

Mississippi Regional Haze SIP Progress Report

1.0 INTRODUCTION

In the 1977 Amendments to the Clean Air Act (CAA), Congress set forth a program for protecting the visibility in Class I Federal areas in order to protect visibility in 156 national parks and wilderness areas. In 1999, the United States Environmental Protection Agency (EPA) promulgated the Regional Haze Rule (RHR) (64 FR 35713), which revised the existing visibility regulations in order to integrate provisions addressing regional haze impairment and establish a comprehensive visibility protection program for Class I Federal areas.

States are required to submit state implementation plans (SIPs) to EPA that set out each state's plan for complying with the regional haze rule and to consult with other states and federal land managers, in order to reduce visibility impairment. The RHR at 51.308d requires states to demonstrate reasonable progress toward meeting the national goal of a return to natural visibility conditions. Mississippi submitted its SIP on September 22, 2008, with an addendum submitted on May 9, 2011. On June 7, 2012, EPA finalized a limited disapproval of the Mississippi regional haze SIP because of deficiencies in its submittal which arose from the State's reliance on CAIR to meet certain regional haze requirements. On June 27, 2012, EPA finalized a limited approval for the SIP.

The EPA designated five Regional Planning Organizations (RPOs) to assist with the coordination and cooperation needed to address the visibility issue. Those that make up the southeastern portion of the contiguous United States are known as VISTAS (Visibility Improvement – State and Tribal Association of the Southeast) and include: Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia. While Mississippi does not have any Class I areas, Breton National Wildlife Refuge in Louisiana and Sipsey Wilderness Area in Alabama are the closest Class I areas to Mississippi. Louisiana and Alabama have indicated that Mississippi has no impact on the visibility at Breton National Wildlife Refuge and Sipsey Wilderness, respectively. However, through the VISTAS program, Mississippi has developed a SIP in order to meet the regional haze requirements set forth by the EPA and to assess the effect of the state's emissions on Class 1 areas in surrounding states.

While developing its SIP, Mississippi set forth a long term strategy stating that the emissions controls from existing federal standards, such as CAIR and the Heavy Duty Diesel Rule, would result in significant reductions of visibility impairing pollutants from sources in Mississippi.

Mississippi also performed Best Available Retrofit Technology (BART) analysis and determined that two additional facilities were BART-subject. These facilities adopted controls to reduce emissions and will be discussed further in this progress report.

According to the requirements of 40 CFR 51.308(g), *“Each State identified in 51.300(b)(3) must submit a report to the Administrator every 5 years evaluating progress towards the reasonable progress goal for each mandatory Class I Federal area located within the State and in each mandatory Class I Federal area located outside the State which may be affected by emissions from within the State.”* Due to the fact that there are no Class I areas in Mississippi, there were no reasonable progress goals for Mississippi to set in its SIP. This document demonstrates progress in emissions reductions since the original Regional Haze SIP submittal and that these reductions are on track with those laid out in the SIP. This progress report covers the first half of the implementation period from 2008 through 2012.

2.0 EMISSION CONTROL PROGRAMS

40 CFR 51.308(g)(1) *“A description of the status of implementation of all measures included in the implementation plan for achieving reasonable progress goals for mandatory Class I Federal areas both within and outside the State.”*

As noted in the Regional Haze SIP, since Mississippi does not have any Class 1 areas, reasonable progress goals are not presented. However, Mississippi has addressed the impact of sources in the state on Class 1 areas potentially impacted by the state’s sources. Section 3.3 of this report details the facilities in Mississippi that were in need of further evaluation to help meet reasonable progress goals set by surrounding states.

2.1 CAIR and CSAPR

On March 10, 2005, the EPA issued the Clean Air Interstate Rule (CAIR), which would permanently cap emissions of sulfur dioxide (SO₂) and nitrogen oxides (NO_x) in the eastern United States. CAIR would achieve large reductions of SO₂ and/or NO_x emissions across 29 eastern states and the District of Columbia using a cap and trade system. When fully implemented, CAIR would reduce SO₂ emissions in these states by over seventy (70) percent and NO_x emissions by over sixty (60) percent from 2003 levels.

On July 6, 2011, the EPA finalized the Cross-State Air Pollution Rule (CSAPR), which would require 28 states across the eastern portion of the United States to reduce power plant emissions. This rule would reduce SO₂ emissions by 73 percent and NO_x emissions by 54 percent from 2005 levels by 2014. Mississippi is only subject to the Ozone Season NO_x provisions in CSAPR, not the Annual NO_x or SO₂ provisions.

Mississippi originally relied on the CAIR is better than BART ruling. CSAPR replaced CAIR beginning in January of 2015. Mississippi was not fully covered by CSAPR, under which Mississippi is only subject to the Ozone Season NO_x provisions. Mississippi is working to address BART on the following seven BART-eligible EGU sources: Entergy Mississippi Inc., Baxter Wilson Plant; Entergy Mississippi Inc., Gerald Andrus Plant; Mississippi Power Company, Chevron Cogenerating Plant; Mississippi Power Company, Plant Jack Watson; Mississippi Power Company, Plant Victor J Daniel; South Mississippi Electric Power Association, Moselle Plant; and South Mississippi Electric Power Association, R D Morrow Plant.

However, Mississippi has seen reductions of annual NO_x and SO₂ over the past several years. These NO_x and SO₂ emissions reductions are detailed in Section 3.2 of this document.

2.2 NO_x SIP Call

Phase I of the NO_x SIP call applies to certain EGUs and large non-EGUs, including large industrial boilers and turbines, and cement kilns. Those states affected by the NO_x SIP call in the VISTAS region have developed rules for the control of NO_x emissions that have been approved by the EPA. The NO_x SIP Call has resulted in a 68 percent reduction in NO_x emissions from large stationary combustion sources. For this analysis, the emissions for NO_x SIP call-affected sources were capped at 2007 levels, and carried forward the capped levels for the 2009 and 2018 future year inventories. Mississippi was not subject to the NO_x SIP call. However, states north and east of Mississippi are subject and the resulting emission reductions should improve conditions at Class I areas throughout the Southeast.

2.3 Consent Agreements

- The settlement requires Tampa Electric Company (TECO) to pay a \$3.5 million civil penalty. Under the agreement, TECO was required to install permanent emissions-control equipment to meet stringent pollution limits; implement a series of interim pollution-reduction measures to reduce emissions while the permanent controls are designed and installed; and retire pollution emission allowances that TECO or others could use, or sell to others, to emit additional pollution into the environment by 2008. This requirement was completed on schedule. The settlement also requires the company to spend between \$10 and \$11 million on environmentally beneficial projects in the region designed to mitigate the impact of emissions from the company's plants.

- Virginia Electric and Power Co. (VEPCO) agreed to spend \$1.2 billion to eliminate 237,000 tons of SO₂ and NO_x emissions per year from eight coal-fired electricity generating plants in Virginia and West Virginia by 2013.
- The 2002 agreement calls for Gulf Power to upgrade its operation to cut NO_x emission rates by sixty-one (61) percent at its Crist generating plant by 2007, with major reductions beginning in early 2005. The Crist plant is a significant source of NO_x emissions in the Pensacola area.
- Under the 2005 settlement agreement, Chevron Refinery Pascagoula was required to significantly reduce emissions, particularly of SO₂ and NO_x. Emissions of other pollutants will be reduced to lesser extents. The major emissions points with reductions are two sulfur recovery units, the FCC regenerator, flares, and several boilers and heaters. The Chevron consent decree will result in emission reductions of 12,700 tons/yr of SO₂, 4200 tons/yr of NO_x, and 175 tons/yr of PM₁₀ with a modeled visibility improvement of 2.99dv at Breton. All of these reductions were completed by 2011. Greater details of the consent decree and the emissions reductions can be found in the BART analysis, appendix L.10 of the 2008 Regional Haze SIP.

2.4 Heavy Duty Diesel (2007) Engine Standard

EPA set a PM emissions standard for new heavy-duty engines of 0.01 grams per brake-horsepower-hour (g/bhp-hr) to take full effect for diesels in the 2007 model year. It also includes standards for NO_x and non-methane hydrocarbons (NMHC) of 0.20 g/bhp-hr and 0.14 g/bhp-hr, respectively. These NO_x and NMHC standards were phased in together between 2007 and 2010 for diesel engines. Sulfur in diesel fuel was also lowered to enable modern pollution-control technology to be effective on these trucks and buses. In 2006, EPA proposed a 97 percent reduction in the sulfur content of highway diesel fuel from its current level of 500 parts per million (low sulfur diesel, or LSD) to 15 parts per million (ultra-low sulfur diesel, or ULSD). In 2010, the conversion of highway diesel fuel to ULSD was completed.

2.5 Tier 2 Tailpipe

EPA mobile rules include the Tier 2 fleet averaging program, modeled after the California LEV II standards. Manufacturers can produce vehicles with emissions ranging from relatively dirty to zero, but the mix of vehicles a manufacturer sells each year must have average NO_x emissions below a specified value. Tier 2 standards became effective in the 2005 model year.

2.6 Large Spark Ignition and Recreational Vehicle Rule

EPA has adopted new standards for emissions of NO_x, hydrocarbons (HC), and carbon monoxide (CO) from several groups of previously unregulated nonroad engines. Included in these are large industrial spark-ignition engines and recreational vehicles. Nonroad spark-ignition engines are those powered by gasoline, liquid propane gas, or compressed natural gas rated over 19 kilowatts (kW) (25 horsepower). These engines are used in commercial and industrial applications, including forklifts, electric generators, airport baggage transport vehicles, and a variety of farm and construction applications. Nonroad recreational vehicles include snowmobiles, off-highway motorcycles, and all-terrain vehicles. These rules were initially effective in 2004 and fully phased-in by 2012.

2.7 Nonroad Diesel Emissions Control

This rule sets standards that will reduce emissions by more than 90 percent from nonroad diesel equipment, and reduce sulfur levels by 99 percent from current levels in nonroad diesel fuel starting in 2007. Federal requirements also implemented a standard to reduce fuel sulfur levels in most nonroad diesel fuel in 2010 and fuel used in locomotive and marine vessels in 2012. The new low-sulfur diesel standards for nonroad engines, locomotives, and marine vessels were phased in completely by 2014.

2.8 Industrial Boiler / Process Heater / Reciprocating Internal Combustion Engines (RICE) Maximum Achievable Control Technology (MACT) Standards

On September 13, 2004, the EPA issued final rules to substantially reduce emissions of toxic air pollutants from industrial, commercial and institutional boilers, process heaters and stationary RICE. These rules reduce emissions of a number of toxic air pollutants, including hydrogen chloride, manganese, lead, arsenic and mercury by 2009. This rule also reduces emissions of sulfur dioxide and particulate matter in conjunction with the toxic air pollutant reductions. The applied MACT control efficiencies were 4 percent for SO₂ and 40 percent for PM₁₀ and PM_{2.5}. The EPA's industrial boiler MACT rules were vacated on June 8, 2007. However, the EPA is required under the Clean Air Act to issue revised boiler MACT rules. These rules were scheduled to be proposed in 2009 and final in 2010. As such, it is likely that by 2018 MACT controls will be required for industrial boilers. Therefore, the VISTAS States decided to include control assumptions for industrial boilers due to MACT.

On May 21, 2011, the EPA established new emissions standards in response to the vacatur of the 2004 standards. These standards require major source industrial/commercial/institutional boilers and process heaters to meet hazardous air pollutant (HAP) standards reflecting the application of

the MACT. The EPA revised this rule on January 31, 2013 and again on November 20, 2015. The final emission standards for control of mercury, hydrogen chloride (HCl), particulate matter, and carbon monoxide from coal-fired, biomass-fired, and liquid-fired major source boilers are based on the MACT. EPA estimated the total emissions reductions resulting from these adjusted standards are 1.6 tons per year (TPY) of mercury; 1,786 TPY of non-mercury metals; 39,385 TPY of HCl; 16,593 TPY of PM_{2.5}; 570,000 TPY of SO₂; and 2,400 TPY of VOCs. Any emissions reductions that result from these updated standards may provide further assurance that surrounding state's Class 1 areas achieve their RPGs.

2.9 Combustion Turbine MACT

The projection inventories do not include the NO_x co-benefit effects of the MACT regulations for Gas Turbines or stationary Reciprocating Internal Combustion Engines (RICE), which EPA estimates to be small compared to the overall inventory.

2.10 VOC 2-, 4-, 7-, and 10-year MACT Standards

The point source MACTs and associated emission reductions were designed from Federal Register (FR) notices and discussions with EPA's Emission Standards Division (ESD) staff. MDEQ did not apply reductions for MACT standards with an initial compliance date of 2001 or earlier, assuming that the effects of these controls are already accounted for in the 2002 inventories supplied by the States.

MACT Source Category	40 CFR 63 Subpart	Date Promulgated	Existing Source Compliance Date	Pollutants Affected
Hazardous Waste Combustion (Phase I)	Parts 63 (EEE), 261 and 270	9/30/99	9/30/03	PM
Oil & Natural Gas Production	HH	6/17/99	6/17/02	VOC
Polymers and Resins III	OOO	1/20/00	1/20/03	VOC
Portland Cement Manufacturing	LLL	6/14/99	6/10/02	PM
Publicly Owned Treatment Works (POTW)	VVV	10/26/99	10/26/02	VOC
Secondary Aluminum Production	RRR	3/23/00	3/24/03	PM
Combustion sources at Kraft, Soda, and Sulfite Pulp & Paper Mills (Pulp and Paper MACT II)	MM	1/12/01	1/12/04	VOC
Municipal solid Waste Landfills	AAAA	1/16/03	1/16/04	VOC

MACT Source Category	40 CFR 63 Subpart	Date Promulgated	Existing Source Compliance Date	Pollutants Affected
Coke Ovens	L	10/27/93	Phased from 1995-2010	VOC
Coke Ovens: Pushing, Quenching, and Battery Stacks	CCCCC	4/14/03	4/14/06	VOC
Asphalt Roofing Manufacturing and Asphalt Processing (two source categories)	LLLLL	4/29/03	5/1/06	VOC
Metal Furniture (Surface Coating)	RRRRR	5/23/03	5/23/06	VOC
Printing, Coating, and Dyeing of Fabrics	OOOOO	2/29/03	5/29/06	VOC
Wood Building Products (Surface coating)	QQQQQ	5/28/03	5/28/06	VOC
Lime Manufacturing	AAAAA	1/5/04	1/5/07	PM, SO ₂
Site Remediation TSDF	GGGGG	10/8/03	10/8/06	VOC
Iron & Steel Foundries	EEEEEE	4/22/04	4/23/07	VOC
Taconite Iron Ore Processing	RRRRRR	10/30/03	10/30/06	PM, SO ₂
Miscellaneous Coating Manufacturing	HHHHH	12/11/03	12/11/06	VOC
Metal Can (Surface Coating)	KKKKK	11/13/03	11/13/06	VOC
Plastic Parts and Products (Surface Coating)	PPPPP	4/19/04	4/19/07	VOC
Miscellaneous Metal Parts and Products (Surface Coating)	MMMMM	1/2/04	1/2/07	VOC
Industrial Boilers, Institutional/Commercial Boilers, and Process Heaters	DDDDD	9/13/04	9/13/07	PM, SO ₂
Plywood and Composite Wood Products	DDDD	7/30/04	10/1/07	VOC
Reciprocating Internal Combustion Engines	ZZZZ	6/15/04	6/15/07	NO _x , VOC
Auto and Light-Duty Truck (Surface Coating)	IIII	4/26/04	4/26/07	VOC
Wet Formed Fiberglass Mat Production	HHHH	4/11/02	4/11/05	VOC
Metal Coil (Surface Coating)	SSSS	6/10/02	6/10/05	VOC
Paper and Other Web Coating (Surface Coating)	JJJJ	12/4/02	12/4/05	VOC
Petroleum Refineries	UUU	4/11/02	4/11/05	VOC
Miscellaneous Organic Chemical Production (MON)	FFFF	11/10/03	5/10/08	VOC

Table 1: MACT Source Categories with Compliance Dates on or after 2002

2.11 New Control Strategies

Three federal programs have been implemented since initial SIP submittal. Any emissions reductions that result from these federal programs were not relied upon by Mississippi in its regional haze SIP, however, they provide further assurance that any Class 1 areas potentially impacted by Mississippi's sources will achieve their RPGs.

2.11.1 Mercury and Air Toxics Rule (MATS)

This rule, promulgated on December 16, 2011, established emission standards for coal and oil-fired power plants. The new rule established emission standards for mercury, acid gases, and non-mercury metallic toxic pollutants. It will also prevent 90 percent of the coal burned in power plants from being emitted into the air, cut the acid gas emissions produced at these plants by 88 percent, and reduce SO₂ emissions 41 percent beyond the expected reductions from CSAPR. These reductions were implemented in 2016.

MATS standards were updated by the EPA on March 28, 2013 to include updated emission limits for mercury, particulate matter, SO₂, acid gases and certain individual metals. The new standards only affect new coal- and oil- fired power plants and do not change the emissions limits for existing power plants. The EPA projects these updates will result in no significant change in emissions reductions from MATS.

On April 14, 2016, EPA issued its finding that setting emissions standards for air toxics from coal- and oil- fired power plants is both appropriate and necessary. This finding is in response to a U.S. Supreme Court decision that the EPA must consider cost in the appropriate and necessary finding supporting MATS.

2.11.2 2010 SO₂ National Ambient Air Quality Standards (NAAQS)

On June 2, 2010, the EPA revised the SO₂ NAAQS by changing the primary SO₂ standard to 75 ppb averaged over an hour. This change replaced the previous 1971 standards of 0.14 ppm averaged over 24 hours and 0.030 ppm averaged over a year.

In the 2015 Final Data Requirements Rule (DRR), the EPA directed state and tribal air agencies to submit pathways to characterize air quality in areas with large sources of SO₂ emissions that were greater than 2,000 TPY for 2014 in accordance with 40 CFR Part 51.1203. Mississippi submitted characterization pathway information for the six facilities seen in Table 2 below.

FACILITY	CHARACTERIZATION PATHWAY
South Mississippi Electric Power Association, R.D. Morrow Plant	Area Designated Attainment: EPA designated Lamar County as unclassifiable/attainment based upon air dispersion modeling analysis, thus satisfying evaluation requirements for the R.D. Morrow Plant.
Mississippi Power Company, Plant Jack Watson	Federally Enforceable Emission Limit: These limits reduced this facility's potential SO ₂ emissions to less than 2,000 TPY. They also underwent a fuel switch from coal to natural gas that eliminated coal as a potential fuel.
Mississippi Power Company, Plant Victor Daniel	Air Quality Modeling: Modeling results for the 1-hour SO ₂ NAAQS were 75% of the 1-hour SO ₂ NAAQS. The two coal fired emissions units are equipped with wet flue gas desulfurization (FGD) systems for control of SO ₂ emissions. However, modeling was conducting using uncontrolled SO ₂ emissions rates. Because of this, it is anticipated that annual reporting required to demonstrate ongoing attainment of the 2010 SO ₂ NAAQS will be limited to providing verification of the decrease in actual emissions, and no further modeling will be warranted.
The Chemours Company FC, LLC, (Formerly DuPont-Delisle)	Federally Enforceable Emission Limit: These limits reduced this facility's potential SO ₂ emissions to less than 2,000 TPY. They also underwent a fuel switch from coal to natural gas that eliminated coal as a potential fuel.
Pursue Energy Corporation, Thomasville Gas Plant	Facility Shut Down: Facility was shut down on September 13, 2016
Choctaw Generation, LLP, Red Hills Generation Facility	Air Quality Modeling: Modeling results for the 1-hour SO ₂ NAAQS were 43% of the 1-hour SO ₂ NAAQS. It is therefore anticipated that no annual reporting will be required to demonstrate ongoing attainment of the 2010 SO ₂ NAAQS.

Table 2. Characterization Pathways for Emission Sources That Exceed the Actual Annual Emissions Threshold of 2,000 TPY for 2014

2.12 One-Hour Ozone SIPs (Atlanta/Birmingham/Northern Kentucky)

New SIPs have been submitted to the EPA to demonstrate attainment of the one-hour ozone NAAQS. These SIPs require NO_x reductions from specific coal fired power plants and address transportation plans in these cities.

3.0 EMISSION REDUCTIONS

40 CFR 51.308(g)(2) *“A summary of the emissions reductions achieved throughout the State through implementation of the measures described in paragraph (g)(1).”*

3.1 Overall Emission Reductions

As noted in the initial SIP submittal, sulfates are the leading contributor to visibility impairment in all of the Class 1 areas in the VISTAS region. Sulfates also continue to be the major component of visibility impairment at the Breton National Wildlife Refuge Class 1 area on both its clearest days and its haziest days, as seen in Figures 2 and 3 respectively. Therefore, this progress report is focused on overall SO₂ emissions. As can be seen in Tables 3 and 4, EGUs have historically contributed most significantly to point source SO₂ emissions. Therefore, Figure 1 displays Mississippi's EGU SO₂ emissions from 2002 to 2017. These emissions have had an overall decrease in Mississippi since 2002, with SO₂ increases in 2013 and 2014. As can be seen in Figure 1, EGU SO₂ emissions have decreased from 65,741 tons in 2002 to 2,569 tons in 2017. It can be seen that EGU SO₂ emissions are trending downward, with significant SO₂ decreases between 2014 and 2016 and consistent low emissions values in 2016 and 2017.

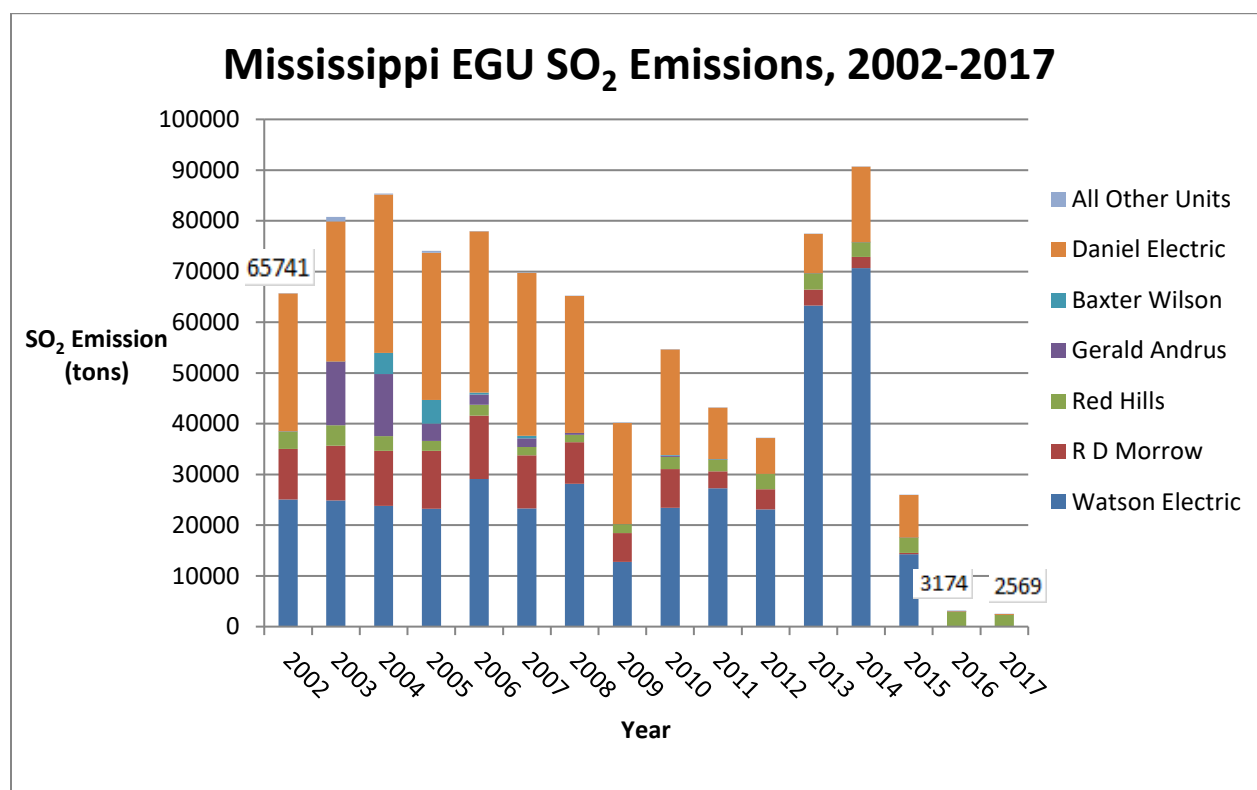


Figure 1. Mississippi EGU SO₂ Emission Reductions, 2002-2017.

(Source: EPA Air Markets Program Data)

(Note: Watson Electric converted from coal power to natural gas in 2015, which greatly reduced annual SO₂ emissions.)

3.2 EGU and Non-EGU Emission Reductions

Reductions in emissions from electric generating units between 2007 and 2014 are due to the implementation of the Clean Air Interstate Rule and subsequently the Cross State Air Pollution Rule, the MATS rule, and other requirements. Emission inventory data from EGU and non – EGU point sources are shown in Tables 3 and 4 below. The 2018 projection data is from the original SIP. Non-EGU point sources have seen reductions and are below the 2018 projections for all pollutants. EGU emissions are near or below the 2018 projections for all pollutants except SO₂. This is due to increased emissions from Mississippi Power, Plant Watson in 2014. However, the facility has since been converted to natural gas only. The 2014 SO₂ emissions were 70,667 tons whereas the 2017 emissions were 5.1 tons. With this reduction, the 2014 SO₂ emissions from EGUs will be approaching the 2018 projection.

	VOC	NO _x	PM _{2.5}	PM ₁₀	SO ₂
2002 (VISTAS)	648	43,135	1,138	1,633	67,429
2007 (SEMAP)	669	48,150	1,426	2,165	75,563
2014 (NEI data)	349	21,686	1,829	2,359	90,733
2018 (Projected)	1,274	21,535	7,252	7,412	15,213

Table 3. Mississippi EGU Emission Inventory Data in Tons/Year.

	VOC	NO _x	PM _{2.5}	PM ₁₀	SO ₂
2002 (VISTAS)	43,204	61,526	9,906	19,472	35,960
2007 (SEMAP)	33,917	50,033	7,305	10,203	19,415
2014 (NEI Date)	28,885	31,761	9,363	10,769	13,450
2018 (Projected)	45,335	61,252	10,719	22,837	25,674

Table 4. Mississippi Non-EGU Point Source Emission Inventory Data in Tons/Year.

(Note: SEMAP & VISTAS represent the Southeast Measurement Assurance Program and Visibility Improvement – State and Tribal Association of the Southeast, respectively)

3.3 Reasonable Progress

VISTAS adopted a 1% contribution threshold in order to determine facilities that needed further evaluation to meet reasonable progress goals. As noted in Section 7.6 of Mississippi's Regional Haze SIP, sources identified by Area of Impact (AOI) analysis were evaluated to determine if there were reasonable controls that could be applied to meet the reasonable progress goals for the impacted Class I area. Using the state's reasonable progress evaluation criteria as a screening

tool, Mississippi found two facilities that exceeded this threshold and needed further evaluation for reasonable progress as sources potentially impacting Breton National Wildlife Refuge. Those facilities are:

- Mississippi Power Company, Plant Watson, Harrison County (5.4% contribution)
- DuPont DeLisle Facility, Harrison County (1.2% contribution)

Since the time of the original SIP submittal, Louisiana has completed and submitted the SIP to address visibility at Breton. Neither Plant Watson nor the DuPont DeLisle facility were identified by Louisiana in consultations with Mississippi or in the Louisiana regional haze SIP as sources identified for reasonable progress control evaluation as sources potentially impacting Breton. Consequently, Mississippi determined that no further control analysis was necessary at these facilities at this time and no controls were adopted for reasonable progress for Mississippi Power Company, Plant Watson or the DuPont DeLisle facility during this implementation period.

4.0 BART DETERMINATIONS

Only the non-EGU BART eligible facilities are addressed in this report. As stated in Section 2.1, CAIR was originally relied upon to meet the BART requirements for NO_x and SO₂ in the original evaluation and, with only particulate matter being modeled, all of the EGUs screened out. Mississippi is currently working to evaluate and address BART for the following facilities: Entergy Mississippi Inc., Baxter Wilson Plant; Entergy Mississippi Inc., Gerald Andrus Plant; Mississippi Power Company, Chevron Cogenerating Plant; Mississippi Power Company, Plant Jack Watson; Mississippi Power Company, Plant Victor J Daniel; South Mississippi Electric Power Association, Moselle Plant; and South Mississippi Electric Power Association, R D Morrow Plant. Since the time of the original submittal, all facilities with significant SO₂ emissions have added controls or converted to natural gas, resulting in much lower SO₂ emissions. Figure 1 and Table 3 demonstrate these reductions.

After the screening analysis performed prior to the SIP, two non-EGU sources were determined to be above the 0.5 dv threshold, and therefore “subject to BART.” These facilities were required to perform an engineering analysis containing their evaluation of potential BART options and proposed BART determinations. The two “subject to BART” facilities are the Chevron Pascagoula Refinery in Pascagoula, MS, and Mississippi Phosphates in Pascagoula, MS. Table 5 shows the controls put in place by these two facilities.

FACILITY	EMISSIONS UNIT	EMISSION CONTROLS INCLUDED IN SIP	ESTIMATED TONS/YR REDUCED	REQUIRED CONTROL DATE	STATUS OF CONTROLS
Chevron, Pascagoula Refinery	f-1603/ FCC Regenerator	7-day average 50 ppmvd @ 0 vol% O ₂ SO ₂ limit and 365 day rolling 25 ppmvd @ 0 vol% O ₂ SO ₂ limit	1662	11/30/2008	Implemented September 2007
	F-2745/ SRU 2	SCOT tail Gas System	1636	7/31/2007	Implemented February 2007
	F-2765/ SRU 3	SCOT tail Gas System	1501	7/31/2007	Implemented February 2007
	Plant 38 - Flares 1-6	Flare Gas Recovery System	1882	12/01/2010	Implemented December 2008
Mississippi Phosphate Corporation	Sulfuric Acid Plants 1 & 2	3.0 lb SO ₂ / ton acid produced	292	Five years after SIP approval	Part of a multi-year facility improvement project – although construction began, MPC recently halted operations due to bankruptcy

Table 5. Planned Controls at “Subject to BART” Facilities

(Note: “Required Control Date” for Mississippi Phosphate Corporation is five years after the effective date of EPA’s final limited approval of the State’s regional haze SIP. This effective date is July 27, 2012 and the “Required Control Date” is July 27, 2017.)

As noted in Section 2.1 of this report, Mississippi is working to address BART on seven BART-eligible EGUs. The state is working on a SIP which will update and address BART for these EGUs.

4.1 Chevron Pascagoula Refinery

The modeled visibility impact (on Breton Wilderness) resulting from Chevron Refinery’s emissions was 3.89dv, which exceeds the threshold of 0.5dv. Chevron installed numerous controls to their units by 2008, which will result in emission reductions of 12,700 TPY of SO₂, 4200 TPY of NO_x and 175 TPY of PM₁₀ with a modeled visibility improvement of 2.99dv at Breton. See Table 6 below for a detailed account of the units and their emission reductions, involved in Chevron’s consent decree, that contribute to 96% of the SO₂ emissions for Chevron’s BART-eligible sources. Further reductions would be very costly without significant visibility improvement. Mississippi has determined that the emissions controls and resulting reductions from the consent decree constitute BART.

	2002 ACTUAL EMISSIONS		2012 ACTUAL EMISSIONS		2012-2002 EMISSIONS		
	NO _x	SO ₂	NO _x	SO ₂	NO _x	SO ₂	
BART Eligible Unit	<i>tons/yr</i>	<i>tons/yr</i>	<i>tons/yr</i>	<i>tons/yr</i>	<i>tons/yr</i>	<i>tons/yr</i>	CONTROLS
F-1603/FCC Regenerator	207	1902	59	29	-148	-1873	NO _x reducing catalyst
F-2101/Boiler No. 1	107	6	16	10	-91	4	
F-2102/Boiler No. 2	107	6	17	12	-90	6	
F-2103/Boiler No. 3	116	7	18	12	-98	5	
F-2745/SRU 2 w/Thermal Oxidizer	3	1780	10	12	7	-1768	SCOT Tail Gas Treatment Systems
F-2765/SRU 3 w/Thermal Oxidizer	3	637	11	8	8	-629	
F-3801/Flare No. 1	25	7	0	0	-25	-7	Flare Gas Recovery System
F-3801/Flare No. 2	56	270	0	6	-56	-264	
F-3801/Flare No. 3	48	69	4	10	-44	-59	
F-3801/Flare No. 4	29	41	1	1	-28	-40	
F-3805/Flare No. 5	59	83	1	0	-58	-83	
F-3806/Flare No. 6	38	53	0	0	-38	-53	
F-6101/6102 Crude Unit No. 2 Heaters	629	59	97	49	-532	-10	ULNB Installed
TOTAL REDUCTIONS					-1,193	-4,771	

Table 6: Reduction from Major BART-Eligible Units Involved in the Consent Decree
(Source: 2002 and 2012 Air Emissions Reporting Requirements Form)

4.2 Mississippi Phosphate Corporation

The modeled impact of Mississippi Phosphates Corporation on Breton Wilderness was 0.81dv, which exceeds the threshold of 0.5dv. On November 9, 2010 Mississippi Phosphates (MPC) was issued a Permit to Construct Air Emissions Equipment that included Best Available Control Technology limits for SO₂ and Sulfuric Acid Mist (H₂SO₄). With this project, MPC began making many upgrades, including: replacing the absorption towers, installing new economizers and new superheaters, replacing duct work and piping, relocating new or refurbished acid coolers (i.e. heat exchangers), repairing the cooling tower, and replacing the vanadium catalyst with

cesium catalyst in the third and fourth converter passes. These upgrades would not have resulted in increased sulfuric acid production capacity, which is currently permitted at 1800 tons per day per plant, but would have allowed for significant decreases in down-time due to more reliable operation of the plants. This would result in an actual-to-potential increase in tons SO₂ per year; however, the project would result in greater emission controls and lower permitted short-term and annual emissions for both pollutants. BACT for SO₂ was determined to be the replacement of vanadium catalyst with cesium catalyst in the third and fourth converter passes. The permitted sulfur dioxide limit is 3.0 lbs of SO₂ per ton of sulfuric acid produced, not to exceed 225 lb/hr and 1700 tons/yr. MDEQ considers this limit appropriate and meets BART for this source. BACT for H₂SO₄ was determined to be the installation of vertical tube mist eliminators in the interpass absorption tower. The final absorption tower already has these mist eliminators installed. MPC also initiated the act of replacing the economizer prior to the final absorption tower with a larger one which would have the effect of lowering the exhaust gas temperature thus reducing sulfuric acid mist emissions. The permitted sulfuric acid mist limit is 0.10 lb H₂SO₄ per ton of sulfuric acid produced, not to exceed 7.5 lb/hr and 32.85 tons/yr. MDEQ considered this limit appropriate and met BART for this source. This work was part of a multi-year facility upgrade. MPC has been permanently shut down and has been declared a Superfund site. Any future operations that have are emissions will be subject to new source permitting requirements.

5.0 VISIBILITY

40 CFR 51.308(g)(3): *“For each mandatory Class I Federal area within the State, the State must assess the following visibility conditions and changes, with values for most impaired and least impaired days expressed in terms of 5-year averages of these annual values:*

- (i) *Current visibility conditions for the most and least impaired days.*
- (ii) *Difference between current visibility conditions for the most impaired and least impaired days and baseline visibility conditions.*
- (iii) *Change in visibility impairment for the most impaired and least impaired days over the past 5 years.*

Since there are no Class I areas in Mississippi, a visibility assessment in accordance with 40 CFR 51.308(g)(3) was not necessary for this progress report.

6.0 EMISSIONS TRACKING

40 CFR 51.308(g)(4) *“An analysis tracking the change over the past 5 years in emissions of pollutants contributing to the visibility impairment from all sources and activities within in the State. Emissions changes should be identified by type of source or activity. The analysis must be based on the most recently updated emissions inventory, with estimates projected forward as necessary and appropriate, to account for emissions changes during the applicable 5 year period.”*

In order to address the change in emissions of pollutants contributing to visibility impairment, the VISTAS states developed an inventory with 2002 as the baseline year, and projected emissions out to 2018. The source classifications included were Point and Area sources, On-Road and Non-Road Mobile sources, Biogenics, and Fires. The targeted pollutants were VOC's, NO_x, PM_{2.5}, PM₁₀, NH₃, and SO₂. Tables 7, 8, and 9 show the emissions in 2002, 2007 and 2014. Table 10 shows projected 2018 emissions. The 2014 pollutant emissions values that are below the projected 2018 values are VOC, NO_x, and NH₃. The increase in SO₂ was due to emissions from one facility, Mississippi Power, Plant Watson, which converted from coal to natural gas in 2014. PM₁₀ and PM_{2.5} increases were found to be due to an increase in the unpaved road dust category due to different methodologies in calculating unpaved road emissions in the various inventories. Refer to Section 7.0 for further analysis and explanation regarding the increase in PM_{2.5} and PM₁₀ emissions values and the SO₂ emissions trends. Overall there have been significant emissions decreases that have resulted in some pollutant levels lower in 2014 than the projected 2018 emissions.

	VOC	NO _x	PM _{2.5}	PM ₁₀	NH ₃	SO ₂
Point	43,852	104,661	11,044	21,106	1,359	103,389
Area	131,808	4,200	50,401	343,377	58,721	771
On-Road Mobile	86,811	110,672	2,089	2,828	3,549	4,566
Non-Road Mobile	41,081	88,787	4,690	5,010	23	11,315
Biogenics	1,544,646	20,305	0	0	0	0
Fires	13,621	3,326	13673	14686	177	99
TOTAL	1,861,820	331,952	81,896	387,007	63,829	120,139

Table 7: 2002 Baseline Emissions Inventory Summary for MS in tons
(Source: VISTAS, 2002)

	VOC	NO _x	PM _{2.5}	PM ₁₀	NH ₃	SO ₂
Point	34,586	98,183	8,731	12,368	1,640	94,978
Area	74,755	6,091	42,758	326,350	58,774	344
On-Road Mobile	4,516	117,225	4,061	5,030	1,809	920
Non-Road Mobile	35,315	48,321	3,105	3,308	35	3088
Biogenics	1,544,646	20,305	0	0	0	0
Fires	178,431	12,454	66,621	78,612	12,413	6,327
TOTAL	1,872,249	302,579	125,276	425,668	74,671	105,657

Table 8: SEMAP 2007 Emissions Inventory Summary for MS in tons

	VOC	NO _x	PM _{2.5}	PM ₁₀	NH ₃	SO ₂
Point	29,234	53,477	11,192	13,128	2,891	104,183
Area	47,959	19,504	122,136	977,608	64,986	951
On-Road Mobile	28,852	72,763	2,336	4,438	1,428	399
Non-Road Mobile	22,408	14,631	1,434	1,510	23	34
Biogenics	1,515,263	14,157	0	0	0	0
Fires	69,792	6,156	26,913	31,758	4,855	28,63
TOTAL	1,713,509	180,658	164,012	1,028,442	74,184	108,429

Table 9: NEI 2014 Emissions Inventory Summary for MS in tons

	VOC	NO _x	PM _{2.5}	PM ₁₀	NH ₃	SO ₂
Point	46,452	71,804	17,172	30,046	1,591	54,367
Area	140,134	4,483	53,222	375,495	69,910	746
On-Road Mobile	31,306	30,259	810	1,607	4,520	435
Non-Road Mobile	28,842	68,252	3,203	3,452	29	6,683
Biogenics	1,544,646	20,305	0	0	0	0
Fires	14,747	3,840	15,669	17,013	285	240
TOTAL	1,806,127	198,943	90,076	427,613	76,335	62,471

Table 10: 2018 Projected Emissions Inventory Summary for MS in tons
(Source: Regional Haze SIP, 2008)

7.0 CHANGES IN ANTHROPOGENIC EMISSIONS

40 CFR 51.308(g)(5) “An assessment of any significant changes in anthropogenic emissions within or outside the State that have occurred over the past 5 years that have limited or impeded progress in reducing pollutant emissions and improving visibility.

Tables 7, 8 and 9 show the changes in emissions from baseline to the latest complete inventory in 2014. For most pollutants the trend shows reductions within reach of the 2018 projections. The only pollutants where significant increases are shown are Area source PM_{2.5} and PM₁₀ and point source SO₂ emissions. The increase in SO₂ was due to emissions from one facility, Mississippi Power, Plant Watson. Since 2014, however, it has converted from coal to natural gas only. In 2014 the SO₂ emissions were 70,667 tons whereas the 2017 emissions were 5.1 tons. Also, a closer look at the 2014 inventory finds that the increases in PM₁₀ and PM_{2.5} are due to an increase in the unpaved road dust category. It appears that this is due to different methodologies in calculating unpaved road emissions in the various inventories. In fact, according to data from the Mississippi Department of Transportation, the number of miles of unpaved roads have decreased. In 2006 there were 22,547 miles of unpaved roads and in 2014 there were 18,857 miles of unpaved roads. There have been no emissions changes that would impede progress. Thus, no significant changes in anthropogenic emissions within the State that have limited or impeded progress have occurred over the review period.

Visibility Components, Breton Island's Clearest Days 2008-2012

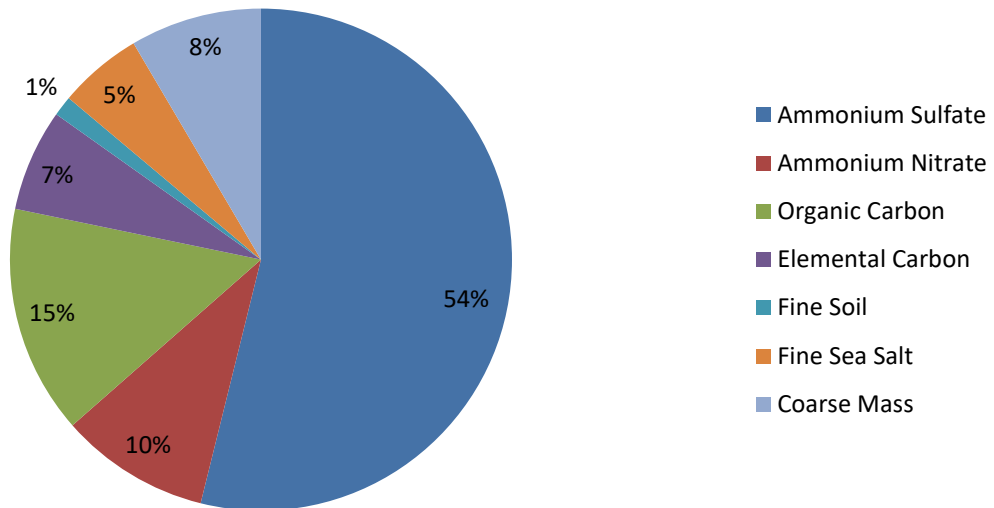


Figure 2. Percentage Breakdown of Haze Components, Breton Island's Clearest Days.

Visibility Components, Breton Island's Haziest Days 2008-2012

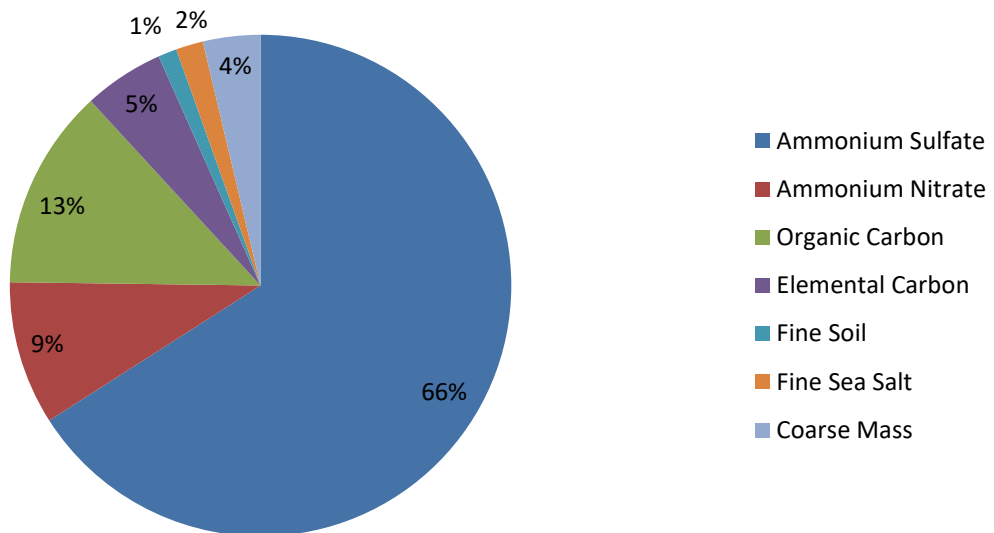


Figure 3. Percentage Breakdown of Haze Components, Breton Island's Haziest Days.

8.0 ASSESSMENT OF IMPLEMENTATION PLAN

40 CFR 51.308(G)(6) *“An assessment of whether the current implementation plan elements and strategies are sufficient to enable the State, or other States with mandatory Federal Class I areas affected by emissions from the State, to meet all established reasonable progress goals.”*

Based on the data provided throughout the SIP, MDEQ believes that the implementation plan provided in the SIP is sufficient to meet the established reasonable progress goals. Figures 2 and 3 show the Speciation data for the Breton National Wildlife Refuge indicating that Sulfates continue to be the dominant contributor to haze. Tables 3 and 4 show major reductions in emissions from EGUs and other point sources. Data in Tables 6 through 9 (Emission tracking), also shows that with the reduction in emissions from Plant Watson, SO₂ emissions are decreasing throughout the state. This data shows that the implementation plan elements and strategies are sufficient to enable surrounding states with mandatory Class 1 areas potentially effected by emissions from Mississippi to meet all established reasonable progress goals.

9.0 MONITORING STRATEGY

40 CFR 51.308(g)(7) *“A review of the State’s visibility monitoring strategy and any modifications to the strategy as necessary.”*

Mississippi has no monitoring strategy, as there are no Class I areas located in the state, therefore no modifications are necessary.

10.0 CONCLUSIONS

40 CFR 51.308(h) *“...At the same time the State is required to submit any 5-year progress report to EPA in accordance with paragraph (g) of this section, the State must also take one off the following actions based upon the information presented in the progress report:*

(1) “If the State determines that the existing implementation plan requires no further substantive revision at this time in order to achieve established goals for visibility improvement and emissions reductions, the State must provide to the Administrator a negative declaration that further revision of the existing implementation plan is not needed at this time.

(2) *“If the State determines that the implementation plan is or may be inadequate to ensure reasonable progress due to emissions from sources in another State(s) which participated in a regional planning process, the State must provide notification to the Administrator and to the other State(s) which participated in the regional planning process with the States. The State must also collaborate with the other State(s) through the regional planning process for the purpose of developing additional strategies to address the plan’s deficiencies.*

(3) *“Where the State determines that the implementation plan is or may be inadequate to ensure reasonable progress due to emissions from sources in another country, the State shall provide notification, along with available information, to the Administrator.*

(4) *“Where the State determines that the implementation plan is or may be inadequate to ensure reasonable progress due to emissions from sources within the State, the State shall revise its implementation plan to address the plan’s deficiencies within one year.”*

The preceding sections of this document demonstrate that the current implementation plan is on track to meet the RPGs for visibility improvement and emissions reductions in any Class 1 areas potentially impacted by Mississippi’s sources. Therefore, the Department of Environmental Quality submits a negative declaration to the Administrator; that further revision of the SIP is not needed at this time.

11.0 FEDERAL LAND MANAGER CONSULTATION

40 CFR 51.308(i) *“What are the requirements for State and Federal Land Manager coordination?”*

(1) *“By November 29, 1999, the State must identify in writing to the Federal Land Managers the title of the official to which the Federal Land Manager of any mandatory Class I Federal area can submit any recommendations on the implementation of this subpart including, but not limited to:*

- (i) *Identification of impairment of visibility in any mandatory Class I Federal area(s); and*
- (ii) *Identification of elements for inclusion in the visibility monitoring strategy required by §51.305 and this section.*

(2) *“The State must provide the Federal Land Manager with an opportunity for consultation, in person and at least 60 days prior to holding any public hearing on an implementation plan (or plan revision) for regional haze required by this subpart. This consultation must include the opportunity for the affected Federal Land Managers to discuss their:*

- (i) *Assessment of impairment of visibility in any mandatory Class I Federal area; and*
- (ii) *Recommendations on the development of the reasonable progress goal and on the development and implementation of strategies to address visibility impairment.*

(3) *“In developing any implementation plan (or plan revision), the State must include a description of how it addressed any comments provided by the Federal Land Managers.*

(4) *“The plan (or plan revision) must provide procedures for continuing consultation between the State and Federal Land Manager on the implementation of the visibility protection program required by this subpart, including development and review of implementation plan revisions and 5-year progress reports, and on the implementation of other programs having the potential to contribute to impairment of visibility in mandatory Class I Federal areas.”*

Mississippi afforded the Federal Land Managers (FLMs) the opportunity to consult on the Regional Haze Progress Report with a draft progress report sent on May 13, 2014. We received no comments in response. The state has continuing consultation procedures with the FLMs and Mississippi commits to continue carrying out ongoing consultation with the FLMs. For more details on these continuing consultations, see Section 11.0 of Mississippi’s Regional Haze SIP.