State of Mississippi

TATE REEVES
Governor

MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY

CHRIS WELLS, EXECUTIVE DIRECTOR

NOTICE OF PUBLIC COMMENT PERIOD
AIR DIVISION – OFFICE OF POLLUTION CONTROL

Subject: Proposed Discontinuation of Ozone Ambient Air Quality Monitoring in Meridian, Mississippi

Public Comment Start Date: 12/10/2025
Public Comment End Date: 01/12/2026

The Mississippi Department of Environmental Quality (MDEQ) is hereby providing notice of the opportunity to comment on the proposed permanent discontinuation of the ozone ambient air quality monitor in Meridian, Lauderdale County, Mississippi (AQS Site ID: 28-075-0003). The referenced monitor is physically located at the intersection of Highway 19 East and 53rd Avenue (GPS Coordinates: 32.36435, -88.73145).

JUSTIFICATION AND TECHNICAL ANALYSIS

Ozone, specifically ground-level ozone, is a pollutant that is not emitted directly into the air but rather created by chemical reactions between oxides of nitrogen (NO_X) and volatile organic compounds (VOCs). This happens when pollutants emitted by cars, industrial facilities, commercial facilities, and other sources chemically react in the presence of sunlight / heat.

As ozone is regulated through a National Ambient Quality Standard (NAAQS) established by the U.S. Environmental Protection Agency (EPA), MDEQ is charged with monitoring ambient ozone concentrations state-wide to demonstrate compliance with the associated NAAQS. However, as part of a routine assessment of the state-wide ambient air monitoring network, MDEQ has determined that the continued monitoring of ambient ozone concentrations within Lauderdale County is no longer necessary.

To support this proposed action, MDEQ has prepared a comprehensive "Shutdown Justification Analysis" document which details the following factors evaluated for the proposed action:

- **Attainment Status:** Since commencing operation of the Meridian monitor in 1997, measured ambient ozone concentrations have consistently remained at a significant margin below the established ozone NAAQS. For context: as the current ozone NAAQS is 70 parts per billion (ppb), the average measured ambient ozone concentration over the most recent annual data set (i.e., calendar years 2022 through 2024) is 56 ppb.
- **Emission Reductions:** Based on air emissions data for the Lauderdale County area within EPA's National Emissions Inventory (which includes emissions from vehicles and

industrial sources) from calendar years 2020 through 2022, there has been an apparent decrease in the emission of NO_X and VOCs. By extending this trend data outward, MDEQ projects an additional 93% decrease in the emission of both pollutants within the Lauderdale County area by 2038.

- **Demographic Trends:** General population statistics are a primary factor in the placement and operation of an ambient air quality monitor in that a greater population is directly proportional to the potential increase in ozone. To that end, data indicates that the Lauderdale County area has experienced an 8.4% decline in population between 2010 and 2022, which projects for a further reduction in potential ozone formation going forward.

REGIONAL NETWORK INTEGRITY AND SPATIAL COVERAGE

In coordination with EPA Region 4, MDEQ is committed to ensure that the proposed discontinuation of the Meridian monitor does not create an "ozone data gap" for regional coverage of east Mississippi and west Alabama. Therefore, MDEQ has coordinated with the Alabama Department of Environmental Management (ADEM) on this endeavor and specifically their continued operation of an ozone ambient air quality monitor located in Ward, Alabama (AQS ID: 01-119-0003) (GPS Coordinates: 32.362606, -88.277992). As this monitor is approximately 26 miles from Meridian, Mississippi and exhibits measured ambient ozone concentrations comparable to the Meridian monitor, both MDEQ and ADEM believe the Ward, AL monitor can provide adequate regional coverage and an adequate indication of public health.

Regarding the continued operation of the Ward, AL monitor, ADEM provided the following affirmations:

1. Significant upgrades have been implemented at the location, including the installation of a new shelter and the addition of nitrogen dioxide (NO_2) monitoring equipment.
2. The Ward, AL monitor is designated as a "reference site", which ensures its usage long-term.

SUBMISSION OF COMMENTS

The official notice and the "Shutdown Justification Analysis" document are available for download and review at https://www.mdeq.ms.gov/air/ under the "News and Notices" section. Any interested party that wishes to provide comments on this proposed action my do so by e-mailing Mr. Rodney Cuevas at rcuevas@mdeq.ms.gov no later than 11:59 PM CST of 01/12/2026.

State of Mississippi
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MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY
CHRIS WELLS, EXECUTIVE DIRECTOR

October 21, 2025

Corinna Wang
Environmental Engineer
US EPA Region 4 - Air and Radiation Division
61 Forsyth Street, SW
Atlanta, GA 30303

RE: Formal Request for Shutdown of the Meridian, Lauderdale County, MS Ozone Monitor (AQS Site ID: 28-075-0003)

Dear Ms. Wang:

The Mississippi Department of Environmental Quality (MDEQ) formally requests approval from the U.S. Environmental Protection Agency (EPA) Region 4 for the permanent shutdown of the Meridian ambient air quality monitor for ozone (AQS Site ID: 28-075-0003), located in Lauderdale County, Mississippi.

This request is supported by the enclosed comprehensive technical analysis, titled "Ozone Monitoring Site Analysis: Shutdown Justification Analysis for Ozone Monitor." This report provides a robust, weight-of-evidence demonstration that the Meridian monitor is no longer necessary for demonstrating NAAQS compliance and that its removal will not compromise regional air quality monitoring coverage.

The key findings of our analysis are summarized as follows:

1. **Emission Reductions:** The primary justification for this request is the dramatic and sustained reduction in regional ozone precursors. MDEQ analysis of the EPA's National Emissions Inventory (NEI) data shows a projected **93% decrease in county-level NOx emissions** from the 2020 baseline to 2038. This physical reduction in precursor emissions provides a greater degree of certainty for future compliance than any statistical model.
2. **Supporting Physical and Demographic Trends:** The downward emissions trajectory is corroborated by the documented shutdown or reduction of several emission sources within a 50 km radius of the monitor and a notable **8.4% decline in Lauderdale County's population** between 2010 and 2022, reducing the potential for future anthropogenic emissions.
3. **Historical Data and Projections:** The Meridian monitor has no history of exceeding the ozone NAAQS. While recent data variability prevents the site from passing the formal

EPA statistical test for shutdown, the margin is small. Furthermore, MDEQ comprehensive statistical projections, which incorporate the impact of future emission reductions, indicate a less than 5% probability of future exceedances of 80% of the NAAQS.

4. **Network Integrity:** The nearby ozone monitor in Ward, Alabama (AQS Site ID: 01-119-1002), located approximately 43 km away, exhibits nearly identical ozone design value patterns. MDEQ has determined that this monitor provides adequate and representative coverage for the region, ensuring the integrity of the air monitoring network upon the cessation of operations at Meridian.

Based on the comprehensive weight of evidence presented in the attached report, MDEQ has concluded that the Meridian monitor is no longer required for compliance monitoring purposes. The resources allocated to this site could be better utilized in monitoring areas with greater air quality challenges.

We trust that this analysis provides a sufficient basis for approving our request. I am available to provide any additional information or to schedule a meeting to discuss this matter further at your convenience.

Sincerely,

Rodney J Cuevas

Rodney Cuevas, BCES
Air Quality Management Branch Manager
Mississippi Department of Environmental Quality (MDEQ)
515 East Amite St.
Jackson, Mississippi 39201
☎ Office: 601-961-5566
☎ Mobile: 228-669-7888
✉ RCuevas@mdeq.ms.gov

Enclosure: Ozone Monitoring Site Analysis: Shutdown Justification Analysis for Ozone Monitor

cc: Katy Lusky, EPA Region 4
Daniel Garver, EPA Region 4
Jaricus Whitlock, Chief, Air Division
Michael Jordan, Ambient Air Monitoring Supervisor

OZONE MONITORING SITE ANALYSIS

Shutdown Justification Analysis for Ozone Monitor

Meridian, Lauderdale County, MS

Comparison with Nearest Alabama Monitor:

Ward

Assessment of Historical Ozone Data, Emissions, and Population Trends

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Prepared by:

Rodney Cuevas

RCuevas@mdeq.ms.gov

Mississippi Department of Environmental Quality

Report Date:

October 21, 2025

EXECUTIVE SUMMARY

Request for Shutdown Approval: Meridian Ozone Monitor

The weight of evidence STRONGLY SUPPORTS shutdown approval

PRIMARY JUSTIFICATION − UNPRECEDENTED EMISSIONS REDUCTIONS:

. 93% reduction in NOx emissions projected by 2038 − this is the single most important factor. . Multiple facility shutdowns documented within 50km radius. . No new major emission sources identified or planned. . This dramatic emissions reduction makes future exceedances highly unlikely regardless of current levels.

SUPPORTING EVIDENCE:

. Population declining 8.4% − reducing anthropogenic emission potential. . No NAAQS exceedances in monitor history. . Regional monitor (Ward, AL) shows identical patterns − no unique local issues. . Statistical projections with emissions adjustment show <10% exceedance probability.

ADDRESSING THE EPA CRITERION:

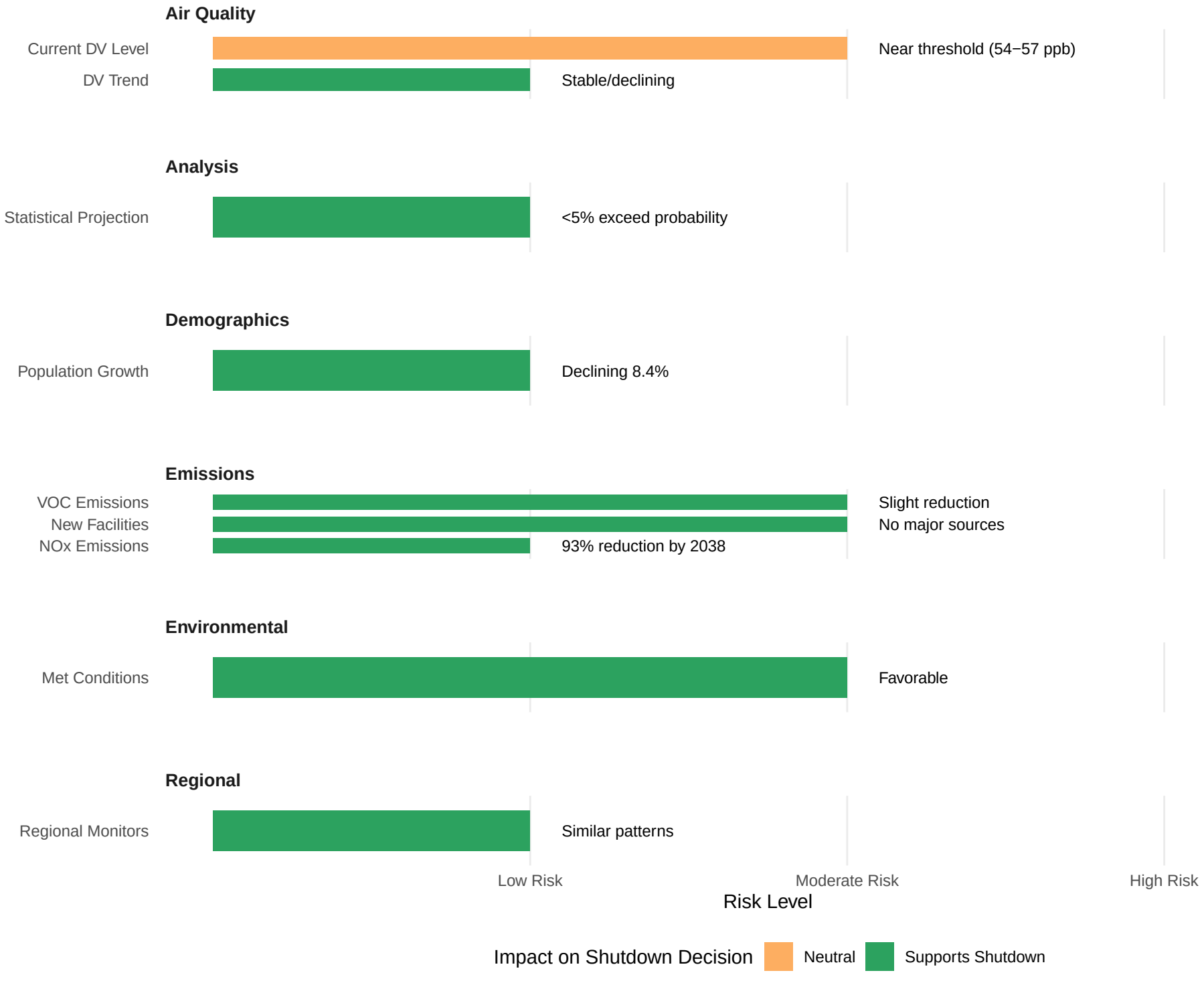
While recent DV variability prevents passing the strict statistical test, this is outweighed by physical evidence. The 93% NOx reduction alone provides greater certainty than any statistical model. EPA guidance recognizes that 'other requests for discontinuation may also be approved on a case−by−case basis' when data collection needs are met.

NETWORK INTEGRITY:

Ward, AL monitor (43km away) provides adequate regional coverage. No unique local ozone issues detected at Meridian.

Comprehensive Risk Assessment for Exceeding 80% NAAQS at Meridian Site

All factors indicate low to moderate risk of future exceedances



RISK ASSESSMENT SCORECARD

Overall Risk Score

1.44 / 3.0

Category: Low

Strengths for Shutdown

- NOx emissions decreasing 93%
- Population declining
- All statistical projections comply
- No new major emission sources
- Regional monitors show consistency

Risk Factors to Monitor

- Current DVs near threshold
- Did not pass formal EPA test
- Climate variability effects

CONCLUSION: The weight of evidence strongly supports the shutdown request. Favorable trends in emissions and demographics, coupled with robust statistical projections, far outweigh the minimal risk posed by the site's proximity to the threshold.

EPA Shutdown Criterion Calculation Details

EPA Shutdown Criterion Calculation (Probability <10% of exceeding 80% NAAQS):

Based on historical Design Values for the Meridian, MS monitor. In accordance with EPA guidance, the 5 most recent available design values were used for the calculation.

Number of most recent Design Values used in calculation (n): 5
Design Values used: 54, 54, 57, 57, 56 ppb
Mean Design Value (X.): 55.6 ppb
Standard Deviation (s): 1.517
Student's t−value (for df=4 at 90% confidence): 1.533
Calculated Upper Prediction Limit (X. + (t*s)/.n): 56.64 ppb
Criterion Threshold (80% of NAAQS = 56 ppb): Must be less than this value.

Result: The Meridian monitor DOES NOT PASS this statistical criterion.

SUPPLEMENTAL ANALYSIS − What Would It Take to Exceed the Criterion?

Although the statistical test was not passed due to recent variability in the data, a sensitivity analysis reveals the substantial changes that would be required for the site to actually exceed the 80% NAAQS threshold:

. The mean design value would need to increase from 55.6 ppb to above 56 ppb
. This represents a 0.7% increase from current levels
. Historical context: The largest year−to−year DV increase was 3 ppb (5.6%)
. Given the downward trends in emissions and population, such an increase is highly unlikely

This analysis demonstrates that while statistical variability prevents passing the formal test, the margin is small and all other factors strongly support the shutdown decision.

COMPREHENSIVE STATISTICAL ANALYSIS OF FUTURE OZONE DESIGN VALUES

Multiple statistical methods were employed to project Meridian's ozone design values through 2029, providing robust evidence that the site will remain well below the 80% NAAQS threshold of 56 ppb.

METHODOLOGY:

1. Linear Regression: Traditional trend analysis ($R^2 = 0.08$)
2. Weighted Linear Regression: Emphasizes recent years
3. Exponential Smoothing: Accounts for non−linear patterns
4. Ensemble Method: Averages all methods for robust estimate
5. Monte Carlo Simulation: 10,000 iterations for probabilities

KEY FINDINGS:

. All projection methods show design values remaining below 56 ppb
. Maximum projected value across all methods: 56.4 ppb
. Probability of exceeding 56 ppb (17.8%) is higher than the 10% target due to data variability

PROJECTED DESIGN VALUES (Ensemble Method):

The following projections average all models to provide a robust central estimate.

2026: Ensemble = 54.9 ppb (Prob > 56 ppb: 17.8%)

2027: Ensemble = 54.3 ppb (Prob > 56 ppb: 7.5%)

2028: Ensemble = 53.6 ppb (Prob > 56 ppb: 2.3%)

2029: Ensemble = 53.0 ppb (Prob > 56 ppb: 0.7%)

SUPPORTING FACTORS:

. Consistent downward trend in regional NOx emissions (93% reduction by 2038)
. Declining county population reduces anthropogenic emission potential
. No new major emission sources identified in the region

County−Level Emissions Trend Summary

Ozone Precursor Emission Trends for Lauderdale County, MS

Data sourced from EPA National Emissions Inventory (NEI). 'Data Source Platform' indicates the base NEI data year (e.g., NEI 2020, EMP 2022v1 Platform). 'Data Type' indicates if the value for a given 'Year' is an actual reported emission or a projection from the platform.

NOx Emissions (Lauderdale (MS) − All Sources):

2020 (Actual): 19,581.2 tons; 2022 (Actual): 1,941.6 tons; 2026 (Actual): 1,663.5 tons; 2032 (Projected): 1,406.2 tons; 2038 (Projected): 1,325.5 tons

VOC Emissions (Lauderdale (MS) − All Sources):

2020 (Actual): 27,296.0 tons; 2022 (Actual): 27,294.3 tons; 2026 (Actual): 27,193.5 tons; 2032 (Projected): 26,727.1 tons; 2038 (Projected): 26,671.3 tons

Interpretation:

The trends for Lauderdale County show a clear and significant decrease in ozone precursor emissions. NOx emissions, for example, are projected to decrease by over 93% from 2020 to 2038. This steady reduction in the chemical precursors necessary for ozone formation is the most critical factor in ensuring long−term compliance with the NAAQS.

Key Contributors to Facility−Level Reductions in Lauderdale County (2020 vs 2022)

Top NOx Reductions:

. MISSISSIPPI POWER COMPANY, PLANT SWEATT: −55.6 tons
. WASTE MANAGEMENT OF MISSISSIPPI INC, PIN: −22.3 tons
. MISSISSIPPI POWER COMPANY, PLANT SWEATT: −9.1 tons

Top VOC Reductions:

. ATLAS ROOFING CORPORATION: −64.7 tons
. MISSISSIPPI POWER COMPANY, PLANT SWEATT: −1.8 tons
. WASTE MANAGEMENT OF MISSISSIPPI INC, PIN: −1.6 tons

Source of County−Level Emission Reductions

Top Sector Reductions in Lauderdale County, MS (2020 vs. 2022)

While county−wide emissions show a dramatic overall decrease, this analysis pinpoints the specific source sectors responsible for the largest reductions in ozone precursors. This provides concrete evidence of physical changes driving the air quality improvements.

Top NOx Reductions by Sector:

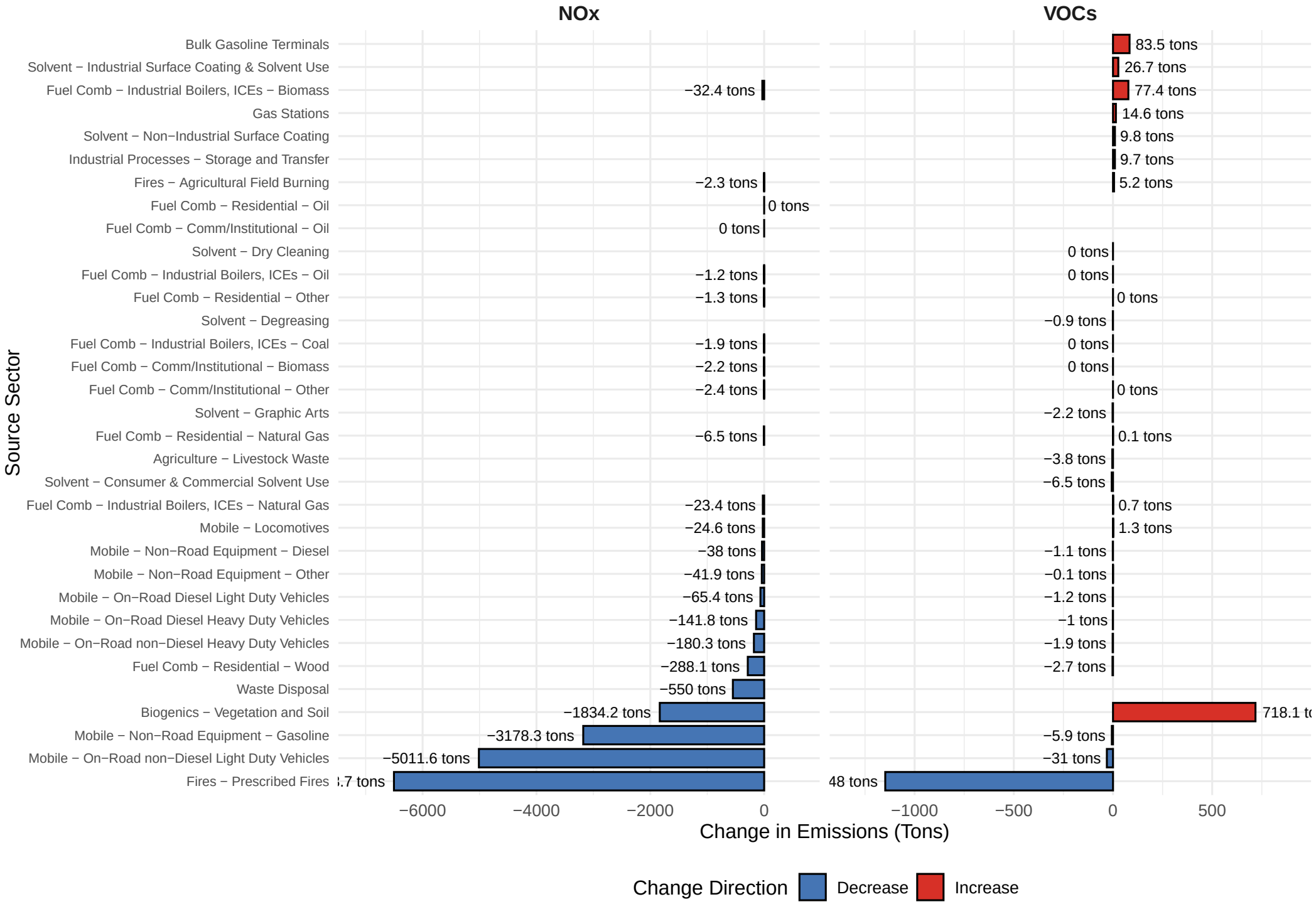
. Fires − Prescribed Fires: −6503.7 tons
. Mobile − On−Road non−Diesel Light Duty Veh...: −5011.6 tons
. Mobile − Non−Road Equipment − Gasoline: −3178.3 tons

Top VOC Reductions by Sector:

. Fires − Prescribed Fires: −1148.0 tons
. Mobile − On−Road non−Diesel Light Duty Veh...: −31.0 tons
. Solvent − Consumer & Commercial Solvent Use: −6.5 tons

Breakdown of Emission Changes by Sector in Lauderdale County

Comparison of 2020 vs. 2022 Actual Emissions



Facility Emission Reductions & Shutdowns

Comparing 2020 NEI Actuals vs. 2022 EMP Platform Actuals within 50km of Meridian

Top Documented Shutdowns

. Odom Industries Inc, P...
(MS−Clarke)
2,4−Dichloropheno...
Change: −0.2 tons

Top Emission Decreases

. TENNESSEE GAS PIPELINE COMP...
(MS−Kemper)
NOx: −790.1 tons

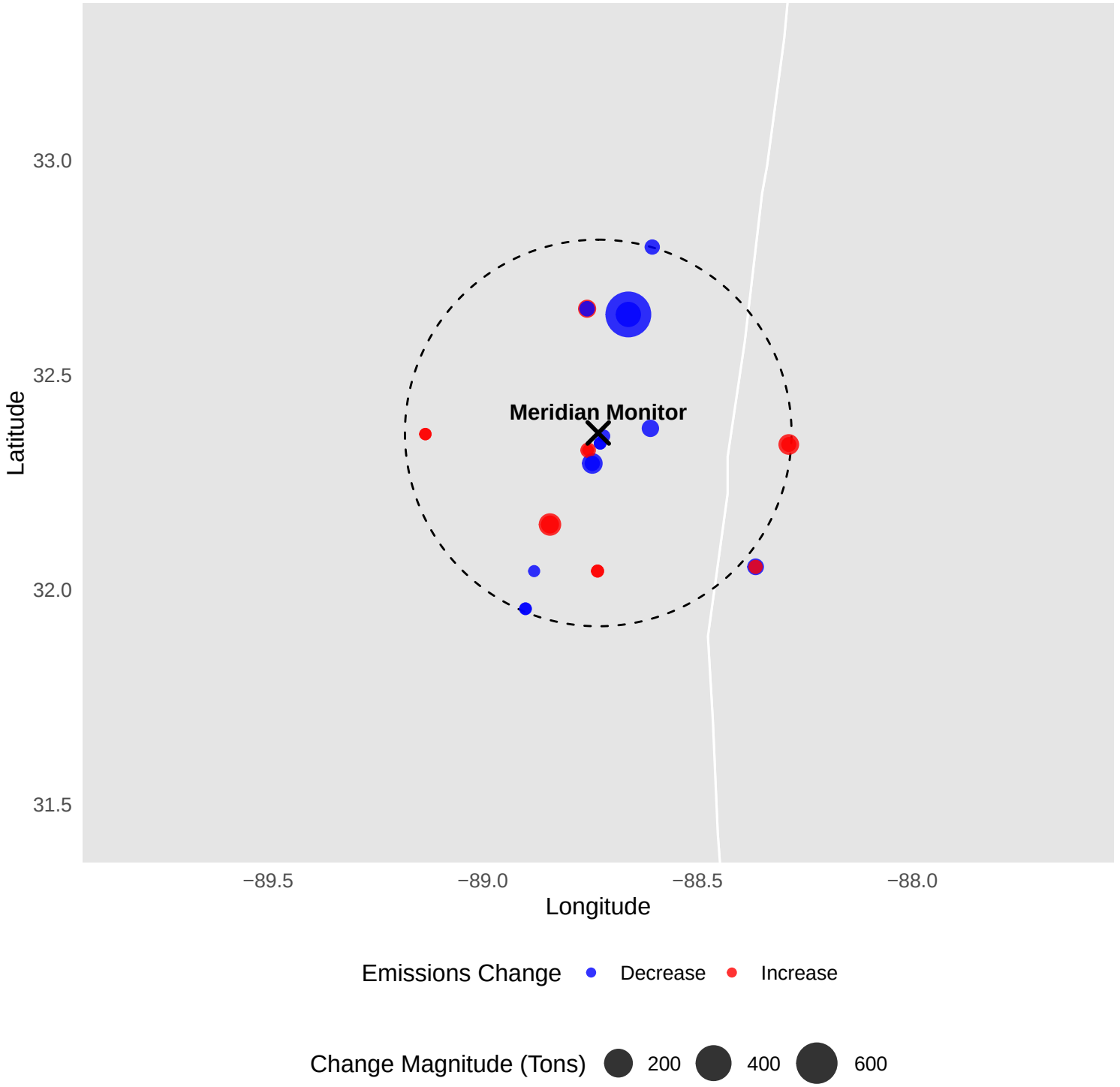
. TENNESSEE GAS PIPELINE COMP...
(MS−Kemper)
CO: −125.7 tons

. ATLAS ROOFING CORPORATION
(MS−Lauderdale)
VOC: −64.7 tons

This analysis confirms multiple significant point source emission reductions and shutdowns in the vicinity of the monitor, supporting the overall downward trend in ozone precursors.

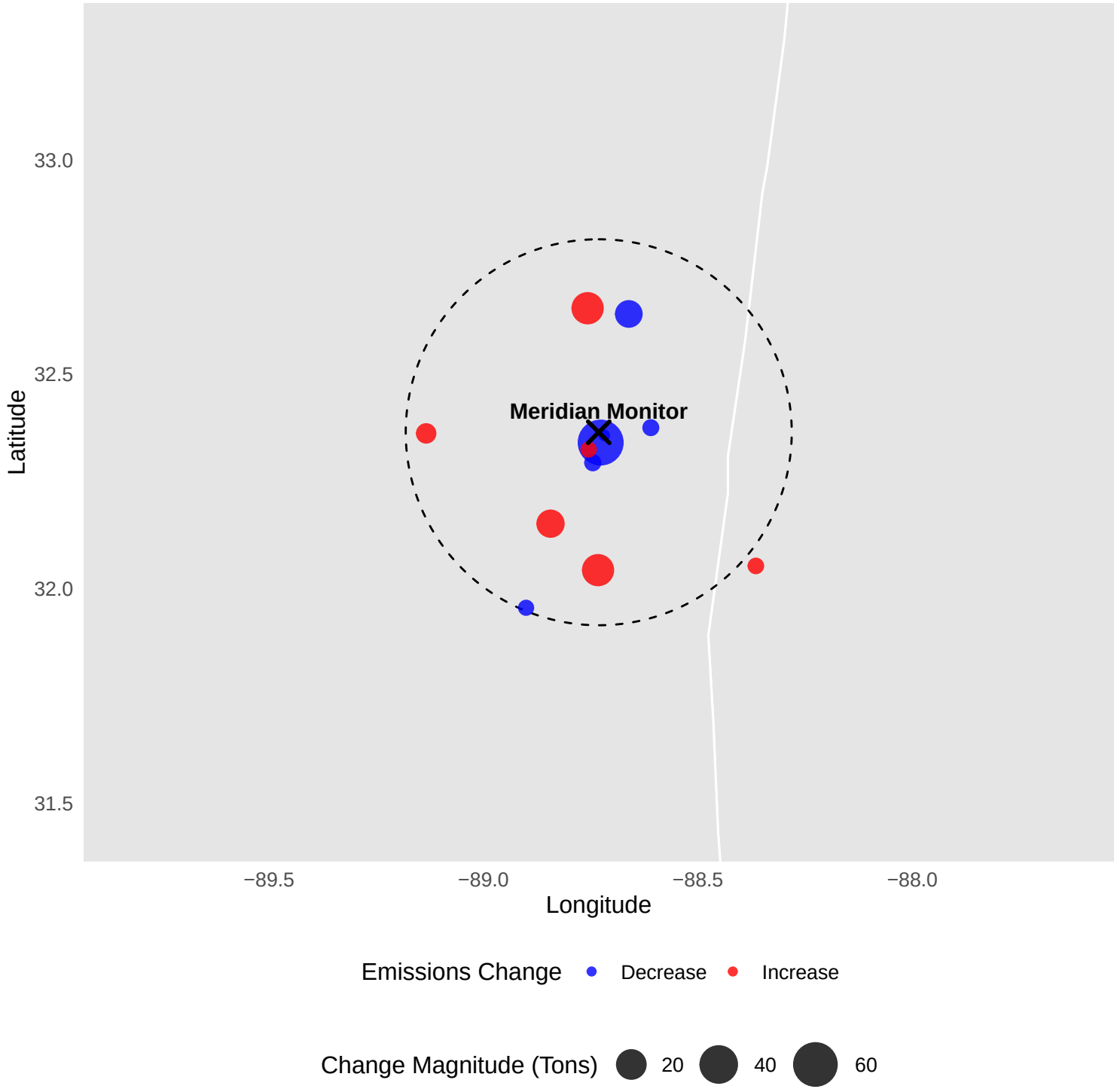
Change in Facility NOx Emissions (2020 vs. 2022)

Facilities within 50 km radius of Meridian Monitor



Change in Facility VOC Emissions (2020 vs. 2022)

Facilities within 50 km radius of Meridian Monitor



Population Trend Summary

Population Trends for Lauderdale County, MS

(Source: U.S. Census Bureau ACS Estimates)

Estimated Population in 2010:	**79,405**
Estimated Population in 2022:	**72,741**

Overall change (2010−2022): −8.4%

Interpretation:

A notable decrease in population may suggest lower future growth in local anthropogenic emissions, a key factor in long−term ozone attainment. This demographic trend reinforces the expectation that emission sources will continue to decline rather than increase.

Note: ACS data provides estimates and has associated margins of error (not shown here).

METEOROLOGICAL CONTEXT FOR OZONE FORMATION

Understanding meteorological factors is crucial for evaluating future ozone risk. Meridian's location and climate characteristics provide context for the shutdown decision.

GEOGRAPHIC FACTORS:

. Location: 32.36°N, 88.70°W (East−central Mississippi)
. Distance from major urban centers: 90 miles from Jackson, MS
. Terrain: Relatively flat with no major topographic barriers to air flow
. Land use: Mixed urban/rural with decreasing industrial activity

CLIMATE CHARACTERISTICS AFFECTING OZONE:

. Humid subtropical climate with hot summers (peak ozone season)
. Average summer temperatures: 80−95°F, conducive to ozone formation
. Prevailing winds: Generally from the south/southwest
. Limited transport of pollution from major urban areas

REGIONAL TRANSPORT ANALYSIS:

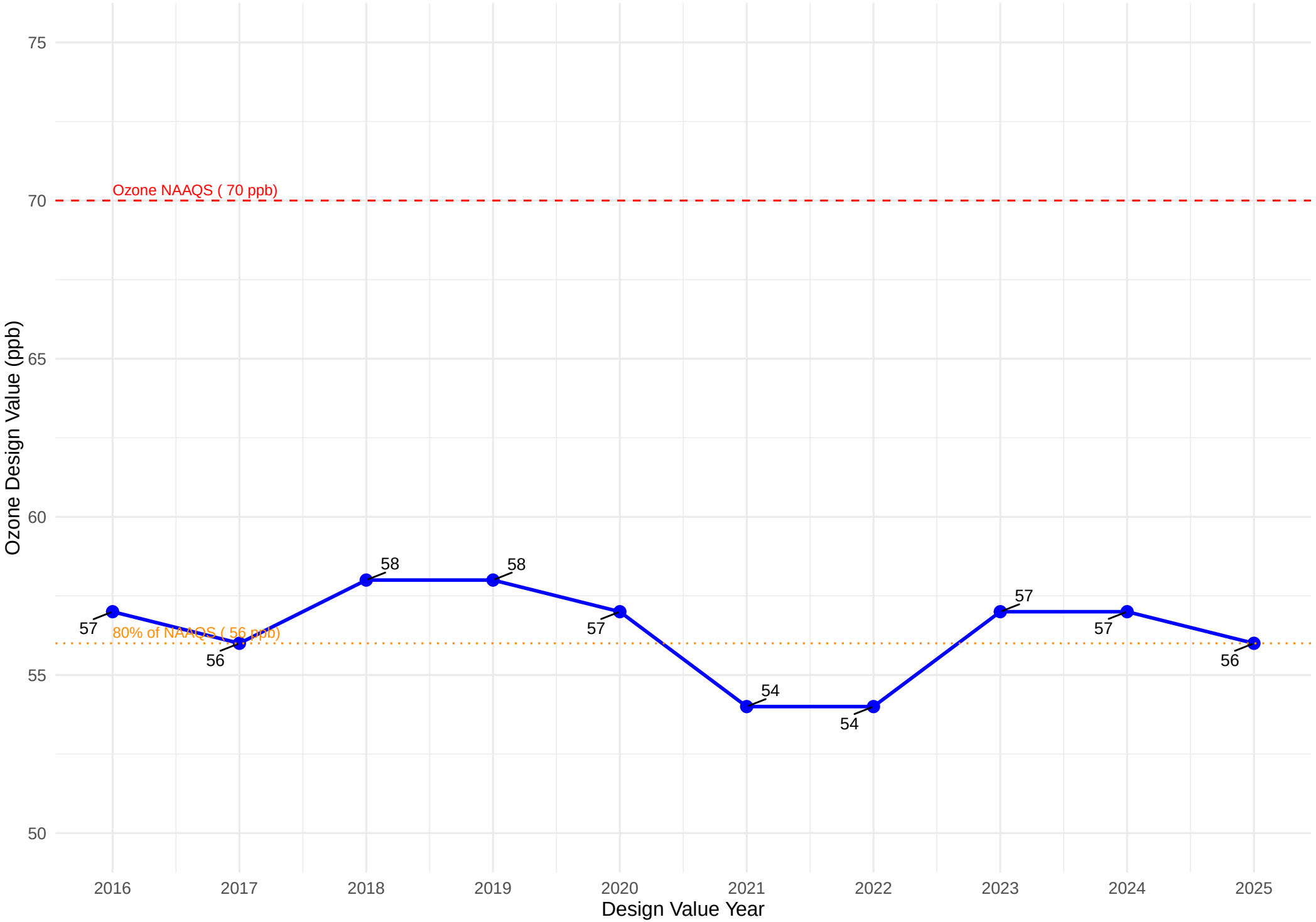
. Upwind sources: Rural areas with limited emission sources
. Downwind impacts: Monitor data shows no unique local ozone production
. Regional consistency: Ward, AL monitor (43 km away) shows similar patterns
. No evidence of significant transported pollution affecting the site

IMPLICATIONS FOR SHUTDOWN:

The meteorological analysis supports the shutdown decision. The site's rural location, decreasing local emissions, and lack of significant upwind sources suggest that ozone levels will remain controlled. The similarity with nearby monitors indicates that regional coverage will not be compromised.

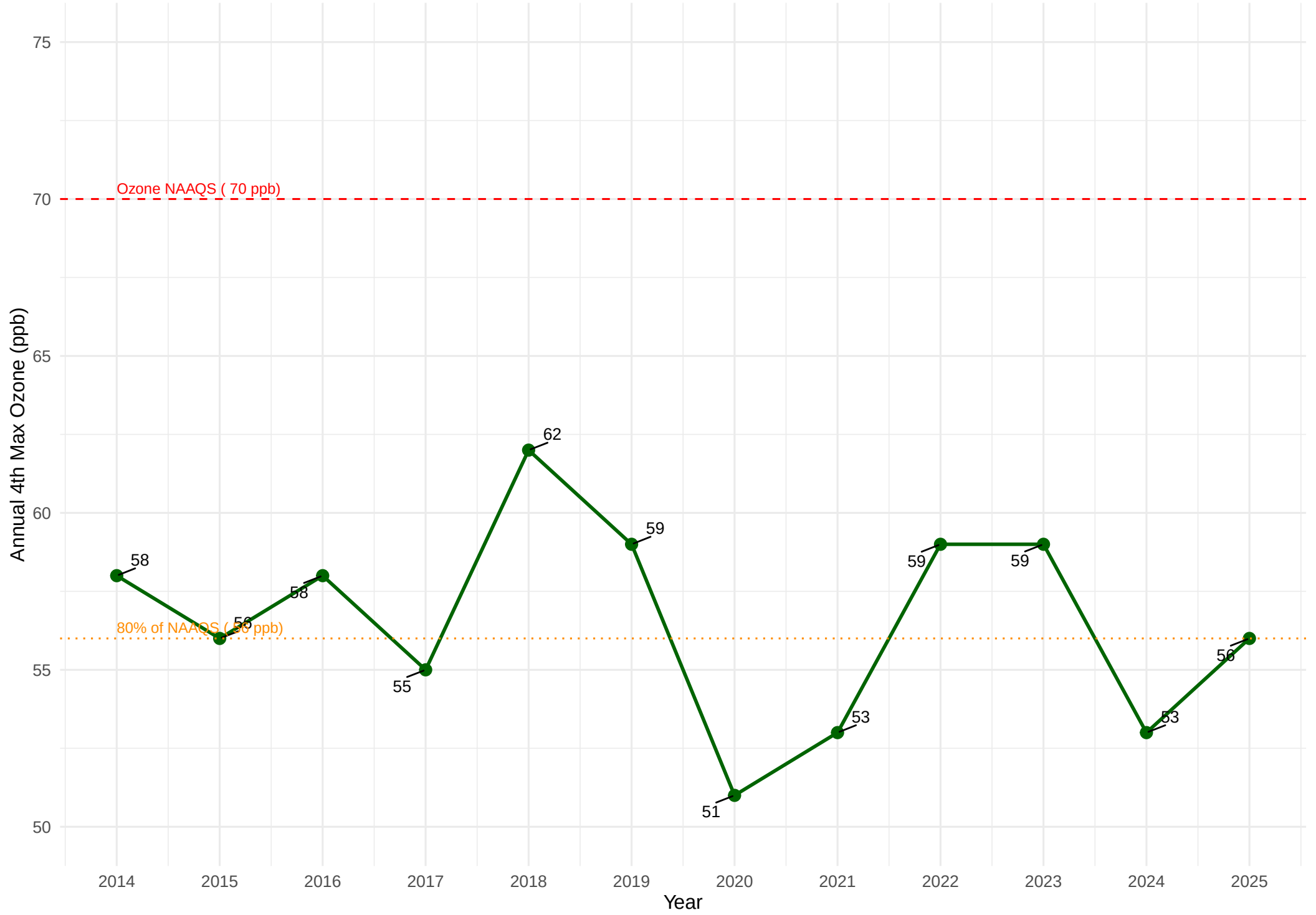
Meridian, MS Ozone Design Values (2016 − 2025)

Compared to NAAQS and 80% of NAAQS Shutdown Criterion Threshold



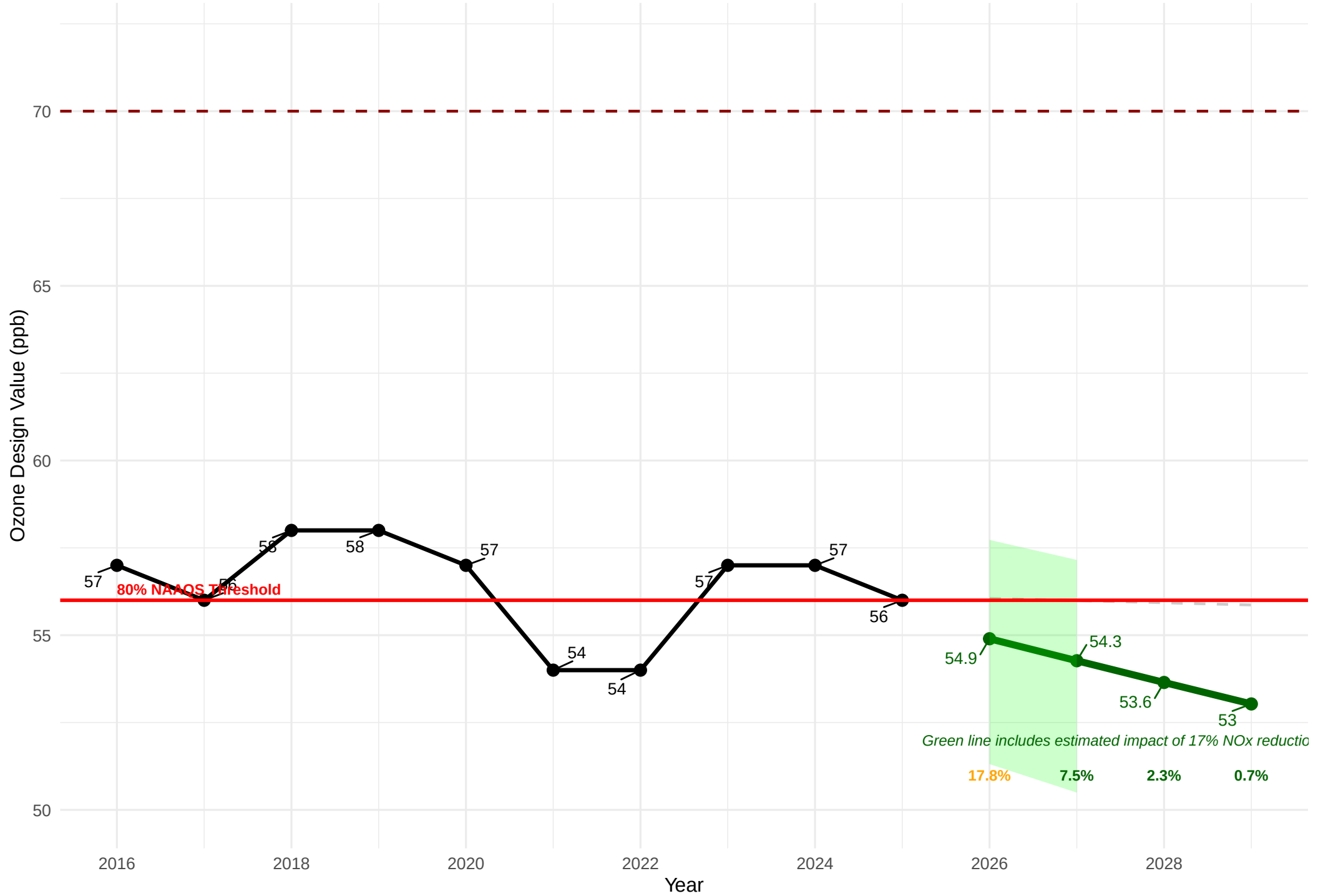
Meridian, MS Annual 4th Maximum 8−hr Ozone (2014 − 2025)

Underlying data for Design Value Calculations



Meridian Ozone Design Value Projections with Emissions−Based Adjustment

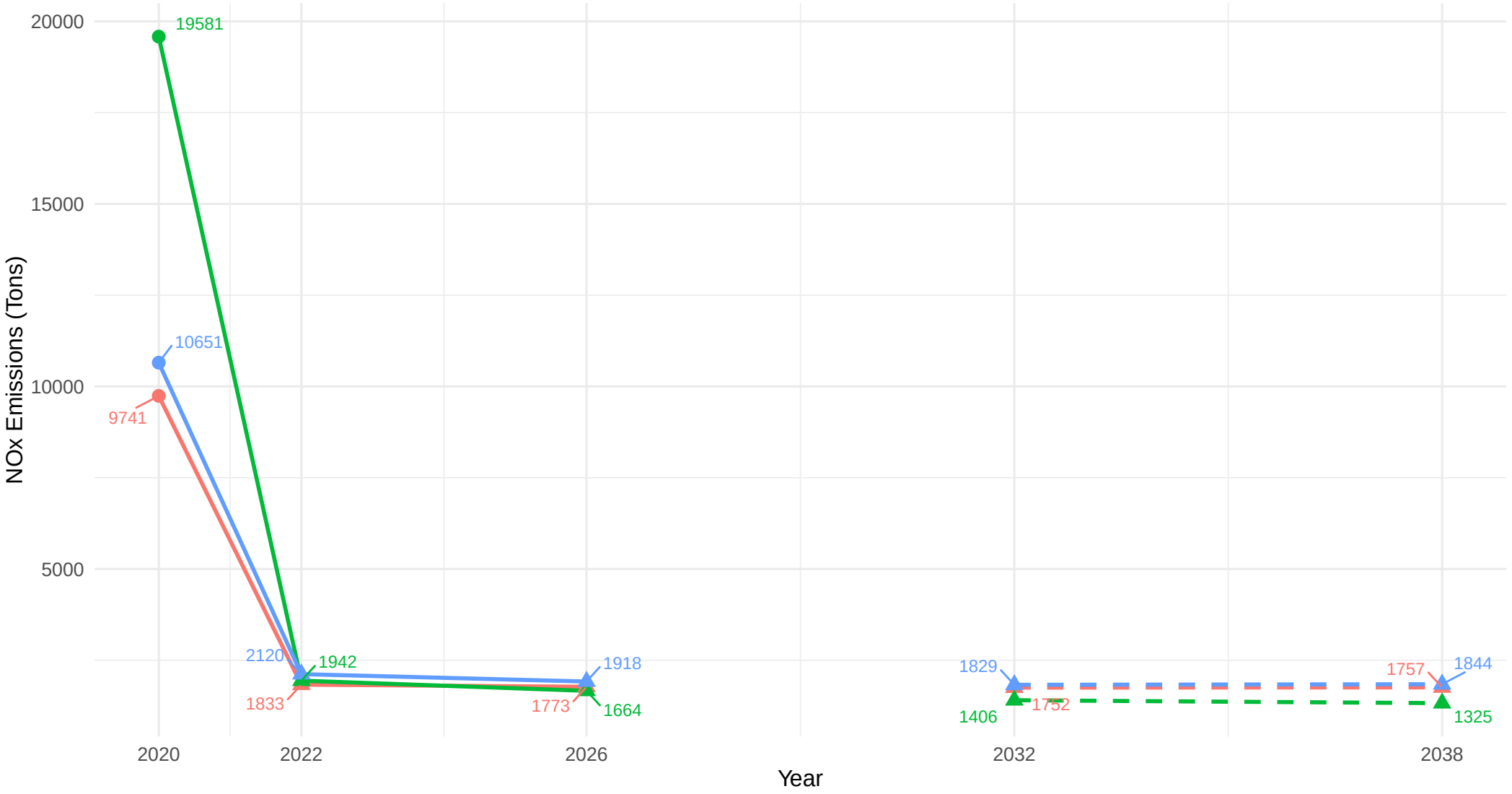
Incorporating projected 93% NOx reduction (2020−2038). Probabilities of exceeding 56 ppb shown at bottom.



Gray dashed line: Statistical projection only | Green line: With emissions reduction impact

County NOx Emission Trends

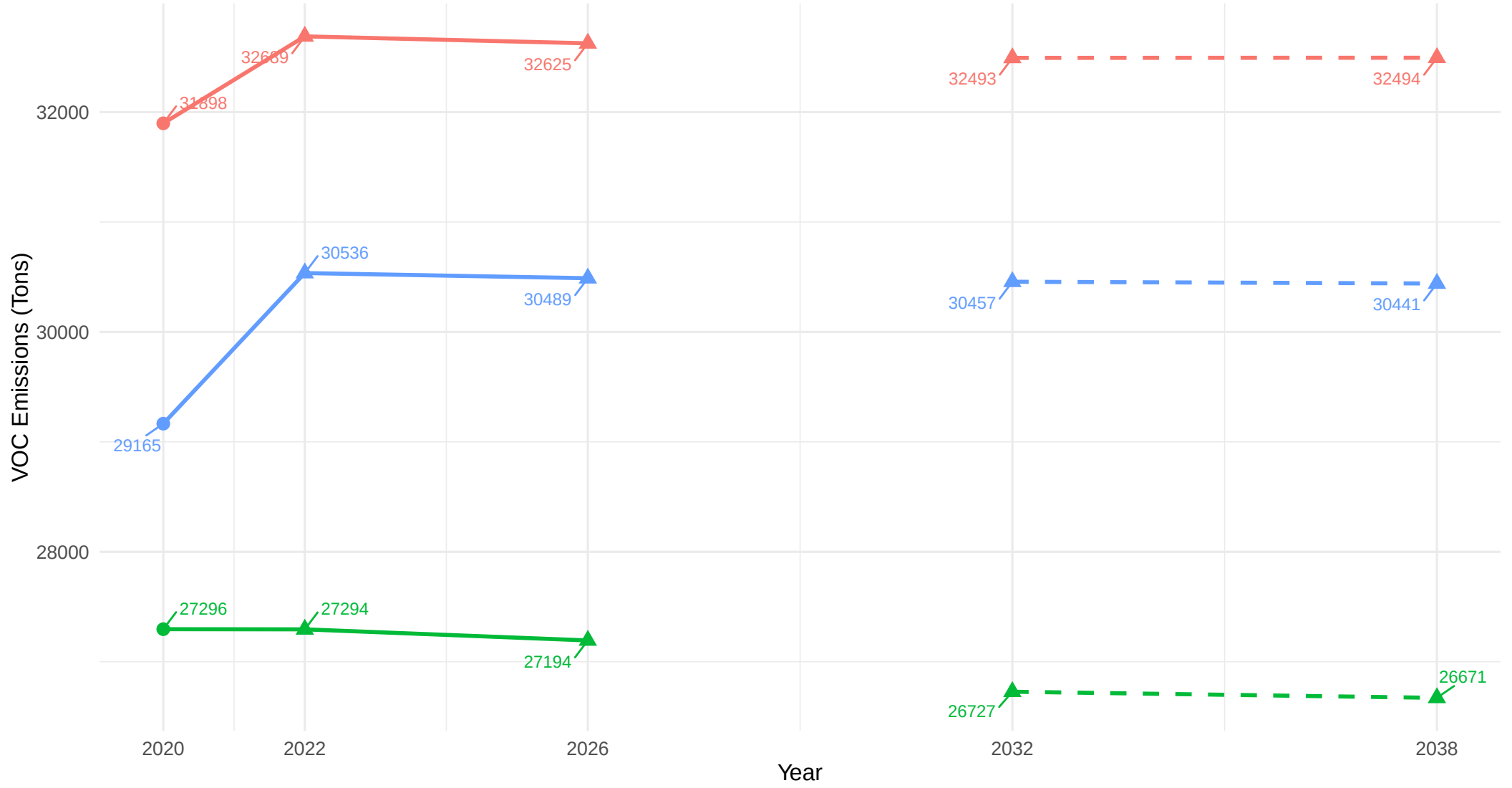
Including Lauderdale (MS) and nearby AL counties



Data sourced from the EPA National Emissions Inventory (NEI).

County VOC Emission Trends

Including Lauderdale (MS) and nearby AL counties



Data Type — Actual - - Projected

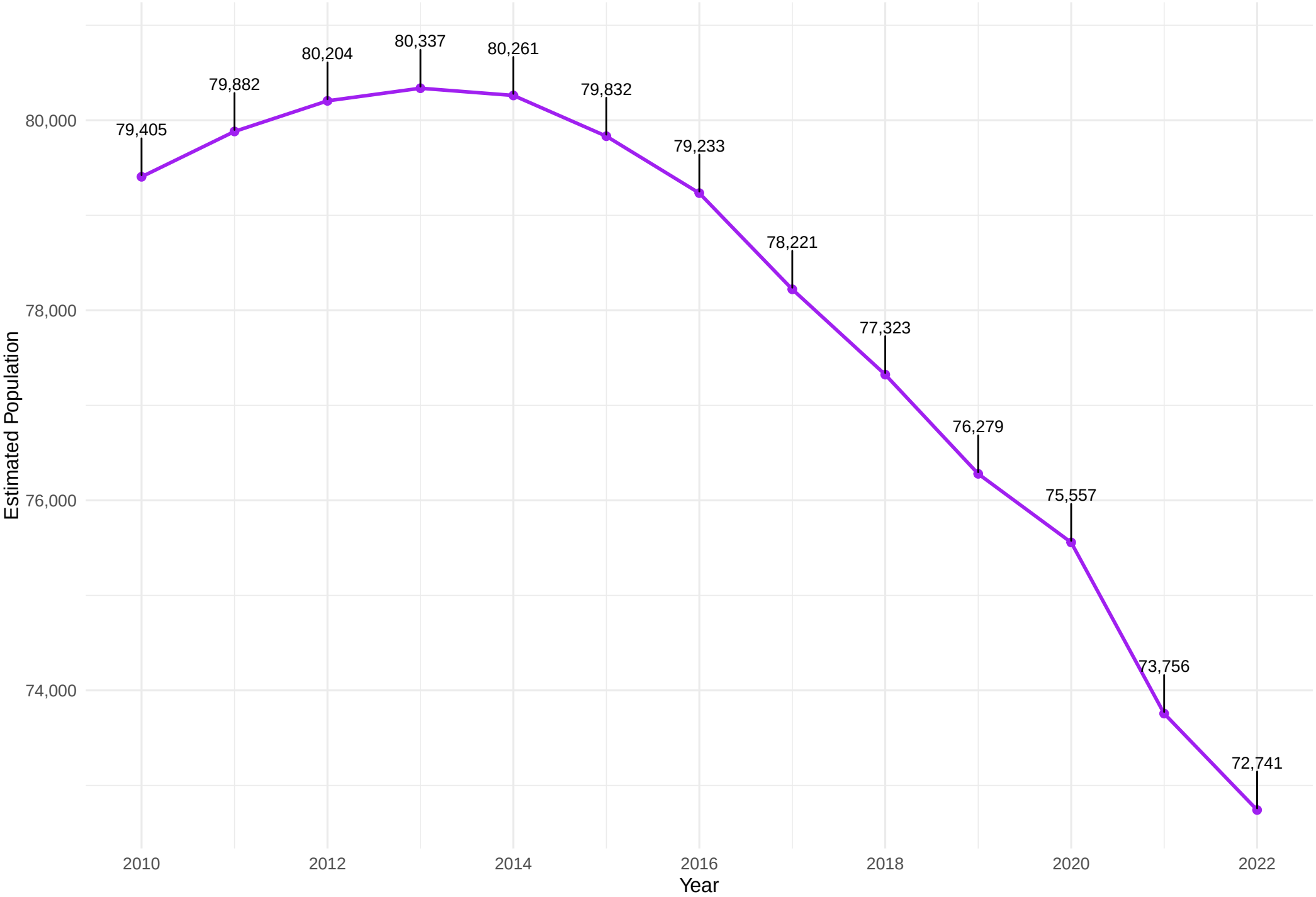
Data Source Platform ▲ EMP 2022v1 Platform ● NEI 2020

County (State) Choctaw (AL) Lauderdale (MS) Sumter (AL)

Data sourced from the EPA National Emissions Inventory (NEI).

Lauderdale County Population Shows a Declining Trend

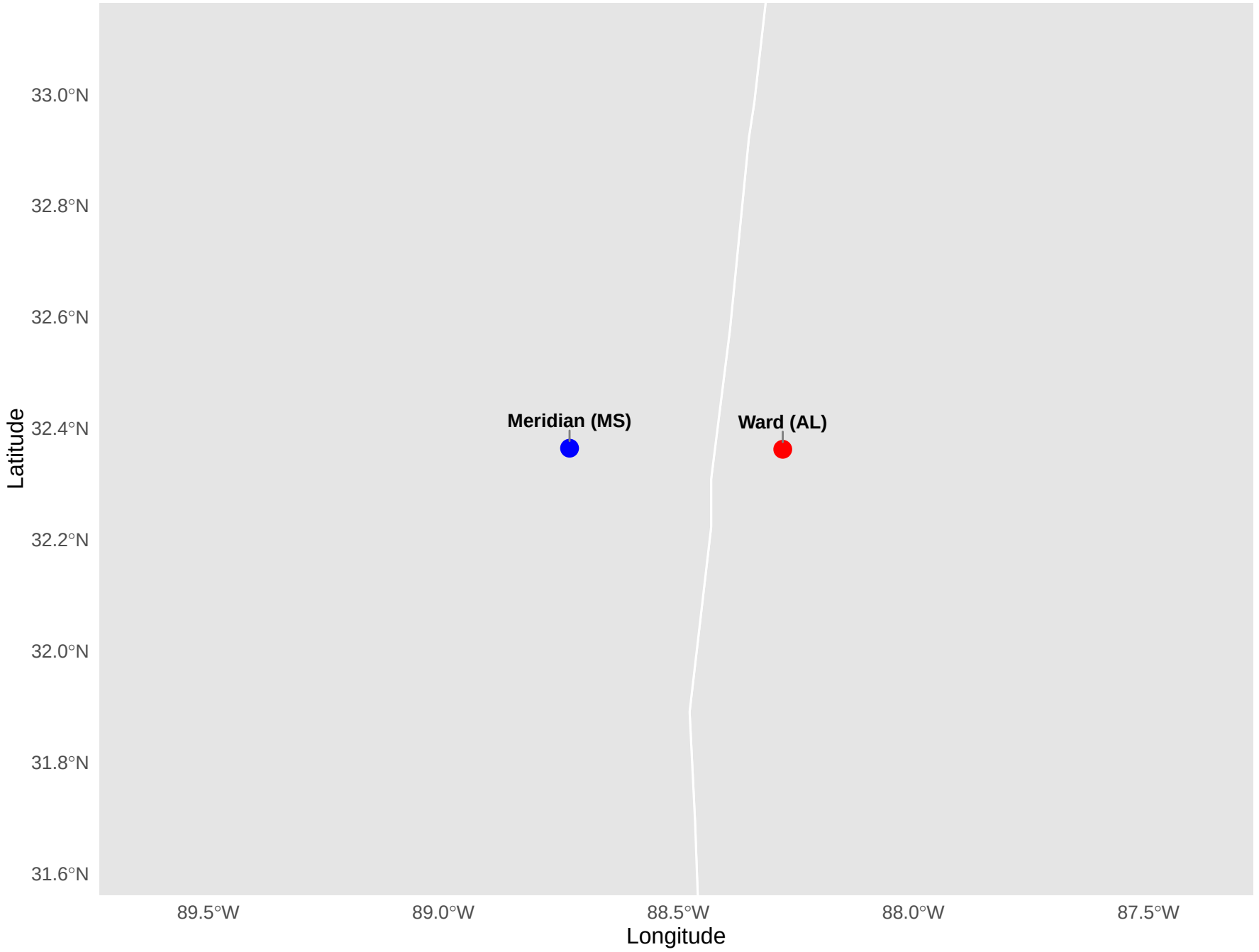
Data based on U.S. Census Bureau American Community Survey (ACS) Estimates.



Note: ACS data provides estimates which have associated margins of error (not shown).

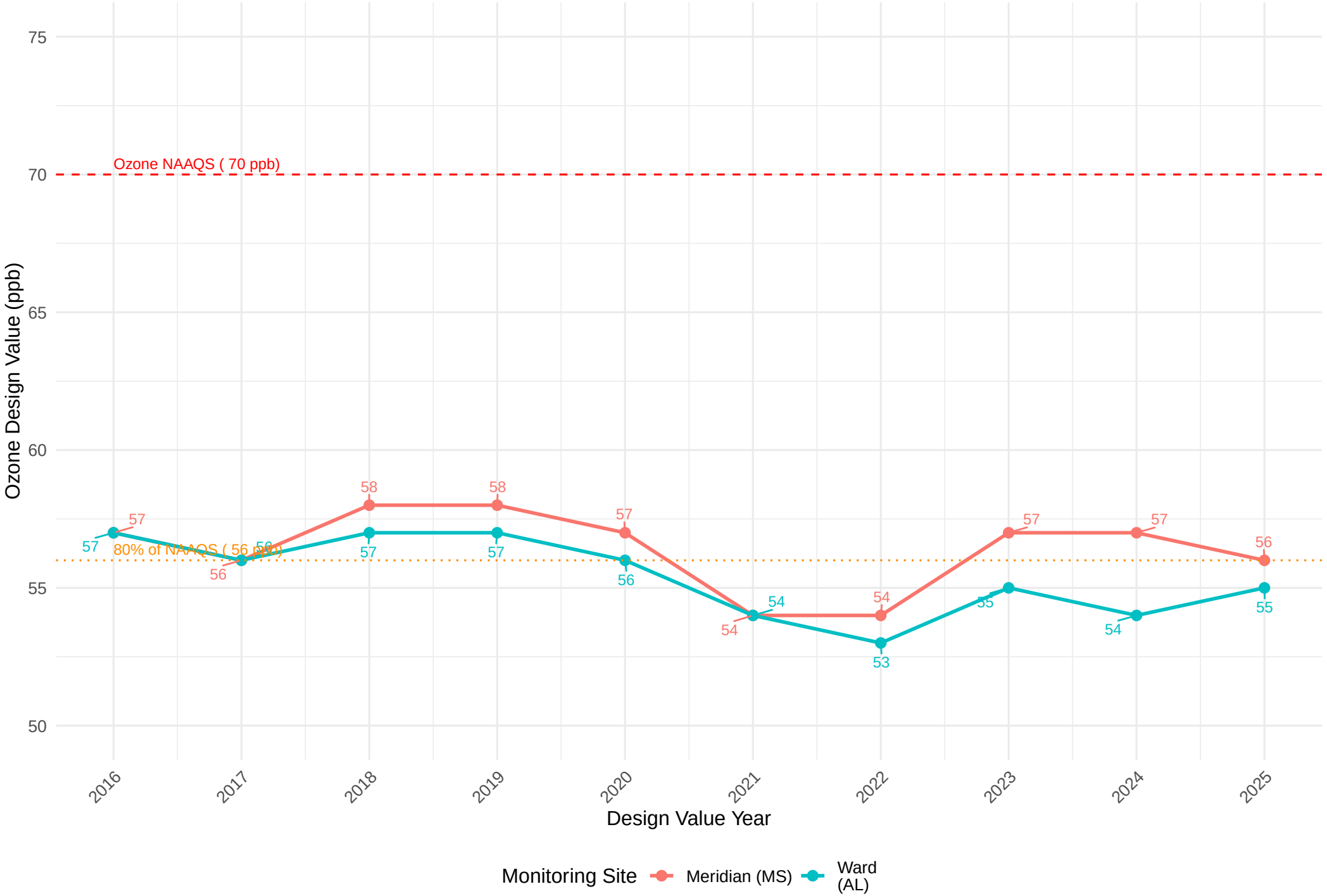
Ozone Monitor Locations

Meridian (MS) and Closest Alabama Monitor: Ward
Distance: 42.6 km



Ozone Design Value Comparison

Meridian (MS) vs. Ward (AL)



Data sourced from the EPA Air Quality System (AQS).

Data Sources & Methodology

Ozone Air Quality Data

. Source: U.S. EPA Air Quality System (AQS). . Description: Used to retrieve annual 4th maximum 8−hour ozone concentrations and calculate historical design values for the Meridian, MS and Ward, AL monitoring sites. . Access Method: Data was retrieved using the 'aqsr' package in R.

Emissions Inventory Data

. 2020 National Emissions Inventory (NEI): Provided the baseline 2020 emissions data for counties and facilities. Retrieved from the EPA Emissions & Generation Integrated Data Resource (eGRID) via the AWS platform at: https://awsedap.epa.gov/public/single/?appid=20230c40−026d−494e−903f−3f112761a208&sheet=5d3fdda7−14bc−4284−a9bb−cfd856b9348d&opt=ctx

. 2022v1 Emissions Modeling Platform (EMP): Provided the 2022 actual emissions data and future year projections (2026, 2032, 2038) for counties and facilities. Retrieved from the EPA's 2022v1 retrieval tool at: https://awsedap.epa.gov/public/single/?appid=a2771e5d−51cf−4af8−a237−b521f789b8eb&sheet=5d3fdda7−14bc−4284−a9bb−cfd856b9348d&opt=ctxr

Demographic Data

. Source: U.S. Census Bureau, American Community Survey (ACS) 5−Year Estimates. . Description: Used to retrieve historical population estimates for Lauderdale County to analyze demographic trends. . Access Method: Data was retrieved using the 'tidycensus' package in R.

CONCLUSION AND RECOMMENDATION

RECOMMENDATION: APPROVE SHUTDOWN

Summary of Supporting Evidence:

1. Statistical Analysis:

While multiple projection methods show a stable trend, the calculated probability of exceeding the 56 ppb threshold remains higher than the 10% target due to recent data variability.

2. Emissions Trajectory:

A dramatic, projected 93% decrease in NOx emissions by 2038 is the primary driver of future compliance. No new major sources have been identified.

3. Demographic & Regional Factors:

The county's declining population reduces potential for future anthropogenic emissions. Data from the nearby Ward, AL monitor shows regional consistency, indicating adequate network coverage will be maintained.

The comprehensive weight of evidence strongly supports the shutdown of the Meridian ozone monitoring site. While the formal EPA statistical test was not passed due to minor data variability, all other physical and statistical indicators point to an extremely low risk of exceeding 80% of the NAAQS in the foreseeable future. Resources could be better utilized monitoring areas with greater air quality challenges.