55	Wisc	87	Outagamie	445031180	International Pape	694.55	508.2	286	SENE1	0.02004	5.7	0.0748	21.4	250	24	66	9
9	36	New	1	Albany	4012400001	Lafarge Building M	1875.6	517.3	1052	SENE1	0.0177	18.6	0.07	73.6	27	30	7	11
10	17	Illi	31	Cook	031012ABI	Corn Products Inte	757.27	234.85	522	SENE1	0.01952	10.2	0.0539	28.2	95	26	45	17
11	18	Indi	89	Lake	121	U S Steel Co Gary	800.33	221.74	530	SENE1	0.03144	16.7	0.0393	20.8	37	14	70	31
12	29	Miss	163	Pike	1	Holcim (Us) Inc-Cl	517.79	-51.92	867	SENE1	0.02502	21.7	0.0439	38.1	16	20	28	26
13	26	Mich	153	Schoolcraf	A6475	Manistique Papers	831.18	711.84	42	SENE1	0.01603	0.7	0.0609	2.5	2000	37	474	14
14	35	New	43	Sandoval	350430005	Rio Rancho Facilit	-873.64	-482.1	2118	SENE1	0.01579	33.4	0.049	103.7	5	38	3	21
15	55	Wisc	69	Lincoln	735008010	Packaging Corporat	556.13	626.3	318	SENE1	0.01522	4.8	0.059	18.8	333	44	75	15
16	47	Tenn	163	Sullivan	3	Eastman Chemical C	1282.4	-283.13	1119	SENE1	0.01368	15.3	0.0576	64.5	42	59	9	16
17	19	Iowa	33	Cerro_Gord	17-01-005	Lehigh Cement Comp	306.72	359.46	668	SENE1	0.01472	9.8	0.0441	29.4	98	51	41	25
18	19	Iowa	33	Cerro_Gord	17-01-009	Holcim (Us) Inc. -	307.38	358.1	668	SENE1	0.01784	11.9	0.0243	16.3	60	28	92	49
19	48	Texa	331	Milam	1	Alcoa Sandow Plant	-6.64	-1048.6	1991	SENE1	0.01147	22.8	0.0707	140.8	15	71	2	10
20	55	Wisc	141	Wood	772009480	Stora Enso No. Ame	572.9	514.1	363	SENE1	0.01478	5.4	0.0388	14.1	284	50	114	32
21	19	Iowa	45	Clinton	23-01-006	Adm Corn Processin	559.9	222.35	601	SENE1	0.02147	12.9	0.0224	13.5	54	22	118	60
22	21	Kent	19	Boyd	2101900004	Marathon Ashland P	1245.1	-80.57	919	SENE1	0.0154	14.2	0.0249	22.9	48	41	58	47
23	39	Ohio	141	Ross	671010028	Mw Custom Papers L	1196.5	14.78	812	SENE1	0.01001	8.1	0.0646	52.5	135	87	13	13
24	26	Mich	163	Wayne	A7809	National Steel Cor	1135.1	339.67	499	SENE1	0.01923	9.6	0.0194	9.7	105	27	178	74
25	26	Mich	3	Alger	B1470	Kimberly-Clark Mic	795.45	757.13	55	SENE1	0.01171	0.6	0.0332	1.8	2000	68	558	36
26	18	Indi	89	Lake	316	Ispat Inland Inc.	789.68	225.78	527	SENE1	0.02872	15.1	0.0162	8.5	44	16	209	92
27	19	Iowa	163	Scott	82-04-005	Lafarge North Amer	522.89	179.92	656	SENE1	0.01142	7.5	0.0321	21.1	158	72	68	37
28	17	Illi	179	Tazewell	179060ACR	Williams Ethanol S	616.71	86.4	702	SENE1	0.01003	7	0.0443	31.1	177	86	37	24
29	47	Tenn	107	McMinn	12	Bowater Newsprint	1106	-447.1	1223	SENE1	0.01335	16.3	0.0237	29	39	60	43	50

Obs	State ID	State Name	Count y ID	County Name	Facility ID	Facility Name	X grid	Y Grid	Min Dist	Class I Area	Q/d for Nox	Nox Emis (tons/day)	Q/d for SO2	SO2 Emis (tons/day)	Nox Q/d Rank	Nox Emis. Rank	SO2 Q/d Rank	SO2 Emis. Rank
30	55	Wisc	75	Marinette	438039360	Stora Enso No. Ame	699.42	675.24	167	SENE1	0.01123	1.9	0.03	5	817	73	318	40
31	31	Nebr	25	Cass	2	Ash Grove Cement C	70.4	111.58	1007	SENE1	0.01522	15.3	0.0198	19.9	41	43	71	71
32	55	Wisc	85	Oneida	744008100	Rhinelander Paper	590.04	650.4	278	SENE1	0.01431	4	0.0215	6	415	53	285	63
33	19	Iowa	113	Linn	57-01-080	Adm Corn Processin	437.9	226	666	SENE1	0.01406	9.4	0.0217	14.4	111	55	109	62
34	48	Texa	245	Jefferson	18	Beaumont Refinery	284	-1098.2	1932	SENE1	0.01055	20.4	0.0269	51.9	19	78	14	45
35	22	Loui	19	Calcasieu	16	Citgo Petroleum Co	354.5	-1083.4	1898	SENE1	0.01382	26.2	0.0202	38.4	11	58	27	67
36	17	Illi	197	Will	197090AAI	Citgo Petroleum Co	739.52	218.57	542	SENE1	0.01054	5.7	0.0263	14.3	253	79	112	46
37	27	Minn	37	Dakota	2703700011	Flint Hills Resour	313.1	536.07	577	SENE1	0.01554	9	0.0174	10	120	39	173	86
38	17	Illi	143	Peoria	143065AJE	Archer Daniels Mid	620.28	100.05	688	SENE1	0.01177	8.1	0.022	15.1	137	66	101	61
39	36	New	55	Monroe	8261400205	Kodak Park Divisio	1554.2	520.79	741	SENE1	0.00731	5.4	0.0832	61.7	278	125	11	6
40	29	Miss	186	Ste_Genevi	1	Mississippi Lime C	604.82	-201.25	981	SENE1	0.01074	10.5	0.0233	22.9	85	77	57	55
41	26	Mich	115	Monroe	B1743	Holcim (Us) Inc.	1095.2	301.31	511	SENE1	0.00797	4.1	0.0521	26.6	401	115	48	20
42	37	Nort	87	Haywood	3708700159	Blue Ridge Paper P	1273	-395.75	1221	SENE1	0.0124	15.1	0.0196	24	43	64	54	72
43	17	Illi	197	Will	197800AAA	Exxonmobil Oil Cor	731.72	191.95	569	SENE1	0.01151	6.6	0.0204	11.6	202	70	140	66
44	55	Wisc	141	Wood	772010690	Domtar A. W. Corp-	564.3	500.64	378	SENE1	0.00948	3.6	0.0275	10.4	459	94	168	43
45	51	Virg	580	Covington_	3	Meadwestvaco Packa	1479.4	-104.98	1061	SENE1	0.00783	8.3	0.0454	48.2	131	117	17	22
46	26	Mich	103	Marquette	B1827	Empire Iron Mining	721.86	753.57	128	SENE1	0.08138	10.4	0.0107	1.4	89	5	652	137
47	26	Mich	131	Ontonagon	A5754	Stone Container Co	585.66	788.16	267	SENE1	0.01042	2.8	0.0209	5.6	590	81	295	64
48	22	Loui	101	St_Mary	5	Columbian Chem Co/	539.96	-1130.4	1905	SENE1	0.00881	16.8	0.0247	47	36	104	22	48
49	27	Minn	137	St_Louis	2713700005	Us Steel Corp - Mi	329.2	844.37	529	SENE1	0.07638	40.4	0.0101	5.3	1	6	307	150
50	18	Indi	93	Lawrence	2	Lehigh Cement Comp	908.36	-87.24	838	SENE1	0.01411	11.8	0.0143	12	64	54	134	107
51	27	Minn	137	St_Louis	2713700113	Evtac Mining - Fai	332.38	817.67	522	SENE1	0.01005	5.2	0.0187	9.8	291	85	175	76
52	38	Nort	57	Mercer	65	Great Plains Synfu	-366.4	822.14	1218	SENE1	0.01024	12.5	0.0178	21.7	55	84	65	81
53	55	Wisc	9	Brown	405032210	Procter & Gamble P	712.19	536.92	253	SENE1	0.00874	2.2	0.0209	5.3	724	105	309	65
54	24	Mary	5	Baltimore	005-0147	Bethlehem Steel	1745	111.32	1099	SENE1	0.01178	13	0.0135	14.8	51	65	104	110
55	39	Ohio	3	Allen	302020012	Premcor Refining G	1077.3	156.38	635	SENE1	0.00971	6.2	0.0172	10.9	220	88	154	88
56	36	New	39	Greene	4192600021	St Lawrence Cement	1877.1	479.42	1062	SENE1	0.01033	11	0.0156	16.6	74	82	89	96
57	18	Indi	89	Lake	3	Bp Products North	786.62	226.25	527	SENE1	0.02961	15.6	0.0088	4.6	40	15	337	166
58	54	West	51	Marshall	2	Ppg Industries, In	1368.8	92.13	837	SENE1	0.00628	5.3	0.0413	34.6	288	156	31	27
59	17	Illi	119	Madison	119813AAI	National Steel Cor	593.44	-122.12	908	SENE1	0.01103	10	0.0126	11.5	97	74	146	116

Obs	State ID	State Name	Count y ID	County Name	Facility ID	Facility Name	X grid	Y Grid	Min Dist	Class I Area	Q/d for Nox	Nox Emis (tons/day)	Q/d for SO2	SO2 Emis (tons/day)	Nox Emis. Rank	Nox Q/d Rank	SO2 Emis. Rank	SO2 Q/d Rank
60	24	Mary	1	Allegany	001-0011	Westvaco Fine Paper	1523.4	92.53	941 SENE1	0.00572	5.4	0.0526	49.5	281	186	15	19	
61	26	Mich	121	Muskegon	A4203	S. D. Warren, Musk	863.45	407.17	342 SENE1	0.01257	4.3	0.01	3.4	382	63	410	151	
62	55	Wisc	141	Wood	772010140	Stora Enso No. Ame	569.27	510.68	368 SENE1	0.01451	5.3	0.0088	3.3	286	52	422	165	
63	39	Ohio	17	Butler	1409010006	Ak Steel Corporati	1074.3	17.69	765 SENE1	0.00801	6.1	0.0127	9.7	223	113	176	115	
64	48	Texa	201	Harris	39	Deer Park Plant	181.22	-1140.9	2005 SENE1	0.0094	18.8	0.011	21.9	26	96	64	134	
65	54	West	3	Berkeley	6	Capitol Cement Cor	1615.5	106.66	1000 SENE1	0.0116	11.6	0.009	9	67	69	196	162	
66	17	Illi	99	La_Salle	099816AAF	Lone Star Industri	660.86	171.62	608 SENE1	0.00628	3.8	0.0178	10.8	427	158	156	83	
67	18	Indi	17	Cass	5	Essroc Cement Corp	886.86	133.3	617 SENE1	0.00768	4.7	0.0114	7	341	120	253	130	
68	51	Virg	23	Botetourt	3	Roanoke Cement Com	1486.1	-140.6	1094 SENE1	0.00772	8.4	0.0109	11.9	129	119	135	135	
69	47	Tenn	163	Sullivan	22	Willamette Industr	1280.3	-281.22	1117 SENE1	0.00741	8.3	0.0113	12.6	132	124	129	131	
70	48	Texa	167	Galveston	1	Texas City Refiner	202.52	-1179	2034 SENE1	0.00959	19.5	0.0088	17.8	22	90	77	167	
71	48	Texa	139	Ellis	22	Holcim (Texas) Lp	2.71	-830.73	1792 SENE1	0.01077	19.3	0.0081	14.6	24	76	107	182	
72	45	Sout	75	Orangeburg	1860-0005	Holcim:Holly Hill	1533.3	-599.62	1512 SENE1	0.00721	10.9	0.0114	17.2	77	131	83	129	
73	18	Indi	19	Clark	8	Essroc Cement Corp	973.34	-115.29	873 SENE1	0.00614	5.4	0.0146	12.7	285	165	128	102	
74	28	Miss	59	Jackson	2805900058	Chevron Products C	805.08	-1022.4	1772 SENE1	0.00728	12.9	0.0105	18.6	53	128	76	140	
75	48	Texa	233	Hutchinson	15	Borger Refinery	-393.25	-467.47	1739 SENE1	0.00522	9.1	0.0225	39.1	117	210	26	59	
76	37	Nort	117	Martin	3711700069	Weyerhaeuser Compa	1802.1	-257.21	1386 SENE1	0.00948	13.1	0.0082	11.3	50	95	151	180	
77	17	Illi	115	Macon	115015AAE	Archer Daniels Mid	688.52	16.11	750 SENE1	0.01511	11.3	0.0062	4.6	72	45	331	235	
78	19	Iowa	139	Muscatine	70-01-004	Grain Processing C	493.3	171.15	679 SENE1	0.00453	3.1	0.0411	27.9	539	256	47	28	
79	55	Wisc	87	Outagamie	445030960	Stora Enso No. Ame	688.7	507.13	291 SENE1	0.00564	1.6	0.0158	4.6	911	191	339	94	
80	54	West	51	Marshall	11	Venco Moundsville	1369.3	103.48	829 SENE1	0.0046	3.8	0.0317	26.2	426	248	49	38	
81	28	Miss	87	Lowndes	2808700025	Holnam Inc, Artesi	776.03	-700.15	1451 SENE1	0.0073	10.6	0.009	13.1	84	126	124	161	
82	18	Indi	129	Posey	2	Ge Plastics Mt. Ve	792.71	-187.85	939 SENE1	0.00689	6.5	0.0098	9.2	209	138	189	155	
83	42	Penn	95	Northhampto	420950006	Hercules Cement Co	1805.9	300.02	1057 SENE1	0.0067	7.1	0.0097	10.2	176	142	171	156	
84	1	Alab	103	Morgan	10	Solutia, Inc	909.72	-543.84	1294 SENE1	0.00503	6.5	0.0178	23.1	205	217	56	82	
85	17	Illi	119	Madison	119090AAA	Toscopetro Corp	597.73	-106.12	892 SENE1	0.00949	8.5	0.0071	6.3	127	93	275	210	
86	42	Penn	73	Lawrence	420730024	Cemex Inc/Wampum C	1388.7	225.03	752 SENE1	0.00578	4.3	0.0124	9.3	377	185	188	120	
87	48	Texa	139	Ellis	2	North Texas Cement	-0.39	-829.74	1793 SENE1	0.0061	10.9	0.0105	18.9	75	168	74	139	
88	26	Mich	65	Ingham	K3249	Michigan State Uni	1016.9	371.28	413 SENE1	0.0048	2	0.0195	8.1	784	237	223	73	
89	51	Virg	101	King_Willi	1	Stone Container Co	1758.9	-76.26	1228 SENE1	0.00592	7.3	0.0108	13.2	168	178	119	136	

Obs	State ID	State Name	Count y ID	County Name	Facility ID	Facility Name	X grid	Y Grid	Min Dist	Class I Area	Q/d for Nox	Nox Emis (tons/day)	Q/d for SO2	SO2 Emis (tons/day)	Nox Q/d Rank	Nox Emis. Rank	SO2 Q/d Rank	SO2 Emis. Rank
90	42	Penn	95	Northhampto	420950012	Keystone Portland	1796	293.91	1050	SENE1	0.00622	6.5	0.0091	9.6	203	162	182	160
91	5	Arka	3	Ashley	500300013	Georgia-Pacific Co	483.48	-742.27	1536	SENE1	0.0071	10.9	0.0077	11.7	78	134	137	191
92	55	Wisc	73	Marathon	737009570	Mosinee Paper Corp	576.5	554.53	335	SENE1	0.00559	1.9	0.011	3.7	821	194	392	133
93	47	Tenn	65	Hamilton	3070	Signal Mountain Ce	1055.4	-474.82	1241	SENE1	0.00855	10.6	0.0064	8	83	107	226	226
94	27	Minn	137	St_Louis	2713700063	Keewatin Taconite	341.99	853.46	518	SENE1	0.03748	19.4	0.0044	2.3	23	12	499	322
95	42	Penn	47	Elk	420470005	Weyerhaeuser/Johns	1510.5	317.92	789	SENE1	0.00488	3.9	0.0145	11.5	423	232	147	105
96	51	Virg	93	Isle_of_Wi	6	International Pape	1770.6	-171.35	1302	SENE1	0.00433	5.6	0.0201	26.2	259	270	50	69
97	18	Indi	89	Lake	318	Isg Indiana Harbor	788.82	225.39	527	SENE1	0.01281	6.8	0.0051	2.7	189	62	466	277
98	42	Penn	95	Northhampto	420950127	Essroc/Nazareth Ce	1802.7	297.77	1055	SENE1	0.00556	5.9	0.0104	11	242	199	153	142
99	17	Illi	31	Cook	ORD	O'hare Airport	748.32	256.51	503	SENE1	0.06204	31.2	0.0042	2.1	7	7	522	334
100	48	Texa	245	Jefferson	4	Port Arthur Refine	295.78	-1122.4	1952	SENE1	0.00774	15.1	0.0062	12.2	45	118	131	231
101	54	West	73	Pleasants	6	Cabot Corporation-	1333.6	40.93	858	SENE1	0.00384	3.3	0.0348	29.8	494	316	40	34
102	42	Penn	73	Lawrence	420730026	Essroc/Bessemer	1373.2	233	735	SENE1	0.01675	12.3	0.0044	3.2	58	33	423	318
103	51	Virg	670	Hopewell_C	26	Honeywell Nylon In	1724.5	-110.82	1227	SENE1	0.0285	35	0.004	4.9	3	17	325	346
104	22	Loui	89	St_Charles	79	Shell Chemical Lp/	639.64	-1087.8	1849	SENE1	0.02	37	0.0037	6.8	2	25	264	364
105	22	Loui	19	Calcasieu	69	Venco/Lake Charles	354.38	-1087.5	1902	SENE1	0.00341	6.5	0.0394	74.9	208	370	6	30
106	27	Minn	137	St_Louis	2713700061	Hibbing Taconite C	312.33	829.93	543	SENE1	0.03345	18.2	0.0032	1.7	30	13	573	389
107	26	Mich	43	Dickinson	B7192	International Pape	701.73	678.23	164	SENE1	0.02807	4.6	0.0029	0.5	356	18	1000	411
108	46	Sout	103	Pennington	28.1121-02	Gcc Dacotah	-500.27	470.86	1378	SENE1	0.01507	20.8	0.0033	4.5	18	46	347	384
109	29	Miss	99	Jefferson	2	Rc Cement Company	577.69	-182.41	970	SENE1	0.01488	14.4	0.0023	2.3	46	49	498	447
110	42	Penn	39	Crawford	420390012	Ppg Ind Inc/Works	1384.9	297.94	700	SENE1	0.01674	11.7	0.002	1.4	66	34	639	485
111	42	Penn	41	Cumberland	420410013	Ppg Ind Inc/Works	1665.8	196.8	986	SENE1	0.01735	17.1	0.0015	1.5	33	32	614	567
112	27	Minn	53	Hennepin	27053XMS	Minneapolis-St Pau	298.25	547.7	587	SENE1	0.01506	8.8	0.0015	0.9	122	47	825	585
113	27	Minn	137	St_Louis	2713700062	Ispat Inland Minin	344.47	852.92	516	SENE1	0.02763	14.2	0.0013	0.7	47	19	924	626
114	22	Loui	39	Evangeline	1	Cabot Corporation/	456.09	-1015.5	1808	SENE1	0.00174	3.1	0.0273	49.4	519	745	16	44
115	22	Loui	47	Iberville	8	Dow Chemical Co/La	557.14	-1058.1	1831	SENE1	0.01499	27.4	0.0007	1.3	8	48	660	850
116	17	Illi	197	Will	197803AAK	Chicago Carbon Co	740.81	220.67	540	SENE1	0.00117	0.6	0.0304	16.4	2000	1000	91	39
117	22	Loui	33	East_Baton	21	Great Lakes Carbon	554.41	-1028.3	1802	SENE1	0.00092	1.7	0.0452	81.4	905	1000	5	23
118	1	Alab	53	Escambia	7	Exxonmobil Product	920.59	-943.87	1695	SENE1	0.00056	0.9	0.0282	47.8	1000	2000	20	41
119	47	Tenn	163	Sullivan	7	Seaman Corporation	1314.2	-273.47	1123	SENE1	0.01782	20	0.0001	0.1	20	29	2000	2000

Obs	State ID	State Name	Count y ID	County Name	Facility ID	Facility Name	X grid	Y Grid	Min Dist	Class I Area	Q/d for Nox	Nox Emis (tons/day)	Q/d for SO2	SO2 Emis (tons/day)	Nox Emis. Rank	Nox Q/d Rank	SO2 Emis. Rank	SO2 Q/d Rank
120	21	Kent	91	Hancock	2109100004	Century Aluminum O	890.34	-177.37	927	SENE1	0.00044	0.4	0.0344	31.9	2000	2000	34	35
121	39	Ohio	3	Allen	302020015	Bp Chemicals, Inc.	1076.8	155.42	636	SENE1	0.01535	9.8	8E-05	0.1	100	42	3000	2000
122	28	Miss	67	Jones	2806700010	Transcontinental G	753	-875.43	1627	SENE1	0.01639	26.7	8E-05	0.1	10	36	2000	2000
123	29	Miss	93	Iron	8	Doe Run Company-GI	554.08	-259.61	1051	SENE1	0.00026	0.3	0.1874	196.9	3000	3000	1	2
124	48	Texa	39	Brazoria	41	Plant B	157.03	-1224	2091	SENE1	0.01545	32.3	1E-05	0	6	40	4000	4000
125	26	Mich	97	Mackinac	N3758	Great Lakes Gas Tr	891.29	735.74	44	SENE1	0.02466	1.1	1E-05	0	1000	21	10000	5000
126	51	Virg	11	Appomattox	11	Transco Station 17	1587.1	-134.93	1151	SENE1	0.01639	18.9	1E-05	0	25	35	5000	5000
127	26	Mich	9	Antrim	B7198	Anr-Coldsprings/ B	946.7	599.21	179	SENE1	0.01762	3.1	0	0	518	31	9000	5000
128	29	Miss	99	Jefferson	3	Doe Run Company-He	575.2	-171.7	961	SENE1	0.00008	0.1	0.075	72	6000	6000	8	8
129	26	Mich	35	Clare	N5581	Farwell Compressor	962.06	500.82	273	SENE1	0.021	5.7	0	0	251	23	8000	6000
130	17	Illi	31	Cook	031600AMC	Ltv Steel Co	780.85	227.97	526	SENE1	0.04441	23.3	0	0	14	9	10000	10000
131	28	Miss	121	Rankin	2812100036	Pursue Energy Corp	662.47	-843.93	1604	SENE1	0.00001	0	0.0279	44.7	10000	10000	24	42
132	4	Ariz	7	Gila	40072435	Asarco - Ray Compl	-1271	-590.46	2508	SENE1	.	.	0.037	92.7	30000	30000	4	33
133	18	Indi	89	Lake	383	Cokenergy Inc.	791.75	227.82	524	SENE1	.	.	0.0406	21.3	30000	60000	67	29

Appendix 10F

OTC-LADCO Letter to EPA

June 11, 2008

Robert J. Meyers
Principal Deputy Assistant Administrator
Office of Air and Radiation
Ariel Rios Building
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Dear Mr. Meyers:

Regional transport of air pollutants in the U.S. is a major problem that can only be remedied by cooperation between state and federal governments. Over the years, a number of states and the U.S. Environmental Protection Agency (USEPA) have worked together successfully as part of the Ozone Transport Assessment Group (OTAG) and more recently on ozone and particulate matter (PM) programs. In looking ahead at our future air quality challenges, such as meeting the new national standards for fine particles (PM2.5) and ozone, and the need for further progress in improving visibility in mandatory Class I Federal areas, we believe that it is time for the states and USEPA to sit down once again and map out an approach for managing air quality, as called for by the National Research Council in its 2004 report.

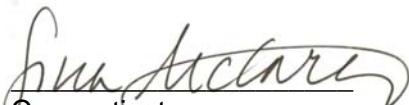
We hereby request that the USEPA enter into a dialogue with us to address the multi-pollutant air quality problems in the U.S.; in particular, nonattainment for ozone and PM2.5, and visibility impairment due to regional haze. We believe that these discussions should, at a minimum, address the following:

- Establish a common understanding of the reductions expected to be necessary to address ozone and PM2.5 nonattainment, and visibility problems. We anticipate that existing (and forthcoming) state and federal regulations will provide for further improvement in air quality, but will not be enough to attain and maintain national ambient air quality standards everywhere in the U.S. for ozone and PM2.5, especially in light of the new ozone standard, or achieve the goals for visibility in all mandatory Class I Federal areas. States are taking an important first step in coming up with a solution by analyzing the potential for additional reductions from a number of key contributing source sectors, which we will bring to the table.
- Identify strategies for achieving effective, equitable, and necessary emission reductions from all important contributing source sectors. Traditional and innovative measures should be considered, as well as consideration for implementing national regulations and programs based on cost-effective and technically feasible state and regional control measures already in place. Possible measures include a third phase of reductions for electrical generating units (EGUs), controls for existing industrial, commercial, and institutional (ICI) boilers, programs to reduce primary (and secondary) emissions from on-road and off-road mobile sources, and maintaining and strengthening inspection and maintenance programs.

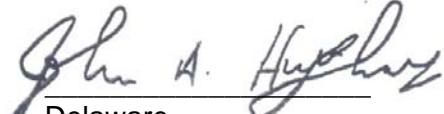
- Determine appropriate regulatory approaches for achieving these emission reductions under the existing framework of the Clean Air Act. These approaches would be designed to utilize the effectiveness and uniformity provided by federal programs while providing for important regional differences and administrative flexibility.

We look forward to working in partnership with USEPA to address our air quality problems.

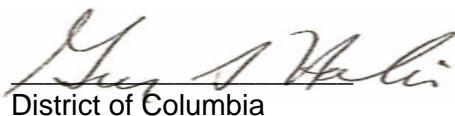
Sincerely,


Gina McCarthy

Connecticut


John A. Hickenlooper

Delaware


Muriel Bowser

District of Columbia


Douglas D. Scott

Illinois


Del. York

Maine

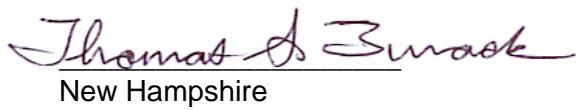

Maryland Governor


Deval Patrick

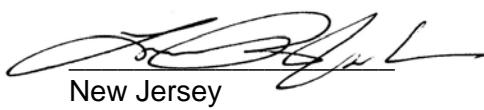
Massachusetts


Rick Snyder

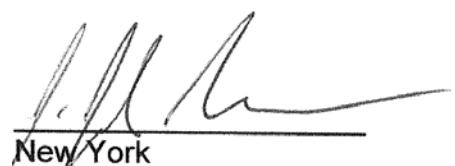
Michigan


Thomas J. Broak

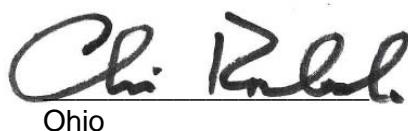
New Hampshire


Chris Christie

New Jersey


Andrew Cuomo

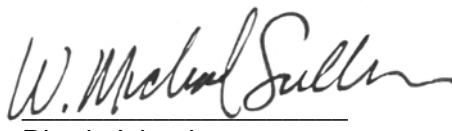
New York


John Kasich

Ohio


Tom Wolf

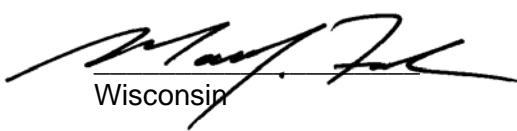
Pennsylvania


Gina Raimondo

Rhode Island


Peter Shumlin

Vermont


Tony Evers

Wisconsin