STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

FLORIDA REGIONAL HAZE PLAN PROGRESS REPORT FOR THE SECOND PLANNING PERIOD

January __, 2025

Executive Summary

The Clean Air Act (CAA) includes visibility protection requirements. In 1999, the United States Environmental Protection Agency (EPA) finalized the Regional Haze Rule (RHR) (64 FR 35714). The RHR calls for state, tribal, and federal agencies to work together to improve visibility in 156 national parks and wilderness areas identified as mandatory Class I Federal areas under 40 CFR Part 81.400.

States are required to develop and implement air quality protection plans (State Implementation Plans, or SIPs) to reduce the pollution that contributes to visibility impairment. These SIPs establish goals and emission reduction strategies based on trends from various sources including area source emissions, mobile source emissions (both on-road and non-road), biogenic emissions, and wildfire and agricultural emissions.

In Florida's Regional Haze SIP (submitted to EPA on October 8, 2021), the Florida Department of Environmental Protection (Department) set forth a long-term strategy to attain reasonable progress goals (RPGs) for visibility impairing pollutants in Florida's Class I areas, which include the Chassahowitzka National Wilderness Area, the Everglades National Park, and the St. Marks National Wilderness Area. The predicted reductions in visibility impairment were expected to result from the implementation of a combination of existing emissions control activities and planned emission control programs. Florida's Regional Haze Progress Report is intended to address the requirements of 40 CFR 51.308(g), which requires that states develop and submit to EPA periodic reports evaluating the state's progress goals toward the RPGs applicable to Class I areas within their jurisdictions.

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Acronyms and Abbreviations

Acronym/Abbreviation	Meaning
CAA	Clean Air Act
CAIR	Clean Air Interstate Rule
CAMD	Clean Air Markets Division
CAMPD	Clean Air Markets Program data
CenSARA	Central State Air Resource Agencies
CFR	Code of Federal Regulations
d	distance (kilometers)
dv	deciview
EGU	Electric Utility Generating Unit
EPA	United States Environmental Protection Agency
FLM	federal land manager
FR	Federal Register
FS	Forest Service
FSL	Forecast Systems Laboratory
FWS	Fish and Wildlife Service
LAC	light absorbing carbon
LADCO	Lake Michigan Air Directors Consortium
MANE-VU	Mid-Atlantic/Northeast Visibility Union
NEI	National Emissions Inventory
NH_3	ammonia
NO	nitric oxide
NO_3^-	nitrate ion
NO_X	nitrogen oxides
NPS	National Park Service
PM	particulate matter
PM_{10}	coarse particulate matter
$PM_{2.5}$	fine particles with a diameter smaller than or equal to 2.5 micrometers (µm)
RHR	Regional Haze Rule
RPG	reasonable progress goal
RPO	regional planning organization
SCC	source category code
SESARM	Southeastern States Air Resource Managers, Inc.
SIP	state implementation plan
SO_2	sulfur dioxide
SO_4^{-2}	sulfate ion
tpy	tons per year

Acronym/Abbreviation	Meaning
URP	uniform rate of progress
USDA	United States Department of Agriculture
USDI	United States Department of the Interior
VISTAS	Visibility Improvement State and Tribal Association of the Southeast

1. Introduction

Section 169A of the Clean Air Act (CAA) "declares as a national goal the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory class I Federal areas which impairment results from manmade air pollution." Mandatory Class I Federal Areas (Class I Areas) consist of National Parks greater than 6,000 acres, wilderness areas and national memorial parks greater than 5,000 acres, and international parks, all of which were in existence as of August 7, 1977. The Clean Air Act recognizes visibility as an important value in these areas.

The CAA directed the U.S. Environmental Protection Agency (EPA) to promulgate regulations aimed at meeting the goals of Section 169A. EPA originally finalized the Regional Haze Rule (RHR) in 1999. EPA amended and revised the RHR in 2005 and 2017, and the RHR is now codified under 40 CFR 51.300-309. The overarching goal of the RHR is to achieve natural visibility conditions at Class I areas. The RHR requires that states submit two types of regional haze planning documents: regional haze state implementation plans (SIPs), each covering a 10-year planning period, and progress reports, which are typically submitted at the mid-point of each planning period. The regional haze SIPs themselves must include specified information such that they also serve as progress reports. Mid-course progress reports, such as this one, are stand-alone documents.

Florida's Regional Haze Plan Progress Report is intended to fulfill the requirements of paragraphs 51.308(g), (h), and (i) of the RHR and to serve as a progress report for the second regional haze planning period, from 2019 to 2028. In this progress report, the Department affirms that the combined elements of Florida's approved regional haze SIP for the first planning period (78 FR 53250) and pending regional haze SIP for the second planning period (. . . FR . . .) are adequate for making reasonable progress towards the RHR goal of achieving natural visibility conditions at Class I areas by 2064.

The Department has made this progress report available for public review prior to its submittal to EPA. Offered review opportunity to FLMs on ____; each FLM agency responded / waived on ____; with respect to 40 CFR 58… – no comments, etc. Per revisions made to the RHR in 2017 (82 FR 3078), Florida's progress report is not, however, being submitted to EPA as a formal SIP revision.

The RHR addressed the combined visibility effects of various pollution sources over a wide geographic region. Many states – even those without mandatory federal Class I areas – are required to participate in haze reduction efforts. Five regional planning organizations (RPOs)

were formed to assist with the coordination and cooperation needed to address visibility issues. These five RPOs are illustrated in **Figure 1-1**.[1] EPA has designated the Southeastern States Air Resource Managers, Inc. (SESARM) as the entity responsible for coordinating regional haze evaluations for the ten Southeastern states (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia), local air pollution control agencies, and tribal authorities. These parties collaborated through the organization known as Visibility Improvement – State and Tribal Association of the Southeast (VISTAS) to prepare the technical analyses and planning activities associated with visibility and related regional air quality issues supporting development of regional haze SIPs for the first and second planning periods. For the second planning period, local air pollution control agencies were represented by the Knox County, Tennessee local air pollution control agency, and tribal authorities were represented by the Eastern Band of Cherokee Indians. **Figure 1-2** shows the location of the 18 Class I areas within the VISTAS states.

[1] URL: https://www.epa.gov/visibility/visibility-regional-planning-organizations

Table 1-1 shows the FLM responsible for each of these Class I areas. Agencies acting as FLMs for Class I areas within the VISTAS region include the United States Department of Agriculture Forest Service (USDA-FS), the United States Department of the Interior Fish and Wildlife Service (USDI-FWS), and the United States Department of the Interior National Park Service (USDI-NPS).

Figure 1-1. Geographical Areas of Regional Planning Organizations

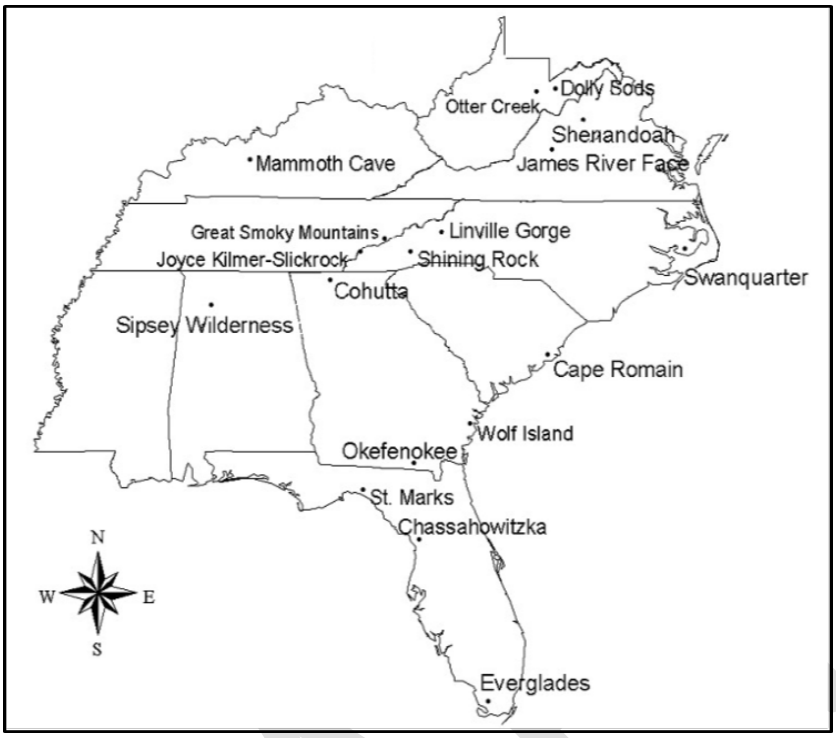


Figure 1-2. Mandatory Federal Class I Areas in the VISTAS Region

Table 1-1. Mandatory Federal Class I Areas in the VISTAS Region

State	Area Name	Acreage	Federal Land Manager
Alabama	Sipsey National Wilderness Area	12,646	USDA-FS
Florida	Chassahowitzka National Wilderness Area	23,360	USDI-FWS
Florida	Everglades National Park	1,397,429	USDI-NPS
Florida	St. Marks National Wilderness Area	17,745	USDI-FWS
Georgia	Cohutta National Wilderness Area	33,776	USDA-FS
Georgia	Okefenokee National Wilderness Area	343,850	USDI-FWS
Georgia	Wolf Island National Wilderness Area	5,126	USDI-FWS
Kentucky	Mammoth Cave National Park	51,303	USDI-NPS
North Carolina	Great Smoky Mountains National Park	273,551	USDI-NPS
North Carolina	Joyce Kilmer-Slickrock National Wilderness Area	10,201	USDA-FS
North Carolina	Linville Gorge National Wilderness Area	7,575	USDA-FS
North Carolina	Shining Rock National Wilderness Area	13,350	USDA-FS
North Carolina	Swanquarter National Wilderness Area	9,000	USDI-FWS
South Carolina	Cape Romain National Wilderness Area	28,000	USDI-FWS
Tennessee	Great Smoky Mountains National Park	241,207	USDI-NPS
Tennessee	Joyce Kilmer-Slickrock National Wilderness Area	3,832	USDA-FS
Virginia	James River Face National Wilderness Area	8,703	USDA-FS
Virginia	Shenandoah National Park	190,535	USDI-NPS
West Virginia	Dolly Sods National Wilderness Area	10,215	USDA-FS
West Virginia	Otter Creek National Wilderness Area	20,000	USDA-FS

As required by 40 CFR 51.308(g), Florida's Regional Haze Plan Progress Report for the Second Planning Period contains the following elements:

- **(g)(1)** Status of implementation of all measures included in the State's second period Regional Haze Plan for achieving reasonable progress goals for mandatory Class I Federal areas both within and outside the State;
- **(g)(2)** Summary of the emissions reductions achieved throughout the State through the implementation of the control measures in the State's second period Regional Haze Plan;
- **(g)(3)** For each mandatory Class I Federal area within the State, an assessment of the following visibility conditions and changes, with values for most impaired, least impaired and/or clearest days as applicable expressed in terms of 5-year averages of these annual values. The period for calculating current visibility conditions is the most recent 5-year period preceding the required date of the progress report for which data are available as of a date 6 months preceding the required date of the progress report.
    - **(i)(B)** Progress reports due on and after January 31, 2025. The current visibility conditions for the most impaired and clearest days;

    - **(ii)(B)** Progress reports due on and after January 31, 2025. The difference between current visibility conditions for the most impaired and clearest days and baseline visibility conditions.
    - **(iii)(B)** Progress reports due on and after January 31, 2025. The change in visibility impairment for the most impaired and clearest days over the period since the period addressed in the most recent plan required under paragraph (f) of this section.
- **(g)(4)** Analysis tracking the change over the past five years in emissions of pollutants contributing to visibility impairment from all sources and activities within Florida; and emissions changes should be identified by type of source or activity. With respect to all sources and activities, the analysis must extend at least through the most recent year for which the state has submitted emission inventory information to the Administrator in compliance with the triennial reporting requirements of subpart A of this part as of a date 6 months preceding the required date of the progress report. With respect to sources that report directly to a centralized emissions data system operated by the Administrator, the analysis must extend through the most recent year for which the Administrator has provided a State-level summary of such reported data or an internet-based tool by which the State may obtain such a summary as of a date 6 months preceding the required date of the progress report. The State is not required to backcast previously reported emissions to be consistent with more recent emissions estimation procedures and may draw attention to actual or possible inconsistencies created by changes in estimation procedures.
- **(g)(5)** Assessment of any significant changes in anthropogenic emissions within or outside the State within the past five years including whether or not these changes in anthropogenic emissions were anticipated in that most recent plan and whether they have limited or impeded progress in reducing pollutant emissions and improving visibility.
- **(g)(6)** An assessment of whether the current implementation plan elements and strategies are sufficient to enable the State, or other States with mandatory Class I Federal areas affected by emissions from the State, to meet all established reasonable progress goals for the period covered by the most recent plan.
- **(g)(8)** For a state with a long-term strategy that includes a smoke management program for prescribed fires on wildland that conducts a periodic program assessment, a summary of the most recent periodic assessment of the smoke management program including conclusions if any that were reached in the assessment as to whether the program is meeting its goals regarding improving ecosystem health and reducing the damaging effects of catastrophic wildfires.

Pursuant to 40 CFR 51.308(h), Florida's Progress Report also includes a determination of the adequacy of the State's existing implementation plan. Consistent with CFR 51.308(h)(1),

Florida has determined that the State's existing implementation plan requires no further substantive revision at this time in order to achieve established goals for visibility improvement and emissions reductions.

2. Long-Term Strategy for Visibility Improvement

As shown in **Table 1-1 and Figure 1-2**, the Class I areas located in Florida include the Chassahowitzka National Wilderness Area, the Everglades National Park and the St. Marks National Wilderness Area. In the Department's second Regional Haze Plan, atmospheric ammonium sulfate was identified as the largest contributor to visibility impairment in Class I areas throughout the southeastern United States during the baseline period. Emissions sensitivity modeling performed for VISTAS determined that the most effective ways to reduce ammonium sulfate were to reduce SO_2 emissions from EGUs and, with an important but smaller impact, to reduce SO_2 emissions from non-utility industrial point sources. Reductions in SO_2 from point sources were therefore identified as the focus of the Department's long-term strategy for visibility improvement.

Florida's Regional Haze Plan for the second planning period included the review of ammonium nitrate. Industrial and EGU point source contributions to ammonium nitrate visibility impairment at Class I areas within the VISTAS states generally did not meet thresholds that were used to select sources for four factor analyses and thus, the Department did not require any four-factor analyses for NO_X controls in the second period for selected sources.

2.1. 2028 Reasonable Progress Goals for Florida's Class I Areas

The following charts provide the observed and predicted visibility improvement for each of Florida's Class I areas and compares these to the Uniform Rate of Progress, the line which connects baseline visibility conditions in 2000-2004 to natural visibility conditions in 2064. **Table 2-1** and **Table 2-2** show the 2028 reasonable progress goals (RPGs) for Florida's Class I areas on the 20% most impaired and 20% clearest visibility days, respectively. All three charts include the VISTAS model projection. The Everglades National Park chart also includes EPA's model projection, which the Department relied upon for demonstrating reasonable progress as EPA's model corrected some Everglades-specific deficiencies in the VISTAS model. As seen in these tables, Florida's Class I areas have met or are on track to meeting the 2028 RPGs.

These goals are based upon predicted visibility response to the expected emissions reductions of visibility-impairing pollutants using air quality models and represent Florida's best estimate at this time. The VISTAS modeling analyzed the regional, national, and global contributions to visibility in each Class I area. The VISTAS modeling included emissions of visibility-impairing pollutants from all known source sectors and locations, including boundary conditions derived from a global model. The VISTAS modeling evaluated current visibility conditions using data

from public and private monitoring networks, and these and other associated data were used to validate model performance. VISTAS developed projected emissions for 2028 considering growth and known or estimated emissions changes due to existing regulations. VISTAS completed substantial analysis to determine visibility sensitivity to specific pollutant reductions and to parse-out the source-sector contributions. Due to issues with the VISTAS modeling for the Everglades National Park – specifically, the influence of boundary conditions on the RPGs – Florida relied upon EPA's regional haze modeling for this Class I area in the second planning period.

Table 2-1. 2028 RPGs for Visibility Impairment in Florida's Class I Areas – 20% Most Impaired Days

Class I Area	Baseline Average (dv) (2000-2004)	2022 Average (dv) (2018-2022)	2028 Goal (dv)	Natural Background (dv)
Chassahowitzka National Wilderness Area	24.52	17.03	16.79	9.03
Everglades National Park	19.52	14.37	13.95	8.33
St. Marks National Wilderness Area	24.68	16.29	16.43	9.13

Table 2-2. 2028 RPGs for Visibility Impairment in Florida's Class I Areas – 20% Clearest Days

Class I Area	Baseline Average (dv) (2000-2004)	2022 Average (dv) (2018-2022)	2028 Goal (dv)	Natural Background (dv)
Chassahowitzka National Wilderness Area	15.60	12.23	12.54	6.00
Everglades National Park	11.69	10.39	9.88	5.22
St. Marks National Wilderness Area	14.34	10.82	11.59	5.37

* The regional haze requirement for the 20% clearest days is to maintain the visibility impairment at or below the baseline impairment.

2.2. Requirements for the Periodic Progress Report

The requirements for periodic reports are detailed in 40 CFR 51.308(g). Each state must submit a report to the EPA every five years evaluating the progress towards the RPGs for each Class I

area located within the state and in each Class I area located outside the state which may be affected by emissions from within the state.

EPA's revised Regional Haze Rule no longer requires that progress reports be formal SIP submittals. At a minimum, progress reports must cover the first year not covered by the previously submitted progress report through the most recent year of data available prior to submission. Florida's previous progress report (included in the SIP submitted for the second planning period) included data through the year 2018. As such, Florida's Regional Haze Progress Report for the Second Planning Period covers the years since 2018. The most recent data available are used to highlight the progress made. This review includes National Emissions Inventory (NEI) data for 2017 and 2020, visibility data through 2022, stationary source data through 2020, and power plant emissions data through 2023.

As described under the **Introduction** heading above, Section 51.308(f)(5) of the RHR requires that each state address the progress report requirements of paragraphs 51.308(g). Florida's progress report meets the requirements in 40 CFR 51.308(g), with the exception of 40 CFR 51.308(g)(7), which applies to progress reports for the first planning period only.

3. Status of Implementation of Control Measures

40 CFR 51.308(g)(1), of the RHR requires: *A description of the status of implementation of all measures included in the implementation plan for achieving reasonable progress goals for Class I areas both within and outside the State.* This section provides the status of implementation of the emission reduction measures that were included in the regional haze SIP for the second planning period, as required by 40 CFR 51.308(g)(1).

3.1 Federal and State Programs Included in the 2028 Projection Year

3.1.1. Federal Programs

The Department included the following federal programs in the 2028 projection year used to establish reasonable progress goals for Class I areas both within and outside Florida. The emissions reductions associated with the Federal and other state programs described below were included in the VISTAS future year emissions estimates for the first planning period. Descriptions contain qualitative assessments of emissions reductions associated with each program, and where possible, quantitative assessments. In cases where delays or modification have altered emissions reduction estimates such that the original estimates of emissions are no longer accurate, the Department has provided information on the effects of these alterations.

3.1.1.1 Federal EGU and Industrial Unit Trading Program (Cross State Air Pollution Rule)

CAA Section 110(a)(2)(D)(i)(I) requires each upwind state to ensure that it does not interfere with either the attainment of a NAAQS or continued compliance with a NAAQS at any downwind monitor (i.e., the "Good Neighbor" provision). EPA has implemented several rules enforcing the Good Neighbor provision for a variety of NAAQS. On August 8, 2011, EPA finalized the Cross State Air Pollution Rule (CSAPR) (76 FR 48208). This rule required 28 states to reduce SO_2, annual NO_X, and ozone season NO_X from fossil fuel-fired EGUs in support of the 1997 and 2006 $PM_{2.5}$ NAAQS and the 1997 ozone NAAQS. CSAPR relied on a trading program to achieve these reductions and became effective January 1, 2015, as set forth in an October 23, 2014, decision by the U.S. Court of Appeals for the D.C. Circuit. Phase 1 began January 2015 for annual programs and May 2015 for the ozone season program. Phase 2 began January 2017 for the annual programs and May 2017 for the ozone season program. Total emissions allowed in each compliance period under CSAPR equals the sum of the affected state emission budgets in the program. The 2017 budgets for these programs, exclusive of new unit set asides and tribal budgets, were:

- SO_2 Group 1 – 1.37 million tons,
- SO_2 Group 2 – 892,000 tons,
- Annual NO_X – 1.21 million tons, and
- Ozone Season NO_X – 586,000 tons

On October 26, 2016, EPA published revised CSAPR ozone season NO_X budgets to address the 2008 ozone NAAQS (81 FR 74504). This "CSAPR Update" reduced state budgets for NO_X during the ozone season to 325,645 tons in 2017 and 330,526 tons in 2018 and later years, exclusive of new unit set asides and tribal budgets. This rule applies to all VISTAS states except North Carolina, South Carolina, Georgia, and Florida, and continues to encourage NO_X emissions reductions from fossil fuel-fired EGUs. On July 31, 2023, EPA published revised new unit set asides for SO_2 and NO_X (88 FR 36654 and 49295). This resulted in a reduction in the new unit set asides but did not change any other fundamental portions of the rule. The U.S. Court of Appeals for the D.C. Circuit remanded, but did not vacate, the CSAPR Update to the EPA to address the court's holding that the rule unlawfully allows significant contributions to continue beyond downwind attainment deadlines. Therefore, the reductions required by the CSAPR Update rule remain in effect. Although CSAPR does not apply to Florida, Florida benefits from emissions reductions in neighboring states.

3.1.1.2 NO_X SIP Call

EPA's NO_X SIP Call applied to certain EGUs and large non-EGUs, including large industrial boilers and turbines, and cement kilns. States in the VISTAS region that were included in the

NO_X SIP call (e.g., Alabama, North Carolina, South Carolina, and Tennessee) addressed NO_X emissions controls in state plans that EPA subsequently approved. The NO_X SIP Call has resulted in a significant reduction in NO_X emissions from large stationary combustion sources. For the first regional haze SIP, the emissions for NO_X SIP Call-affected sources were capped at 2007 levels and carried forward to the 2009 and 2018 inventories. Although Florida was not included among the states subject to the NO_X SIP Call, Florida benefits from emissions reductions in neighboring states.

3.1.1.3 Mercury and Air Toxics Standard (MATS)

On February 16, 2012, EPA promulgated the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Coal- and Oil-Fired Electric Steam Generating Units and Standards of Performance for Fossil-Fuel-Fired Electric Utility, Industrial-Commercial-Institutional, and Small Industrial-Commercial-Institutional Steam Generating Units (77 FR 9304). This rule is often referred to as the Mercury and Air Toxics Standard (MATS). The standard applies to EGUs burning fossil fuel and sets limits for certain HAP emissions, many of which are acid gases. Control of these acid gases often have the co-benefit of reducing SO_2 emissions. Sources had until April 16, 2015, to comply with the rule unless granted a one-year extension for control installation or an additional extension for reliability reasons. As a direct result of compliance with MATS, Florida saw a reduction of 77,760 tons per year of SO_2 emissions from the 2011 baseline modeling. In addition, the following facilities either retired the units subject to MATS limits or switched the units from being coal-fired (e.g., subject to MATS) to natural gas-fired: CD McIntosh, Jr. Power Plant Unit 3 and TECO Big Bend Unit 3.

3.1.1.4 One-hour Ozone SIPs (Atlanta / Birmingham / Northern Kentucky)

Florida's Regional Haze Plan also makes reference to emissions reductions from one-hour ozone SIPs that other states and regions submitted to 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. These reductions further improve regional visibility.

3.1.1.5 NO_X RACT in 8-hour Nonattainment Area SIPs

The NCDAQ's SIP for the Charlotte/Rock Hill/Gastonia nonattainment area includes RACT for NO_X for two facilities located in the nonattainment area: Philip Morris USA and Norandal USA. These controls were also included in the VISTAS modeling for 2018. Additional RACT controls may be realized as other companies subject to RACT complete the determination, but RACT-level controls were assumed for just these two sources. These controls further improve regional visibility in the VISTAs states.

3.1.1.6 2010 SO_2 NAAQS

On June 22, 2010, EPA finalized a new primary NAAQS for SO_2 (75 FR 35520). This regulation significantly strengthened the NAAQS by lowering the standard to 75 ppb on a one-hour basis. Using emissions inventories and other technical data as support, EPA determined that anthropogenic SO_2 emissions chiefly originated from point sources, with fossil fuel combustion at electric utilities accounting for 66% of total anthropogenic SO_2 emissions and fossil fuel combustion at other industrial facilities accounting for 29%. EPA simultaneously revised ambient air monitoring requirements for SO_2, requiring fewer monitors due to the use of a hybrid approach combining air quality modeling and monitoring to determine compliance with the new standard. Much of this work focused on the evaluation of point source emissions.

After promulgation of the 2010 SO_2 NAAQS, EPA designated as nonattainment two areas in Florida with ambient SO_2 monitored design values above the standard: the Hillsborough County SO_2 Nonattainment Area (NAA) and the Nassau County SO_2 NAA. Four facilities (Mosaic Riverview and TECO Big Bend in the Hillsborough County NAA; and Rayonier Performance Fibers and WestRock Fernandina Beach in the Nassau County NAA) were required to reduce SO_2 emissions significantly to bring their areas into compliance with the 2010 SO_2 NAAQS. The Hillsborough County NAA and the Nassau County NAA were subsequently redesignated to attainment after more recent ambient monitoring data demonstrated that the 2010 SO_2 NAAQS was being met (84 FR 60927 and 84 FR 17085, respectively).

In addition to areas for which attainment was determined through ambient air monitoring, EPA's Data Requirements Rule (80 FR 51052) required states to identify large sources of SO_2 and characterize the air quality around these sources, either through air monitoring or air quality modeling, to evaluate whether these areas were attaining the 2010 SO_2 NAAQS. Florida completed eleven area characterizations addressing twelve SO_2 sources through air quality modeling. As a result of Florida's DRR analysis, EPA designated one additional area in Florida nonattainment for the 2010 SO_2 NAAQS (the Hillsborough-Polk NAA). Two facilities within the Hillsborough-Polk NAA (Mosaic New Wales and Mosaic Bartow) were required to reduce SO_2 emissions significantly to comply with the 2010 SO_2 NAAQS in that area. The Hillsborough-Polk NAA was subsequently redesignated to attainment (85 FR 9666). Effective March 23, 2020, all of Florida is in compliance with the 2010 SO_2 NAAQS.

3.1.1.7 On-road and Non-Road Programs

The CAA authorizes EPA to establish emission standards for motor vehicles under Section 202 and fuel controls under Section 211. The CAA generally prohibits states other than California from enacting emission standards for motor vehicles under Section 209(a) and for non-road engines under Section 209(e). States may choose to adopt California requirements or meet

federal requirements. Federal programs to reduce emissions from on-road and non-road engines are therefore critical to improving both visibility and air quality.

Several of the programs discussed below address SO_2 emissions by reducing allowable sulfur contents in various fuels. As well as reducing SO_2 emissions, reduced sulfur content improves the efficiency of NO_X controls on existing engines and facilitates the use of state-of-the-art NO_X controls on new engines.

3.1.1.8 2007 Heavy-Duty Highway Rule

In 40 CFR Part 86, Subpart P, EPA set emissions standards for heavy-duty on-road engines. These standards became effective between 2007 and 2010. Subpart P limited NO_X to 0.20 grams per brake horsepower-hour (g/bhp-hr) and non-methane hydrocarbons to 0.14 g/bhp-hr. Subpart P also required that the sulfur content of diesel fuel not exceed 0.0015% by weight to facilitate the use of modern pollution control technology on these engines. EPA required a 97% reduction in the sulfur content of highway diesel fuel, from levels of 500 ppm (low sulfur diesel) to 15 ppm (ultra-low sulfur diesel). These emission standards continue to provide benefit as older vehicles are replaced with newer models. These requirements were successfully implemented on the timeline detailed in the regulation. This program applies nationwide, including in Florida, and, thus, has a direct impact on Florida Class I areas.

On June 29, 2021, EPA removed and reserved 40 CFR Part 86 Subpart P (86 FR 34308) to improve accuracy, reduce testing burden and add other amendments which impacted heavy-duty vehicles. Phase 2 fuel efficiency standards were restated in 40 CFR Part 1036.

3.1.1.9 Tier 2 Vehicle and Gasoline Sulfur Program

EPA's Tier 2 fleet averaging program for on-road vehicles, modeled after the California Low Emission Vehicle (LEV) II standards, became effective in the 2005 model year (40 CFR Part 80 (Registration of Fuels and Fuel Additives), Subpart H; 40 CFR Part 85; and 40 CFR Part 86). The Tier 2 program allows manufacturers to produce vehicles with emissions ranging from relatively dirty to very clean, but the mix of vehicles a manufacturer sells each year must have average NO_X emissions below a specified value. Mobile emissions continue to be reduced as motorists replace older, more polluting vehicles with cleaner vehicles. The Tier 2 program applies nationwide, including in Florida, and, thus, has a direct impact on Florida Class I areas.

On December 4, 2020 (85 FR 78412), EPA revised the greenhouse gas (GHG) standards that had previously been adopted for model years 2021–2026. EPA also removed and reserved multiple subparts to 40 CFR Part 80, including Subpart H, during this rulemaking. 40 CFR Part 1090 (Regulation of Fuels, Fuel Additives, and Regulated Blendstocks) replaced the earlier Subpart H. On December 30, 2021 (86 FR 74434), EPA revised GHG standards for light-duty passenger

cars and light trucks for make years (Mys) 2023 through 2026, setting significantly more stringent standards for those MYs than had been set by the 2020 rulemaking, and somewhat more stringent than the standards adopted in 2012. On April 18, 2024 (89 FR 27842), EPA revised these rules (40 CFR Parts 85, 86, 600 and 1036) to establish more protective emission standards for criteria pollutants and GHG.

3.1.1.10 Tier 3 Motor Vehicle Emissions and Fuel Standards

EPA's Tier 3 program (codified under 40 CFR Part 80, Subpart H, 40 CFR Part 85, and 40 CFR Part 86) reduces tailpipe and evaporative emissions from passenger cars, light-duty trucks, medium-duty passenger vehicles, and some heavy-duty vehicles. The tailpipe standards include phase-in schedules that vary by vehicle class and begin to apply between model years 2017 and 2025. The Tier 3 gasoline sulfur standard, which reduced the allowable sulfur content to 10 parts per million (ppm) in 2017, allows manufacturers to comply across the fleet with the more stringent Tier 3 emission standards. Reduced sulfur content in gasoline will also enable the control devices on vehicles already in use to operate more effectively. Compared to older standards, the non-methane organic gases and NO_X tailpipe standards for light duty vehicles in this rule are 80% lower than the existing fleet average. The heavy-duty tailpipe standards are 60% lower than the existing fleet average.

On December 4, 2020 (85 FR 78412), EPA revised the greenhouse gas (GHG) standards that had previously been adopted for vehicle model years 2021–2026. EPA also removed and reserved multiple subparts to 40 CFR Part 80, including Subpart H, during this rulemaking. 40 CFR Part 1090 (Regulation of Fuels, Fuel Additives, and Regulated Blendstocks) replaced the earlier Subpart H. EPA also revised heavy-duty engine and vehicle standards on January 24, 2023 (88 FR 4296) to further reduce pollutants creating ozone and particulate matter. Requirements for heavy-duty highway engines were effectively migrated from 40 CFR Part 86 to Parts 1036 (Control of Emissions From New and In-use Heavy-Duty Highway Engines), 1065 (Control of Evaporative Emissions From New and In-use Nonroad and Stationary Equipment) and 1068 (General Compliance Provisions For Highway, Stationary and Nonroad Programs). On April 18, 2024 (89 FR 27842), EPA revised some of these rules (40 CFR Parts 85, 86, 600 and 1036) to establish more protective emission standards for criteria pollutants and GHG.

3.1.1.11 Non-Road Diesel Emissions Program

EPA promulgated a series of non-road diesel emissions control programs in 40 CFR Part 89 (Control of Emissions from New and In-Use Nonroad Compression-Ignition Engines), Part 90 (Control of Emissions from Nonroad Spark-Ignition Engines At or Below 19 Kilowatts), Part 91 (Control of Emissions from Marine Spark-Ignition Engines), Part 92 (Control of Air Pollution From Locomotives and Locomotive Engines), and Part 94 (Control of Emissions From marine

Compression-Ignition Engines), which, by 2012, had implemented limitations on compression ignition engines, spark-ignition non-road engines, marine engines, and locomotive engines. Environmental benefits are ongoing as consumers replace older engines with newer engines with improved fuel economy and more stringent emissions standards. These regulations also required the use of cleaner fuels. EPA's non-road diesel rules set standards that reduced emissions by more than 90% from non-road diesel equipment and, beginning in 2007, reduced fuel sulfur levels by 99% from previous levels. The reduction in fuel sulfur levels applied to most non-road diesel fuel in 2010 and applied to fuel used in locomotives and marine vessels in 2012.

EPA has migrated regulatory requirements for these engines to 40 CFR Part 1039 (Control of Emissions From New and In-Use Nonroad Compression-Ignition Engines), with additional testing and compliance provisions in 40 CFR Parts 1065 (Engine-Testing Procedures) and 1068 (General Compliance Provisions for Highway, Stationary and Non-Road Programs) as of June 29, 2021 (86 FR 34372). The Tier 1, Tier 2, and Tier 3 standards originally adopted in this part are identified in 40 CFR Part 1039, Appendix I.

3.1.1.12 Large Spark Ignition and Recreational Vehicle Rule

EPA adopted standards (67 FR 68347) for emissions of NO_X, hydrocarbons (HC), and CO from several groups of previously unregulated non-road engines including large industrial spark-ignition engines and recreational vehicles in 40 CFR Part 1051 (Control of Emissions From Recreational Engines and Vehicles). Non-road spark-ignition engines are those powered by gasoline, liquid propane gas, or compressed natural gas rated over 19kW (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. Non-road recreational vehicles include snowmobiles, off-highway motorcycles, and all-terrain-vehicles. These rules were initially effective in 2004 and were fully phased-in by 2012.

3.1.1.13 Emission Control Area Designation and Commercial Marine Vessels

On April 4, 2014, new standards for ocean-going vessels became effective in 40 CFR Part 1043 (Control of NOx, SOx and PM Emissions from Marine Engines and Vessels Subject to the Marpol Protocol), which applied to ships constructed after 2015 (75 FR 23013). These standards are found in MARPOL Annex VI,[2] the international convention for the prevention of pollution from ocean-going ships. These requirements also mandate the use of significantly cleaner fuels by all large ocean-going vessels when operating near coastlines. The cleaner fuels lower SO_2 emission rates as well as emissions of other criteria pollutants as the engines operate more efficiently on cleaner fuel. These requirements apply to vessels operating in waters of the United

[2] URL: https://www.epa.gov/sites/production/files/2016-09/documents/resolution-mepc-251-66-4-4-2014.pdf

States as well as vessels operating within 200 nautical miles of the coast of North America, also known as the North American Emission Control Area. Ships within the Emissions Control Area are limited to 1,000 ppm sulfur content beginning in 2020.

3.1.1.14 Maximum Achievable Control Technology Programs (40 CFR Part 63)

VISTAS applied controls to future year emissions estimates from various MACT regulations for VOC, SO_2, NO_X, and PM for source categories at which controls were installed on or after 2002. **Table 3-1** describes the MACT used as control strategies for the non-EGU point source emissions in Florida's Regional Haze Plan. The table notes the pollutants for which controls were applied as well as the promulgation dates and the compliance dates for existing sources.

Table 3-1. MACT Source Categories

MACT Source Category	40 CFR 63 Subpart	Original Promulgation Date	Compliance Date (Existing Sources)	Pollutants Affected
Hazardous Waste Combustion (Phase I)	63(EEE), 261 and 270	9/30/99	9/30/03	PM
Portland Cement Manufacturing	LLL	6/14/99	6/10/02	PM
Secondary Aluminum Production	RRR	3/23/00	3/24/03	PM
Lime Manufacturing	AAAAA	1/5/04	1/5/07	PM, SO_2
Taconite Iron Ore Processing	RRRRR	10/30/03	10/30/06	PM, SO_2
Industrial Boilers, Institutional/Commercial Boilers and Process Heaters	DDDDD	9/13/04	9/13/07	PM, SO_2
Reciprocating Internal Combustion Engines	ZZZZ	6/15/04	6/16/07	NO_x, VOC

The Industrial/Commercial/Institutional (ICI) boiler MACT standard (40 CFR Part 63, Subpart DDDDD) was vacated by the U.S. Court of Appeals and remanded the regulation to EPA on June 8, 2007. VISTAS did, however, choose to leave the emissions reductions associated with this regulation in place as the CAA required use of alternative control methodologies under Section 112(j) for uncontrolled source categories. The applied MACT control efficiencies were 4% for SO_2 and 40% for PM_{10} and $PM_{2.5}$ to account for the co-benefit from installation of acid gas scrubbers and other control equipment to reduce HAPs.

EPA finalized the revised ICI Boiler MACT on March 21, 2011. EPA subsequently reconsidered certain aspects of the rule and proposed changes on December 2, 2011. The rules were repromulgated on January 31, 2013. The final compliance date for ICI boilers at major sources was 2016, with the option to request an additional year. EPA's estimate of nationwide SO_2 emissions reductions from this rule is over 500,000 tons/year, as compared to an estimate of 113,000 tons/year in the analysis for the 2004 rule (78 Fed. Reg. 7,138 and 69 Fed. Reg. 55,218). On November 5, 2015, EPA finalized additional revisions to the Boiler MACT and projected that these updates would not significantly change the emissions reductions expected from the rule. It

is, therefore, reasonable to conclude that the 2012 rule has brought about more SO_2 reductions in Florida than were modeled in Florida's Regional Haze Plan.

3.1.1.15 State EGU Control Measures

Emissions from electric generating units (EGUs) have been regulated through state measures in North Carolina and Georgia, which VISTAS included in its Regional Haze modeling. Reductions associated with these measures were used to estimate the 2018 visibility improvements at the Class I areas in VISTAS states. The Department is unaware of any changes to these state programs that have or will result in emissions levels greater than those projected for 2028.

- **North Carolina Clean Smokestacks Act.** In June of 2002, the North Carolina General Assembly enacted the Clean Smokestacks Act (CSA), which required significant actual emissions reductions from coal-fired power plants in North Carolina.[3] These reductions were included as part of the VISTAS 2018 Best and Final modeling effort. Under the CSA, power plants were required to reduce their NO_X emissions by 77% in 2009 and their SO_2 emission by 73% in 2013. Actions taken to date by facilities subject to these requirements comply with the provisions of the CSA, and compliance plans and schedules will allow these entities to achieve the emissions limitations set out by the Act. This program has been highly successful. In 2009, regulated entities emitted less than the 2013 system annual cap of 250,000 tons of SO_2 and less than the 2009 system annual cap of 56,000 tons of NO_X. In 2002, the sources subject to CSA emitted 459,643 tons of SO_2 and 142,770 tons of NO_X. In 2011, these sources emitted only 73,454 tons of SO_2 and 39,284 tons of NO_X, well below the system caps specified in the Act.

- **Georgia Multi-Pollutant Control for Electric Utility Steam Generating Units.** Georgia Rule 391-3-1.02(2)(sss), enacted in 2007, requires flue-gas desulphurization (FGD) and SCR controls on large coal-fired EGUs in Georgia. Reductions from this regulation were included as part of the VISTAS 2018 Best and Final modeling effort. These controls reduced SO_2 emissions from the affected emissions units by at least 95% and reduced NO_X emissions by approximately 85%. Control implementation dates vary by EGU, starting with December 31, 2008, and ending with December 31, 2015.

The Department is unaware of any changes to these federal programs that have or will result in emission increases beyond that projected for 2028.

[3] This legislation established annual caps on both SO_2 and NO_X emissions for the two primary utility companies in North Carolina, Duke Energy and Progress Energy. Duke Energy and Progress Energy have produced emissions reductions beyond what was required which further improved regional visibility.

3.1.2 Consent Agreements

- **Lehigh Cement Company/Lehigh White Cement Company (U.S. District Court, Eastern District of Pennsylvania).** EPA reached a settlement with these companies on December 3, 2019, to settle alleged violations of the CAA. The settlement reduced emissions of NO_X and SO_2 and applied to facilities located in several states, including Alabama.

- **VEPCO (U.S. District Court, Eastern District of Virginia).** Virginia Electric and Power Company (also known as Virginia-Dominion Power) agreed to spend $1.2 billion by 2013 to eliminate 237,000 tons of SO_2 and NO_X emissions each year from eight coal-fired electricity generating plants in Virginia and West Virginia.

- **Anchor Glass Container (U.S. District Court for the Middle District of Florida).** On August 3, 2018, Anchor Glass Container (Anchor) agreed to convert six of its furnaces to oxyfuel furnaces and to meet NO_X emission limits at these furnaces that are consistent with or better than best available control technology. On its remaining furnaces, Anchor agreed to install oxygen enriched air staging to meet more stringent emission limits. To control SO_2, Anchor agreed to install dry or semi-dry scrubber systems on two furnaces. Remaining furnaces must achieve batch optimization and meet enforceable emissions limits. Anchor also agreed to install NO_X and SO_2 continuous emissions monitoring systems at all furnaces. The agreement was projected to result in cumulative emissions reductions of 2,000 tpy of NO_X and 700 tpy of SO_2 at facilities located in Florida, Georgia, Indiana, Minnesota, New York, and Oklahoma.

- **Tennessee Valley Authority (Docket No. CAA-04-2010-1528(b)).** In 2011, the Tennessee Valley Authority (TVA) entered into a court settlement for previous violations of the Clean Air Act at eleven of its coal-fired power plants in Alabama, Kentucky, and Tennessee. This settlement required shutdowns, new emissions controls, and a switch from coal to natural gas at specified facilities. The settlement required the continuous operation of all new and existing selective catalytic reduction controls and flue gas desulfurization controls. The settlement required TVA to invest between $3 to $5 billion on new and upgraded state-of-the-art pollution controls. TVA invested an additional $350 million on clean energy projects that reduced pollution, saved energy and protected public health and the environment. As compared to TVA's 2008 emissions, upon full implementation of the settlement, TVA achieved NO_X reductions of 115,977 tons per year (69% reduction) and SO_2 reductions of 225,757 tons per year (67% reduction).

- **Tampa Electric Company (TECO).** In 2000, under a settlement agreement, (Civil Action No. 99-2524-CIV-T-23F) TECO converted units at the TECO Gannon Station Power Plant (now TECO Bayside Power Station) from coal to natural gas and installed permanent emissions-control equipment to meet stringent pollution limits.

- **Gulf Power.** On August 28, 2002, under a voluntary agreement between Gulf Power and EPA, Gulf Power upgraded its operation to significantly cut NO_X emissions at its James F. Crist Electric Generating Facility, now known as Gulf Clean Energy Center. The voluntary NOx reductions involved installation of a Selective Catalytic Reduction (SCR) unit on Unit No. 7 and a Selective Non-Catalytic Reduction (SNCR) unit on Unit No. 6. The facility was converted to natural gas operations in 2021.

The Department is unaware of any changes to these consent agreements that have or will result in emissions levels greater than those projected for 2028.

3.2 Measures Included in the Regional Haze Plan for the Second Planning Period

Florida included the following additional measures in its Long-Term Strategy for the Second Planning Period.

3.2.1 Measures within Florida

Long-Term Strategy for Regional Haze. Florida has developed a long-term strategy that includes specific enforceable emissions limitations and measures resulting from reasonable progress analyses. In developing its long-term strategy, Florida relied on the technical analyses developed by VISTAS and EPA, and considered the effect of emission reductions due to ongoing pollution control programs; measures to mitigate the impacts of construction activities; Florida's smoke management plan; the effect of source retirements and replacement schedules; and the anticipated net effect on visibility due to projected changes in point, area, and mobile source emissions expected through 2028.

Under EPA's Regional Haze Rule, states are required to consider four-factors (cost, time to comply, energy and non-air impacts, and remaining useful life) in determining whether further reductions in visibility-impairing pollutants would be reasonable for any sources in the state. To limit the scope of this requirement, and based on a VISTAS analysis, the Department focused its reasonable progress objectives on SO_2 emissions from large EGU and non-EGU point sources. Based on criteria to identify sources with the greatest potential visibility impacts in Class I areas,

Florida selected eleven facilities in Florida[4] and two facilities outside of Florida[5] (one in Georgia and one in Kentucky) for review.

Eight of the eleven selected facilities in Florida demonstrated that some or all of the facility's units are effectively-controlled. Included among these are five power plants[6] with one or more units that are required to meet EPA's SO_2 limit under MATS and three phosphate fertilizer facilities[7] that have recently made significant expenditures to upgrade emissions controls and reduce emissions. Florida determined that there is a low likelihood that cost-effective technological advancements exist that could provide further reasonable emission reductions for these sources.

Four of the eleven selected facilities in Florida were subjected to a full four-factor analysis for at least one selected unit (one power plant,[8] which had also submitted an effective-controls demonstration for other selected units at the plant, and three pulp and paper mills[9]) after the Department determined that the selected units did not meet the effectively-controlled criteria. The Department is currently proposing to incorporate into Florida's Regional Haze SIP permit limits and measures resulting from the effectively-controlled analyses and four-factor analyses for these four facilities. The Department also requested that Georgia and Kentucky complete a reasonable progress analysis on the two facilities selected in those states that affect visibility in Florida Class I areas. The Department has not yet received the final results of the reasonable progress analysis from Georgia or Kentucky.

On October 28, 2024, Florida submitted to EPA a supplemental SIP to complete the four-factor analyses for Foley Cellulose Perry Mill. The supplemental SIP also included an updated permit for WestRock Fernandina Beach that includes monitoring, reporting, and recordkeeping requirements and an evaluation of whether a lower-sulfur back-up fuel should be considered a reasonable progress control. Florida also committed to completing mid-point reviews of the regional haze plan as required in the Regional Haze Rule (40 CFR 51.308(f)). The next mid-point review is due by January 31, 2025. The Department will review the progress of the projected emissions changes to judge the necessity of making any revisions to the plan. **Table 3-2** provides the most current emissions for the facilities selected for four-factor analyses.

Table 3-2. Current Status of Reasonable Progress Sources in the Second Implementation Period

[4] Foley Cellulose, LLC Foley Mill, Duke Crystal River Power Plant, JEA Northside Generating Station, Mosaic New Wales, Mosaic Bartow, WestRock Fernandina Beach Mill, WestRock Panama City Mill, TECO Big Bend Power Station, Nutrien White Springs Ag Chem, Seminole Generating Station, CD McIntosh Power Plant.
[5] Georgia Power Company – Plant Bowen, GA, Tennessee Valley Authority (TVA) – Shawnee Fossil Plant
[6] Duke Crystal River Power Plant, JEA Northside Generating Station, TECO Big Bend Power Station, Seminole Generating Station, CD McIntosh Power Plant
[7] Mosaic New Wales, Mosaic Bartow, Nutrien White Springs Ag Chem
[8] JEA Northside Generating Station
[9] Foley Cellulose, LLC Foley Mill, WestRock Fernandina Beach Mill, WestRock Panama City Mill

Facility	Unit ID	Current Status of Controls/Reductions	Modeled 2011 SO_2 Emissions	Actual 2020 SO_2 Emissions	Projected 2028 SO_2 Emissions
Foley Cellulose, LLC Foley Mill	EU002, EU004, EU006, EU007, EU011	[Shutdown]	1,618 tpy	2,314.5 tpy	1,520 tpy
Duke Crystal River Power Plant	EU003 and EU004 EU051, EU052, EU042 and EU043	MATS 0.2 lb/MMBTU limit Combust only natural gas	26,162 tpy	2,424.2 tpy	2,614 tpy
JEA Northside Generating Station	E026 and EU027	0.15 lb/MMBTU	14,917 tpy	2,308.6 tpy	2,150 tpy
Mosaic New Wales	EU002, EU003, EU004, EU042, EU044	5-unit cap 1,090 lb/hr	7,901 tpy	4,002.1 tpy	4,491 tpy
Mosaic Bartow	EU012, EU032 and EU033	3-unit cap 1,100 lb/hr, 24 hr block average	4,426 tpy	2,907.1 tpy	4,301 tpy
WestRock Fernandina Beach Mill	EU011 EU015	150 lb/hr SO_2 3-hr block average and 642.6 tpy rolled monthly 125 tpd coal usage 30-day rolling average	3,717 tpy	633.0 tpy	2,607 tpy
WestRock Panama City Mill	EU001 and EU019 EU015 and EU016	2.75 lb/MMBTU [shutdown] 643 lb/hr cap for both 24-hr rolling average [shutdown]	2,392 tpy	1,118.2 tpy	2,591 tpy
TECO Big Bend Power Station	EU001 EU002 and EU003 EU004	[shutdown] Natural gas only [shutdown 2023] MATS 0.2 lb/MMBTU limit	9,106 tpy	0 tpy	6,085 tpy
Nutrien White Springs Ag Chem	EU066 and EU067	2.6 lb/ton 3-hr rolling average and 2.3 lb/ton on 365 day rolling average	3,229 tpy	1,335.6 tpy	1,557 tpy
Seminole Generating Station	EU001 and EU002	MATS 0.2 lb/MMBTU limit	14,970 tpy	4,974.9 tpy	3,713 tpy
CD McIntosh Power Plant	EU006 EU028 EU034	[Shutdown in 2021] 8 lb/hr 0.015% by vol exhaust gas	4,257 tpy	583.8 tpy	4,202 tpy

3.2.2 Measures Outside of Florida

VISTAS provided consultation letters on behalf of South Carolina to Ohio and Pennsylvania, and South Carolina provided a consultation letter to Georgia to address measures outside of South Carolina. VISTAS states have been advised to include reference to these measures in their state progress reports. A summary of the responses is below:

- **Georgia Power Company – Plant Bowen, GA:** A reasonable progress analysis provided by Georgia Power Company states the facility will be taking a limit of 0.20 lb/MMBtu on their coal-fired boilers.

- **International Paper – Savannah, GA.** A reasonable progress analysis provided by International Paper states the facility is removing the ability to burn coal and fuel oil from the four main sources.

- **Genon NE Management Company – Keystone Station, PA.** A reasonable progress analysis provided by the state of Pennsylvania asserts that Units 1 and 2 at this facility are considered to be effectively controlled. Keystone indicated that the units are currently controlled by BACT-level controls for SO_2 and NO_X. In addition, the units made process improvements to comply with the MATS Rule and the 2010 1-hour SO_2 NAAQS. Keystone Generating Station stated in the four-factor analysis that since 2008, annual SO_2 emissions have been reduced by 89%. Keystone did not identify any technically feasible controls for SO_2, because the units are already controlled by a wet flue gas desulfurization (FGD) (at least 90% effectiveness) and dry sorbent injection. For NO_X control, Keystone did evaluate potential tuning and upgrading of the low NO_X burners installed the units. The cost effectiveness of this upgrade was estimated to be $16,322/ton NO_X removed. Keystone did not identify any reasonable control measures for NO_X or SO_2 as a result of the four-factor analysis.

- **General James M. Gavin Power Plant, OH.** A reasonable progress analysis provided by the state of Ohio asserts that due to the presence of an FGD and SCR system of at least 90% effectiveness, this facility is considered to be effectively controlled. Boilers B003 and B004 have federally enforceable SO_2 emissions limits of 7.41 lb/MMBtu. Both boilers are required to be continuously controlled by FGD systems with an effective control efficiency of 95%. Ohio has requested a four-factor analysis from the facility.

Florida did not take credit for any of these out-of-state measures in establishing reasonable progress goals for the Class I areas in Florida. In addition to those out-of-state measures listed

above, the Department requested, but did not receive, reasonable progress analysis information on the out-of-state facilities listed in **Table 3-3**.

Table 3-3. Facilities in VISTAS States (not including Florida) Selected for Reasonable Progress Analysis

State	Facility ID	Facility Name
GA	13015-2813011	Ga Power Company – Plant Bowen
KY	21145-6037011	Tennessee Valley Authority (TVA) – Shawnee Fossil Plant

3.3 Changes to Measures Included in Long-Term Strategy for First Planning Period

Florida included the following measures in its long-term strategy for the first planning period. Florida completed source-specific reasonable progress and BART determinations for all applicable sources in the first-round regional haze SIP. In total, Florida had 46 BART-eligible sources, and 15 reasonable-progress sources were reviewed. Of the 46 BART-eligible sources, 25 met the modeling exemption criteria, nine shut down, and twelve were reviewed for BART determinations. Of the 15 facilities with reasonable progress units, three had shut down, three took enforceable permit limits that rendered them no longer subject to a four-factor analysis, six were also BART sources that completed a BART demonstration (equivalent to a reasonable progress determination), and five completed a reasonable progress four-factor analysis determination. (Two sources had units split between BART and reasonable progress.)

Table 3-4 lists the fifteen facilities that had units for which a reasonable progress determination was made, together with their current status. All of the facilities that were required to implement reasonable progress controls or measures have met their compliance dates. **Table 3-4** compares the modeled 2018 SO_2 emissions to the actual 2018 emissions for these sources. Emissions data for 2023 are also available, and they have been included in the table. **Table 3-4** also shows the emissions change over the period from 2018 through 2023 (2023 emissions minus 2018 emissions). Since the last progress report, five additional reasonable progress units at three facilities have shutdown, with 15 reasonable progress units still in operation. At of the end of the first implementation period (2018), actual emissions from all existing facilities (23,117 tpy from 10 facilities) are significantly lower than the emissions that were modeled in the SIP for 2018 (133,552 tpy from 13 facilities), including those facilities that made no changes (i.e., those facilities for which no reasonable progress controls were identified). During the period of 2018 through 2023, SO_2 emissions from these units decreased by 74,034 tons.

Table 3-5 lists the twelve sources for which a BART review was made. Sources that were exempt from BART analysis or shut down prior to submission of the first regional haze SIP are not listed. All BART controls have been implemented as of December 31, 2018. The actual 2018 and 2023 emissions for these sources are compared to the emission reductions that were expected

based upon the BART emission limitations compared to the 2002 base year emissions. As of the end of the first implementation period (2018), reductions in actual emissions from existing facilities (7,259 tpy of SO_2, 9,238 tpy of NO_X, and 285 tpy of PM from eight facilities) have significantly surpassed the emission reductions expected from the 2002 base year emissions based on BART emission limitations. This is due to additional unit shutdowns and fuel switches, documented in **Table 3-5**, which occurred for reasons outside of the BART process. **Table 3-5** also shows the emissions change over the period from 2018 through 2023 (2023 emissions minus 2018 emissions). During the period of 2018 through 2023, SO_2 emissions from these units decreased by 10,608 tons, NO_X emissions decreased by 6,944 tons and PM emissions decreased by 388 tons.

3.4 Emission Reductions Achieved through Implementation of Control Measures

40 CFR 51.308(g)(2) of the Regional Haze Rule requires *[a] summary of the emission reductions achieved throughout the State through implementation of the measures described in (1) above.* As required by 40 CFR 51.308(g)(2), emissions reductions at Florida emission units are provided in **Table 3-4** and **Table 3-5** below. Florida is not anticipating any increases in SO_2, NO_x or PM emissions from any of these emission units owing to the combination of factors discussed above, including the implementation of additional control measures as a result of four-factor analyses conducted at specified facilities.

Table 3-4. Current Status of Reasonable Progress Sources from the First Implementation Period

Plant Name	Unit ID	Current Status of Controls/Reductions	BART-Eligible?	Modeled 2018 SO_2 Emissions	Actual 2018 SO_2 Emissions	Actual 2023 SO_2 Emissions
GRU Deerhaven	EU005	Permit limited (5,500 tpy)		1,062	530.0	68.9
FPL Port Everglades	EU003	Shutdown 01/31/13	Y	859	13.6	11.5
FPL Port Everglades	EU004	Shutdown 01/31/13	Y	97	13.6	11.5
Duke Crystal River	EU001	Shutdown 12/31/18	Y	13,537	-	-
Duke Crystal River	EU002	Shutdown 12/31/18	Y	15,241	-	-
Duke Crystal River	EU003	FGD – in operation		3,634	3,364.8	3,540.4
Duke Crystal River	EU004	FGD – in operation		6,120	3,364.8	3,540.4
FPL Turkey Point	EU001	Shutdown 10/31/16	Y	499	12.8	13.6
FPL Turkey Point	EU002	Shutdown 10/31/16	Y	179	12.8	13.6
JEA St. Johns River Power Park	EU016	Shutdown		5,882	-	-
JEA St. Johns River Power Park	EU017	Shutdown		7,420	-	-
JEA Northside	EU027	Permit limited (1,816 tpy)		5,950	2,473.8	1,505.6
JEA Northside	EU003	No changes	Y	7,146	2,473.8	1,505.6
Gulf Clean Energy Center (Crist)	EU007	FGD – in operation	Y	4,648	430.6	8.4
Florida Power Development	EU018	Shutdown 06/30/18		2,884	2.0	-
TECO Bayside (formerly Gannon)	EU001	Shutdown 2003		0	15.1	13.2
TECO Bayside (formerly Gannon)	EU002	Shutdown 2003		0	15.1	13.2
TECO Bayside (formerly Gannon)	EU003	Shutdown 2003		0	15.1	13.2
TECO Bayside (formerly Gannon)	EU004	Shutdown 2003		0	15.1	13.2
TECO Bayside (formerly Gannon)	EU005	Shutdown 2003		0	15.1	13.2
TECO Bayside (formerly Gannon)	EU006	Shutdown 2003		0	15.1	13.2
FPL Manatee	EU001	Fuel oil sulfur reduction – in effect	Y	4,371	525.2	20.6
FPL Manatee	EU002	Fuel oil sulfur reduction – in effect	Y	6,163	525.2	20.6
WestRock Fernandina Beach	EU015	No changes		3,627	1,641.1	493.6
Duke Anclote	EU001	Converted to NG only – in effect	Y	13,879	4.8	6.5
Duke Anclote	EU002	Converted to NG only – in effect	Y	13,225	4.8	6.5
Duke Bartow	EU001	Shutdown 2009		0	16.6	14.9
Duke Bartow	EU002	Shutdown 2009		0	16.6	14.9
Duke Bartow	EU003	Shutdown 2009	Y	0	16.6	14.9
Lakeland McIntosh	EU006	Eliminated petcoke – in effect		3,842	1,656.2	3.9
Seminole Electric	EU001	FGD improved to 0.25 lb/mmbtu/ no petcoke		6,779	5,638.0	3,194.7
Seminole Electric	EU002	FGD improved to 0.25 lb/mmbtu/ no petcoke		6,508	5,638.0	3,194.7

Table 3-5. Current Status of BART Sources

Plant Name	Unit ID	Current Status of Controls/Reductions	2002 SO_2	Est. SO_2 Reduction 2018	Actual 2018 SO_2	Actual 2023 SO_2	2002 NO_X	Est. NO_X Reduction 2018	Actual 2018 NO_X	Actual 2023 NO_X	2002 PM_{10}	Est. PM_{10} Reduction 2018	Actual 2018 PM_{10}	Actual 2023 PM_{10}
GULF LANSING SMITH	1	SO_2 -DSI (0.74 lb/MMBtu) approx. 50% reduction, required by 3/31/16. Unit retired 3/31/16	6,044	3,022	-	-	2,533	0	-	-	79	0	-	-
GULF LANSING SMITH	2	SO_2 -DSI (0.74 lb/MMBtu) approx. 50% reduction, required by 3/31/16. Unit retired 3/31/16	4,247	2.123	-	-	1,428	0	-	-	55	0	-	-
DUKE CRYSTAL RIVER	1	By permit, unit will cease coal operation by 12/31/20 – Unit retired 12/31/18	18,998	0	456.9	-	4,810	0	231.4	-	179	0	7.0	-
DUKE CRYSTAL RIVER	2	By permit, unit will cease coal operation by 12/31/20 – Unit retired 12/31/18	20,728	0	3,787.0	-	6,373	0	2,070.7	-	74	0	69.6	-
GULF CRIST	6	No changes	11,085	0	741.7	8.4	3,518	0	1,714.1	1,449.6	108	0	389.9	309.1
GULF CRIST	7	No changes	21,546	0	741.7	8.4	6,355	0	1,714.1	1,449.6	191	0	389.9	309.1
TECO BIG BEND	1	No changes. Fires natural gas only.	2,789	0	1,070.7	47.9	9,142	0	0.8	0.5	200	0	81.1	23.1 (CPM)**
TECO BIG BEND	2	No changes. Fires natural gas only.	2,021	0	1,070.7	47.9	6,625	0	0.8	0.5	718	0	81.1	23.1 (CPM)
TECO BIG BEND	3	No changes	2,621	0	1,070.7	47.9	5,929	0	0.8	0.5	402	0	81.1	23.1 (CPM)
JEA NORTHSIDE/SJ RPP	3	No changes	7,146	0	2,473.8	1,505.6	3,631	0	2,748.9	2,253.9	568	0	53.1	37.3
FPL MANATEE	1	SO_2 - lower S limit (0.7% or less) approx. 30% reduction- in effect	14,691	4,407	525.2	20.6	4,630	0	798.8	203.2	1,177	0	65.2	42.8
FPL MANATEE	2	SO_2 - lower S limit (0.7% or less) approx. 30% reduction- in effect	16,508	4,952	525.2	20.6	5,210	0	798.8	203.2	1,323	0	65.2	42.8
LAKELAND C.D. MCINTOSH	1	Shutdown	559	0	1,656.2	3.9	246	0	1,735.0	166.0	22	0	97.6	17.1
LAKELAND C.D. MCINTOSH	5	Shutdown 06/22/20	80	0	1,656.2	3.9	168	0	1,735.0	166.0	8	0	97.6	17.1
FPL MARTIN	1	Shutdown 12/31/18	6,404	0	521.3	19.0	2,434	0	1,976.9	484.1	576	0	103.5	68.2
FPL MARTIN	2	Shutdown 12/31/18	8,215	0	521.3	19.0	2,937	0	1,976.9	484.1	730	0	103.5	68.2
FPL TURKEY POINT	1	Shutdown 10/31/16	4,307	3,808	12.8	13.6	2,324	0	165.1	175.8	369	0	45.1	48.4
FPL TURKEY POINT	2	Shutdown 10/31/16	4,289	4,289	12.8	13.6	2,233	2,233	165.1	175.8	365	365	45.1	48.4
TALLAHASSEE PURDOM	7	Shutdown 12/31/13	2	2	2.3	3.3	11	11	121.9	10.5	0.3	3	31.3	35.9

Plant Name	Unit ID	Current Status of Controls/Reductions	2002 SO_2	Est. SO_2 Reduction 2018	Actual 2018 SO_2	Actual 2023 SO_2	2002 NO_X	Est. NO_X Reduction 2018	Actual 2018 NO_X	Actual 2023 NO_X	2002 PM_{10}	Est. PM_{10} Reduction 2018	Actual 2018 PM_{10}	Actual 2023 PM_{10}
PCS White Springs	1	Shutdown	0	0	-	-	0	0	-	-	17	0	-	-
PCS White Springs	3	Shutdown	1	0	-	-	29	0	-	-	11	0	-	-
PCS White Springs	4	No changes	23	0	-	-	12	0	-	-	10	0	-	-
PCS White Springs	8	No changes	1	0	-	0.0074	0	0	-	2.153	0	0	-	4.708
PCS White Springs	10	No changes	0	0	-	-	0	0	-	-	12	0	-	0.0016
PCS White Springs	15	No changes	0	0	-	-	0	0	-	-	5	0	0.407	0.133
PCS White Springs	21	Shutdown	18	0	-	-	Limited operation	0	-	-	0	0	-	-
PCS White Springs	22	Shutdown	27	0	-	-	Limited operation	0	-	-	0	0	-	-
PCS White Springs	32	No changes	0	0	0.0246	0.0081	1	0	7.175	2.357	0	0	5.409	2.176
PCS White Springs	38	Shutdown	1	0	-	-	29	0	-	-	14	0	-	-
PCS White Springs	42	Shutdown	13	0	-	-	7	0	-	-	1	0	-	-
PCS White Springs	44	Shutdown	0	0	-	-	0	0	-	-	16	0	-	-
PCS White Springs	54	No changes	Active	0	-	-	Active	0	-	-	Active	0	-	-
PCS White Springs	62	Shutdown	Active	0	-	-	Active	0	-	-	Active	0	-	-
PCS White Springs	64	Shutdown	0	0	-	-	2	0	-	-	1	0	-	-
PCS White Springs	65	Shutdown	0	0	-	-	0	0	-	-	0	0	-	-
PCS White Springs	ALL	Cyclones, venturi and cyclonic scrubbers	Active	-	1,982.1	977.6		-	130.8	107.7	Active	-	7.1	16.8
CEMEX Brooksville	2	No changes	0	0	-	-	0	0	-	-	3	0	-	-
CEMEX Brooksville	3	No changes	5	0	-	-	555	0	-	-	16	0	-	-
CEMEX Brooksville	4	No changes	0	0	-	-	0	0	-	-	11	0	-	-
CEMEX Brooksville	5	No changes	0	0	-	-	0	0	-	-	105	0	-	-
CEMEX Brooksville	6	No changes	0	0	-	-	0	0	-	-	1	0	-	-

Plant Name	Unit ID	Current Status of Controls/Reductions	2002 SO_2	Est. SO_2 Reduction 2018	Actual 2018 SO_2	Actual 2023 SO_2	2002 NO_X	Est. NO_X Reduction 2018	Actual 2018 NO_X	Actual 2023 NO_X	2002 PM_{10}	Est. PM_{10} Reduction 2018	Actual 2018 PM_{10}	Actual 2023 PM_{10}
CEMEX Brooksville	8	No changes	0	0	-	-	0	0	-	-	6	0	-	-
CEMEX Brooksville	9	No changes	0	0	-	-	0	0	-	-	105	0	-	-
CEMEX Brooksville	11	No changes	0	0	-	-	0	0	-	-	8	0	-	-
CEMEX Brooksville	ALL			-	12.5	33.0		-	1,233.9	1,135.2		-	72.9	36.2

***Note: Emissions are in tons per year. PM_{10} emissions represent PM_{10} filterable + condensable.**

****Note: Emissions reported as condensable particulate matter (CPM).**

4 Visibility Conditions

40 CFR 51.308(g)(3) of the RHR requires that *[f]or each Class I 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 five-year averages of these annual values:*

(i) The current visibility conditions for the most impaired and least impaired days;

(ii) The difference between current visibility conditions for the most impaired and least impaired days and baseline visibility conditions;

(iii) The change in visibility impairment for the most impaired and least impaired days over the past five years;

40 CFR 51.308(g)(3) requires the state to assess the visibility conditions for the most impaired and least impaired days expressed in terms of five-year averages. The visibility conditions that must be reviewed include: (1) the current visibility conditions; (2) the difference between current visibility conditions compared to the baseline; and (3) the change in visibility impairment for the most and least impaired days over the past five years. The Interagency Monitoring of Protected Visual Environments (IMPROVE) program provides visibility data allowing such assessments within Class I areas or at nearby Class I areas.[10]

Table 4-1 and **Table 4-2** show the current visibility conditions and the difference between the current visibility and the baseline condition expressed in terms of five-year averages of observed visibility impairment for the 20% most impaired days and the 20% clearest days, respectively. The baseline conditions are for 2000 through 2004 and the current conditions are for 2018 through 2022. Because the RPGs in the first planning period were calculated for the 20% worst days, the table includes a comparison of the baseline average and current average for the 20% worst days. **Table 4-3** and **Table 4-4** show the current visibility conditions and the difference between the current visibility and the baseline condition for five-year periods through 2022 for the 20% most impaired and clearest days, respectively.

The data shows that Chassahowitzka National Wilderness Area, the Everglades National Park and the St. Marks National Wilderness Area saw an improvement in visibility on the 20% most impaired days and on the 20% clearest days. The current observed five-year average value for each Class I area on the 20% most impaired days is either below or on track to meet the 2028 goal. On the 20% clearest days, the current observed five-year average value for each Class I area is either below or on track to meet the 2028 goal and thus ensures no degradation in visibility for the 20 % clearest days since the baseline period as required in 40 CFR 51.308(g)(3).

[10] https://vista.cira.colostate.edu/Improve/improve-program/

Table 4-1. Current Observed Visibility Impairment, Change from Baseline, and Comparison to 2028 RPGs (20% Most Impaired Days [deciviews])

Class I Area	Baseline Average (2000-2004)	Current Average (2018-2022)	Change, current – baseline	2028 Goal	Difference, current – goal
Chassahowitzka National Wilderness Area	24.52	17.03	-7.49	16.79	0.24
Everglades National Park	19.52	14.37	-5.15	13.95	0.42
St. Marks National Wilderness Area	24.68	16.29	-8.39	16.43	-0.14

Table 4-2. Current Observed Visibility Impairment, Change from Baseline, and Comparison to 2028 RPGs (20% Clearest Days [deciviews])

Class I Area	Baseline Average (2000-2004)	Current Average (2018-2022)	Change, current – baseline	2028 Goal	Difference, current – goal
Chassahowitzka National Wilderness Area	15.60	12.23	-3.37	12.54	-0.31
Everglades National Park	11.69	10.39	-1.30	9.88	0.51
St. Marks National Wilderness Area	14.34	10.82	-3.52	11.59	-0.77

The previous progress report covered visibility through 2018. **Table 4-3** and **Table 4-4** display the change in visibility impairment for the 20% most impaired and 20% clearest days for five-year periods from 2018 through 2022. The data shows that Florida's Class I areas saw an improvement in visibility on the 20% most impaired and 20% clearest days. In comparing **Tables 4-1** and **4-3**, there was a -13.02 percent change between the 2014-2018 and 2018-2022 five-year periods for 20% most impaired days for Chassahowitzka National Wilderness Area. Similarly, there was a -1.45 percent change between the 2014-2018 and 2018-2022 five-year periods for 20% clearest days for the same Class I area. Both comparisons show an increase in visibility at Florida's Class I areas.

Table 4-3. Observed Visibility Impairment for Five-Year Periods through 2022 (20% Most Impaired Days [deciviews])

Class I Area	2014-2018	2015-2019	2016-2020	2017-2021	2018-2022
Chassahowitzka National Wilderness Area	19.58	17.14	16.89	17.02	17.03
Everglades National Park	17.74	14.67	14.54	14.58	14.37
St. Marks National Wilderness Area	20.09	16.72	16.60	16.48	16.29

Table 4-4. Observed Visibility Impairment for Five-Year Periods through 2022 (20% Clearest Days [deciviews])

Class I Area	2014-2018	2015-2019	2016-2020	2017-2021	2018-2022
Chassahowitzka National Wilderness Area	12.41	12.33	12.22	12.21	12.23
Everglades National Park	10.37	10.44	10.39	10.34	10.39
St. Marks National Wilderness Area	11.15	11.07	11.15	11.00	10.82

Figure 4-1 and **Figure 4-2** display the data listed in **Table 4-1** through **Table 4-4**. Monitoring data from the IMPROVE network used in these figures are current as of October 2023.[11] **Figure 4-1** shows the uniform rate of progress (URP) towards natural background for the 20% most impaired days and observed visibility impairment for the 20% most impaired days in the Chassahowitzka National Wilderness Area, as well as the associated glide slope and the predicted impairment from the Regional Haze SIP. The 2028 RPG is included in the graph. The observed five-year average impairment for 2022 is below both the glide path and the predicted impairment.

[11] http://vista.cira.colostate.edu/Improve/rhr-summary-data/sia_impairment_daily_budgets_10_23.zip

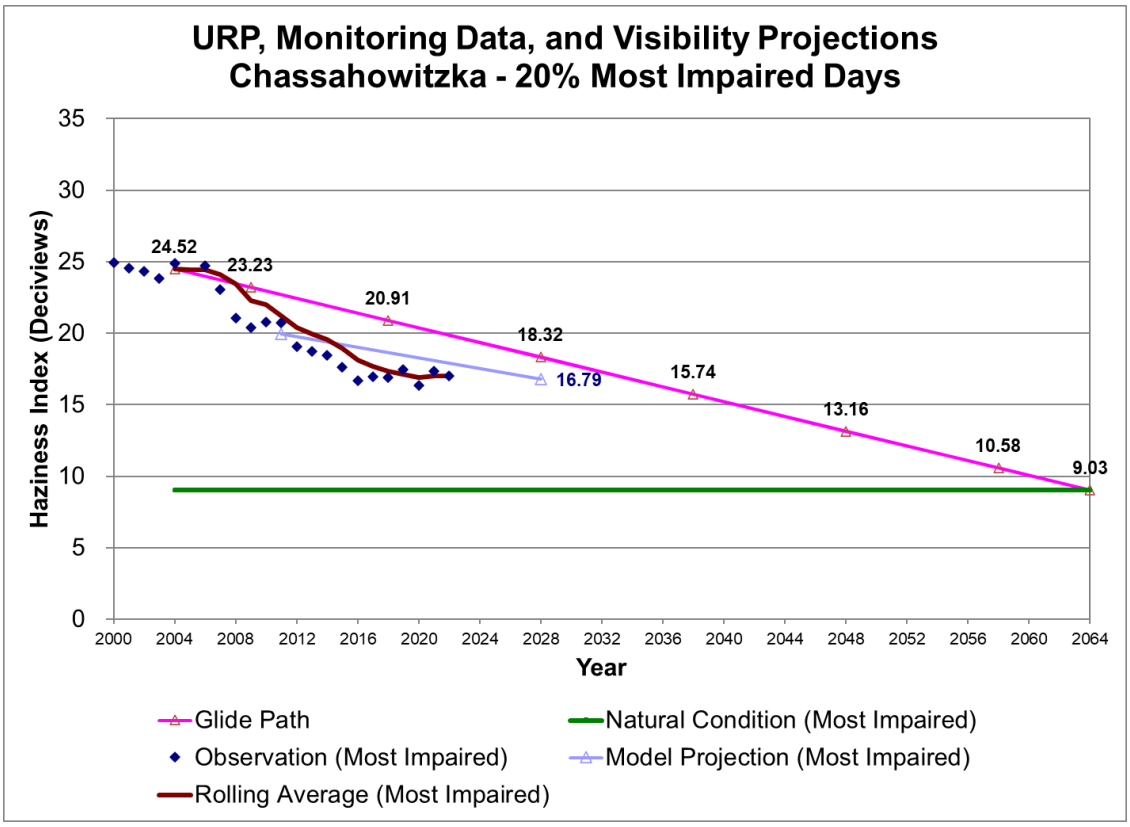


Figure 4-1. Chassahowitzka National Wildlife Refuge Visibility Impairment on the 20% Most Impaired Days, Glide Path, and 2028 RPG

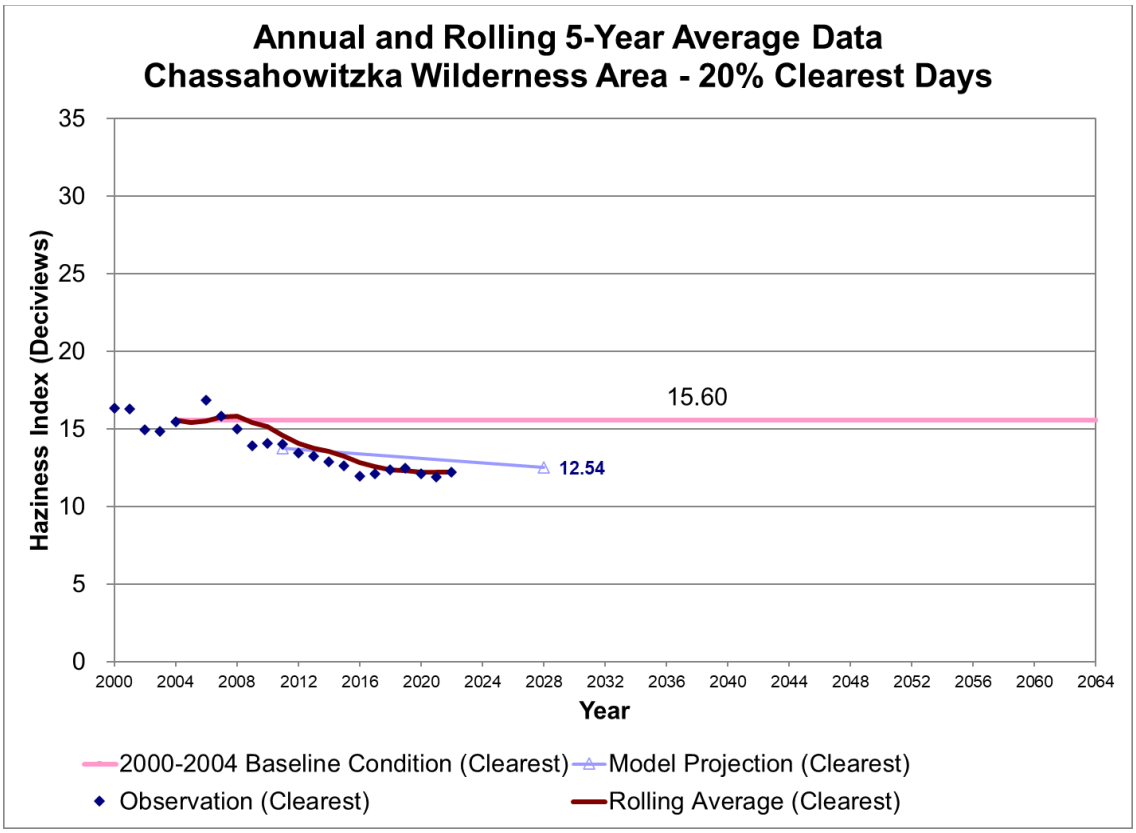


Figure 4-2. Annual and Rolling Five-Year Average Data for Chassahowitzka National Wildlife Refuge (20% Clearest Days [deciviews])

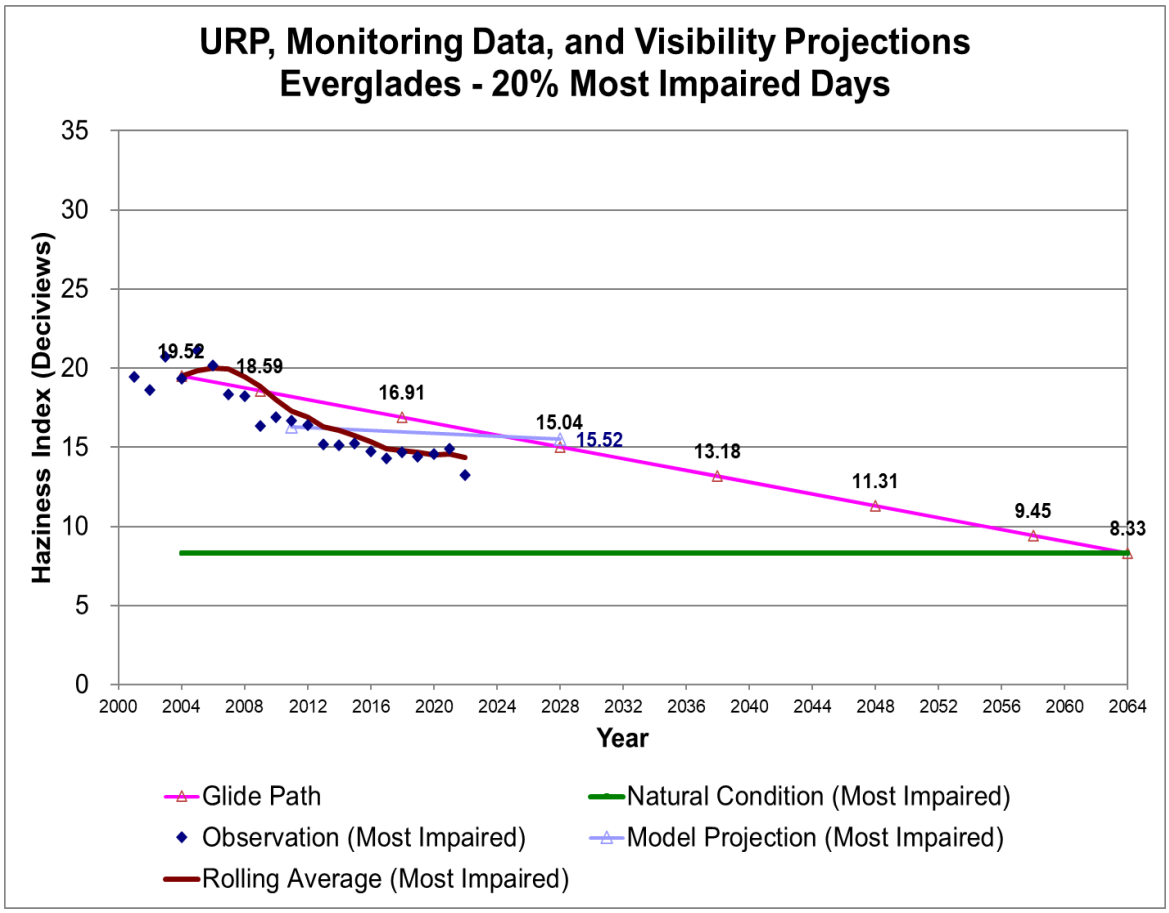


Figure 4-3. Everglades National Park Visibility Impairment on the 20% Most Impaired Days, Glide Path, and 2028 RPG

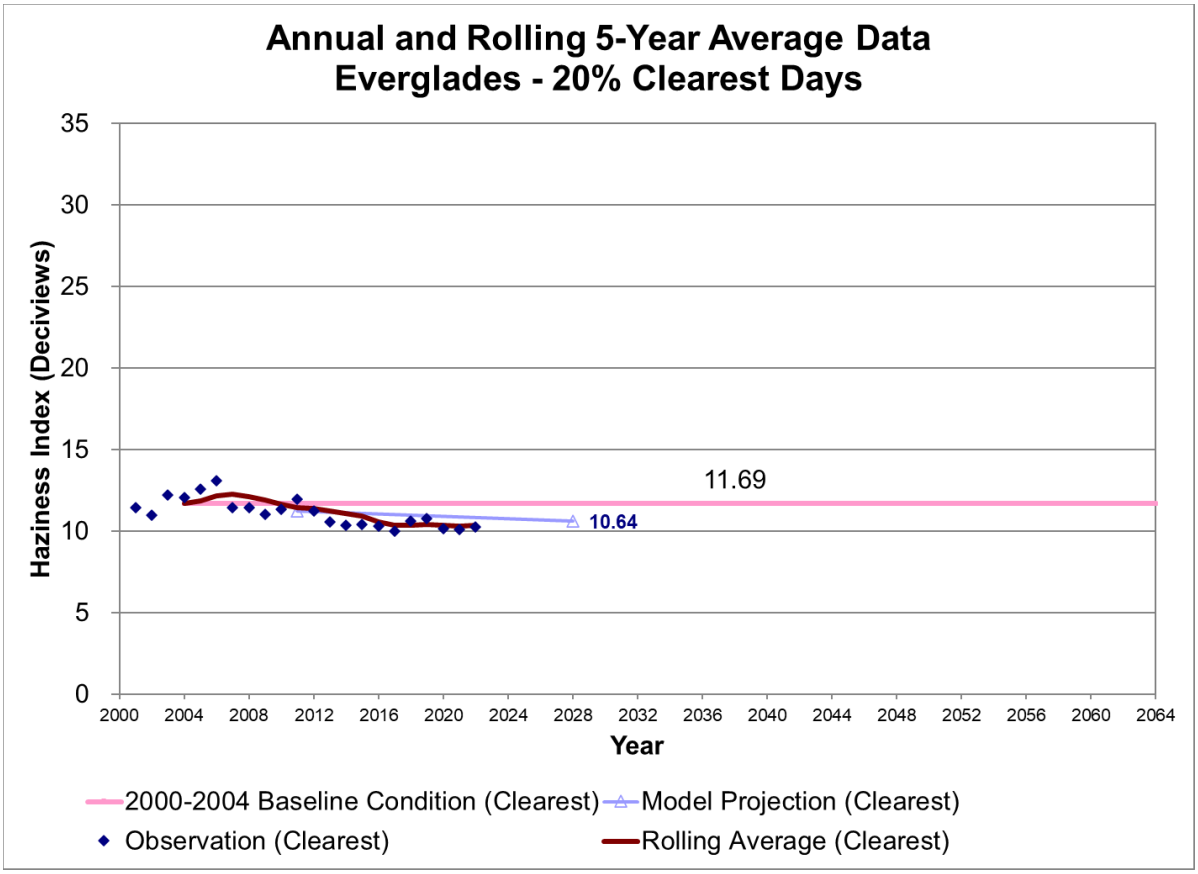


Figure 4-4. Annual and Rolling Five-Year Average Data for Everglades National Park (20% Clearest Days [deciviews])

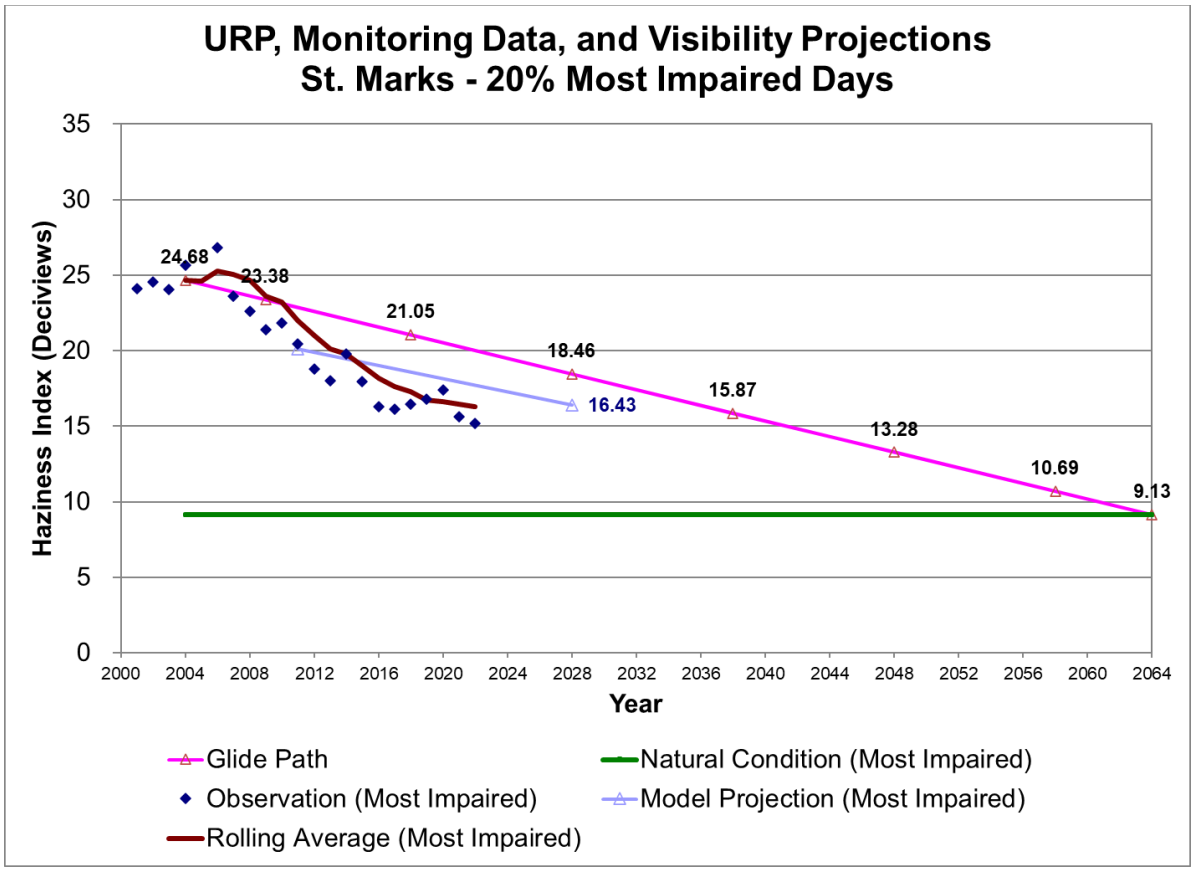


Figure 4-5. St. Marks National Wildlife Refuge Visibility Impairment on the 20% Most Impaired Days, Glide Path, and 2028 RPG

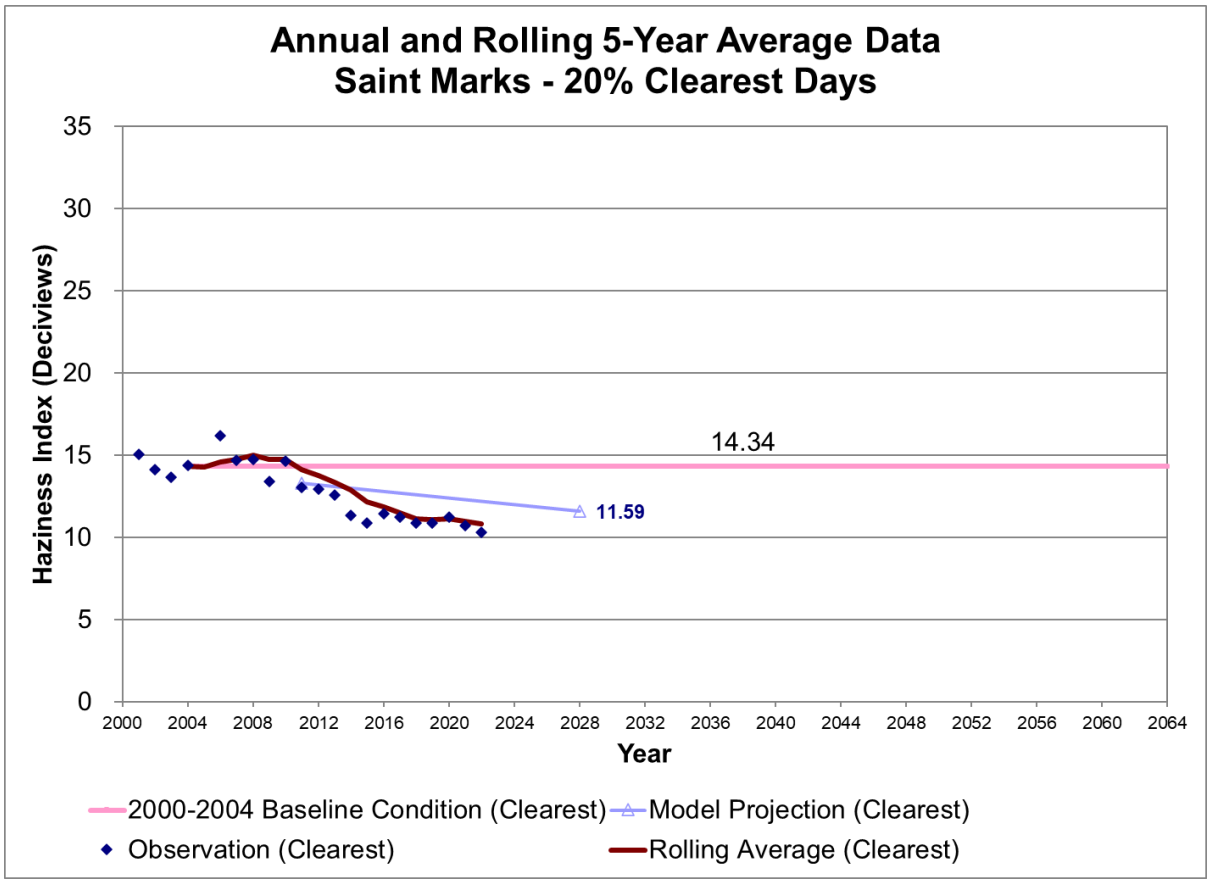


Figure 4-6. Annual and Rolling Five-Year Average Data for St. Marks National Wildlife Refuge (20% Clearest Days [deciviews])

Figures 4-2, **4-4** and **4-6** show the observed five-year average impairment values for the 20% clearest days in Chassahowitzka National Wildlife Refuge, Everglades National Park, and St. Marks National Wildlife Refuge, respectively, as well as the predicted impairment as reported in Florida's Regional Haze Plan and SIP. The observed five-year average impairments for the 20% clearest days for 2022 are all below both the glidepath and predicted impairments.

5 Emissions Analysis

40 CFR 51.308(g)(4) of the RHR requires *[a]n analysis tracking the change over the period since the period addressed in the most recent plan required under paragraph (f) of this section in emissions of pollutants contributing to visibility impairment from all sources and activities within the State. Emissions changes should be identified by type of source or activity. With respect to all sources and activities, the analysis must extend at least through the most recent year for which the state has submitted emission inventory information to the Administrator in compliance with the triennial reporting requirements of subpart A of this part as of a date 6 months preceing the required date of the progress report. With respect to sources that report directly to a centralized emissions data system operated by the Administrator, the analysis must*

extend through the most recent year for which the Administrator has provided a State-level summary of such reported data or an internet-based tool by which the State may obtain such a summary as of a date 6 months preceding the required date of the progress report. The State is not required to backcast previously reported emissions to be consistent with more recent emissions estimation procedures, and may draw attention to actual or possible inconsistencies created by changes in estimation procedures.

This section includes an analysis tracking the change since 2019 in emissions of pollutants contributing to visibility impairment from all sources and activities within the state, as required by 40 CFR 51.308(g)(4). Because SO_2 was the significant pollutant contributing to visibility impairment during the second implementation period, the emissions analysis will focus mostly on SO_2 emissions. This section also includes an assessment of changes in anthropogenic emissions since 2018, as required by 40 CFR 51.308(g)(5).

5.1 Change in $PM_{2.5}$, NO_X, and SO_2 Emissions from All Source Categories

This analysis divides emissions across eight source categories: agricultural burning, stationary point, non-point (area), nonroad mobile, on-road mobile, prescribed burns, wildfires, and biogenic sources.

- Agricultural burning includes emissions from field burning associated with various crop production, such as corn, wheat, soybean, citrus, beans, and sugar cane. Emissions estimates from agricultural burning are available on a countywide level.

- Stationary point sources are those sources that emit greater than a specified tonnage per year, with data provided at the facility level. Electricity generating utilities and industrial sources are major subcategories for stationary point sources.

- Nonpoint sources, sometimes called stationary area sources, are those sources the individual emissions from which are relatively small, but due to the large number of these sources, the collective emissions from which may be significant. These types of emissions are estimated on a countywide level.

- Nonroad mobile sources are equipment that can move, but do not use the roadways (i.e., lawn mowers, construction equipment, marine vessels, railroad locomotives, aircraft). The emissions from these sources, like stationary area sources, are estimated on a countywide level.

- On-road mobile sources are automobiles, trucks, and motorcycles that use the roadway system. The emissions from these sources are estimated by vehicle type and road type and

are summed into countywide level data.

- Wildfire emissions include smoldering and flaming emissions from unplanned, unwanted fires burning in natural areas, such as forests, grasslands, or prairies. These emissions may be summed into countywide level data or reported as point sources.

- Prescribed fire emissions include smoldering and flaming emissions from fire land treatment, under controlled conditions, to accomplish natural resource management objectives. Utilization of prescribed burning can reduce the likelihood of catastrophic wildfires.

- Biogenic sources are natural sources like trees, crops, grasses, and the natural decay of plants. Biogenic emissions are not included in this review since they were held constant as part of the original regional haze SIP modeling and are not controllable emissions.

For the purpose of evaluating recent emissions changes and progress, the Department used the 2014 NEI[12], the 2017 NEI,[13] the 2020 NEI,[14] and Florida's point source emissions inventory data collected each year. When available, data after 2020 are also used. For comparison purposes, the tables below include the 2028 emissions projected by VISTAS[15] in the second regional haze SIP.

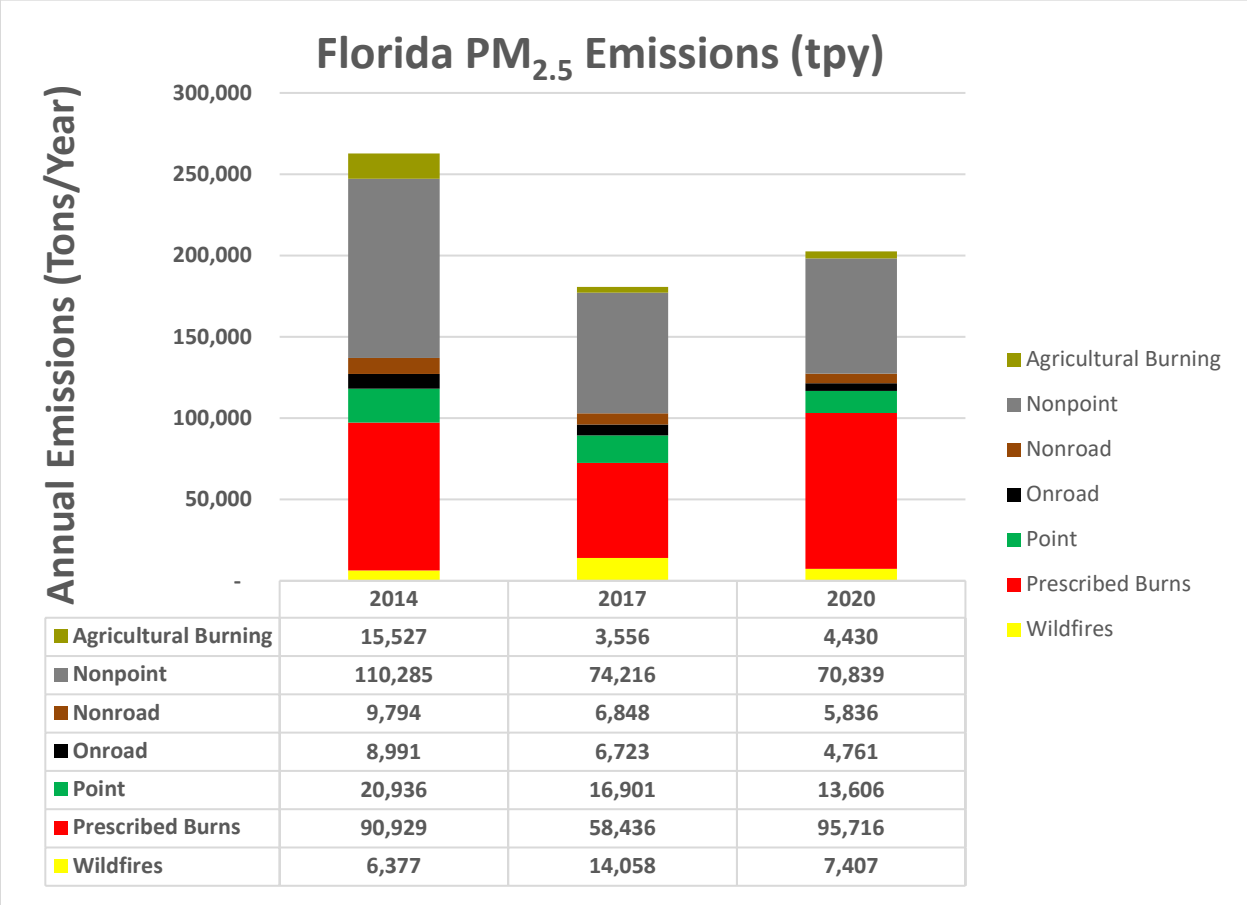
Table 5-1 and **Figure 5-1** show how fine particulate matter ($PM_{2.5}$) emissions for each source category have changed. The VISTAS 2028 emissions projections for Florida for $PM_{2.5}$ emissions were 210,317 tons for all source categories. The overall $PM_{2.5}$ emissions across all categories in the 2020 NEI are about 4% lower than what VISTAS projected for 2028.

Table 5-1. Florida $PM_{2.5}$ Emissions (in tons) for the 2014 NEI, 2017 NEI, and 2020 NEI

$PM_{2.5}$ Sector	NEI 2014 (tpy)	NEI 2017 (tpy)	NEI 2020 (tpy)
Point	20,936	16,901	13,606
Nonpoint	110,285	74,216	70,839
On-road	8,991	6,723	4,761
Nonroad	9,794	6,848	5,836
Wildfires	6,377	14,058	7,407
Prescribed Fires	90,929	58,436	95,716

[12] https://www.epa.gov/air-emissions-inventories/2014-national-emissions-inventory-nei-data
[13] https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data
[14] https://www.epa.gov/air-emissions-inventories/2020-national-emissions-inventory-nei-data
[15] https://www.metro4-sesarm.org/content/task-2-emission-inventory-updates

$PM_{2.5}$ Sector	NEI 2014 (tpy)	NEI 2017 (tpy)	NEI 2020 (tpy)
Agricultural Fires	15,527	3,556	4,430
Total	262,839	180,738	202,595



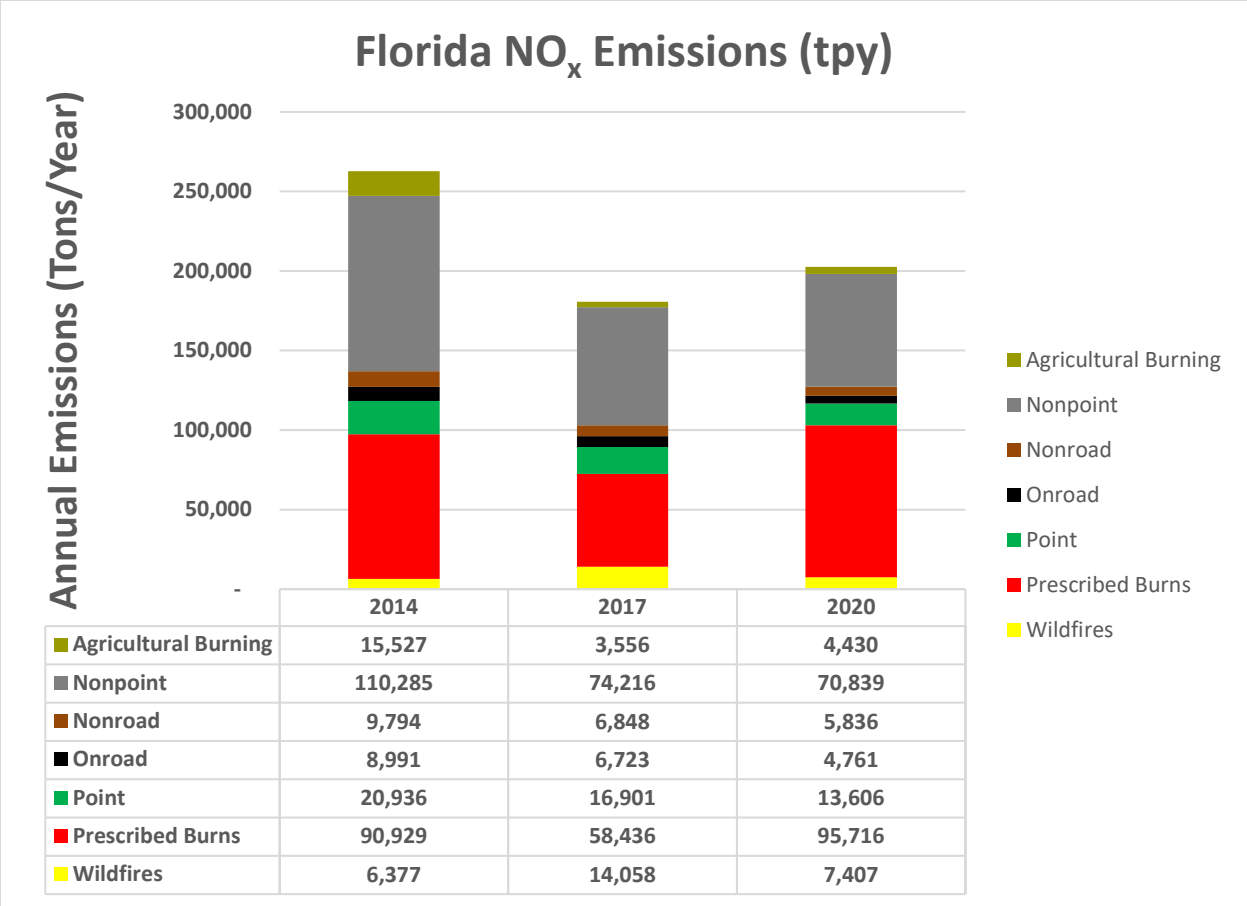
	2014	2017	2020
Agricultural Burning	15,527	3,556	4,430
Nonpoint	110,285	74,216	70,839
Nonroad	9,794	6,848	5,836
Onroad	8,991	6,723	4,761
Point	20,936	16,901	13,606
Prescribed Burns	90,929	58,436	95,716
Wildfires	6,377	14,058	7,407

Figure 5-1. Florida PM2.5 Emissions (in tons) by Category

There have been significant decreases in most source categories for nitrogen oxides (NO_X) emissions (**Table 5-2**). The VISTAS 2028 projections for Florida for NOx emissions were 265,451 tons across all source categories. For Florida, the 2020 NEI emissions are higher than the projected 2028 value; however, point source emissions have dropped by 36% since 2014.

Table 5-2. Florida NO_X Emissions (in tons) for the 2014 NEI, 2017 NEI, and 2020 NEI

NO_X Sector	NEI 2014 (tpy)	NEI 2017 (tpy)	NEI 2020 (tpy)
Point	118,657	104,163	74,901
Nonpoint	17,688	7,260	12,171
On-road	262,347	201,751	122,822
Nonroad	139,554	87,052	76,237
Wildfires	1,578	3,167	1,816
Prescribed Fires	22,087	11,080	20,413
Agricultural Fires	5,936	1,856	4,215
Total	582,390	449,400	346,212



	2014	2017	2020
Agricultural Burning	15,527	3,556	4,430
Nonpoint	110,285	74,216	70,839
Nonroad	9,794	6,848	5,836
Onroad	8,991	6,723	4,761
Point	20,936	16,901	13,606
Prescribed Burns	90,929	58,436	95,716
Wildfires	6,377	14,058	7,407

Figure 5-2. Florida NOX Emissions (in tons) by Category

For SO_2 emissions (**Table 5-3** and **Figure 5-3**), point sources show the most significant decrease since 2014, and actual emissions from point sources are already 42% lower than the projected 2028 emissions of 63,183 tons. This is largely due to a significant reduction in oil use and a shift to natural gas as well as installation of control measures required under EPA's Mercury and Air Toxics Standards[16] and as the result of state-level facility-specific analyses and permitting done under the Data Requirements Rule[17] in support of the 2010 SO_2 National Ambient Air Quality Standard. Overall, SO_2 emissions across all categories for 2020 are 21% below the 2028 projections of 66,979 tons.

[16] https://www.epa.gov/mats
[17] https://www.epa.gov/so2-pollution/final-data-requirements-rule-2010-1-hour-sulfur-dioxide-so2-primary-national-ambient

Table 5-3. Florida SO_2 Emissions (in tons) for the 2014 NEI, 2017 NEI, and 2020 NEI

SO_2 Sector	NEI 2014 (tpy)	NEI 2017 (tpy)	NEI 2020 (tpy)
Point	133,650	66,757	36,599
Nonpoint	6,419	1,055	1,998
On-road	2,158	2,049	657
Nonroad	8,899	529	524
Wildfires	711	1,482	821
Prescribed Fires	10,023	5,593	9,778
Agricultural Fires	2,609	928	2,141
Total	164,468	78,392	52,517

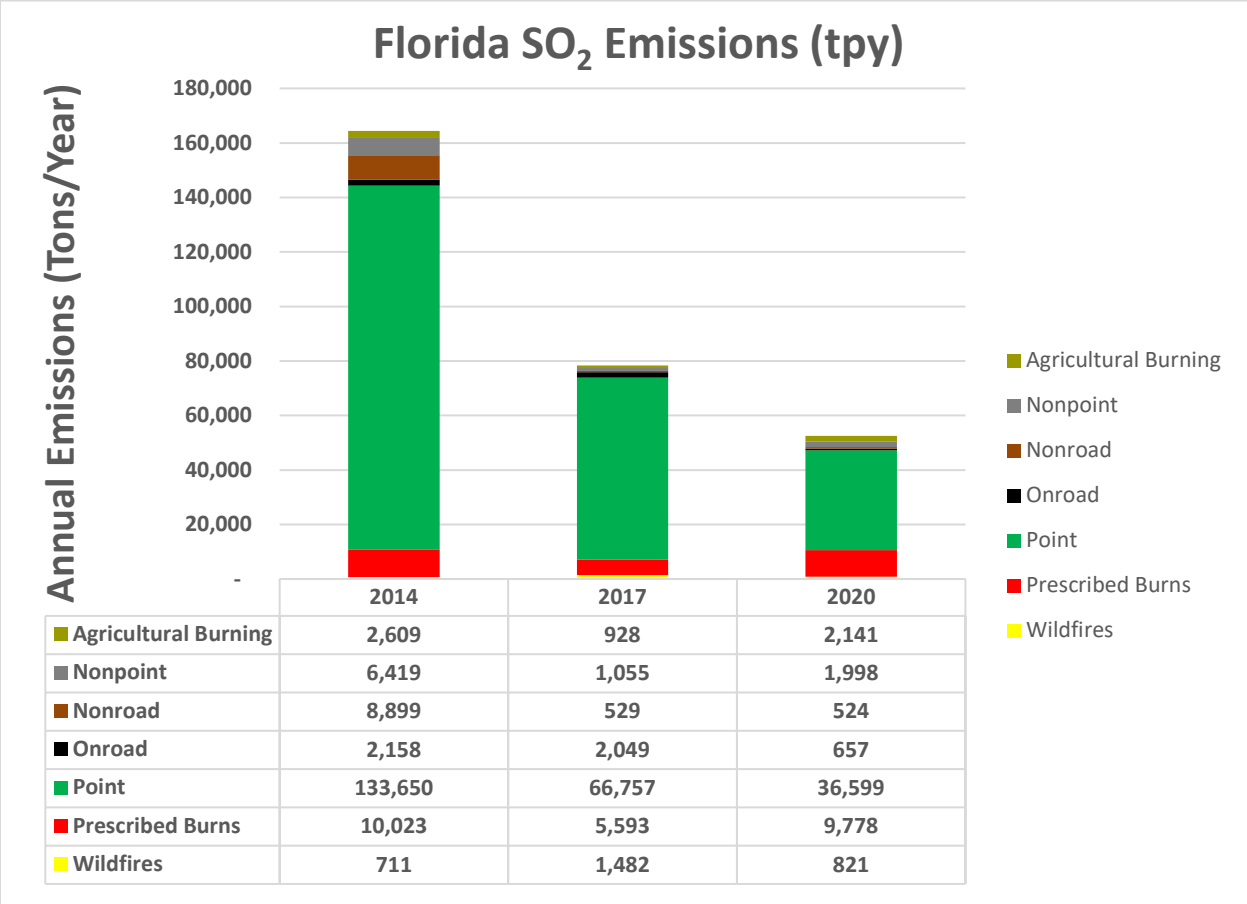


Figure 5-3. Florida SO2 Emissions (in tons) for by Category

Actual emissions reductions from the electricity generating unit (EGU) sector have continued to decrease significantly due to installation of scrubbers and other controls on some of the larger power generation sources in Florida. Repowering or shifting to natural gas, as well as some reduced utilization of coal EGUs and increased utilization of natural gas EGUs and renewable

energy, have also reduced emissions of SO_2. **Table 5-4** shows the Clean Air Markets Program Data (CAMPD)[18] emissions from 2015 and from the most recent five years, 2018 to 2023.

Table 5-4. Florida EGU SO2 CAMPD Emissions (2015 and 2018-2023)

SO_2 Emissions	2015 (tpy)	2018 (tpy)	2019 (tpy)	2020 (tpy)	2021 (tpy)	2022 (tpy)	2023 (tpy)
CAMPD	61,396	29,202	17,009	15,250	16,111	12,898	10,807

Figure 5-4 below depicts the trends for Florida units that report annual emissions to the Clean Air Markets Division (CAMD).

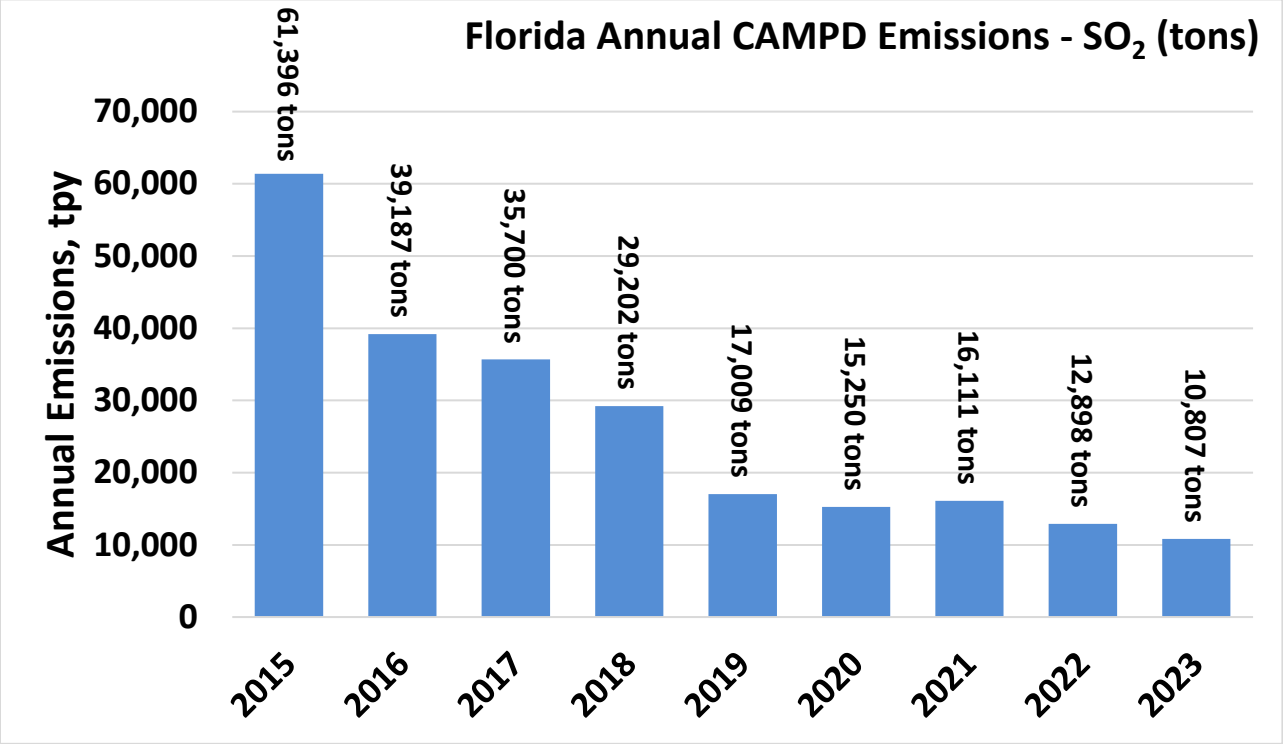


Figure 5-4. Florida SO2 CAMPD Emissions (Source: EPA CAMD Database)

Table 5-5. Florida EGU CAMPD NOx Emissions (2015 and 2018-2023)

NO_x Emissions	2015 (tpy)	2018 (tpy)	2019 (tpy)	2020 (tpy)	2021 (tpy)	2022 (tpy)	2023 (tpy)
CAMPD	57,255	36,888	31,225	29,632	28,991	27,404	25,054

[18] https://campd.epa.gov/

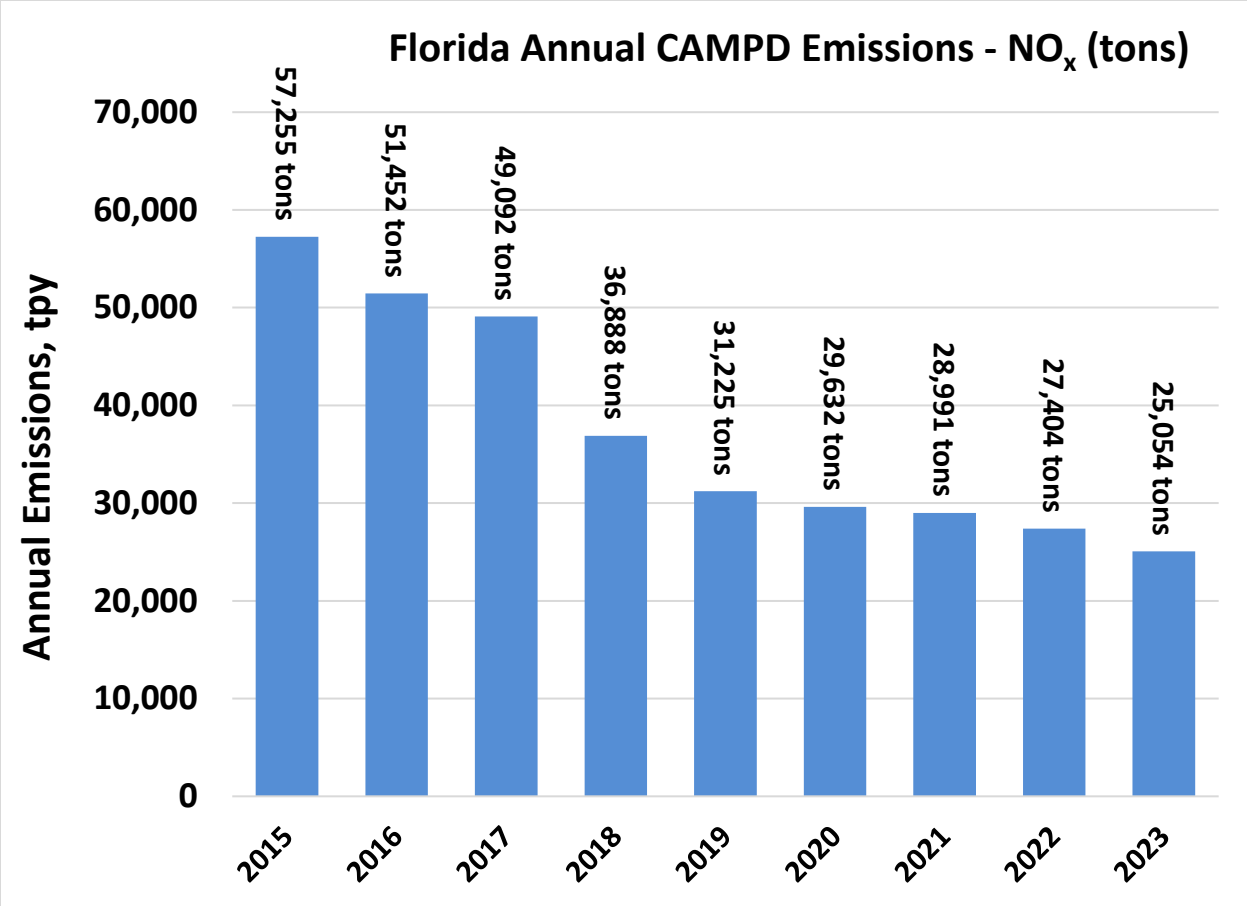
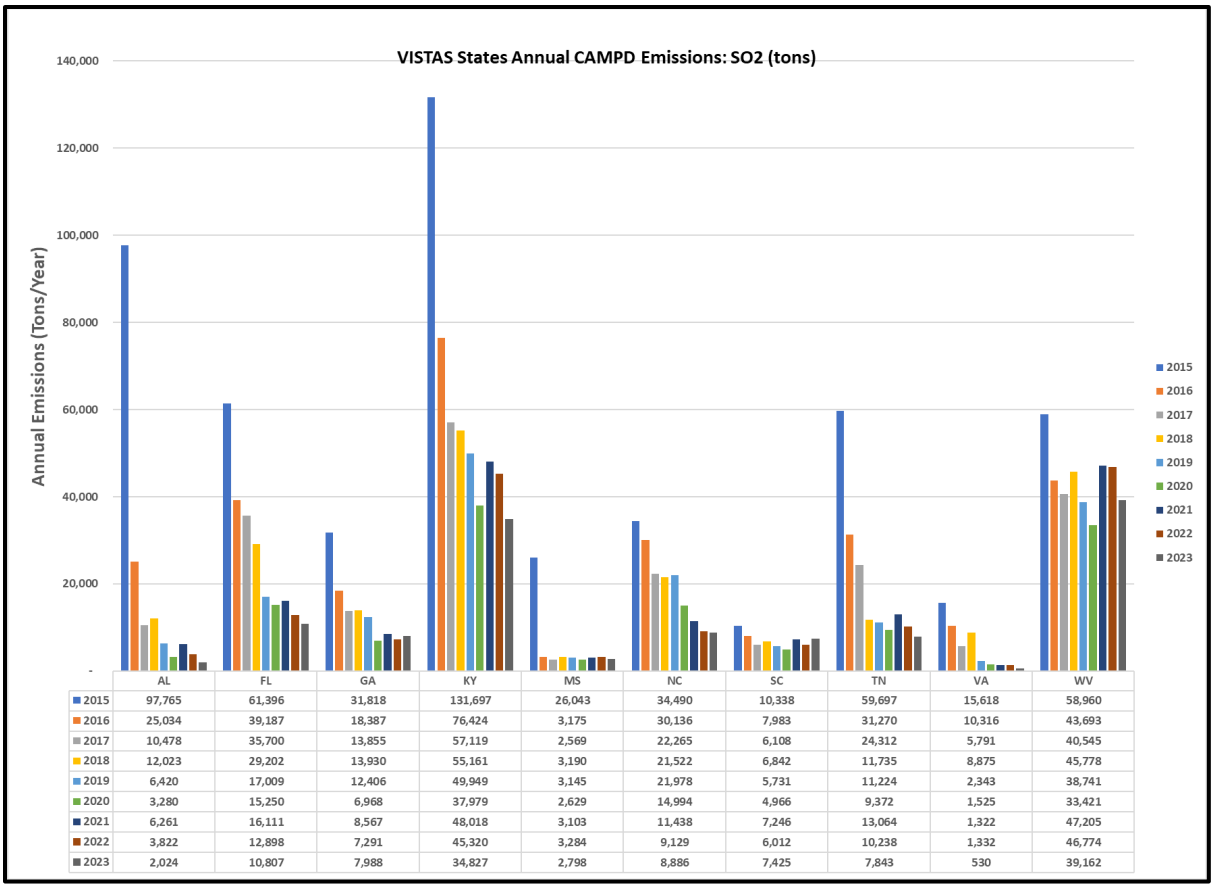


Figure 5-5. Florida NOx CAMPD Emissions (Source: EPA CAMD Database)

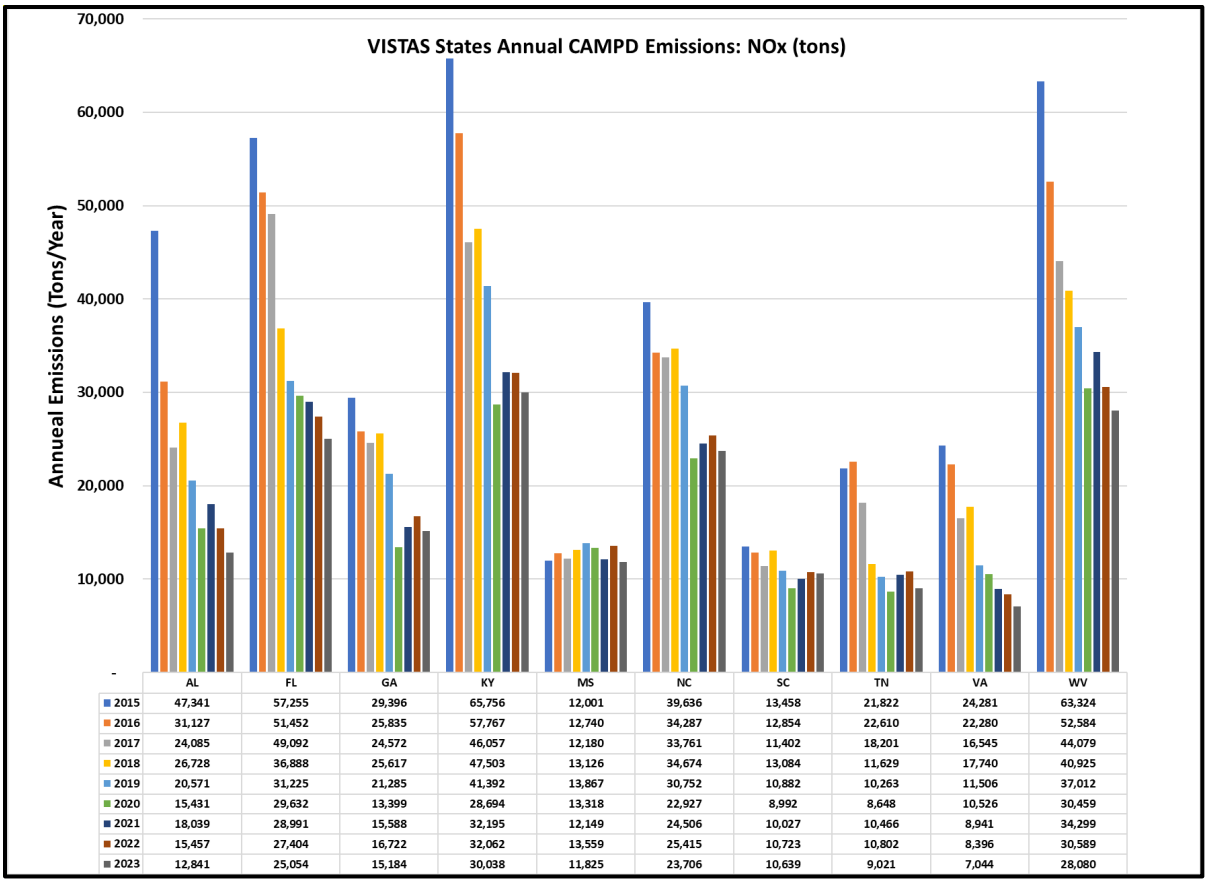
As shown in **Figure 5-4** and **Figure 5-5**, the SO_2 emissions from these units decreased from 61,396 tons annually in 2015 to 10,807 tons annually in 2023, a decrease of 82%, and NO_X emissions decreased from 57,255 tpy to 25,054 tpy, a decrease of 56%.

Figure 5-6 and **Figure 5-7** show the trends for units reporting to CAMD across all VISTAS states.



	AL	FL	GA	KY	MS	NC	SC	TN	VA	WV
2015	97,765	61,396	31,818	131,697	26,043	34,490	10,338	59,697	15,618	58,960
2016	25,034	39,187	18,387	76,424	3,175	30,136	7,983	31,270	10,316	43,693
2017	10,478	35,700	13,855	57,119	2,569	22,265	6,108	24,312	5,791	40,545
2018	12,023	29,202	13,930	55,161	3,190	21,522	6,842	11,735	8,875	45,778
2019	6,420	17,009	12,406	49,949	3,145	21,978	5,731	11,224	2,343	38,741
2020	3,280	15,250	6,968	37,979	2,629	14,994	4,966	9,372	1,525	33,421
2021	6,261	16,111	8,567	48,018	3,103	11,438	7,246	13,064	1,322	47,205
2022	3,822	12,898	7,291	45,320	3,284	9,129	6,012	10,238	1,332	46,774
2023	2,024	10,807	7,988	34,827	2,798	8,886	7,425	7,843	530	39,162

Figure 5-6. VISTAS States Annual CAMPD SO2 Emissions (source: EPA CAMD Database)



	AL	FL	GA	KY	MS	NC	SC	TN	VA	WV
2015	47,341	57,255	29,396	65,756	12,001	39,636	13,458	21,822	24,281	63,324
2016	31,127	51,452	25,835	57,767	12,740	34,287	12,854	22,610	22,280	52,584
2017	24,085	49,092	24,572	46,057	12,180	33,761	11,402	18,201	16,545	44,079
2018	26,728	36,888	25,617	47,503	13,126	34,674	13,084	11,629	17,740	40,925
2019	20,571	31,225	21,285	41,392	13,867	30,752	10,882	10,263	11,506	37,012
2020	15,431	29,632	13,399	28,694	13,318	22,927	8,992	8,648	10,526	30,459
2021	18,039	28,991	15,588	32,195	12,149	24,506	10,027	10,466	8,941	34,299
2022	15,457	27,404	16,722	32,062	13,559	25,415	10,723	10,802	8,396	30,589
2023	12,841	25,054	15,184	30,038	11,825	23,706	10,639	9,021	7,044	28,080

Figure 5-7. VISTAS States Annual CAMPD NOX Emissions (source: EPA CAMD Database)

As shown in **Figure 5-6** and **Figure 5-7**,SO_2 emissions decreased from 527,823 tons annually in 2015 to 122,289 tons annually in 2023, a decrease of 77%, and NO_X emissions decreased from 374,271 to 173,432 tons annually in 2023, a decrease of 54%.

The figures above reflect the fact that the reductions in SO_2 and NO_X are generally the result of permanent changes at EGUs through the use of control technology and fuel switching. Visibility improvements from reduced sulfate and nitrate contribution should, therefore, continue into the future even if there are moderate increases in demand for power from these units. In addition, market forces on coal EGUs have shifted these units from baseload operations to load following operations with increased usage of natural gas and renewable energy sources for electricity production.

5.2 Assessments of Changes in Anthropogenic Emissions

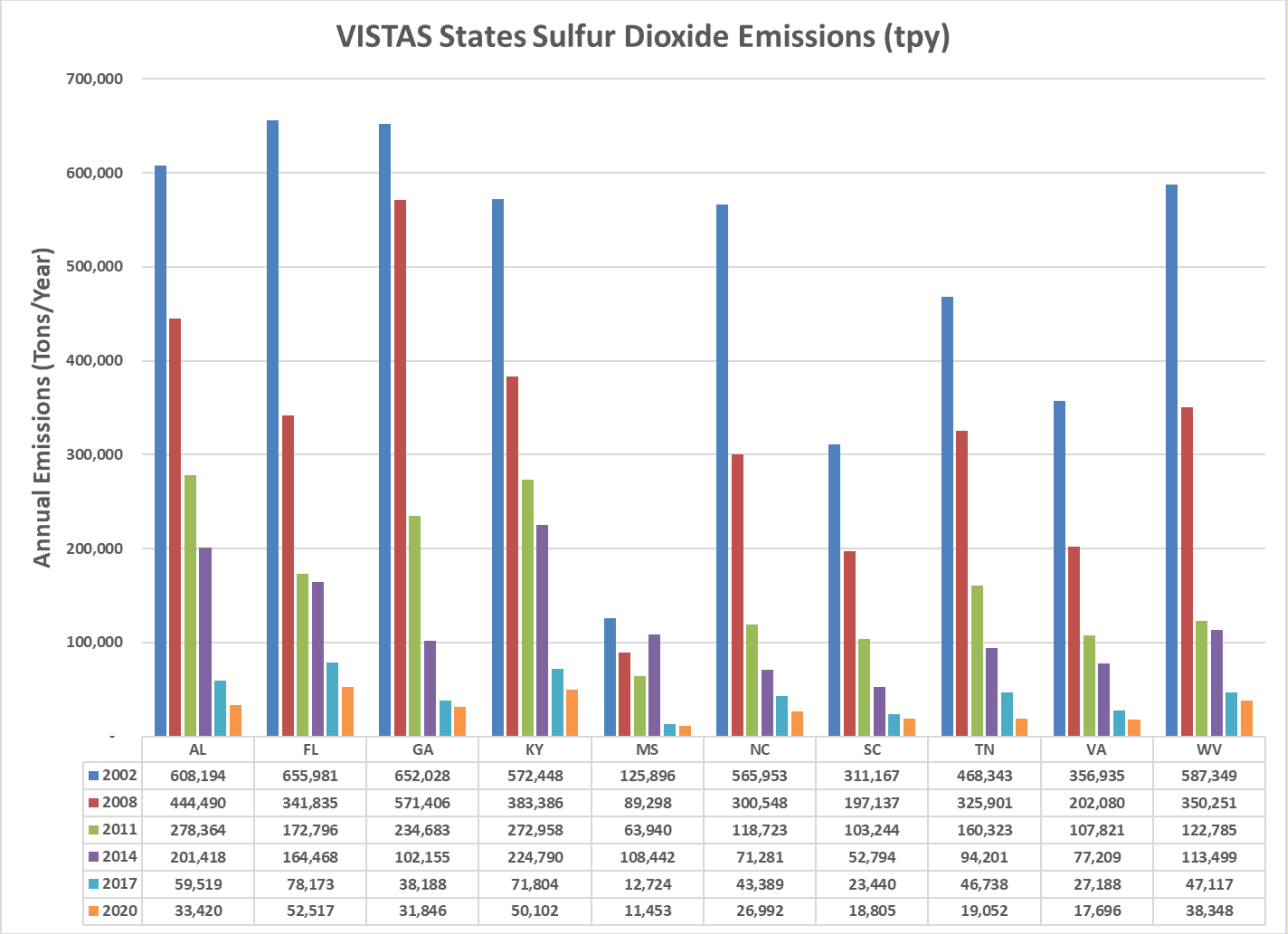
40 CFR 51.308(g)(5) of the RHR requires *[a]n assessment of any significant changes in anthropogenic emissions within or outside the State that have occurred since the period addressed in the most recent plan required under paragraph (f) of this section including whether or not these changes in anthropogenic emissions were anticipated in that most recent plan and*

whether they have limited or impeded progress in reducing pollutant emissions and improving visibility.

To address this provision, the Department reviewed anthropogenic SO_2 and NO_X emissions trends for the VISTAS states and each of the Regional Planning Organizations (RPOs) based on emissions included in the 2011, 2014, 2017, and 2020 NEIs. The emissions trends are shown in **Table 5-6**, and the data in this table are presented in bar charts in **Figure 5-8** and **Figure 5-9** for SO_2 and NO_X emissions, respectively. These data show a significant decline in both SO_2 and NO_X emissions during the period of 2011 through 2020 (which includes the 2019-2023 period covered by this Progress Report) within Florida, across other VISTAS states, and across the non-VISTAS states included in the RPOs covering the rest of the United States.

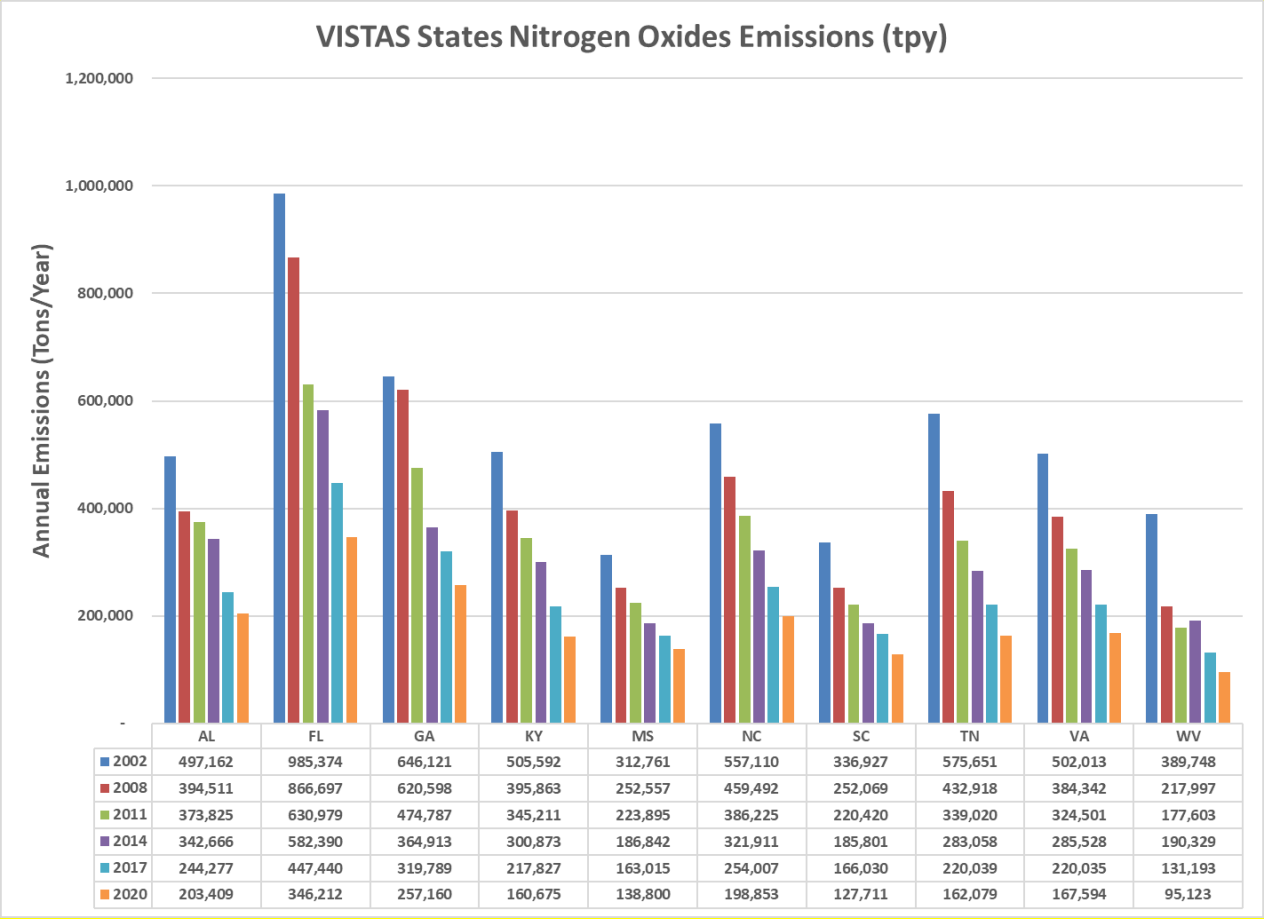
Table 5-6. Annual Anthropogenic SO2 and NOX Emissions Trends by RPO and VISTAS States (2011, 2014, 2017, and 2020)

	SO_2 Emissions (TPY)				**NO_X Emissions (TPY)**			
RPO/State	**2011**	**2014**	**2017**	**2020**	**2011**	**2014**	**2017**	**2020**
CENSARA	1,552,522	1,215,472	966,258	610,656	4,045,719	3,533,785	3,097,671	2,392,637
LADCO	1,885,366	1,240,170	471,368	353,993	2,706,484	2,293,286	1,751,389	1,365,771
MANE-VU	739,180	503,720	169,617	93,635	1,694,698	1,497,530	1,105,379	867,774
VISTAS	1,635,635	1,210,257	448,278	300,230	3,496,466	3,044,311	2,383,651	1,857,616
WESTAR/WRAP	608,768	460,131	460,331	468,003	3,429,383	2,992,736	2,763,218	2,283,084
VISTAS States								
AL	278,364	201,418	59,519	33,420	373,825	342,666	244,277	203,409
FL	172,796	164,468	78,173	52,517	630,979	582,390	447,440	346,212
GA	234,683	102,155	38,188	31,846	474,787	364,913	319,789	257,160
KY	272,958	224,790	71,804	50,102	345,211	300,873	217,827	160,675
MS	63,940	108,442	12,724	11,453	223,895	186,842	163,015	138,800
NC	118,723	71,281	43,389	26,992	386,225	321,911	254,007	198,853
SC	103,244	52,794	23,440	18,805	220,420	185,801	166,030	127,711
TN	160,323	94,201	46,738	19,052	339,020	283,058	220,039	162,079
VA	107,821	77,209	27,188	17,696	324,501	285,528	220,035	167,594
WV	122,785	113,499	47,117	38,348	177,603	190,329	131,193	95,123



	AL	FL	GA	KY	MS	NC	SC	TN	VA	WV
2002	608,194	655,981	652,028	572,448	125,896	565,953	311,167	468,343	356,935	587,349
2008	444,490	341,835	571,406	383,386	89,298	300,548	197,137	325,901	202,080	350,251
2011	278,364	172,796	234,683	272,958	63,940	118,723	103,244	160,323	107,821	122,785
2014	201,418	164,468	102,155	224,790	108,442	71,281	52,794	94,201	77,209	113,499
2017	59,519	78,173	38,188	71,804	12,724	43,389	23,440	46,738	27,188	47,117
2020	33,420	52,517	31,846	50,102	11,453	26,992	18,805	19,052	17,696	38,348

Figure 5-8. Annual Anthropogenic SO2 Emissions Trends by VISTAS State



	AL	FL	GA	KY	MS	NC	SC	TN	VA	WV
2002	497,162	985,374	646,121	505,592	312,761	557,110	336,927	575,651	502,013	389,748
2008	394,511	866,697	620,598	395,863	252,557	459,492	252,069	432,918	384,342	217,997
2011	373,825	630,979	474,787	345,211	223,895	386,225	220,420	339,020	324,501	177,603
2014	342,666	582,390	364,913	300,873	186,842	321,911	185,801	283,058	285,528	190,329
2017	244,277	447,440	319,789	217,827	163,015	254,007	166,030	220,039	220,035	131,193
2020	203,409	346,212	257,160	160,675	138,800	198,853	127,711	162,079	167,594	95,123

Figure 5-9. Annual Anthropogenic NOX Emissions Trends by VISTAS State

Figures 5-10 through **5-12** show the average light extinction for the 20% most impaired days over the five-year periods 2001 through 2004 and 2018 through 2022 for the Chassahowitzka National Wildlife Refuge, Everglades National Park, and the St. Marks National Wildlife Refuge, respectively.

Figures 5-13 through **5-15** show the annual average light extinction for the 20% most impaired days from 2000 through 2022 for the Chassahowitzka National Wildlife Refuge, Everglades National Park, and the St. Marks National Wildlife Refuge, respectively.

These figures demonstrate that on the 20% most impaired days at all three locations, sulfates (SO_{2-4}) continue to be of concern during the second planning period. Sulfates are formed secondarily from the SO_2 emissions from stationary point sources. As shown in these figures, the reduction in SO_2 and NO_X emissions at the Chassahowitzka National Wildlife Refuge, Everglades National Park, and the St. Marks National Wildlife Refuge, respectively, as well as in neighboring states, has resulted in significant improvements in visible range at the Class I areas, as well as Class I areas in nearby states. Based on these emissions and visibility data, there does

not appear to be any anthropogenic emissions within Florida that would have limited or impeded progress in reducing pollutant emissions or improving visibility at the Class I areas affected by state sources.

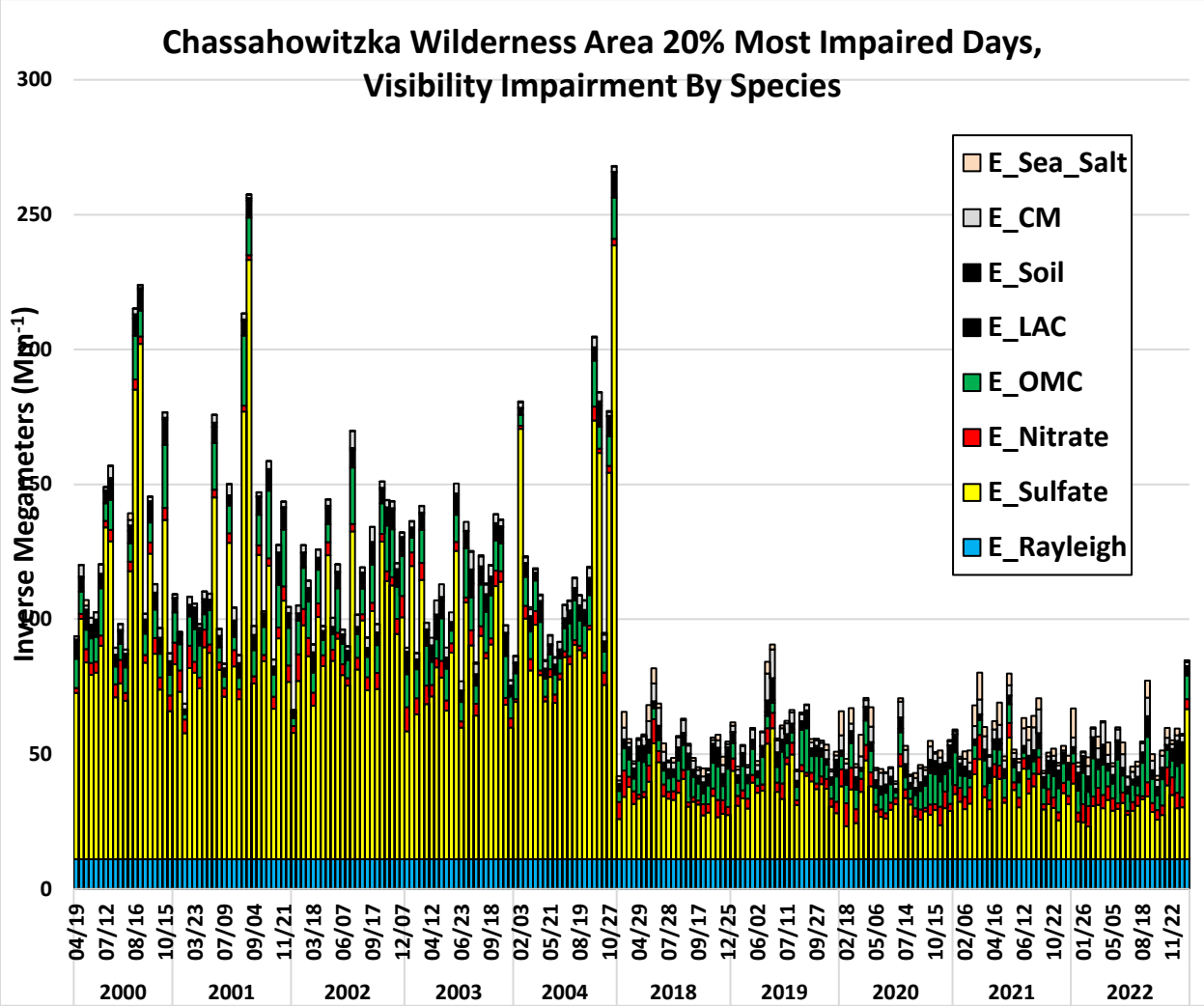


Figure 5-10. Chassahowitzka National Wildlife Refuge –20% Most Impaired Days, Visibility Impairment by Species

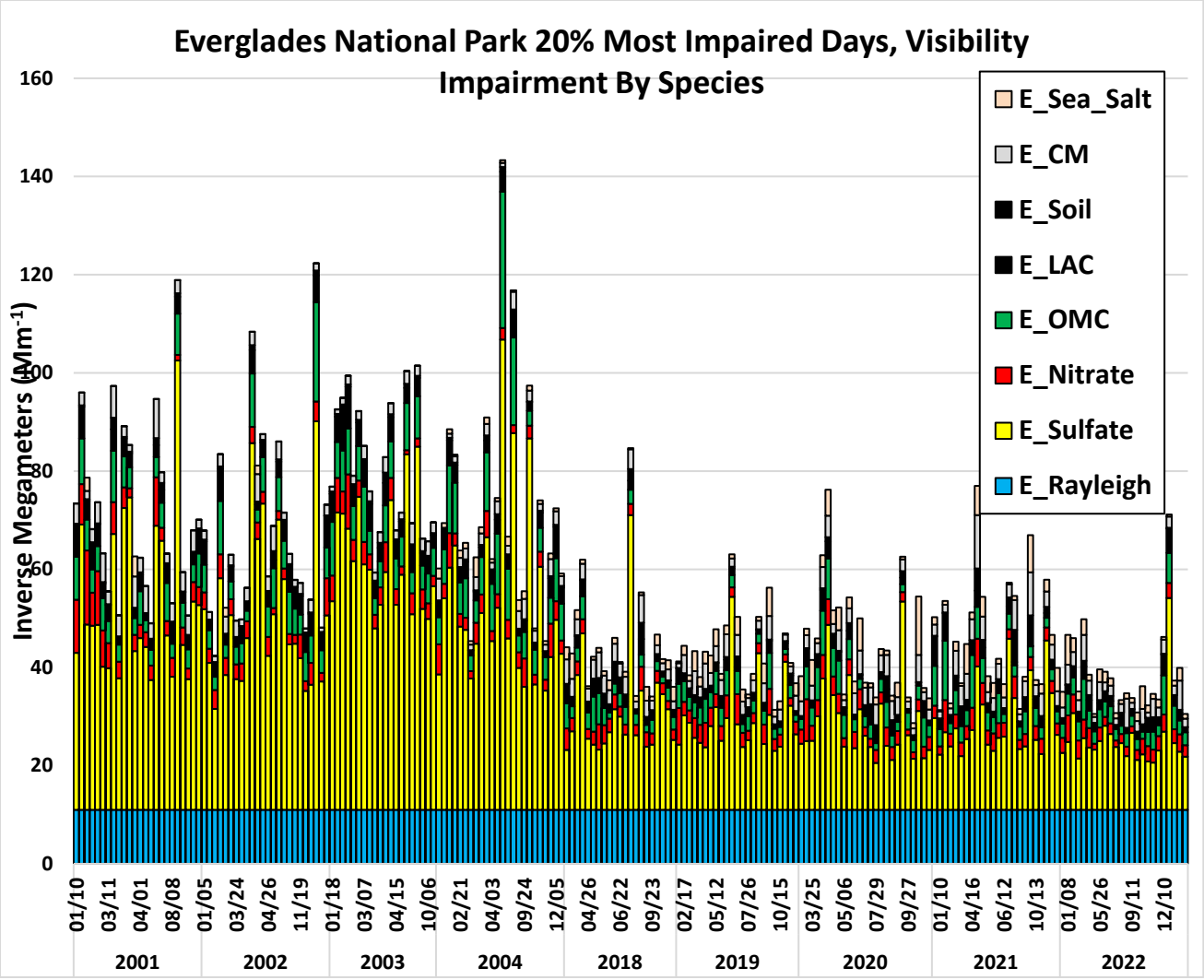


Figure 5-11. Everglades National Park – 20% Most Impaired Days, Visibility Impairment by Species

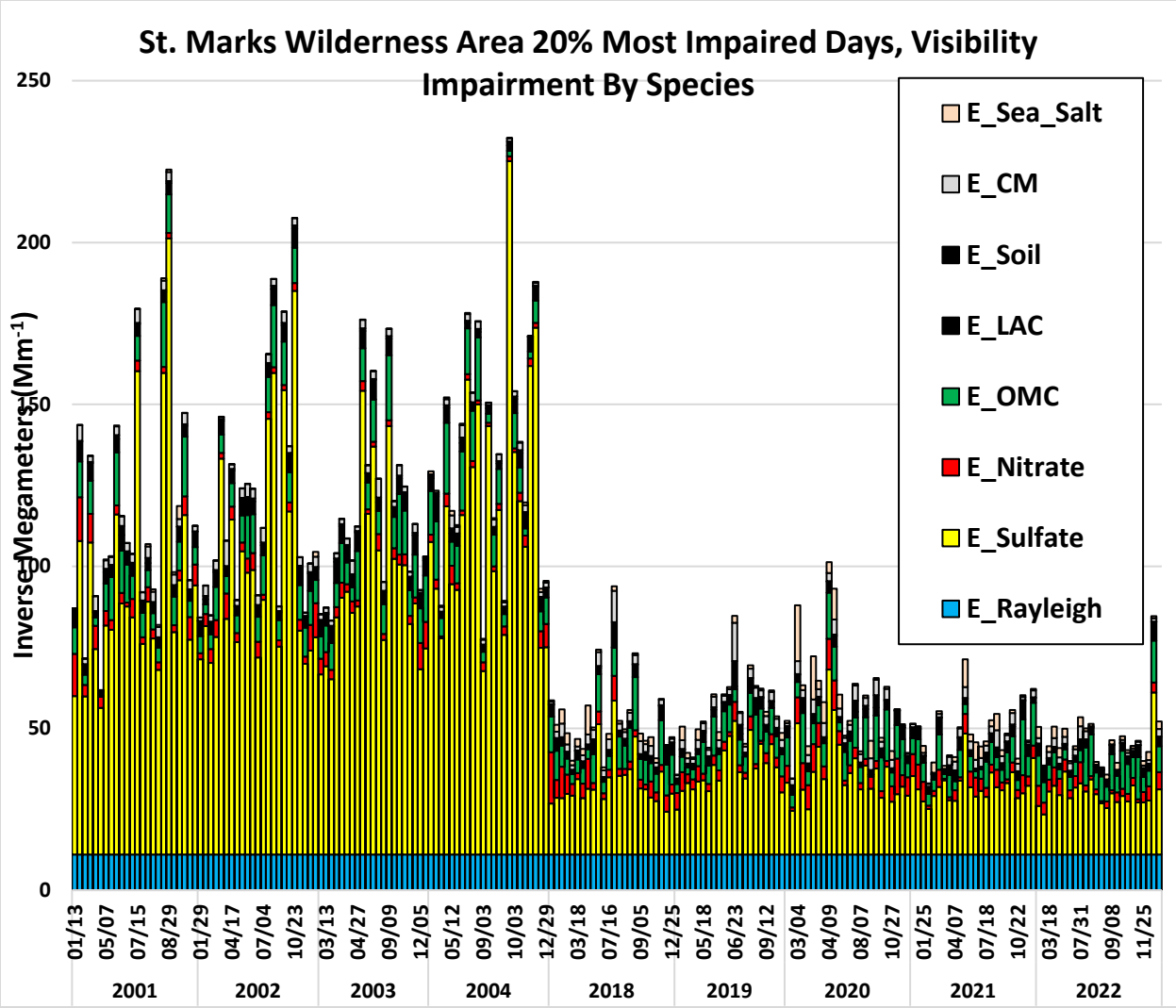


Figure 5-12. St. Marks National Wildlife Refuge – 20% Most Impaired Days, Visibility Impairment by Species

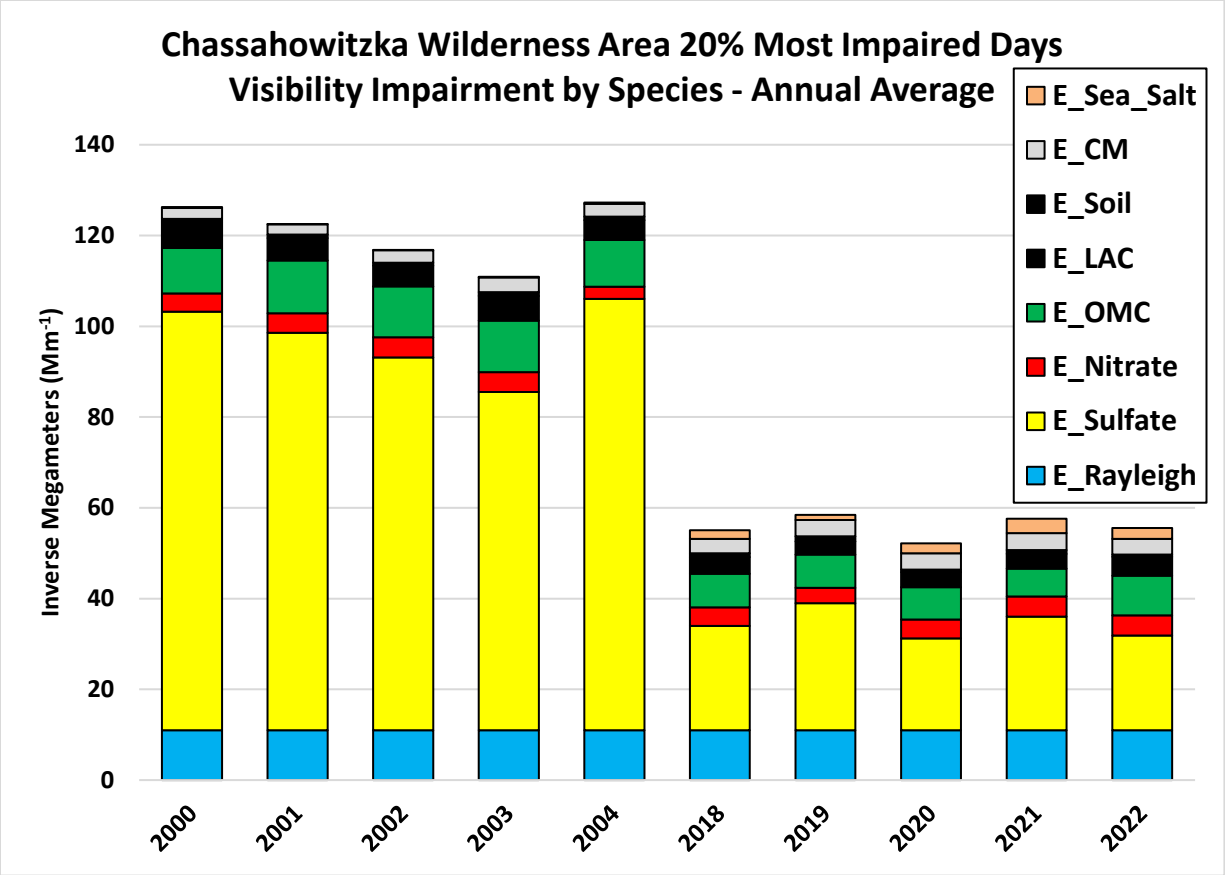


Figure 5-13. Chassahowitzka National Wildlife Refuge – 20% Most Impaired Days Visibility Impairment by Species – Annual Average

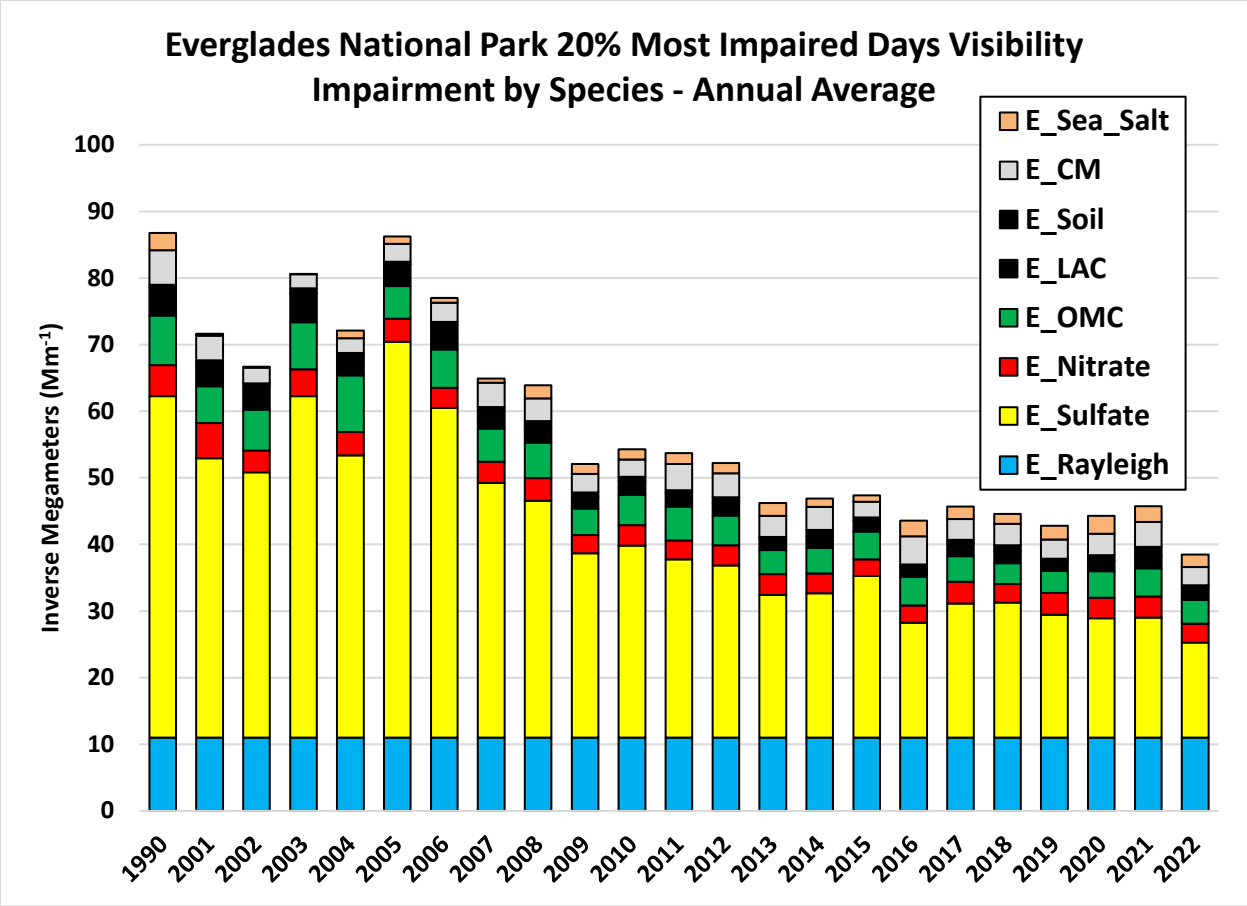


Figure 5-14. Everglades National Park – 20% Most Impaired Days Visibility Impairment by Species – Annual Average

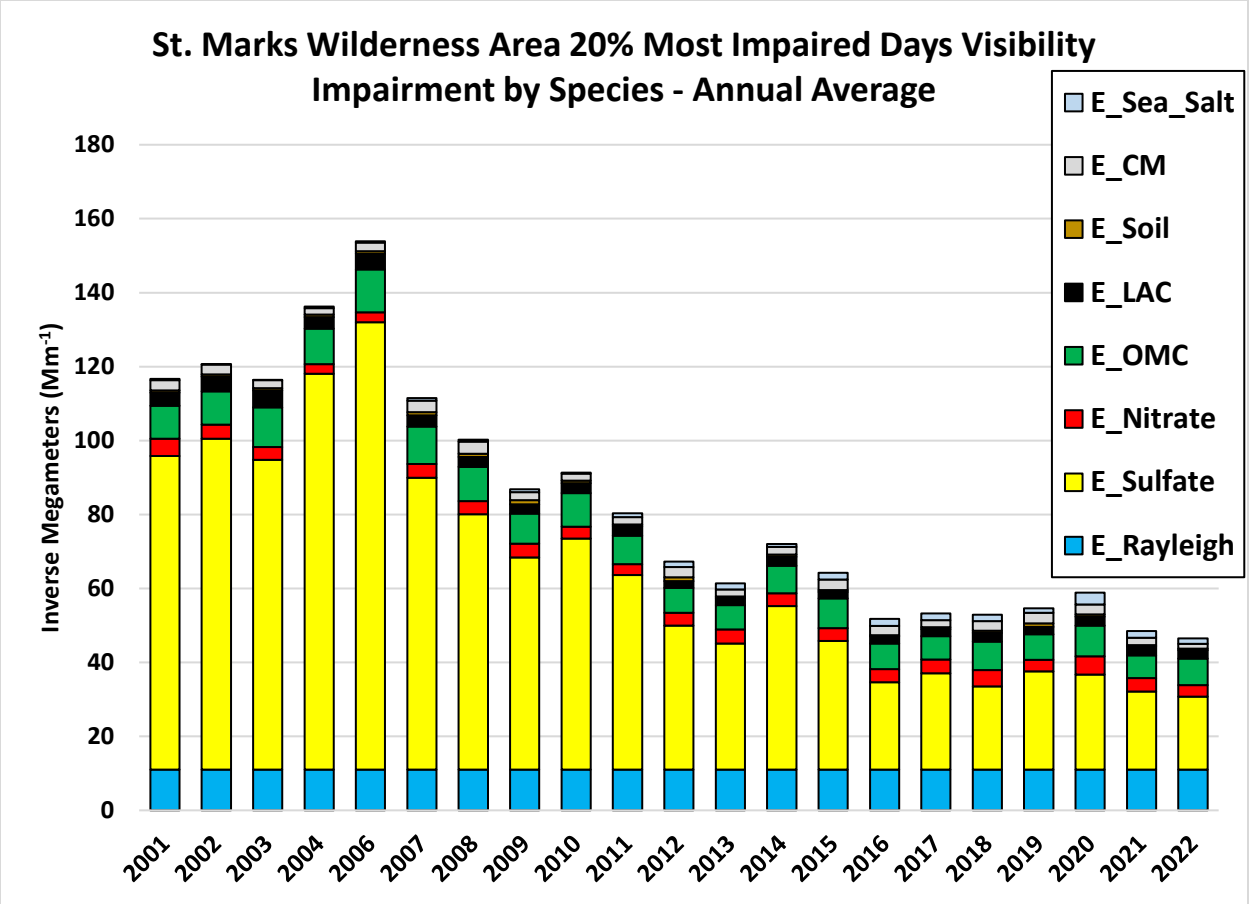


Figure 5-15. St. Marks National Wildlife Refuge – 20% Most Impaired Days Visibility Impairment by Species – Annual Average

6 Assessment of Current Implementation Plan Elements and Strategies

40 CFR 51.308(g)(6) of the RHR requires an *[a]ssessment of whether the current implementation plan elements and strategies are sufficient to enable the state, or other states with Class I areas affected by emissions from that state, to meet all established reasonable progress goals.*

The current implementation elements and strategies discussed in this report are sufficient to enable Florida to meet all established RPGs. Even though some federal programs have not yet been fully implemented, significant progress has been made in reducing emissions to attain the reasonable progress goals set for the Class I areas in Florida, or which may be affected by emissions originating in Florida. As discussed in Section 3 and Section 5 above, reductions in both EGU and non-EGU emissions have continued to decrease since the 2019 base year. The tabulated data provided in Section 5 demonstrate the reductions in various source sectors through implementation of controls and changes in operation. The figures in Section 4 depict the most recent visibility observations at the Chassahowitzka National Wildlife Refuge, Everglades

National Park, and the St. Marks National Wildlife Refuge – each of which is on track to meet the 2028 visibility goals for the 20 percent clearest days and 20 percent most impaired days. With the continued progress of federal programs, Florida expects that emissions will only continue to decrease and improve air quality.

Regarding the impacts of Florida's sources on regional Class I areas, the Department included in Appendix F of Florida's Regional Haze SIP for the Second Planning Period (submitted to EPA on October 8, 2021) documentation of the process of consulting with other states. As part of this consultation, the state undertook a review and evaluation of potential interstate impacts through their Reasonable Progress analyses. Given the significant emissions reductions that have occurred across various source categories since the baseline date for the second planning period, it is reasonable to assume that no additional consultation is warranted for this Progress Report.

That said, the Department has evaluated the IMPROVE monitoring data, which were presented in Florida's Regional Haze SIP for the Second Planning Period and included in this Progress Report, for the available 2018-2022 period under Section 5. For each of the Class I areas subject to assessment in this Progress Report, the current trends are at or below the glidepath. Given the continued reductions expected in the future, these trends are expected to continue.

The Department finds that the current implementation plan elements and strategies outlined in the Second Round Regional Haze SIP are sufficient to enable Florida and other neighboring states with mandatory Class I Federal areas affected by emissions from the State to meet all the established reasonable progress goals for the period covered by the most recent plan required under 40 CFR 51.308(f) through the combined implementation of emissions standards codified in facility-specific permits and applicable federal rules.

7 Determination of Adequacy of the Existing Plan

40 CFR 51.308(h) of the RHR requires the state to take one of the following actions:

- The state may declare that no further revision of the existing plan is needed at this time. This is commonly referred to as a "negative declaration."

- If the plan is or may be inadequate to ensure reasonable progress due to emissions from another state, or states, which participated in a regional planning process, the state must notify EPA and the applicable state(s). The state must collaborate with the state(s) through the regional planning process to develop additional strategies for addressing the plan's deficiencies.

- If the plan is or may be inadequate to ensure reasonable progress due to emissions from another country, the state must notify the EPA and provide any available relevant information.

- If the plan is or may be inadequate to ensure reasonable progress due to emissions from within the state, then that state must revise its plan within one year to address the deficiencies.

Sections 5.1 and **5.2** show significant decreases in direct visibility impairing pollutants and precursors in Florida, other VISTAS states, and states in RPOs near and adjacent to the VISTAS region. This trend started beginning with the initial implementation of the Regional Haze program and has continued into the second planning period. Data presented under **Section 4** shows a similar decrease in visibility impairment during the 20% most impaired and the 20% clearest days measured at the IMPROVE monitors at the Chassahowitzka National Wildlife Refuge, Everglades National Park, and the St. Marks National Wildlife Refuge. Based on this information, Florida declares that no further substantive revision of the existing plan is needed at this time in order to achieve established goals for visibility improvement and emissions reductions.

8 FLM Coordination and Public Comment

The VISTAS states participated in national conferences and consultation meetings and shared information with other states, RPOs, FLMs, and EPA throughout the report development process. VISTAS held numerous group calls and webinars with FLMs, EPA, RPOs and their member states to explain the overall analytical approach, methodologies, tools, and assumptions used during the progress report development process, and VISTAS considered these stakeholders' comments along the way. The Regional Haze Rule requires that states provide an opportunity for consultation with Federal Land Managers early in the SIP development process (40 CFR 51.308(i)(2)). Based upon EPA's 2017 revisions to the RHR, this Progress Report is not, however, considered to be a formal component of Florida's SIP, and no formal FLM review or public hearing is required prior to submittal to EPA. Nonetheless, the Department provided to the FLMs a courtesy DRAFT copy of this Progress Report and posted the DRAFT Progress Report to the Department's website during a 30-day public review period prior to submittal to EPA. Based upon discussions with EPA, Florida understands that this level of coordination with the FLMs and opportunity for public comment meets the requirements of the RHR.

9 Conclusion

This Progress Report documents that all control measures detailed in Florida's Regional Haze SIP for the Second Planning Period have been implemented or are on track to be implemented as scheduled and that Florida is on track to meet all of the reasonable progress goals projected for

2028. SO_2 emissions reductions have been significantly greater than those that VISTAS projected. Sulfates continue to play a significant role in visibility impairment, especially for the most anthropogenically impaired days. As SO_2 emissions continue to drop in future planning periods, nitrates may have a larger relative impact on regional haze, which may warrant consideration of nitrate emission reduction measures. Pursuant to 40 CFR 51.308(g), Florida's next Regional Haze Plan Progress Report is due to be submitted to EPA by July 31, 2033.

* * *