

# Carbon Reduction Strategy

**FINAL REPORT**

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Prepared by:





# Table of Contents

- List of Tables ..... iv
- List of Figures ..... v
- List of Acronyms ..... vi
- Executive Summary ..... vii
- 1.0 Introduction ..... 1**
  - 1.1 Carbon Reduction Program Overview ..... 1
  - 1.2 Carbon Reduction Strategy Overview..... 1
- 2.0 Existing Conditions in Alabama..... 3**
- 3.0 Alabama’s Carbon Reduction Strategy Development Process..... 5**
  - 3.1 Transportation Planning Process..... 5
  - 3.2 CRS Development Tasks ..... 5
  - 3.3 MPO Consultation..... 6
  - 3.4 Public Engagement..... 8
- 4.0 Vision Statement & Goals..... 10**
- 5.0 Focus Areas & Strategies ..... 11**
- 6.0 Implementation Actions..... 13**
  - 6.1 ITS Technologies..... 13
  - 6.2 Transportation Demand Management ..... 14
  - 6.3 Multimodal Transportation ..... 17
  - 6.4 Energy Efficient Lighting & Traffic Control Devices..... 18
  - 6.5 Alternative Fuel Vehicles & Infrastructure..... 19
- 7.0 Alignment with Federal Requirements & Existing Plans ..... 21**
  - 7.1 Federal Requirements ..... 21
  - 7.2 Statewide Plans..... 21
  - 7.3 MPO Plans ..... 21
- 8.0 Project Evaluation Process & Performance Measures ..... 33**
  - 8.1 Project Evaluation Process..... 33
  - 8.2 Targets & Performance Measures..... 34



<b>9.0 Conclusion.....</b>	<b>35</b>
<b>Appendix A: MPO Meeting Summaries .....</b>	<b>36</b>
Meeting #1 .....	37
Meeting #2.....	47
Meeting #3.....	71
<b>Appendix B: Survey &amp; Survey Results.....</b>	<b>83</b>
Survey .....	84
Survey Results .....	91
<b>Appendix C: Public Engagement Summary.....</b>	<b>100</b>
Press Release .....	101
Webpage Content.....	102
Public Comment Form .....	107
Media Outreach .....	108
Summary of Public Comments .....	116
<b>Appendix D: Statewide Environmental Justice Population Maps.....</b>	<b>120</b>
Persons 65 or Older.....	121
Households Without a Vehicle .....	122
Limited English Proficiency Population.....	123
Minority Population .....	124
Low Income Population .....	125
Persons with Disabilities .....	126
Combined Environmental Justice Population .....	127



## List of Tables

Table 1.1: Funding by System .....	1
Table 2.1: Baseline CO <sub>2</sub> Emissions in Alabama (2021) .....	4
Table 6.1: Implementation Actions for ITS Technologies .....	13
Table 6.2: Implementation Actions for Transportation Demand Management .....	15
Table 6.3: Implementation Actions for Multimodal Transportation .....	17
Table 6.4: Implementation Actions for Energy Efficient Lighting and Traffic Control Devices ...	19
Table 6.5: Implementation Actions for Alternative Fuel Vehicles and Infrastructure .....	19
Table 7.1: CRS Alignment with Federal Requirements .....	22
Table 7.2: CRS Alignment with Statewide Plans .....	23
Table 7.3: CRS Alignment with MPO Plans .....	26



## List of Figures

Figure 2.1: Transportation Sector CO <sub>2</sub> Emissions from Fossil Fuel Consumption (1970–2020) .	3
Figure 3.1: Project Development Tasks .....	5
Figure 3.2:: Alabama MPOs .....	6



## List of Acronyms

AASHTO	American Association of State Highway and Transportation Officials
ADA	Americans with Disabilities Act
ADECA	Alabama Department of Economic and Community Affairs
AF	Alternative Fuel
ALDOT	Alabama Department of Transportation
ASAP	Alabama Service Assistance Patrol
CCTV	Closed Circuit Television
CO <sub>2</sub>	Carbon Dioxide
CRP	Carbon Reduction Program
CRS	Carbon Reduction Strategy
EV	Electric Vehicle
FHWA	Federal Highway Administration
GHG	Greenhouse Gas
HOV	High-Occupancy Vehicle
HPMS	Highway Performance Monitoring System
IJA	Infrastructure Investment and Jobs Act
ITS	Intelligent Transportation Systems
LED	Light-Emitting Diode
L RTP	Long Range Transportation Plan
MPO	Metropolitan Planning Organization
NEVI	National Electric Vehicle Infrastructure
NHS	National Highway System
RTOP	Regional Traffic Operations Program
SOV	Single Occupancy Vehicle
TDM	Travel Demand Management
TIP	Transportation Improvement
TMC	Traffic Management Center
TPO	Transportation Planning Organization
TSMO	Transportation Systems Management and Operations



# Executive Summary

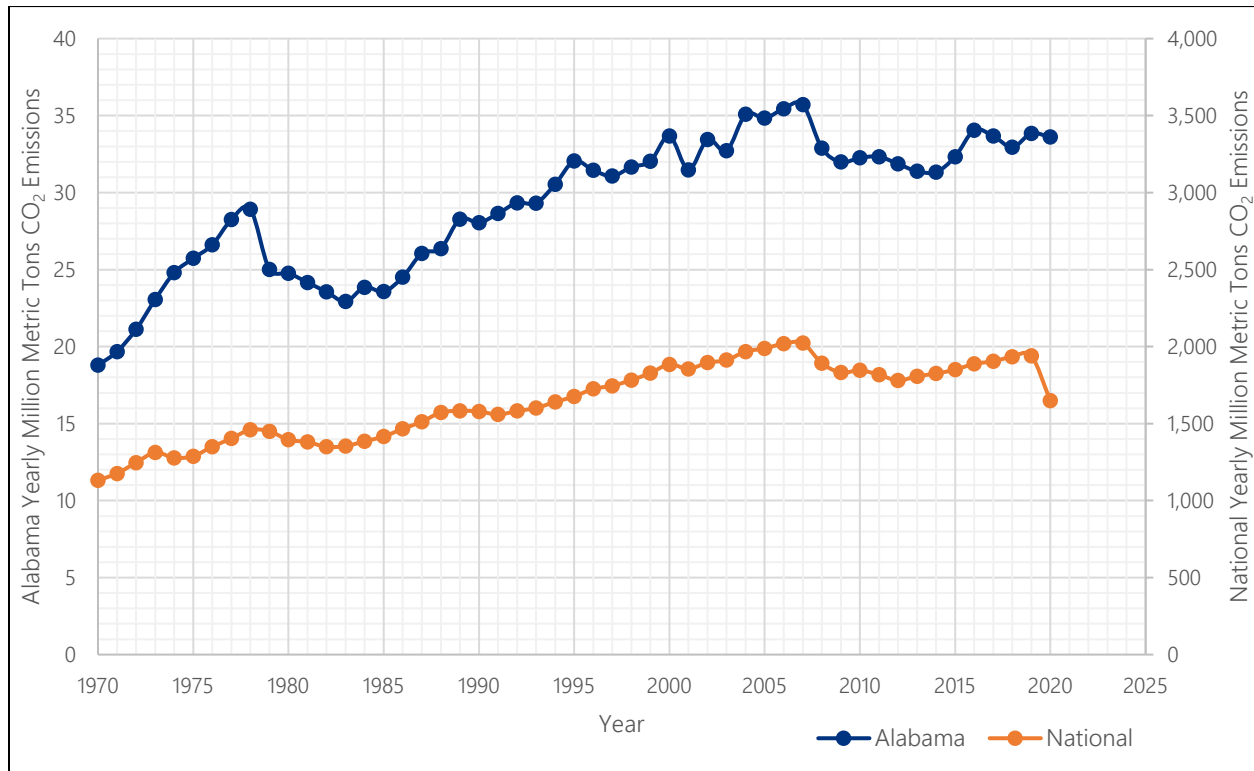
## Introduction

The Infrastructure Investment and Jobs Act (IIJA) requires all states to develop a Carbon Reduction Strategy (CRS) to identify projects and programs to reduce carbon dioxide (CO<sub>2</sub>) emissions in the transportation sector. The Federal Highway Administration (FHWA) released guidance on April 21, 2022, to outline the CRS requirements. The first CRS is due to FHWA by November 15, 2023, and updates are required every four years.

## Existing Conditions in Alabama

The figure below shows how Alabama’s transportation sector CO<sub>2</sub> emissions compare to national CO<sub>2</sub> emissions over a 50-year period.

**Transportation Sector CO<sub>2</sub> Emissions from Fossil Fuel Consumption (1970–2020)**



\*Note that the scale for the Alabama CO<sub>2</sub> Emissions is on the left axis while the scale for the National CO<sub>2</sub> Emissions is on the right axis.  
Source: U.S. Energy Information Administration

Extensive data collection was performed to determine the baseline CO<sub>2</sub> emissions in Alabama. This information was entered into the AASHTO Greenhouse Gas (GHG)



Calculator to calculate Alabama’s existing transportation CO<sub>2</sub> emissions using 2021 as the base year.

### Baseline CO<sub>2</sub> Emissions in Alabama (2021)

Measure	Baseline (2021) Emissions (metric tons)
Total Annual GHG	30,808,407
NHS Annual GHG	13,832,728

Source: AASHTO GHG Calculator


## Alabama’s CRS Development Process

The first task that was completed for Alabama’s CRS was data collection and analysis. This information was used to calculate the CO<sub>2</sub> emissions produced by the transportation sector for baseline year 2021. Statewide plans were reviewed for goals, initiatives, and implementation actions that support the reduction of CO<sub>2</sub> emissions.

In consultation with Alabama’s 14 Metropolitan Planning Organizations (MPOs), the Alabama Department of Transportation (ALDOT) and their planning team developed a vision statement for the CRS as well as goals and focus areas. Several strategies were developed for each focus area, and implementation actions were identified to support each strategy. The draft CRS was prepared and presented to the MPOs and the public for comment. After all comments were considered, the final CRS was developed and submitted to FHWA.

## Vision Statement & Goals

The following vision statement was developed for the CRS.



**VISION STATEMENT**

Alabama’s vision is to measurably reduce carbon dioxide emissions in the transportation sector by implementing a variety of strategies that will collectively result in a cleaner environment for all Alabama citizens.

Three goals were identified to guide the CRS development:

- Reduce vehicular carbon dioxide emissions to improve air quality and mitigate climate impacts
- Support and expand multimodal transportation options in urban and rural areas
- Apply transportation management strategies and technologies to improve overall network efficiency

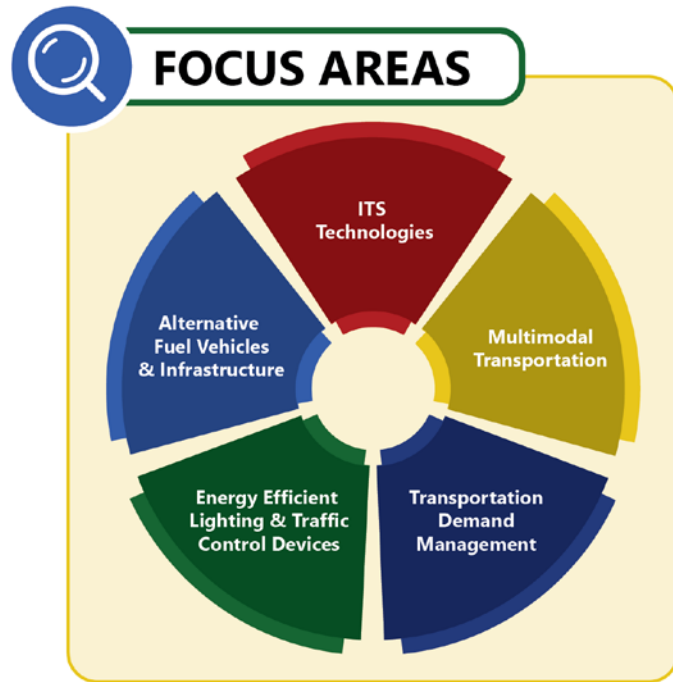


## Focus Areas, Strategies, & Implementation Actions

Five focus areas were identified for Alabama’s CRS:

- Intelligent Transportation Systems (ITS) Technologies
- Transportation Demand Management
- Multimodal Transportation
- Energy Efficient Lighting & Traffic Control Devices
- Alternative Fuel Vehicles & Infrastructure

Corresponding strategies and implementation actions that will be considered within the State of Alabama were developed for each focus area.



### Strategies & Implementation Actions for ITS Technologies

Strategies	Implementation Actions
Advanced Corridor Management	Implement Regional Traffic Operations Program (RTOP)
Detection/Monitoring	Install detection devices; Install/upgrade cameras
Digital Messaging	Expand use of variable message signs; Provide traveler information
Traffic Incident Management	Expand hours & coverage at Traffic Management Centers; Promote & improve ALGO website & app



## Strategies & Implementation Actions for Transportation Demand Management

Strategies	Implementation Actions
Travel Demand Management	Utilize predictive traveler information; Implement/expand on-demand transit; Promote/expand ridesharing programs
Traffic Management	Implement dynamic lane use control & dynamic/variable speed limits; Consider future HOV lanes; Improve intersections; Use incident and queue detection to provide queue warnings; Implement signal timing synchronization / adaptive signal control systems; Improve Traffic Management Centers; Expand ASAP program
Parking Management	Utilize dynamic pricing, reservations, & parking capacity; Improve way-finding for parking; Increase truck parking in rural areas; Add more commuter parking lots

## Strategies & Implementation Actions for Multimodal Transportation

Strategies	Implementation Actions
Pedestrian Facilities	Construct sidewalks, curb ramps, crosswalks, pedestrian signals, overpasses & multi-use paths/trails
Bicycle Facilities	Construct bike lanes, shared lanes, & multi-use paths/trails
Multimodal Access Improvements	Install ramps, bike racks, benches, & shelters; Provide multimodal information & navigational support; Implement transit-oriented development
Transit Service	Introduce more alternative fuel transit vehicles; Coordinate rural transit service; Utilize microtransit
Shared Mobility / Micromobility Options	Implement/increase car share & bicycle share programs; Improve micromobility options



## Strategies & Implementation Actions for Energy Efficient Lighting and Traffic Control Devices

Strategies	Implementation Actions
Street Lighting Installations / Upgrades	Upgrade traditional street lights with LED technology; Require LED for all new lighting
Traffic Signal Retrofits	Upgrade traffic signals to include LED lighting; Require LED for all new traffic signals

## Strategies & Implementation Actions for Alternative Fuel Vehicles and Infrastructure

Strategies	Implementation Actions
Designated Alternative Fuel Corridors	Identify/implement alternative fuel corridors
EV/AF Charging/Refueling Stations	Install charging/fueling stations along key corridors & at convenient locations
Diesel Retrofits	Retrofit truck engines to improve fuel efficiency & reduce emissions
Construction Practices	Increase use of zero emission construction equipment & sustainable construction materials
EV/AF Incentives	Support rebate programs & incentives for purchasing/operating EVs/AFs

### Alignment with Federal Requirements & Existing Plans

Alabama’s CRS aligns with Federal requirements, statewide plans, and MPO plans.

### Evaluation Process

New projects will be evaluated to determine their expected effectiveness in reducing CO<sub>2</sub> emissions. Data collection activities will be performed to measure progress toward meeting carbon reduction goals. The GHG Calculator can be used to update total emissions calculations and determine which types of projects provide the greatest reduction. Equity impacts will also be analyzed for projects identified for carbon reduction funding.

FHWA issued a proposed rule with a request for comments on July 15, 2022, entitled “National Performance Management Measures; Assessing Performance of the National



*Highway System, Greenhouse Gas Emissions Measure*". This CRS will be updated to include targets and performance measures after the rule is finalized.

## Conclusion

ALDOT and the Alabama MPOs are committed to supporting and implementing programs and projects that reduce CO<sub>2</sub> emissions on the state's transportation network. Programs and projects will be evaluated for carbon reduction and equity impacts and will be adjusted as needed to continue progress toward reduced CO<sub>2</sub> emissions and improved air quality for all Alabama residents.



## 1.0 Introduction

### 1.1 Carbon Reduction Program Overview

The Carbon Reduction Program (CRP) is a new program that was introduced in the Infrastructure Investment and Jobs Act (IIJA) to reduce carbon dioxide (CO<sub>2</sub>) emissions from on-road highway sources. It allocated \$6.4 billion over five years for eligible projects. Eligible state funding activities include truck stop electrification, diesel engine retrofits, vehicle-to-infrastructure communications equipment, public transportation, port electrification, and deployment of alternative fuel vehicles, including charging or fueling infrastructure and the purchase or lease of zero emission vehicles.

Alabama will receive \$128 million of this funding which can be used for projects in transportation management areas, small urban and rural areas, and statewide. A local match is required for all projects as shown in **Table 1.1** below.

**Table 1.1: Funding by System**

System	Federal Funding	Local Match
Interstate	90%	10%
Not Interstate	80%	20%

Source: FHWA Bipartisan Infrastructure Law Federal Share Fact Sheet

Projects in the following categories can be considered for CRP funding:

-  Safety
-  Equity
-  Transit Flex
-  Climate Change / Sustainability
-  Transferability between FHWA Programs
-  Truck Parking
-  ADA
-  Labor & Workforce

### 1.2 Carbon Reduction Strategy Overview

The IIJA requires all states to develop a Carbon Reduction Strategy (CRS) to identify projects and programs to reduce CO<sub>2</sub> emissions in the transportation sector. The Federal Highway Administration (FHWA) released guidance on April 21, 2022, to outline the CRS requirements. It must align with existing plans and be coordinated with the state’s Metropolitan Planning Organizations (MPOs). The first CRS is due to FHWA by November 15, 2023, and updates are required every four years.



# Carbon Reduction Strategy

According to the FHWA guidance, the CRS must:

- Support efforts to reduce transportation emissions
- Identify projects and strategies to reduce emissions
- Support reduction of transportation emissions of the state
- At the discretion of the State, quantify total carbon emissions from production, transport, and use of materials in the construction of transportation facilities
- Be appropriate to population density and context of State



Eligible projects are as follows:

- Traffic Monitoring or Management
- Public Transportation
- Transportation Alternatives
- Advanced Transportation or Congestion Management
- Infrastructure-based ITS Systems
- Energy Efficient Street Lighting and Traffic Control Devices
- Carbon Reduction Strategy Development
- Travel Demand Management Strategies
- Freight Projects that Improvement Environmental Impacts
- Deployment of Alternative Fuel Vehicles
- Diesel Engine Retrofits
- Traffic Flow Improvements
- Reduction of Transportation Emissions at Ports



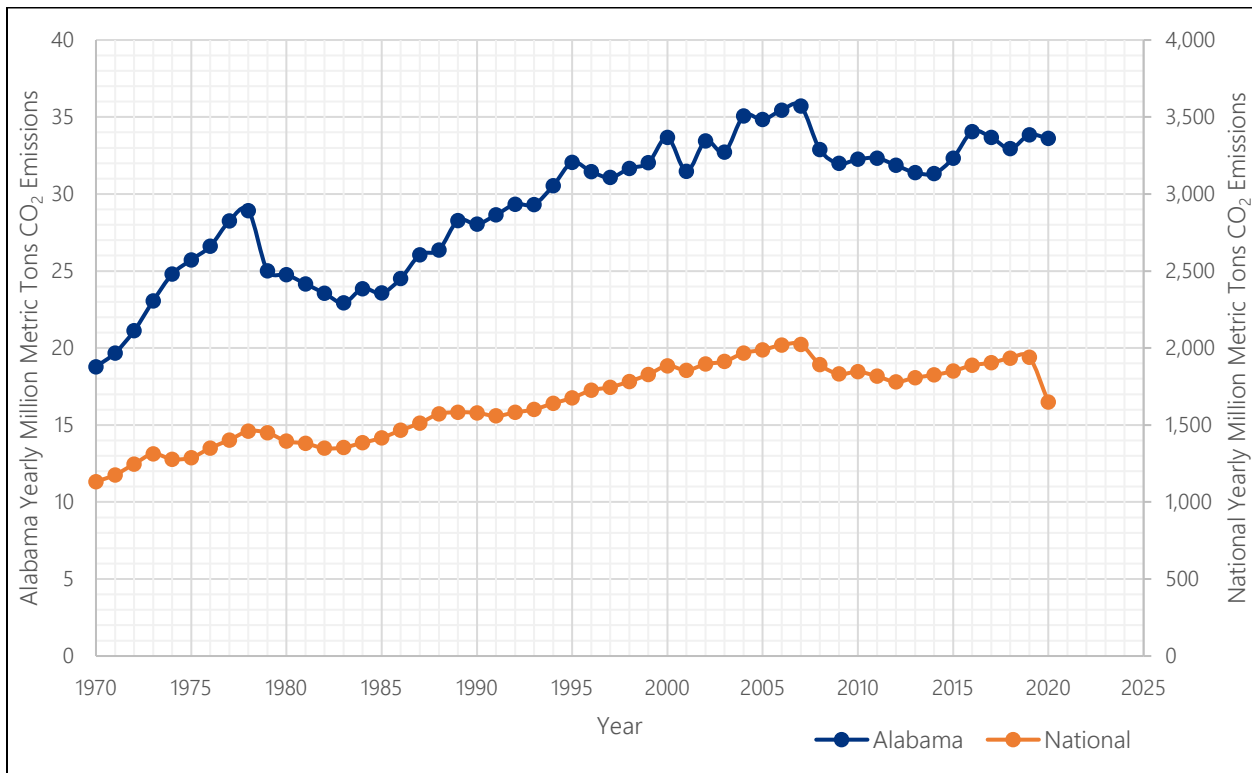
## 2.0 Existing Conditions in Alabama

Extensive data collection was performed to determine the baseline CO<sub>2</sub> emissions in Alabama. The following data was collected:

- Freight data
- Historical traffic counts
- HPMS data
- Fuel consumption data
- Vehicle registration data
- Existing and future socioeconomic data
- State emissions data

**Figure 2.1** shows how Alabama’s transportation sector CO<sub>2</sub> emissions compare to national CO<sub>2</sub> emissions over a 50-year period.

**Figure 2.1: Transportation Sector CO<sub>2</sub> Emissions from Fossil Fuel Consumption (1970–2020)**



*\*Note that the scale for the Alabama CO<sub>2</sub> Emissions is on the left axis while the scale for the National CO<sub>2</sub> Emissions is on the right axis.*

Source: U.S. Energy Information Administration

The AASHTO Greenhouse Gas (GHG) Calculator was used to calculate Alabama’s existing transportation CO<sub>2</sub> emissions using 2021 as the base year. Alabama’s total GHG emissions and the National Highway System (NHS) GHG emissions in Alabama are summarized in **Table 2.1**.



**Table 2.1: Baseline CO<sub>2</sub> Emissions in Alabama (2021)**

Measure	Baseline (2021) Emissions (metric tons)
Total Annual GHG	30,808,407
NHS Annual GHG	13,832,728

Source: AASHTO GHG Calculator

The Alabama Department of Transportation (ALDOT) and the MPOs provided lists of projects that are already programmed for CRP funding. These projects were reviewed and considered during the development of CRS goals and focus areas.

Two technical reports were developed during the existing conditions analysis. The *“Existing Conditions Assessment”* is dated August 2023. It offers a thorough discussion of the data collection, the baseline CO<sub>2</sub> analysis, and the current strategies and projects that address CO<sub>2</sub> emissions. A second technical report explains the GHG Calculator methodology and results. It is titled *“AASHTO GHG Calculator Methodology and Results”* and is dated September 2023.



# 3.0 Alabama’s Carbon Reduction Strategy Development Process

## 3.1 Transportation Planning Process

Alabama’s statewide transportation plans are developed within the Planning Studies Section which is under the Bureau of Office Engineer at ALDOT. Other statewide plans were referenced during the development of the CRS to ensure plan alignment.

## 3.2 CRS Development Tasks

The first task that was completed for Alabama’s CRS was data collection and analysis. This information was used to calculate the CO<sub>2</sub> emissions produced by the transportation sector for baseline year 2021. Technical reports titled “Existing Conditions Assessment” and “AASHTO GHG Calculator Methodology and Results” were developed to thoroughly explain this task.

Statewide plans were reviewed for goals, initiatives, and implementation actions that support the reduction of CO<sub>2</sub> emissions. These plans included:

- Alabama Statewide Transportation Plan (2017)
- Alabama Statewide Transportation Improvement Program (2024-2027)
- Alabama Strategic Highway Safety Plan (2022)
- Alabama Statewide Freight Plan (2022)
- ALDOT Statewide TSMO Master Plan (2019)
- Alabama Electric Vehicle Infrastructure Plan (2022)

In consultation with Alabama’s 14 MPOs, ALDOT and their planning team developed a vision statement for the CRS as well as goals and focus areas. Several strategies were developed for each focus area, and implementation actions were identified to support each strategy. The draft CRS was prepared and presented to the MPOs and the public for comment. After all comments were considered, the final CRS was developed and submitted to FHWA.

A flowchart showing all project tasks can be seen in **Figure 3.1**.

Figure 3.1: Project Development Tasks





## 3.3 MPO Consultation

All 14 Alabama MPOs were invited to participate in the development of the CRS through virtual meetings and an online survey. These MPOs are located throughout the state as seen in **Figure 3.2**. Each MPO also submitted their most recent Long Range Transportation Plan (LRTP) and Transportation Improvement Program (TIP) for use in developing CRS goals, initiatives, and implementation actions that align with these plans.

A brief description of each meeting and a discussion of the survey results are included below. The full meeting summaries with attendance rosters and presentation slides can be found in **Appendix A**.

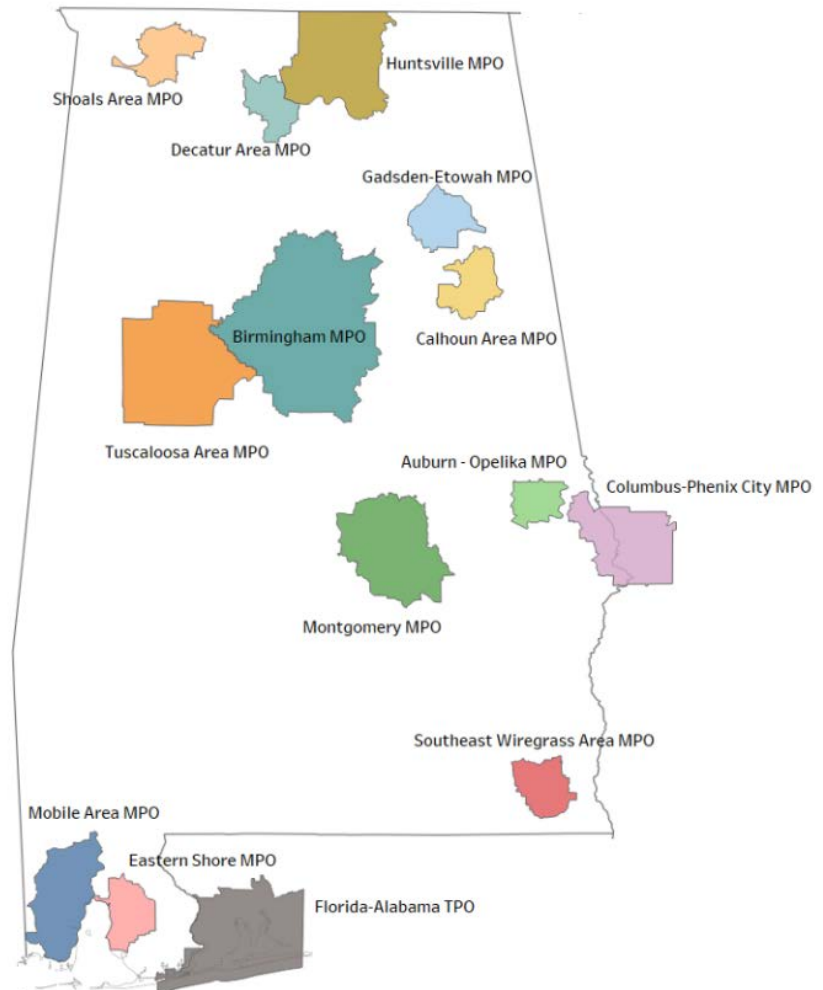
### Meeting #1

All MPOs were invited to attend a virtual meeting on July 12, 2023. During this meeting, an overview of the CRP was presented as well as information about Alabama's CRS. MPOs were asked to provide their current LRTPs, TIPs, and a list of any carbon reduction strategies that they are currently pursuing. The meeting ended with a brief explanation of the next steps in the project and an invitation to attend MPO Meeting #2.

### Survey

After Meeting #1, all MPOs were sent a link to participate in an online survey. The same survey was sent to the ALDOT Region Engineers for distribution to appropriate personnel. The survey requested feedback on potential goals and strategies and asked respondents to share which strategies would be most beneficial in their part of the state.

**Figure 3.2: Alabama MPOs**



Source: Alabama Transportation Policy Research Center, The University of Alabama (January 27, 2021)



## Carbon Reduction Strategy

The first question asked respondents why it is important to reduce carbon emissions in Alabama. The responses to this question were used to help form the vision statement and goals for the CRS. The most common responses included:

- Protect the environment
- Improve air quality
- Improve/preserve quality of life
- Mitigate climate impacts

The next series of questions asked respondents to rank possible strategies as low priority, medium priority, or high priority. Strategies were grouped into the following five categories: Alternative Fuels / Efficient Energy, Active Modes / Multimodal, Transportation Demand Management / Transportation System Management and Operations (TSMO), Technology Solutions, and Other. Weighted averages were used to identify the top strategies for each category as follows:

- Alternative Fuels / Efficient Energy
  - Freight Emission Reductions
  - Energy Efficient Lighting and Equipment
  - Alternative Fuel Vehicle Adoption and Infrastructure
  - Electric Vehicle Adoption and Charging Infrastructure
- Active Modes / Multimodal
  - Pedestrian Facilities
  - Bicycle Facilities
  - Multimodal Access Improvements
- Transportation Demand Management / TSMO
  - Travel Demand Management / Traffic Incident Management
  - Commute Trip Reduction
  - Land Use Changes
- Technology Solutions
  - Intelligent Transportation Systems (ITS) / Advanced Transportation Technologies
  - Adaptive Signals
  - Traffic Management Facilities
- Other
  - Traffic Flow Improvements



- Rural Internet Connectivity Improvements
- Sustainable Construction / Sustainable Design / Clean Construction / Sustainable Pavements

Survey participants were asked to rank the five strategy categories from 1 to 5 depending on their applicability to the MPO's location. For this ranking, 1 was the highest priority and 5 was the lowest priority. The highest ranking categories were Transportation Demand Management / TSMO, Technology Solutions, and Active Modes / Multimodal.

An open-ended question asked respondents to share other ideas for carbon reduction strategies that were not already mentioned in the survey. This question only generated a few unique responses including emissions testing, use of excess right-of-way for solar/wind power or native vegetation, and improvements in travel efficiency.

Finally, each survey participant was asked what strategy or category of strategies is most likely to reduce carbon emissions in their area. The MPOs ranked Bicycle/Pedestrian/Transit Infrastructure highest, while ALDOT ranked TSMO Strategies highest.

A copy of the survey and full results for both the MPOs and ALDOT can be found in **Appendix B**.

## Meeting #2

All MPOs were invited to participate in a second virtual meeting on August 22, 2023. During this meeting, a summary of the "*Existing Conditions Assessment*" technical report was presented, and the survey results were shared. Drafts of the vision statement, goals, and focus areas were presented to the MPOs, and a discussion was held for input and concurrence. Draft strategies to support each focus area were also presented and discussed. The meeting concluded with an invitation to attend MPO Meeting #3.

## Meeting #3

All MPOs were invited to attend the third virtual meeting on October 4, 2023. The draft CRS was presented during this meeting, and the MPOs were offered the opportunity to comment on it before it was posted for public comment.

## 3.4 Public Engagement

ALDOT issued a press release on September 22, 2023, to notify the public that the draft CRS would be available for public comment. The draft CRS was posted on the Public Involvement page of ALDOT's website. The webpage content also included an explanation of the CRS requirements, a list of project tasks, and a description of MPO



involvement in the CRS development process. In addition, the vision statement, goals, and focus areas were highlighted on the webpage along with a brief description of the strategies and implementation actions. Links to the “*FHWA CRP Fact Sheet*” and “*CRP Implementation Guidance*” were included as well.

The public was asked to submit comments on the draft CRS by completing an online comment form or by downloading a hard copy comment form from the webpage. Hard copy comment forms were also available at the ALDOT Bureau of Office Engineer. The comment period was open for 3 weeks from October 17<sup>th</sup> through November 6<sup>th</sup>.

ALDOT’s Media and Community Relations Bureau publicized information about the draft CRS and requested public comments through numerous media outlets including the Cullman Times, Yrt News, News 19, Usa Jaun News, and WVTM 13 News.

A copy of the press release, the webpage content, the public comment form, and media outreach examples can be found in **Appendix C**.

### Summary of Public Comments

Four comments were received during the public comment period. ALDOT responded to each commenter to thank them for their participation and to notify them that their comments would be considered.

Three of the four comments were applicable to the CRS. One comment expressed support for the CRS. The other two applicable comments stated that more emphasis should be placed on land use and alternative transportation. While land use was discussed by ALDOT and the MPOs as a carbon reduction strategy, it is not specifically listed in the CRS since ALDOT and the MPOs do not have jurisdictional authority over land use. However, alternative transportation (i.e., walking, biking, transit usage, etc.) is included as a focus area in this CRS. Appropriate and context-sensitive land use planning is vital to provide people with more choices for getting around their town/city and their region. The final CRS will be shared with the municipalities who make land use decisions.

A table showing all public comments, ALDOT’s responses, and notes pertaining to each comment is included in **Appendix C**.



## 4.0 Vision Statement & Goals

The following vision statement was developed for the CRS. It was approved by ALDOT and the MPOs.



### VISION STATEMENT

Alabama’s vision is to measurably reduce carbon dioxide emissions in the transportation sector by implementing a variety of strategies that will collectively result in a cleaner environment for all Alabama citizens.

Three goals were identified to guide the development of the CRS toward reducing CO<sub>2</sub> emissions. These goals were developed from survey results and fine-tuned through discussions with ALDOT and the Alabama MPOs.



### GOALS



Reduce vehicular carbon dioxide emissions to improve air quality and mitigate climate impacts



Support and expand multimodal transportation options in urban and rural areas



Apply transportation management strategies and technologies to improve overall network efficiency



# 5.0 Focus Areas & Strategies

Focus areas are groups of similar strategies that work together to achieve the goals. The focus areas and strategies for this CRS were identified using survey results, discussion comments from ALDOT and the Alabama MPOs, and carbon reduction efforts that are already in progress throughout the state. The following five focus areas were identified:

- ITS Technologies
- Transportation Demand Management
- Multimodal Transportation
- Energy Efficient Lighting & Traffic Control Devices
- Alternative Fuel Vehicles & Infrastructure

Strategies were assigned to each of the five focus area as shown below.

## ITS Technologies

Intelligent Transportation Systems (ITS) apply technology to improve the quality, safety, and mobility of surface transportation systems. The strategies identified under this focus area are:

- Advanced Corridor Management
- Detection/Monitoring
- Digital Messaging
- Traffic Incident Management

## Transportation Demand Management

Transportation Demand Management describes programs that increase the efficiency of the transportation system. These programs strive to redistribute the demand on the system by providing options that reduce the need for vehicle trips, shorten trip lengths, and use more efficient transportation modes. The following strategies were identified for this focus area:

- Travel Demand Management
- Traffic Management
- Parking Management



## Multimodal Transportation

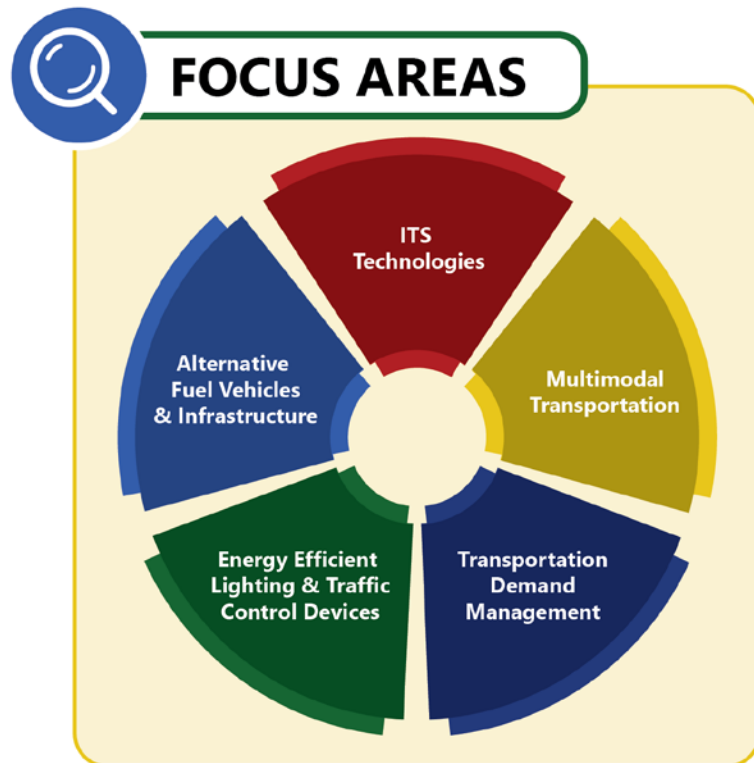
Multimodal Transportation describes all mobility modes including walking, biking, vehicles, transit, railroad, airplane, and water vessels. Transportation options can help reduce congestion and optimize the transportation system. The strategies identified under this focus area are:

- Pedestrian Facilities
- Bicycle Facilities
- Multimodal Access Improvements
- Transit Service
- Shared Mobility / Micromobility Options

## Energy Efficient Lighting & Traffic Control Devices

This focus area seeks to improve energy efficiency in street lights and traffic signals. Two strategies were identified:

- Street Lighting Installations/Upgrades
- Traffic Signal Retrofits



## Alternative Fuel Vehicles & Infrastructure

Alternative fuels are a proven way to reduce CO<sub>2</sub> emissions in the transportation sector. These fuels can include biodiesel, ethanol, hydrogen, natural gas, propane, renewable diesel, and electricity. The following strategies were identified for this focus area:

- Designated Alternative Fuel Corridors
- EV/AF Charging/Refueling Stations
- Diesel Retrofits
- Construction Practices
- EV/AF Incentives



## 6.0 Implementation Actions

Implementation actions are defined as types of projects or programs that support the carbon reduction strategies. This section discusses the implementation actions that were identified for each of the strategies defined in Section 5.0. These actions will be considered for implementation within the State of Alabama.

### 6.1 ITS Technologies

**Table 6.1** displays the implementation actions associated with the ITS Technology strategies. Detailed descriptions of these actions are included below the table.

**Table 6.1: Implementation Actions for ITS Technologies**

Strategies	Implementation Actions
Advanced Corridor Management	Implement Regional Traffic Operations Program (RTOP)
Detection/Monitoring	Install detection devices; Install/upgrade cameras
Digital Messaging	Expand use of variable message signs; Provide traveler information
Traffic Incident Management	Expand hours & coverage at Traffic Management Centers; Promote & improve ALGO website & app

#### Advanced Corridor Management

Alabama began implementing the Regional Traffic Operations Program (RTOP) several years ago. This program focuses on modernizing traffic signals and their associated ITS devices on state routes to reduce delay and congestion. Corridor management, particularly through signal timing and coordination, improves the efficiency of vehicle movement on key roadways and results in reduced congestion and fewer emissions from idling vehicles. Alabama’s implementation action for advanced corridor management supports ALDOT’s plans to continue this effort throughout the state.

#### Detection/Monitoring

Many Alabama roadways and intersections already use ITS devices to detect and monitor traffic. These devices include inductive loops, video cameras, radar, thermal sensors, and Bluetooth readers. Alabama’s implementation actions for detection/monitoring involve upgrading devices already in use and installing new devices in appropriate locations throughout the state.



## Digital Messaging

Variable message signs allow agencies to convey travel information to roadway users in a safe and efficient manner. Digital messaging can be used to inform drivers of slowdowns or unsafe conditions that can be avoided by using alternate routes. Alabama's implementation actions for digital messaging expand the use of variable message signs throughout the state to display traveler information about roadway conditions, incidents, heavy traffic, inclement weather, and other appropriate topics.

## Traffic Incident Management

Traffic incidents, such as vehicle breakdowns and crashes, reduce roadway capacity and generate safety hazards that slow travel and increase congestion and vehicle idling. Traffic incident management focuses on swiftly and safely removing these roadway obstructions to return traffic to normal conditions.

Alabama's Traffic Management Centers (TMCs) aid in incident management by monitoring and reporting live traffic conditions. The ALGO Traffic website and mobile app are used to provide real time updates on Alabama roads including traffic reports, travel times, traffic camera feeds, message sign readouts, incident information, construction updates, and road congestion levels. Push notifications and email alerts are also available to road users. Alabama's implementation actions for traffic incident management expand the operating hours and coverage of the TMCs and promote and improve the ALGO website and mobile app.

## 6.2 Transportation Demand Management

**Table 6.2** displays the implementation actions associated with the Transportation Demand Management strategies. Detailed descriptions of these actions are included below the table.



### Table 6.2: Implementation Actions for Transportation Demand Management

Strategies	Implementation Actions
Travel Demand Management	Utilize predictive traveler information; Implement/expand on-demand transit; Promote/expand ridesharing programs
Traffic Management	Implement dynamic lane use control & dynamic/variable speed limits; Consider future HOV lanes; Improve intersections; Use incident and queue detection to provide queue warnings; Implement signal timing synchronization / adaptive signal control systems; Improve Traffic Management Centers; Expand ASAP program
Parking Management	Utilize dynamic pricing, reservations, & parking capacity; Improve way-finding for parking; Increase truck parking in rural areas; Add more commuter parking lots

## Travel Demand Management

Travel Demand Management (TDM) programs are designed to change travel behavior and reduce Single Occupancy Vehicle (SOV) trips to maximize the capacity of the transportation system. When implemented on an area-wide basis with support from government organizations, businesses, universities, and residents, these programs can reduce delay and congestion during peak periods on local roadway networks. Predictive traveler information can be obtained by using past travel trends to determine when and where people will make future trips. This information can help identify locations where TDM programs may be beneficial.

SOV trips can be reduced through on-demand transit which uses shared vehicles to transport multiple passengers who are traveling in the same direction. While this service is offered in some parts of Alabama, many areas do not have access to it. Four metropolitan areas in Alabama (Birmingham, Huntsville, Mobile, and Montgomery) offer a rideshare program called CommuteSmart which provides carpools and vanpools for work commutes. Alabama’s implementation actions for travel demand management include promoting and expanding this rideshare program, implementing and expanding on-demand transit, and utilizing predictive traveler information to identify locations where TDM programs should be considered.



## Traffic Management

Traffic management focuses on improving the operations of a roadway system through a variety of methods including dynamic lane use control, dynamic/variable speed limits, High-Occupancy Vehicle (HOV) lanes, intersection improvements, and incident/queue detection. Dynamic lane use control allows individual lanes to be opened or closed as needed. Advance warning of these changes is provided through dynamic lane control signs. Dynamic or variable speed limits are adjusted based on real-time traffic, road, or weather conditions. Alabama does not have any High-Occupancy Vehicle (HOV) lanes but may consider implementing them in the future. Intersection improvements, such as signal timing updates, can help with traffic management by improving traffic flow. Other traffic management tools include incident and queue detection to provide queue warnings to motorists in areas where delays may be longer than expected and signal timing synchronization / adaptive signal control systems to coordinate traffic signals.

Alabama's Traffic Management Centers were designed to help manage traffic by monitoring and reporting live traffic conditions. The Alabama Service Assistance Patrol (ASAP) operates within Alabama's larger municipal areas to assist with traffic incident management, motorist needs, road maintenance, emergency operations, and work zone management.

Alabama's implementation actions for traffic management include using the tools mentioned above to improve roadway operations and reduce congestion.

## Parking Management

Parking management includes managing the limited amount of space available for parked vehicles and reducing the time needed for drivers to locate available parking spaces. Dynamic pricing, parking reservations, and dynamic parking capacity can be used to manage parking. Dynamic pricing adjusts parking rates based on demand. Parking reservations ensure that drivers will have a place to leave their vehicles when they arrive at their destinations. Dynamic parking capacity tracks the number of available spaces in a parking lot or deck and continuously updates signage to share that information with drivers. Another way to manage parking is to add or improve way-finding to available parking through signage or phone apps.

Truck parking and commuter parking are also important. Providing truck parking options in rural areas can reduce the number of trucks parked on the side of the road during driver rest periods. Commuter parking lots encourage carpooling and transit use. Alabama has several commuter parking lots located throughout the state.

Alabama's implementation actions for parking management include utilizing the tools described above, improving way-finding to available parking, increasing truck parking areas, and adding more commuter parking lots throughout the state.



### 6.3 Multimodal Transportation

**Table 6.3** displays the implementation actions associated with the Multimodal Transportation strategies. Detailed descriptions of these actions are included below the table.

**Table 6.3: Implementation Actions for Multimodal Transportation**

Strategies	Implementation Actions
Pedestrian Facilities	Construct sidewalks, curb ramps, crosswalks, pedestrian signals, overpasses & multi-use paths/trails
Bicycle Facilities	Construct bike lanes, shared lanes, & multi-use paths/trails
Multimodal Access Improvements	Install ramps, bike racks, benches, & shelters; Provide multimodal information & navigational support; Implement transit-oriented development
Transit Service	Introduce more alternative fuel transit vehicles; Coordinate rural transit service; Utilize microtransit
Shared Mobility / Micromobility Options	Implement/increase car share & bicycle share programs; Improve micromobility options

#### Pedestrian Facilities

The use of pedestrian facilities provides health and mobility benefits for users without contributing to CO<sub>2</sub> emissions. These facilities promote alternative transportation and reduce SOVs. Pedestrian facilities include an expansive and connected network of sidewalks, curb ramps, crosswalks, pedestrian signals, overpasses, and multi-use paths/trails. Alabama’s implementation actions for pedestrian facilities include continued construction of the pedestrian networks throughout the state.

#### Bicycle Facilities

The use of bicycle facilities also provides health and mobility benefits for users without contributing to CO<sub>2</sub> emissions. Like pedestrian facilities, bicycle facilities also promote alternative transportation and reduce SOVs. They include an expansive and connected network of bike lanes, shared lanes, and multi-use paths/trails. Alabama’s implementation actions for bicycle facilities include continued construction of the bicycle network throughout the state.



## Multimodal Access Improvements

Multimodal access links motorized and non-motorized transportation to provide users with multiple travel options. Improving access to multimodal facilities encourages the use of non-motorized transportation and reduces the number of vehicles on the road. Infrastructure improvements such as pedestrian ramps, bike racks, and transit amenities (i.e., benches and shelters at transit stops) make these transportation modes more appealing. Providing user information and navigational support for multimodal facilities also increase their use.

Transit-oriented development is characterized by walkable mixed-use communities centered around public transportation. This design decreases personal vehicle use thus reducing CO<sub>2</sub> emissions. Alabama's implementation actions for multimodal access improvements include continuing to install multimodal access amenities, providing multimodal information/navigation information, and implementing transit-oriented development.

## Transit Service

Public transit provides a less expensive travel option for users while reducing the number of vehicles on the roadways. In addition to these benefits, transit vehicles can use alternative fuels to reduce CO<sub>2</sub> emissions. To maximize the effectiveness of rural transit services, it is important for rural transit providers to coordinate with urban transit providers to provide connectivity between the services. Microtransit can be a good option for rural areas. It is characterized by on-demand shared transportation with routes that vary based on rider demand. Alabama's implementation actions for transit service include introducing more alternative fuel transit vehicles, coordinating rural transit service, and utilizing more microtransit.

## Shared Mobility / Micromobility Options

Shared mobility involves users sharing transportation resources, such as cars or bicycles, that are owned and maintained by a company or agency that charges users a fee to borrow the resources. Micromobility options include bicycles, scooters, segways, e-bikes, and e-scooters. These individual transportation modes produce little to no CO<sub>2</sub> emissions. Alabama's implementation actions for shared mobility / micromobility include implementing or increasing car and bicycle share programs and improving micromobility options throughout the state.

## 6.4 Energy Efficient Lighting & Traffic Control Devices

**Table 6.4** displays the implementation actions associated with the strategies for Energy Efficient Lighting and Traffic Control Devices. Detailed descriptions of these actions are included below the table.



### Table 6.4: Implementation Actions for Energy Efficient Lighting and Traffic Control Devices

Strategies	Implementation Actions
Street Lighting Installations / Upgrades	Upgrade traditional street lights with LED technology; Require LED for all new lighting
Traffic Signal Retrofits	Upgrade traffic signals to include LED lighting; Require LED for all new traffic signals

## Street Lighting Installations/Upgrades

Traditional street lighting can be a significant contributor to CO<sub>2</sub> emissions. Light-emitting diode (LED) street lighting uses less electricity, emits less CO<sub>2</sub>, and requires less maintenance. Alabama’s implementation actions for street lighting installations/upgrades include upgrading traditional street lights with LED technology and requiring LED technology for all new street lighting.

## Traffic Signal Retrofits

Alabama has updated many of their traffic signals to include LED lighting. Similar to LED street lights, LED signals use less electricity, emit less CO<sub>2</sub>, and require less maintenance. Alabama’s implementation actions for traffic signal retrofits include continuing to upgrade traditional traffic signals with LED technology and requiring LED technology for all new traffic signals.

## 6.5 Alternative Fuel Vehicles & Infrastructure

**Table 6.5** displays the implementation actions associated with Alternative Fuel Vehicles and Infrastructure strategies. Detailed descriptions of these actions are included below the table.

### Table 6.5: Implementation Actions for Alternative Fuel Vehicles and Infrastructure

Strategies	Implementation Actions
Designated Alternative Fuel Corridors	Identify/implement alternative fuel corridors
EV/AF Charging/Refueling Stations	Install charging/fueling stations along key corridors & at convenient locations
Diesel Retrofits	Retrofit truck engines to improve fuel efficiency & reduce emissions



Strategies	Implementation Actions
Construction Practices	Increase use of zero emission construction equipment & sustainable construction materials
EV/AF Incentives	Support rebate programs & incentives for purchasing/operating EVs/AFs

## Designated Alternative Fuel Corridors

Designated Alternative Fuel (AF) corridors help users know where to find alternative fuels for their vehicles and allow for more efficient trip planning. These corridors also promote the use of alternative fuels. Alabama’s implementation actions for designated AF corridors are to identify specific corridors throughout the state and install AF fueling infrastructure along them.

## EV/AF Charging/Fueling Stations

Electric Vehicles (EV) require charging stations. Special fueling infrastructure is also needed for AF vehicles. Alabama’s implementation action for EV/AF charging/fueling stations is to install charging/fueling stations on key corridors and at convenient locations throughout the state.

## Diesel Retrofits

Trucks are a large contributor to roadway CO<sub>2</sub> emissions since they traditionally operate using diesel fuel. Diesel retrofits offer a cost-effective way to reduce CO<sub>2</sub> emissions as diesel systems are replaced with more fuel-efficient systems. Alabama’s implementation action for this strategy is to establish programs to retrofit truck engines to improve fuel efficiency and reduce emissions.

## Construction Practices

Roadway construction uses many carbon-based materials. Construction equipment also contributes to CO<sub>2</sub> emissions. Switching to low or no carbon materials and equipment will reduce these emissions. Alabama’s implementation actions for this strategy are to increase the use of zero emissions construction equipment and sustainable construction materials.

## EV/AF Incentives

Rebate programs can encourage the use of electric and alternative fuel vehicles which will result in CO<sub>2</sub> emissions reductions. These programs work well when EV charging and AF fueling stations are supported and conveniently located on identified corridors. Incentives for purchasing and operating these vehicles also encourage their use. Alabama’s implementation action for this strategy is to support rebate programs and incentives for purchasing and operating EVs and AF vehicles in the state.



## 7.0 Alignment with Federal Requirements & Existing Plans

### 7.1 Federal Requirements

The “Carbon Reduction Program Implementation Guidance” memorandum issued by FHWA on April 21, 2022, states that each CRS must be prepared in coordination with MPOs. Documents should support efforts to reduce transportation emissions and should identify projects and strategies to work toward this effort. **Table 7.1** shows how Alabama’s CRS fulfills these Federal requirements.

### 7.2 Statewide Plans

The following statewide plans were reviewed for alignment with the CRS:

- Alabama Statewide Transportation Plan (2017)
- Alabama Statewide Transportation Improvement Program (2024 - 2027)
- Alabama Strategic Highway Safety Plan (2022)
- Alabama Statewide Freight Plan (2022)
- ALDOT Statewide TSMO Master Plan (2019)
- Alabama Electric Vehicle Infrastructure Plan (2022)

**Table 7.2** shows how the goals/objectives and projects/strategies in these plans align with this CRS.

### 7.3 MPO Plans

The most recent LRTP and TIP were reviewed for each of the following MPOs:

- Auburn - Opelika MPO
- Birmingham MPO
- Calhoun Area MPO
- Columbus - Phenix City MPO
- Decatur MPO
- Eastern Shore MPO
- Florida - Alabama TPO
- Gadsden - Etowah Area MPO
- Huntsville MPO
- Mobile MPO
- Montgomery MPO
- Shoals Area MPO
- Southeast Wiregrass Area MPO
- Tuscaloosa Area MPO

**Table 7.3** shows how the goals and projects in these plans align with this CRS.



**Table 7.1: CRS Alignment with Federal Requirements**

Requirement	Compliance	Corresponding Section
Coordinate with MPOs	All Alabama MPOs were invited to participate in three meetings during the CRS development process. They completed a survey to help identify goals and strategies and provided their current plans and project lists. The MPOs also reviewed and provided feedback on the draft CRS.	CRS: Section 3.3, Appendix A, Appendix B
Support efforts to reduce transportation emissions	A vision statement and goals were identified to support efforts to reduce transportation emissions.	CRS: Section 4.0
Identify projects and strategies to reduce transportation emissions	Focus areas, along with corresponding strategies and implementation actions, were identified to reduce transportation emissions.	CRS: Section 5.0, Section 6.0
Support the reduction of transportation emissions of the State	The CRS aligns with existing statewide and MPO plans which contain many projects and initiatives to reduce transportation emissions in Alabama. The CRS also supports ALDOT's current list of CRP projects.	CRS: Section 7.2 & Section 7.3 Technical Report <i>"Existing Conditions Analysis"</i> : Section 4.0
Quantify the total carbon emissions from transportation within the State	Total carbon emissions from transportation fuel consumption were quantified for Alabama.	Technical Report <i>"Existing Conditions Assessment"</i> : Section 2.0 & Section 3.0
Be appropriate to the population density and context of the State	Numerous sources of state-specific data were analyzed to prepare a CRS that is appropriate to the population density and context of Alabama.	CRS: Section 2.0 Technical Report <i>"Existing Conditions Assessment"</i> : Section 2.0



**Table 7.2: CRS Alignment with Statewide Plans**

Plan	Applicable Goals/Objectives	Applicable Projects/Strategies
<p>Alabama Statewide Transportation Plan (2017)</p> <p>Statewide Transportation Improvement Program (2024 - 2027)</p>	<p>Accommodate emerging technology</p> <p>Understand trends in mode shift</p>	<p>Sidewalk/curb ramp improvements &amp; construction</p> <p>Crosswalk installations</p> <p>Intersection improvements</p> <p>Trail expansion &amp; construction</p> <p>CCTV camera deployment</p> <p>Multi-use path construction</p> <p>Lighting upgrades &amp; installations</p> <p>Bicycle lane striping</p> <p>Traffic signal upgrades</p> <p>Pedestrian bridge construction</p> <p>Advanced corridor management (ITS)</p> <p>Regional Traffic Operations Program</p> <p>Ride share program</p> <p>Regional Transportation Management Centers</p> <p>ITS expansion</p> <p>Segways for police department</p> <p>Feasibility study for sidewalks/multi-use path</p> <p>Carbon Reduction Strategy</p> <p>Electric Vehicle Program</p> <p>Transit improvements</p> <p>Electric buses and charging stations</p>



# Carbon Reduction Strategy

Plan	Applicable Goals/Objectives	Applicable Projects/Strategies
<p>Alabama Strategic Highway Safety Plan (2022)</p>	<p>No applicable goals</p>	<p>Safety countermeasures to reduce the frequency and severity of intersection conflicts through traffic control devices</p> <p>Safety countermeasures to reduce the frequency and severity of intersection conflicts through geometric improvements, use of emerging technologies and detection devices, and the utilization of intersection control evaluation studies</p> <p>Access to public transportation or other alternative transportation options</p> <p>Infrastructure to support non-motorists</p>
<p>Alabama Statewide Freight Plan (2022)</p>	<p>Improve reliability and reduce congestion on the National Multimodal Freight Network within the state.</p> <p>Promote the use of ITS technologies to improve the safety, efficiency, and reliability on the statewide freight network.</p> <p>Promote and enhance both the human and natural environment while enhancing the performance of the statewide freight network.</p>	<p>Congestion reduction</p> <p>Innovative operational improvements</p> <p>Commercial vehicle parking</p> <p>Reduction of environmental impacts</p>



Plan	Applicable Goals/Objectives	Applicable Projects/Strategies
<p>ALDOT Statewide TSMO Master Plan (2019)</p>	<p>Reduce congestion and bottlenecks</p> <p>Increase sustainability and minimize environmental impacts</p> <p>Integrate TSMO solutions into ALDOT policies, plans, and procedures</p>	<p>Intelligent Transportation Systems &amp; communications</p> <p>Advanced traffic signal systems</p> <p>Traffic Management Centers</p> <p>Real-time traveler information</p> <p>Traffic incident management</p> <p>Emergency transportation operations</p> <p>Road weather management</p> <p>Special event management</p>
<p>Alabama Electric Vehicle Infrastructure Plan (2022)</p>	<p>No specific goals in plan</p>	<p>Electric vehicle infrastructure</p> <p>Electric vehicle corridors</p>



**Table 7.3: CRS Alignment with MPO Plans**

MPO	Documents	Applicable Goals	Applicable Project Types
Auburn-Opelika	<p>2045 Long Range Transportation Plan</p> <p>FY 2024-2027 Transportation Improvement Program</p>	<p>Provide reliable transportation options.</p> <p>Improve safety and security.</p> <p>Improve and maximize our system.</p> <p>Protect our environment and communities.</p>	<p>Sidewalk construction</p> <p>Intersection improvements</p> <p>Traffic signal upgrades</p> <p>Multi-use path construction</p> <p>Dynamic message signs</p> <p>Transit improvements</p>
Birmingham	<p>2050 Regional Transportation Plan (Draft)</p> <p>FY 2024-2027 Transportation Improvement Program (Draft)</p>	<p>Implement strategies that improve operations and address congestion.</p> <p>Provide equitable transportation options that enhance opportunities for physical activity, increase access to essential needs, and improve quality of life.</p> <p>Support economic growth by ensuring the efficient movement of goods and freight to and from the region.</p> <p>Mitigate the challenges of the climate change by incorporating more sustainable transportation choices that promote clean energy, better air and water quality as well as environmental programs that create more resilient communities.</p>	<p>Traffic signal upgrades</p> <p>Intersection improvements</p> <p>Sidewalk/curb ramp upgrades &amp; construction</p> <p>Crosswalk installation</p> <p>Pedestrian bridge construction</p> <p>Bicycle lane construction</p> <p>Multi-use trail construction &amp; upgrades</p> <p>Transit improvements</p> <p>Electric buses and charging stations</p> <p>Lighting upgrades</p> <p>ITS devices for Advanced Corridor Management</p> <p>Regional Transportation Management Center</p> <p>ASAP program</p>



# Carbon Reduction Strategy

MPO	Documents	Applicable Goals	Applicable Project Types
Calhoun Area	<p>2045 Long Range Transportation Plan</p> <p>FY 2024-2027 Transportation Improvement Program (Draft)</p>	<p>Achieve a significant reduction in congestion on the National Highway System.</p> <p>Improve the efficiency of the surface transportation system.</p> <p>Enhance the performance of the transportation system while protecting and enhancing the natural environment.</p>	<p>Multi-use path construction</p> <p>Bicycle lane striping</p> <p>Ride share</p> <p>Sidewalk construction</p> <p>Lighting upgrades</p> <p>Intersection improvements</p> <p>Traffic signal upgrades</p>
Columbus-Phenix City	<p>2045 Metropolitan Transportation Plan</p> <p>FY 2021-2024 Transportation Improvement Program</p>	<p>Preserve the quality and capacity of transportation facilities and the street and highway network by using and developing all modes of transportation to their highest and most efficient use.</p> <p>Develop and implement appropriate land use controls to help relieve and prevent congestion from occurring to the point that it compromises the functional ability of the primary thoroughfare system.</p> <p>Develop and expand present and alternative modes of transportation, such as increased bikeways, walkways, and motorized public transportation.</p> <p>Develop and implement policies that enhance and protect the environment.</p>	<p>Trail construction</p> <p>Pedestrian &amp; bicycle facility construction</p> <p>Bicycle parking</p> <p>Transit improvements</p>



# Carbon Reduction Strategy

MPO	Documents	Applicable Goals	Applicable Project Types
Decatur	2045 Long-Range Transportation Plan  FY 2024-2027 Transportation Improvement Program	<p>Provide a safe and efficient transportation system.</p> <p>Improve the accessibility, connectivity, and mobility of the transportation system for the movement of people, goods, and services for all modes in and throughout the planning area.</p> <p>Provide a transportation system that will preserve, protect, and enhance the natural and human environment.</p> <p>Improve quality performance of the transportation system through efficient congestion management and operations.</p>	Lighting rehabilitation Intersection improvements Sidewalk construction Advanced Corridor Management Transit improvements
Eastern Shore	2045 Long Range Transportation Plan  FY 2020-2023 Transportation Improvement Program	<p>Develop effective strategies for improving regional mobility for all modes and for freight, within the anticipated funding levels.</p>	Sidewalk construction & improvements Transit improvements Intersection improvements Traffic signal upgrades Trail expansion Street lighting improvements



# Carbon Reduction Strategy

MPO	Documents	Applicable Goals	Applicable Project Types
<p>Florida-Alabama TPO</p>	<p>2045 Long Range Transportation Plan</p> <p>FY 2024-2028 Transportation Improvement Program</p>	<p>A transportation system that meets user needs</p> <p>A transportation system that is well-established and operated efficiently</p> <p>A transportation system that is multimodal, integrated, connected, and innovative</p> <p>A transportation system that supports a high quality of life respectful of the environment, public health, and vulnerable users.</p>	<p>Intersection improvements</p> <p>Traffic signal upgrades</p> <p>Mobility management planning</p> <p>Sidewalk construction</p> <p>Bicycle lane striping &amp; sharrows</p> <p>Multi-use path construction</p> <p>Regional Traffic Management Center</p> <p>Advanced traffic management improvements</p> <p>Lighting installation</p> <p>Transit improvements</p> <p>Regional Traffic Operations Program</p> <p>Corridor management planning</p>
<p>Gadsden-Etowah Area</p>	<p>2045 Long Range Transportation Plan</p> <p>FY 2020-2023 Transportation Improvement Program</p>	<p>Develop effective strategies for improving regional mobility for all modes and for freight, within the anticipated funding levels.</p>	<p>Transit improvements</p> <p>Curb ramp installations</p>



MPO	Documents	Applicable Goals	Applicable Project Types
Huntsville	<p>Transportation Regionally Innovative Projects 2045</p> <p>FY 2024-2027 Transportation Improvement Program (Draft)</p>	<p>Protect and enhance the environment, promote energy conservation, improve quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns.</p> <p>Increase the accessibility and mobility of people and freight.</p> <p>Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.</p> <p>Promote efficient system management and operation.</p>	<p>Advanced corridor management</p> <p>Sidewalk construction</p> <p>Intersection improvements</p> <p>Transit improvements</p> <p>Electric buses</p> <p>Pedestrian overpass construction</p>



# Carbon Reduction Strategy

MPO	Documents	Applicable Goals	Applicable Project Types
Mobile	<p>Envision 2045</p> <p>FY 2024-2027 Transportation Improvement Program</p>	<p>Reduce traffic congestion.</p> <p>Improve the efficiency of the surface system.</p> <p>Protect the environment.</p>	<p>Shared-use path construction</p> <p>Regional Traffic Operations Program</p> <p>Segways for police department</p> <p>Traffic Management Center upgrades</p> <p>ITS expansions</p> <p>Transit improvements</p> <p>Electric buses</p> <p>Workforce transportation pilot project</p> <p>Intersection improvements</p> <p>Traffic signal upgrades</p> <p>Sidewalk &amp; curb ramp construction</p> <p>Trail extension</p> <p>CCTV camera deployment</p>
Montgomery	<p>2045 Long Range Transportation Plan</p> <p>FY 2020-2023 Transportation Improvement Program</p>	<p>Optimize the efficiency, effectiveness, connectivity, safety, and security of the transportation system.</p> <p>Provide viable travel choices to improve accessibility and mobility, sustain environmental quality, and preserve community values.</p> <p>Develop and preserve a balanced multimodal transportation system that provides for safe, integrated, and convenient movement of people and goods.</p>	<p>Sidewalk/multi-use path feasibility study</p> <p>Intersection improvements</p> <p>Curb ramp installation &amp; repairs</p> <p>Sidewalk construction</p> <p>Lighting upgrades</p> <p>Trail construction</p> <p>Intersection improvement study</p> <p>Transit improvements</p>



MPO	Documents	Applicable Goals	Applicable Project Types
Shoals Area	2045 Long Range Transportation Plan  FY 2020-2023 Transportation Improvement Program	Provide a safe and efficient transportation system.  Improve the accessibility, connectivity, and mobility of the transportation system for the movement of people, goods, and services for all modes in and throughout the planning area.  Improve quality performance of the transportation system through efficient congestion management and operations.	Intersection improvements  Transit improvements
Southeast Wiregrass Area	2045 Long Range Transportation Plan  FY 2020-2023 Transportation Improvement Program	Affordable, convenient, and reliable access to destinations by multiple modes of transportation  A well-established and efficient transportation system  A transportation system that minimizes detrimental impacts to the natural and historic environment and practices environmental stewardship	Sidewalk construction  Curb ramp installations  Transit improvements  Intersection improvements
Tuscaloosa Area	2045 Long Range Transportation Plan  FY 2024-2027 Transportation Improvement Program	Achieve a significant reduction in congestion on the National Highway System.  Improve the efficiency of the surface transportation system.  Enhance the performance of the transportation system while protecting and enhancing the natural environment.	Intersection improvements  Lighting installation  Curb ramp installations  Sidewalk construction  Traffic studies  Transit improvements



# 8.0 Project Evaluation Process & Performance Measures

## 8.1 Project Evaluation Process

### Project Evaluation

New projects will be evaluated to determine their expected effectiveness in reducing CO<sub>2</sub> emissions. Projects will be compared against the CRS vision statement, goals, focus areas, and strategies for alignment. Appropriate data collection activities will be identified at the beginning of each project to measure progress toward meeting carbon reduction goals. As the project is implemented, this data will be documented and analyzed to assess continued effectiveness in reducing CO<sub>2</sub> emissions.

As projects are implemented, the parameters can be updated in the GHG Calculator to calculate the revised GHG emissions. The Sensitivity Analysis within the GHG Calculator can be used to determine which types of projects will provide the greatest reduction (i.e., reduced SOV trips, increased fuel efficiency, higher percent of EV fleet, etc.).

### Equity Analysis

ALDOT is committed to equity and will strive to implement carbon reduction projects across all areas of the state, including areas with environmental justice populations. The following statewide maps will be used to analyze equity impacts from projects that are identified for carbon reduction funding:

- Persons 65 or Older
- Households Without a Vehicle
- Limited English Proficiency Population
- Minority Population
- Low Income Population
- Persons with Disabilities
- Combined Environmental Justice Population

These maps are included in **Appendix D**.



## 8.2 Targets & Performance Measures

Performance measures provide a way for agencies to evaluate project and program effectiveness to determine if they are successful. FHWA issued a proposed rule with a request for comments on July 15, 2022, entitled “*National Performance Management Measures: Assessing Performance of the National Highway System, Greenhouse Gas Emissions Measure*”. When finalized, this rule will require ALDOT and all Alabama MPOs to establish targets to reduce CO<sub>2</sub> emissions. Developing methods for measuring performance toward achieving these targets and reporting GHG emissions from the transportation sector will also be required. This CRS will be updated to include targets and performance measures after the rule is finalized.



# 9.0 Conclusion

ALDOT and the Alabama MPOs are committed to supporting and implementing programs and projects that reduce CO<sub>2</sub> emissions on the state's transportation network. These programs and projects will focus on ITS technologies, transportation demand management tools, multimodal transportation improvements, energy efficient lighting and traffic control devices, and alternative fuel vehicles and infrastructure. Programs and projects will be evaluated for carbon reduction and equity impacts and will be adjusted as needed to continue progress toward reduced CO<sub>2</sub> emissions and improved air quality for all Alabama residents.



# Appendix A: MPO Meeting Summaries



## Meeting #1

The first meeting was held on July 12, 2023, via Microsoft Teams. During the meeting, the Neel-Schaffer project team presented an overview of the Carbon Reduction Program. They also discussed Alabama’s Carbon Reduction Strategy and requested that each MPO submit their LRTP, TIP, and any carbon reduction strategies that they are pursuing. The meeting ended with a brief explanation of the next steps in the project and an invitation to attend MPO Meeting #2 on August 22, 2023.

### Attendance

<b>Name</b>	<b>Agency</b>
Scott Tillman	Birmingham MPO
Austin Mount	Florida - Alabama TPO
Zane Davis	Tuscaloosa Area MPO
Lisa Sandt	Auburn - Opelika MPO
Anthony Johnson	Mobile MPO
Monica Williamson	Mobile MPO
Dewayne Hellums	Decatur MPO
Chris Henson	Decatur MPO
Dennis Stripling	Tuscaloosa Area MPO
Michael Mixen	Columbus - Phenix City MPO
Steve Partridge	Gadsden - Etowah Area MPO
Lynda Temples	Columbus - Phenix City MPO
Casey Lewis	Montgomery MPO
Sonya Baker	ALDOT
Toni Arrington	ALDOT
Sundae Ragland	ALDOT
Candy Griffin	ALDOT
Barbara Hendricks	ALDOT
James Giles	ALDOT
Aaron Dawson	FHWA - Alabama Division
Becky Rogers	Neel-Schaffer, Inc.
Vijay Kunada	Neel-Schaffer, Inc.
Chuck LeBoeuf	Neel-Schaffer, Inc.



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## Carbon Reduction Strategy

### Carbon Reduction Program Overview

MPO Meeting #1


July 12, 2023

### Agenda


- Introduce Project Team
- Present Carbon Reduction Program (CRP) Overview
- Discuss Alabama's Carbon Reduction Strategy (CRS)
- Request MPO Involvement
- Share Next Steps
- Provide Project Contact Information


Carbon Reduction Strategy








## Neel-Schaffer Project Team




 **Becky Rogers**  
Project Manager

 **Vijay Kunada**  
QA/QC

 **Chuck LeBoeuf**  
Project Engineer

 **Nick Broussard**  
Senior Planner

3 Carbon Reduction Strategy



## Carbon Reduction Program (CRP) Overview

- New program introduced in Bipartisan Infrastructure Law (BIL) to reduce carbon emissions
- \$6.4 Billion over 5-years (\$128 Million for Alabama)
  - Transportation Management Areas
  - Small Urban and Rural Areas
  - Statewide
- FHWA released guidance on April 21, 2022
- States must develop Carbon Reduction Strategies (CRS)
- Local match required for projects
  - 10% for projects on the Interstate System
  - 20% for projects not on the Interstate System

4 Carbon Reduction Strategy



## Considerations for Projects Using CRP Funding

- Safety
- Transit Flex
- Transferability between FHWA Programs
- ADA
- Equity
- Climate Change/Sustainability
- Truck Parking
- Labor & Workforce


5 Carbon Reduction Strategy

## Carbon Reduction Strategy (CRS)

- Required by CRP in Bipartisan Infrastructure Law
- Identifies projects to reduce carbon emissions
- Aligns with existing plans
- Must be coordinated with MPOs
- Due November 15, 2023
- Updates due to FHWA every 4 years



6 Carbon Reduction Strategy





## Carbon Reduction Strategy (CRS)

- Support efforts to reduce transportation emissions
- Identify projects and strategies to reduce emissions
- Support reduction of transportation emissions of the State
- Quantify total carbon emissions from production, transport, and use of materials used in construction
- Be appropriate to population density and context of State



7 Carbon Reduction Strategy



## Eligible Projects

-  Traffic Monitoring or Management
-  Public Transportation
-  Transportation Alternatives
-  Advanced Transportation or Congestion Management
-  Infrastructure-based ITS Systems
-  Energy Efficient Street Lighting and Traffic Control Devices
-  Carbon Reduction Strategy Development

8 Carbon Reduction Strategy



## Eligible Projects (continued)

-  Travel Demand Management Strategies
-  Freight Projects that Improvement Environmental Impacts
-  Deployment of Alternative Fuel Vehicles
-  Diesel Engine Retrofits
-  Traffic Flow Improvements
-  Reduction of Transportation Emissions at Ports

Carbon Reduction Strategy



## Examples of Strategies/Projects

- Reduce traffic congestion
  - Public transportation facilities
  - Pedestrian facilities
  - Bicycle facilities
  - Complete streets
  - Shared vehicle trips
- Promote vehicles/modes with lower emissions
- Improve construction practices to lower emissions



Carbon Reduction Strategy



## Alabama CRS Tasks

- Data Collection
- Existing Conditions Assessment
  - Estimate baseline GHG emissions
  - AASHTO's Greenhouse Gas (GHG) Performance Calculator
- MPO Consultation
- Development of Carbon Reduction Goals, Projects, Strategies, & Performance Measures
- Identification of Strategy Implementation Actions
- Public Engagement
- Development of CRS Report

11

Carbon Reduction Strategy

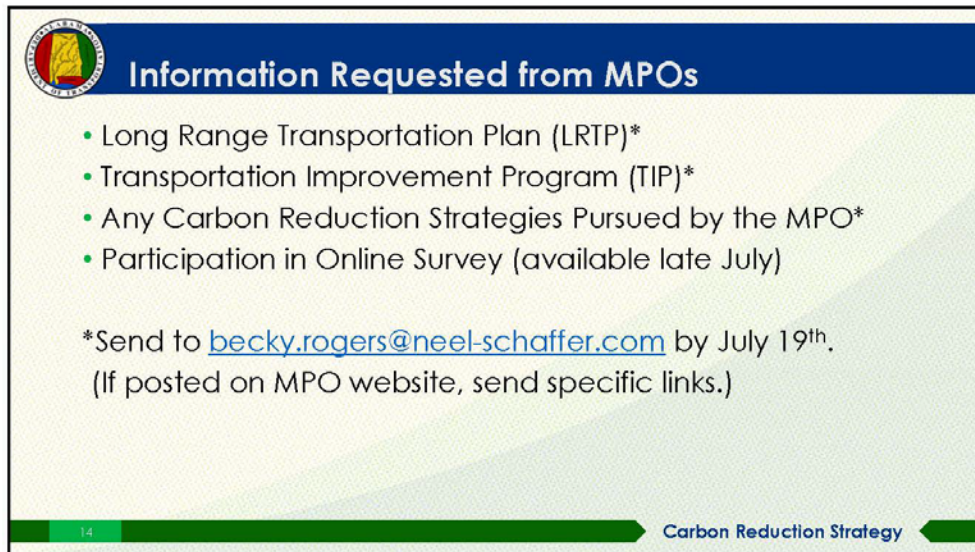
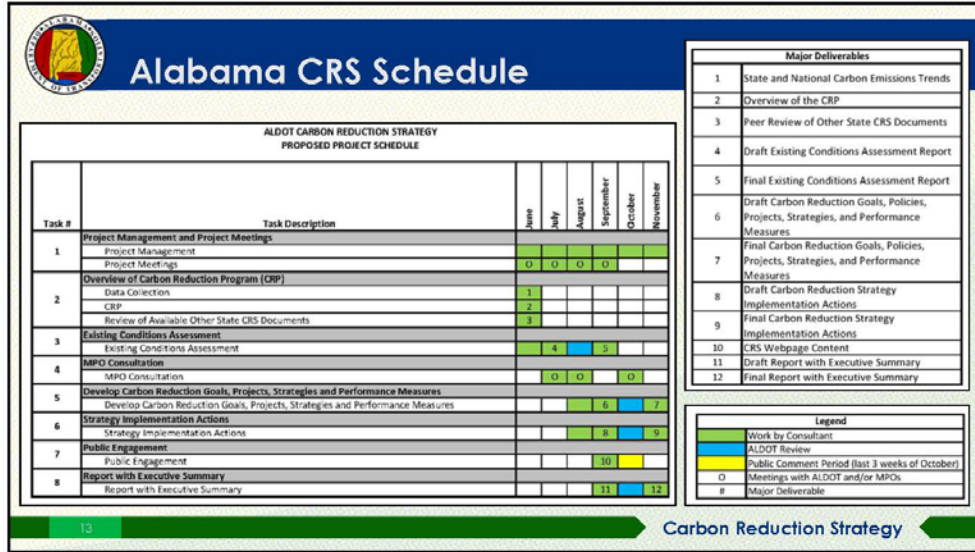


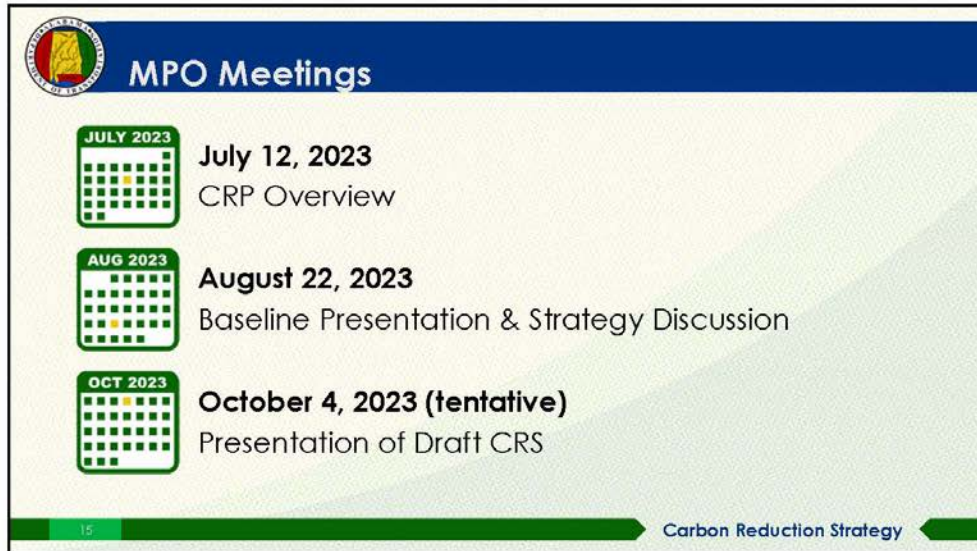
## GHG Calculator

DRAFT AASHTO State-Level Transportation GHG Calculator Inputs and Summary Results			
<i>Baseline Data</i>			
Description	Default	Override	
State		Alabama	
VMT (millions)	71,735		
NHS VMT (millions)	31,565		
Gasoline Consumption (000 gallons)	2,659,652		
Special Fuels Consumption (000 gallons)	874,206		
<i>Other Parameters</i>			
Description	Default	Override	
Analysis Period (years)	4		
Annual VMT Growth	1.06%		
Vehicle Occupancy, Carpools	2.3		
Gasoline CO2 Content (kg/gallon)	8.10		
Special Fuels CO2 Content (kg/gallon)	10.19		
Percent of VMT, Autos	89.6%		
Percent of VMT, Single Unit Trucks and Buses	4.4%		
Percent of VMT, Combo Trucks	5.4%		

12

Carbon Reduction Strategy

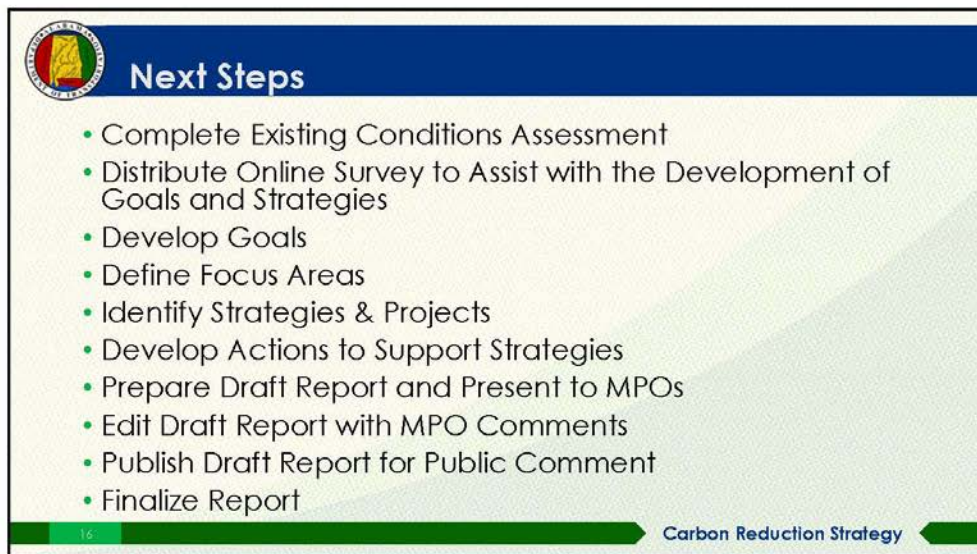




**MPO Meetings**

- JULY 2023**  
July 12, 2023  
CRP Overview
- AUG 2023**  
August 22, 2023  
Baseline Presentation & Strategy Discussion
- OCT 2023**  
October 4, 2023 (tentative)  
Presentation of Draft CRS

15 Carbon Reduction Strategy



**Next Steps**

- Complete Existing Conditions Assessment
- Distribute Online Survey to Assist with the Development of Goals and Strategies
- Develop Goals
- Define Focus Areas
- Identify Strategies & Projects
- Develop Actions to Support Strategies
- Prepare Draft Report and Present to MPOs
- Edit Draft Report with MPO Comments
- Publish Draft Report for Public Comment
- Finalize Report

16 Carbon Reduction Strategy



The slide features a light green background with a circular logo of the Alabama Department of Transportation on the left. To the right of the logo, the text "Carbon Reduction Strategy" is displayed in a large, dark font. Below this, a dark blue horizontal band contains the text "Project Contacts" in white. The bottom section of the slide is green and contains contact information for two individuals: Becky Rogers and Vijay Kunada. The Neel-Schaffer logo is positioned at the bottom center of this green section.

**Carbon Reduction Strategy**

**Project Contacts**

**Becky Rogers**  
becky.rogers@neel-schaffer.com

**Vijay Kunada**  
vijay.kunada@neel-schaffer.com

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## Meeting #2

The second meeting was held on August 22, 2023, via Microsoft Teams. A summary of the *“Existing Conditions Assessment”* technical report and the results of the MPO/ALDOT surveys were presented during this meeting. Drafts of the vision statement, goals, and focus areas were also shared and discussed with the MPOs for input and concurrence. Input was also requested for strategies to support each focus area. The meeting ended with a brief explanation of the next steps in the project and an invitation to attend MPO Meeting #3 on October 4, 2023.

Specific comments from the discussion are recorded below:

- Sonya Baker (ALDOT), Tom Piper (Mobile MPO), and Robert Smith (Montgomery MPO) offered positive feedback on the proposed vision statement.
- The MPOs did not have any feedback on the goals and indicated approval.
- Tom Piper (Mobile MPO) offered positive feedback on the proposed focus areas. He mentioned that his MPO is focused on ITS implementation.
- Austin Mount (Florida-Alabama TPO) suggested being cautious about showing land use changes as a strategy due to political considerations.
- Sonya Baker (ALDOT) mentioned that ALDOT will partner with ADECA for EV infrastructure implementation.
- Tom Piper (Mobile MPO) mentioned purchasing EV buses for one of their cities.
- Robert Smith (Montgomery MPO) mentioned that they programmed funding in their 2024 budget for an EV charging station infrastructure master plan. He also stated that EV/AF vehicles have been discussed as far back as 2011-2012. They plan to eventually go to all electric transit vehicles.
- Scott Tillman (Birmingham MPO) stated that Birmingham is implementing EV infrastructure and diesel retrofits. Their MPO works with the Alabama Clean Air Initiative. He can provide their annual report.
- Sarah Hart Sislak (Eastern Shore MPO) mentioned that they have plans for charging stations and to expand the charging network in their MPO area.
- Vijay Kunada (Neel-Schaffer) brought up alternative fuel corridor designations and the NEVI funding program.
- Austin Mount (Florida - Alabama TPO) mentioned an ITS multi-prong approach, especially on the Florida portion of their MPO. He also mentioned considering a safety element for ITS, especially for corridors with high fatalities.
- Tom Piper (Mobile MPO) brought up the RTOP initiative in Mobile.



# Carbon Reduction Strategy

- Scott Tillman (Birmingham MPO) mentioned the CommuteSmart program partnership with the four large cities (Birmingham, Mobile, Montgomery, and Huntsville).
- Tom Piper (Mobile Area MPO) and Scott Tillman (Birmingham MPO) agree that the strategies support the goals.
- Robert Smith (Montgomery MPO) suggested adding CO<sub>2</sub> emissions to the first goal.
- Sonya Baker (ALDOT) asked the agencies that are also RPOs to brainstorm any strategies that are applicable to rural areas.

## Attendance

Name	Agency
Scott Tillman	Birmingham MPO
Austin Mount	Florida - Alabama TPO
Zane Davis	Tuscaloosa Area MPO
Lisa Sandt	Auburn - Opelika MPO
Anthony Johnson	Mobile MPO
Monica Williamson	Mobile MPO
Dewayne Hellums	Decatur MPO
Dennis Stripling	Tuscaloosa Area MPO
Michael Mixen	Columbus - Phenix City MPO
Casey Lewis	Montgomery MPO
Tim Dail	Gadsden - Etowah Area MPO
Elizabeth Messick	Calhoun Area MPO
James Vandiver	Huntsville MPO
Sarah Hart Sislak	Eastern Shore MPO
Tom Piper	Mobile MPO
Jo Beth Gleason	Huntsville MPO
Robert Smith	Montgomery MPO
Jessica Mayo	Eastern Shore MPO
Sonya Baker	ALDOT
Toni Arrington	ALDOT
Sundae Ragland	ALDOT
Robert Dees	ALDOT
Aaron Dawson	FHWA - Alabama Division
Becky Rogers	Neel-Schaffer, Inc.
Vijay Kunada	Neel-Schaffer, Inc.
Chuck LeBoeuf	Neel-Schaffer, Inc.



Carbon Reduction Strategy

## Goals & Strategies

MPO Meeting #2

August 22, 2023

## Agenda

- Present Existing Conditions Assessment
- Present Survey Results
- Discuss Vision & Goals
- Identify Focus Areas
- Discuss Strategies
- Share Next Steps

2 Carbon Reduction Strategy



## Existing Conditions Assessment

### Data Collection Sources

- Freight Analysis Framework
- Historical Traffic Counts
- Highway Performance Monitoring System
- Energy Consumption Data
- Vehicle Registration Data
- Socioeconomic Data
- Emissions Data

**Carbon Reduction Strategy**

**TECHNICAL REPORT**  
Existing Conditions Assessment

Draft July 2023

Prepared by  
**HEEL-SCHAFFER**

3
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## Freight Analysis Framework Version 5 (FAF5)

### FHWA FAF Zones in Alabama

Legend  
 Interstate Freight Analysis  
 Freeway (I-65) Zone

### Annual Commodity Flows By Mode Inbound

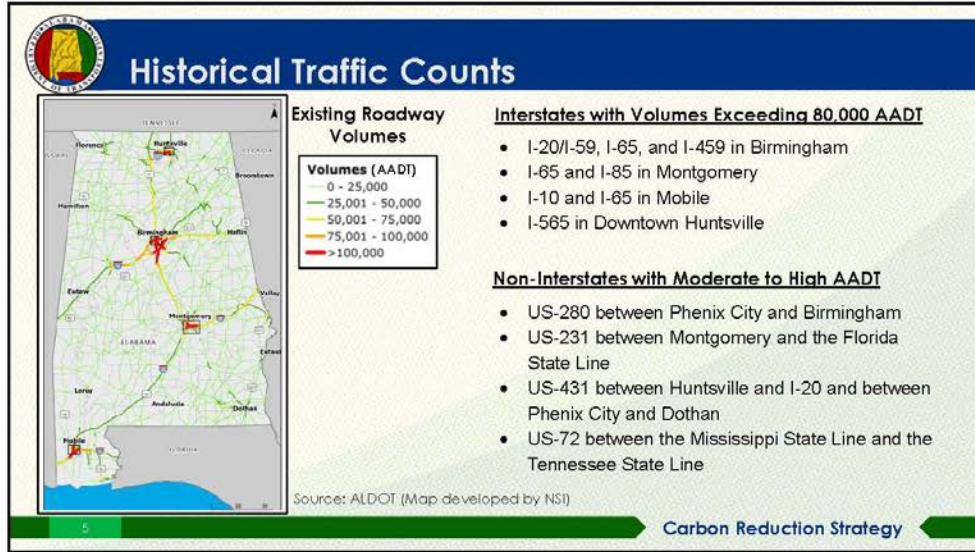
Mode	2020 (Tons)	2021 (Tons)
Other and Unknown	3	3
Pipeline	148,131	181,464
Multiple Modes and Mail	21,870	12,118
Air	50	50
Water	4,237	4,237
Rail	22,887	23,282
Truck	211,271	328,070

### Annual Commodity Flows By Mode Outbound

Mode	2020 (Tons)	2021 (Tons)
Other and Unknown	14	14
Pipeline	162,371	162,371
Multiple Modes and Mail	14,976	14,976
Air	56	56
Water	23,042	23,042
Rail	21,177	24,570
Truck	232,434	343,371

Source: FHWA

4
Carbon Reduction Strategy



## Highway Performance Monitoring System (HPMS)

**HPMS Extent and Travel Summary (2022)**

Functional Classification	Centerline Miles		Daily Vehicle Miles Traveled	
	All	NHS	All	NHS
Interstate	1,005.9	1,003.5	44,371,636	44,226,214
Principal Arterial - Other Freeways and Expressways	34.4	30.6	1,449,307	1,300,240
Other Principal Arterials	3,323.4	3,133.5	41,932,767	40,341,214
Minor Arterials	6,350.1	79.0	32,301,652	643,505
Major Collectors	15,920.8	12.3	23,698,615	52,984
Minor Collectors	5,500.4	0.0	3,821,632	0
Local	66,925.0	7.6	45,244,444	10,510
<b>Total</b>	<b>99,060.0</b>	<b>4,266.6</b>	<b>192,820,054</b>	<b>86,574,666</b>

Sources: HPMS, ALDOT



## Energy Consumption Data

Annual Motor Fuel Consumption Data

Year	Gasoline	Undyed Diesel	Total
2020	2,600,803,596	808,740,922	3,409,544,518
2021	2,700,178,911	877,032,183	3,577,211,094
2022	2,687,141,543	891,672,979	3,578,814,522

Source: Alabama Department of Revenue (Annual Report 2022)

7

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## Vehicle Registration Data

Vehicle Registration Data

Category	2020	2021	2022
Total of All Registrations	5,721,132	6,042,124	5,983,416
Truck and Truck Tractors	99,708	106,156	109,259
Trailers	453,196	490,365	280,706
Buses	3,305	3,224	3,258

Electric Vehicle Sales by Year

Year	EV	PHEV	Total
2016	459	855	1,314
2017	678	1,116	1,794
2018	1,194	1,478	2,672
2019	1,826	1,870	3,696
2020	2,052	2,622	4,674
2021	3,128	4,439	7,567

Sources: Alabama Department of Revenue – Motor Vehicle Division Website  
Alabama Electric Vehicle Infrastructure Plan 2022

8

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## Socioeconomic Data

### Population Change

- 2010: 4,779,736
- 2020: 5,024,279
- 5.1% Growth

### Population Per Square Mile

- 2010: 94.4
- 2020: 99.2
- 5.1% Growth

### Existing Commute Patterns

- 2010: 78% Used Private Vehicles
- 2021: 72% Used Private Vehicles
- 2010: 7% Used Public Transportation
- 2021: 8% Used Public Transportation

### Top Employment Industries

- Manufacturing
- Retail Trade
- Healthcare & Social Assistance
- Professional, Scientific, & Technical Services
- Construction

Sources: U.S. Census Decennial Data 2010-2020  
American Community Survey 2021

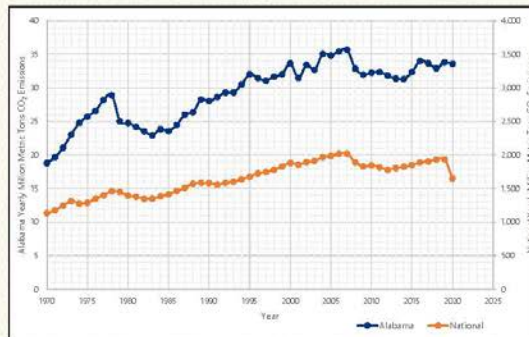
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## Emissions Data

### Transportation Sector CO<sub>2</sub> Emissions from Fossil Fuel Consumption (1970 – 2020)



Source: U.S. Energy Information Administration

10

Carbon Reduction Strategy



## Baseline Greenhouse Gas (GHG) Emissions

### GHG Calculator

**DRAFT AASHTO State-Level Transportation GHG Calculator**  
Inputs and Summary Results

Baseline Data		Default	Override	Notes
State			Alabama	
VMT (millions)	71,735	70,379	Used 2021 AL Data	
NHS VMT (millions)	31,545	31,600	Used 2021 AL Data	
Gasoline Consumption (000 gallons)	2,659,652	2,700,179	Used 2021 AL Data	
Special Fuels Consumption (000 gallons)	874,206	877,032	Used 2021 AL Data	

Other Parameters		Default	Override	Notes
Analysis Period (years)	4	30	Used 30 years (2021 through 2050)	
Annual VMT Growth	1.06%	1.13%	Used growth rate between 2012 and 2021	
Vehicle Occupancy, Carpools	2.3	2.3	Updated ACS	
Gasoline CO <sub>2</sub> Content (kg/gallon)	8.10	8.10	Used Default	
Special Fuels CO <sub>2</sub> Content (kg/gallon)	10.19	10.19	Used Default	
Percent of VMT, Autos	89.0%	89.3%	Used 2021 National Data	
Percent of VMT, Single Unit Trucks and Buses	4.4%	3.8%	Used 2021 National Data	
Percent of VMT, Combo Trucks	5.4%	6.0%	Used 2021 National Data	
Percent of VMT, Motorcycles	0.6%	0.9%	Used 2021 National Data	
Percent of Auto VMT for Work Trips	19.0%	18.4%	Used 2017 NHTS Table 5a <a href="https://nhts.ornl.gov/assets/2017_nhts_summary_travel_trends.pdf">https://nhts.ornl.gov/assets/2017_nhts_summary_travel_trends.pdf</a>	

Source: AASHTO GHG Calculator

11
Carbon Reduction Strategy

## Baseline Greenhouse Gas (GHG) Emissions

### Parameters for Baseline Data

- VMT
- NHS VMT
- Gasoline Consumption
- Special Fuels Consumption

Parameter	Data Source	Value
Annual VMT (millions)	ALDOT 2021	70,379
NHS Annual VMT (millions)	ALDOT 2021	31,600
Annual Gasoline Consumption (thousand gallons)	ALDOR 2021	2,700,179
Annual Special Fuels Consumption (thousand gallons)	ALDOR 2021	877,032

Sources: ALDOT, ALDOR

### Other Parameters

- Analysis Period
- Annual VMT Growth
- Vehicle Occupancy, Carpools
- Gasoline CO<sub>2</sub> Content
- Special Fuels CO<sub>2</sub> Content
- Percent of VMT by Vehicle Type
- Percent of Auto VMT for Work Trips
- Percent of Work Trips Driving Alone
- Percent of Work Trips Carpooling
- Fuel Efficiency, Non-EV
- EV Percent of Fleet
- Percent of Non-EVs Using Gasoline

12
Carbon Reduction Strategy



## Baseline Greenhouse Gas (GHG) Emissions

Baseline CO<sub>2</sub> Emissions in Alabama (2021)

Measure	Baseline (2021) Emissions (metric tons)
Total Annual GHG	30,808,407
NHS Annual GHG	13,832,728

Source: AASHTO GHG Calculator

13 Carbon Reduction Strategy


## Current Projects

**Funding**

- Over \$105 Million obligated to Alabama projects that address CO<sub>2</sub> emissions (includes Federal, State, & other contributions)

**Projects**

- Statewide Projects
  - Intelligent Transportation System (ITS) Specifications
  - Pedestrian Facilities Assessment
  - Carbon Reduction Strategy Development
- Areawide Projects
  - Regional Traffic Operations Program (RTOP)
  - Transportation Management Centers





14 Carbon Reduction Strategy



## Current Strategies/Projects

### Projects (continued)

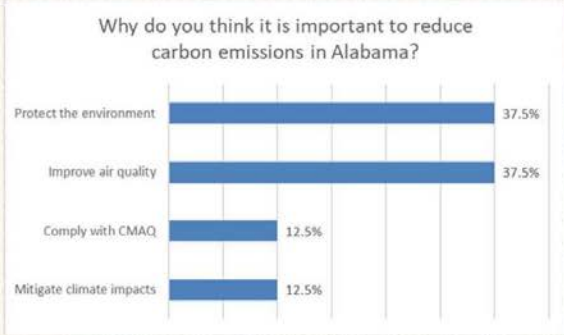
- County Projects
  - Sidewalks and/or Curb Ramps
  - Bike Lanes
  - TSMO Projects (i.e., Advanced Corridor Management)
  - New and/or Upgraded Lighting
  - Multi-Purpose Trails / Shared Use Paths
- ITS Infrastructure
- Traffic Signal Upgrades
- ASAP Program
- RTOP Congestion Management
- Workforce Transportation Pilot Project



15 Carbon Reduction Strategy

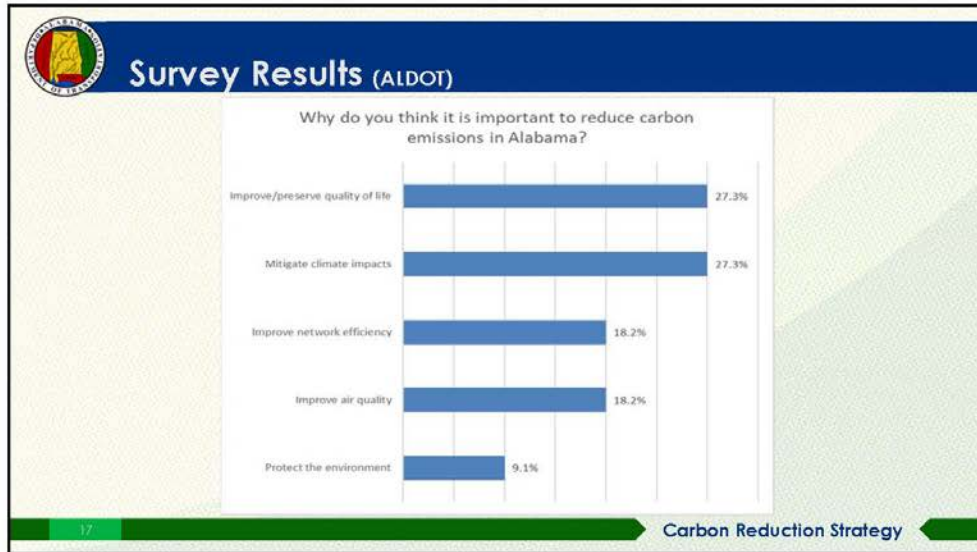
## Survey Results (MPOs)

Why do you think it is important to reduce carbon emissions in Alabama?



Reason	Percentage
Protect the environment	37.5%
Improve air quality	37.5%
Comply with CMAQ	12.5%
Mitigate climate impacts	12.5%

16 Carbon Reduction Strategy



- ### Survey Results
- #### Potential Strategy Categories
- Alternative Fuels / Efficient Energy
  - Active Modes / Multimodal
  - Transportation Demand Management / TSMO
  - Technology Solutions
  - Other
- 18 Carbon Reduction Strategy



## Survey Results

### Alternative Fuels / Efficient Energy Strategies

- Electric Vehicle (EV) Adoption and Charging Infrastructure; Heavy Duty Charging
- Alternative Fuel Vehicle (AFV) Adoption and Infrastructure
- Freight Emission Reductions
- Emission Reduction at Port Facilities
- Diesel Engine Retrofits
- Energy Efficient Lighting and Equipment

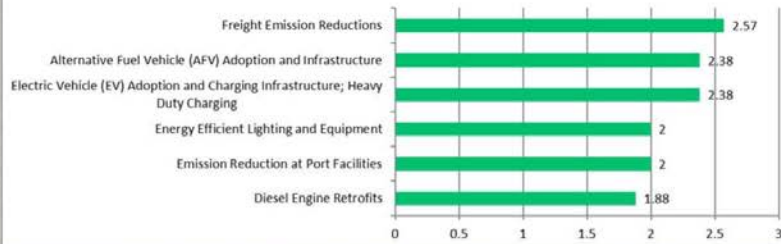
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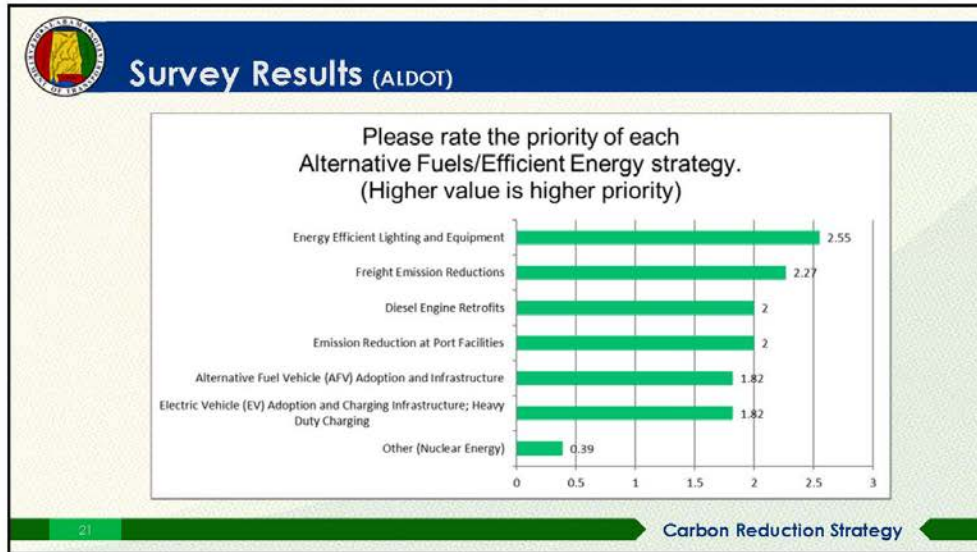
## Survey Results (MPOs)

Please rate the priority of each Alternative Fuels/Efficient Energy strategy. (Higher value is higher priority)

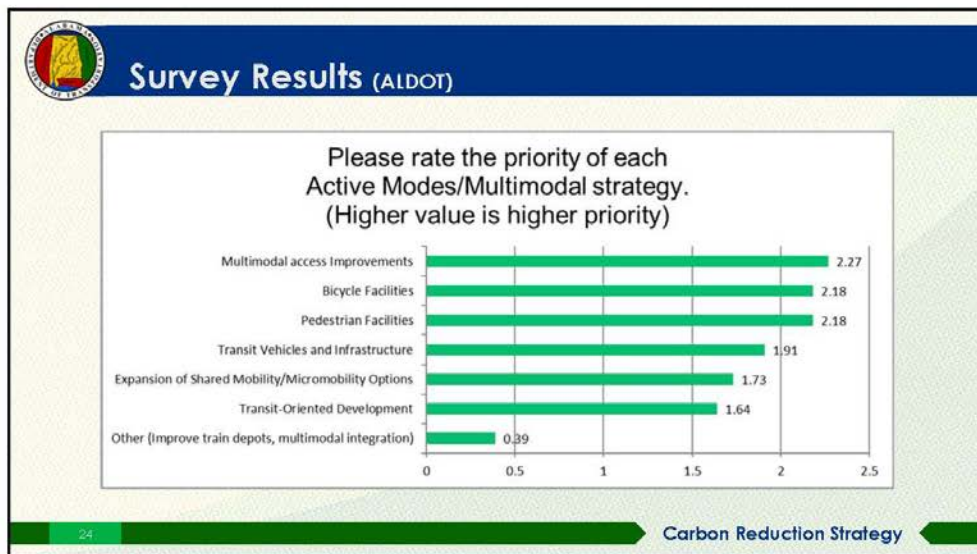
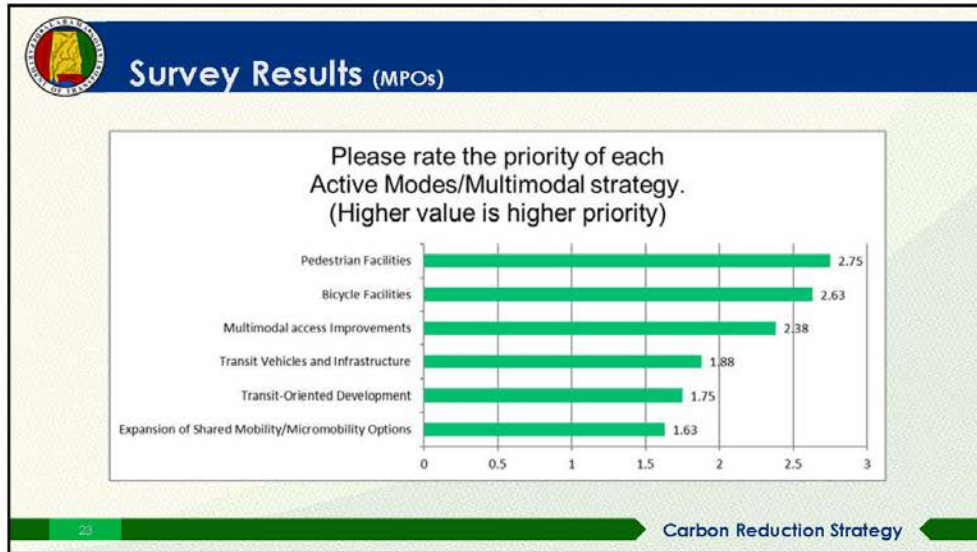


20

Carbon Reduction Strategy



- ### Survey Results
- #### Active Modes / Multimodal Strategies
- Pedestrian Facilities
  - Bicycle Facilities
  - Transit Vehicles and Infrastructure
  - Expansion of Shared Mobility / Micromobility Options
  - Multimodal Access Improvements
  - Transit-Oriented Development
- 22 Carbon Reduction Strategy





## Survey Results

### Transportation Demand Management / TSMO Strategies

- Congestion Pricing; Electronic Tolling
- Land Use Changes
- Commute Trip Reduction
- Travel Demand Management / Traffic Incident Management

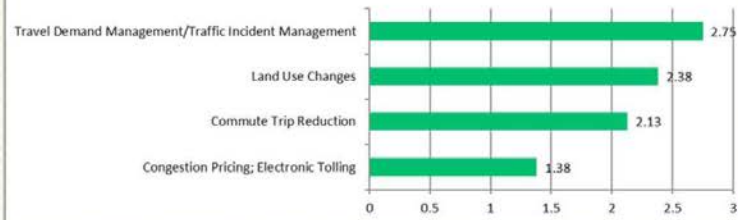
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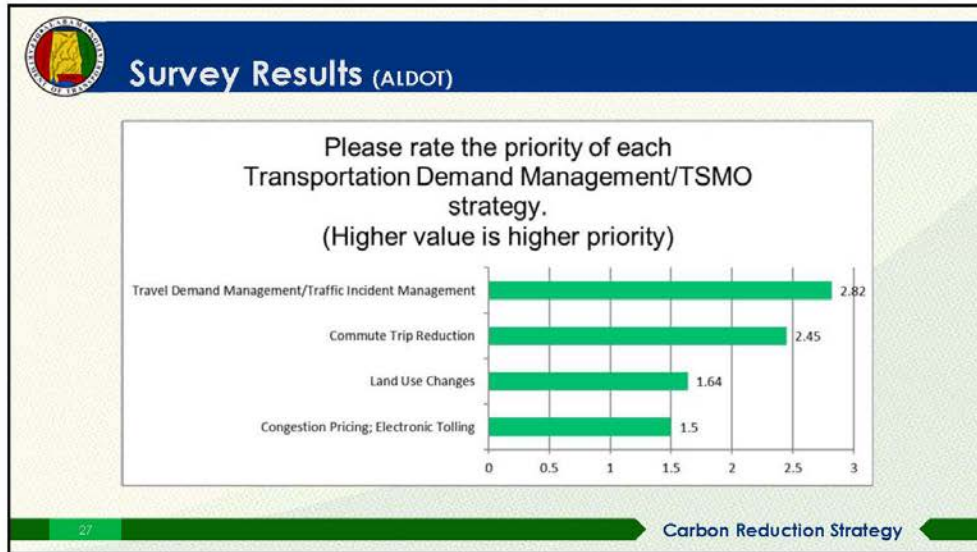
## Survey Results (MPOs)

Please rate the priority of each Transportation Demand Management/TSMO strategy.  
(Higher value is higher priority)

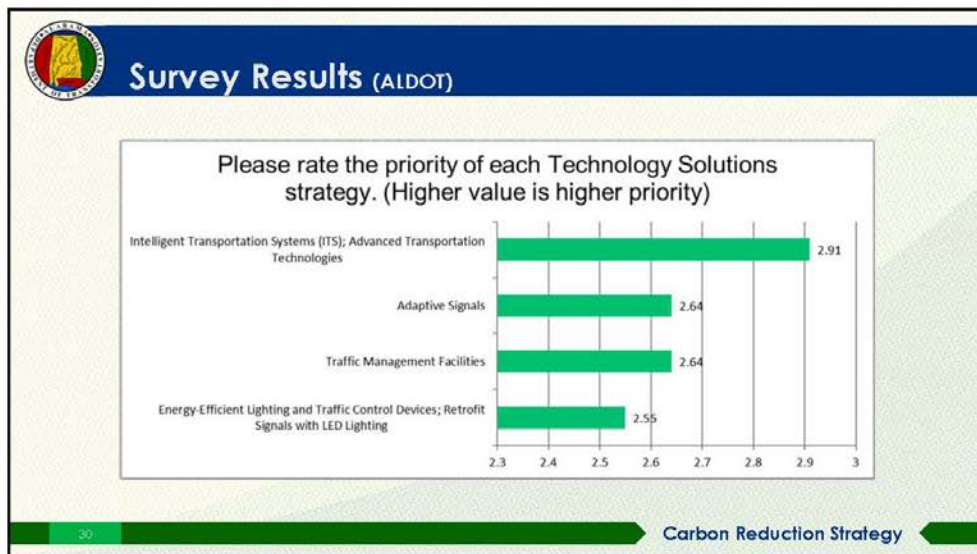
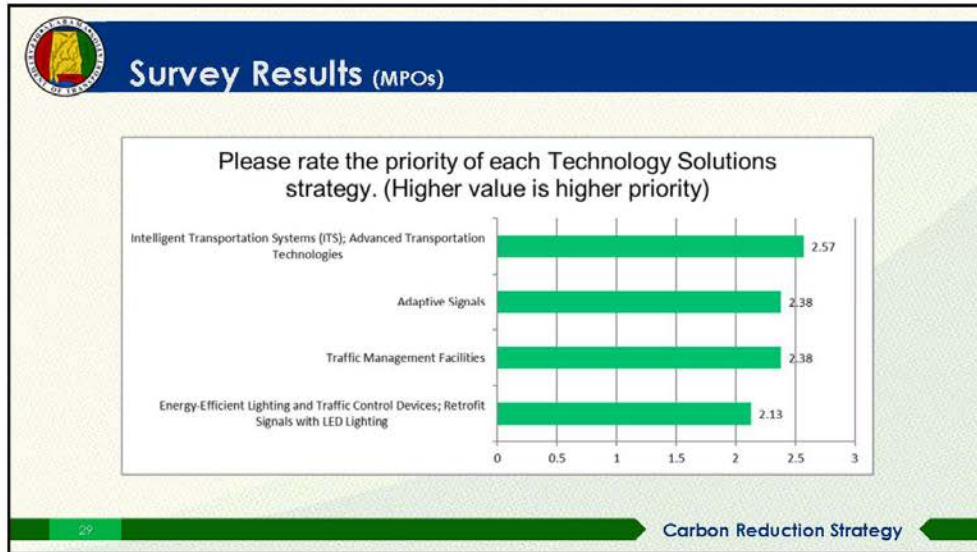


26

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- ### Survey Results
- #### Technology Solutions
- Traffic Management Facilities
  - Adaptive Signals
  - Intelligent Transportation Systems (ITS); Advanced Transportation Technologies
  - Energy-Efficient Lighting and Traffic Control Devices; Retrofit Signals with LED Lighting
- 28 Carbon Reduction Strategy





## Survey Results

### Other Strategies

- Traffic Flow Improvements
- Calculated Carbon Reductions
- Sustainable Construction; Sustainable Design; Clean Construction; Sustainable Pavements
- Fleet and Facilities
- Carbon Sequestration - Ecological
- Rural Internet Connectivity Improvements

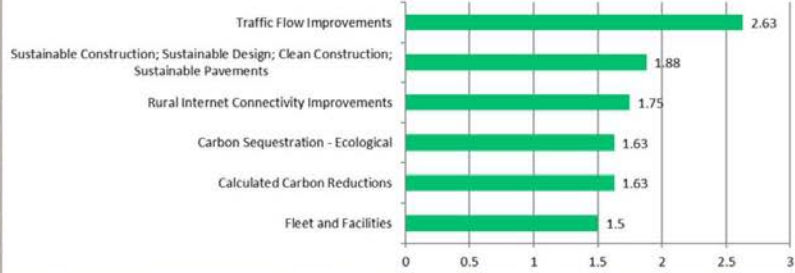
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Carbon Reduction Strategy



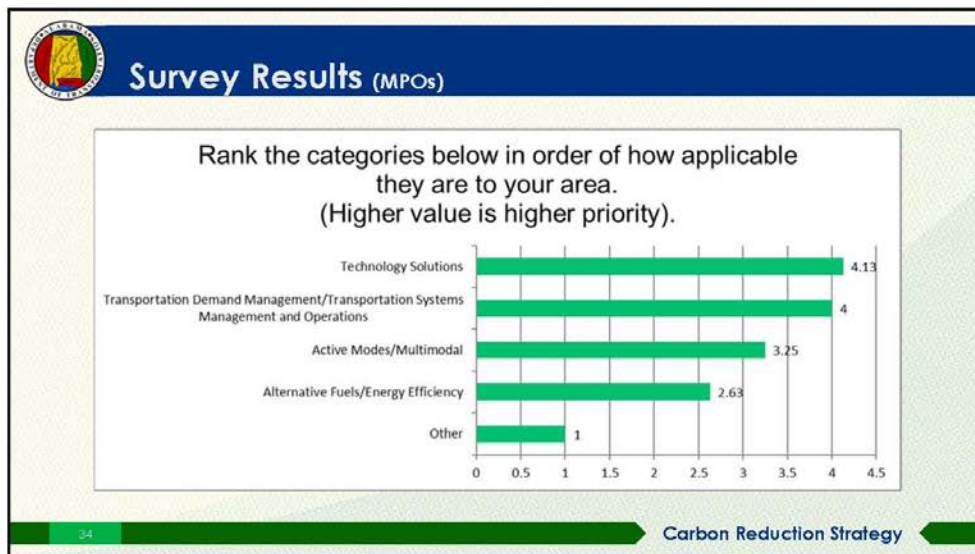
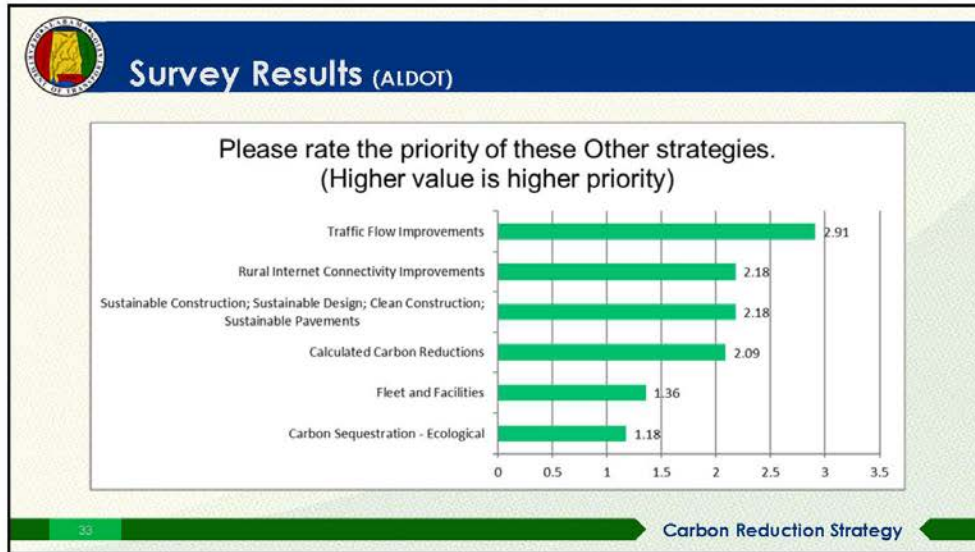
## Survey Results (MPOs)

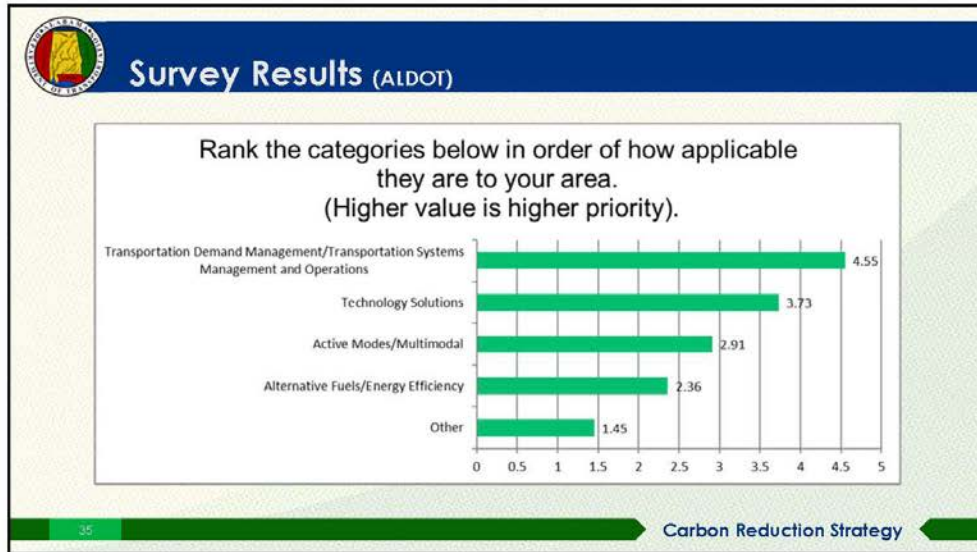
Please rate the priority of these Other strategies.  
(Higher value is higher priority)



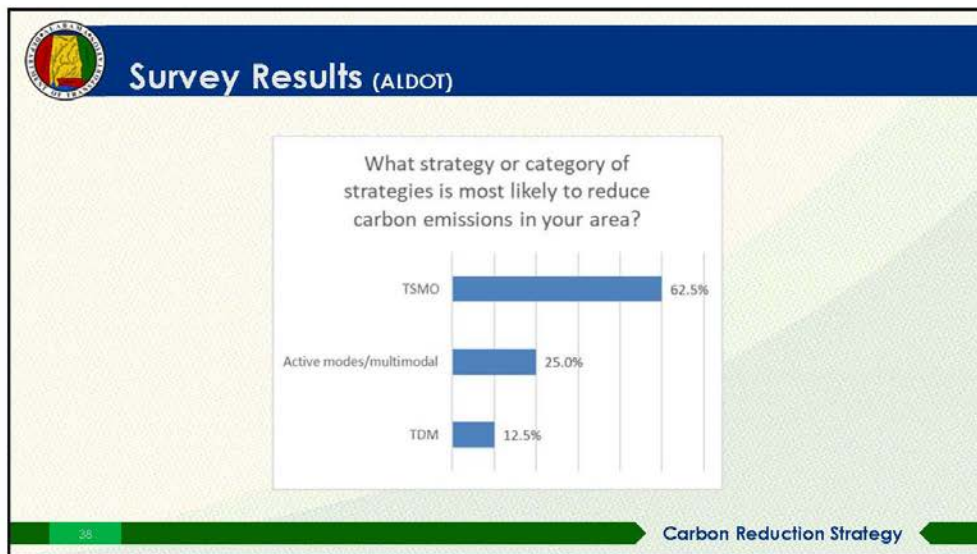
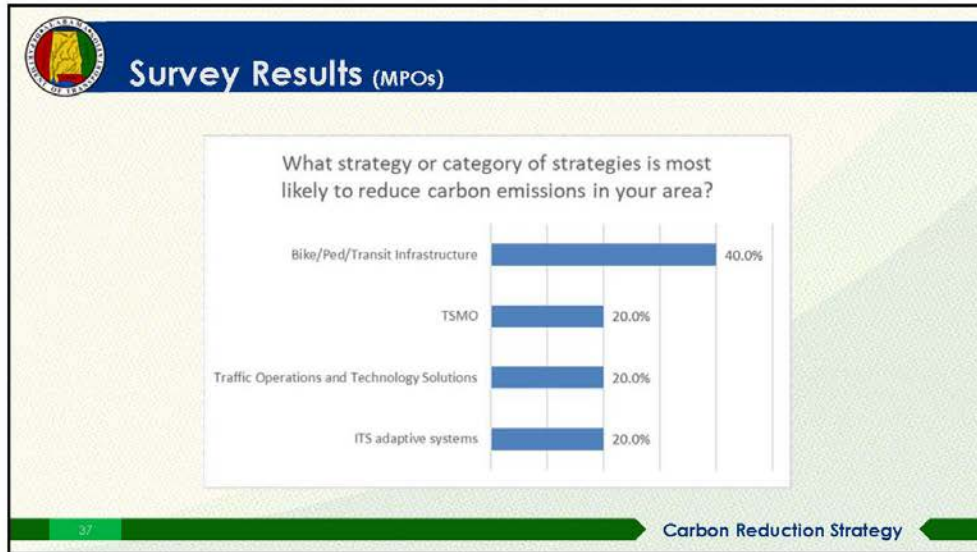
22

Carbon Reduction Strategy





- ### Survey Results (MPOs and ALDOT)
- Other ideas for carbon reduction strategies:
- TDM Programs
  - Emissions Testing
  - Use Excess ROW for Solar/Wind Power or Native Vegetation
  - Improve Travel Efficiency
- 36 Carbon Reduction Strategy





## Vision and Goals

### Proposed Vision Statement

Alabama's vision is to measurably reduce carbon dioxide emissions in the transportation sector by implementing a variety of strategies that will collectively result in a cleaner environment for all Alabama citizens.

### Goals

- Protect the environment / Preserve quality of life / Improve air quality / Mitigate climate impacts
- Support and expand multimodal transportation options
- Improve network efficiency

39

Carbon Reduction Strategy



## Focus Areas & Strategies

### Proposed Focus Areas

- ITS Technologies
  - Possible Strategies: Installation of Advanced Corridor Management Devices, Traffic Incident Management – Camera Installations/Upgrades, Expanded Use of Messaging Signs
- Transportation Demand Management
  - Possible Strategies: Travel Demand Management, Land Use Changes, Commute Trip Reduction
- Multimodal Transportation
  - Possible Strategies: Pedestrian & Bicycle Facilities, Multimodal Access Improvements, Alternative Fuel Transit Vehicles

40

Carbon Reduction Strategy



## Focus Areas & Strategies

### Proposed Focus Areas (continued)

- Energy Efficient Lighting & Traffic Control Devices
  - Possible Strategies: Street Lighting Installations/Upgrades, Traffic Signal Retrofits with LED
- Support Alternative Fuel Vehicles & Infrastructure
  - Possible Strategies: Designated AFCs, EV/AF Charging Stations, Diesel Retrofits

41

Carbon Reduction Strategy



## Next Steps

- Refine Strategies
- Identify Types of Projects and Implementation Actions for Each Strategy
- Prepare Draft Report and Present to MPOs
- Edit Draft Report with MPO Comments
- Publish Draft Report for Public Comment
- Finalize & Submit Report

### Next MPO Meeting



October 4, 2023  
Presentation of Draft CRS

42

Carbon Reduction Strategy



The slide features a light green background with a blue horizontal band across the middle. At the top left is the Alabama Department of Transportation logo. To its right, the text "Carbon Reduction Strategy" is displayed in a large, dark font. Below the blue band, the title "Project Contacts" is centered in white. The bottom section of the slide is green and contains contact information for two individuals: Becky Rogers and Vijay Kunada. The Neel-Schaffer logo is positioned at the bottom center of this green section.

 Carbon Reduction Strategy

**Project Contacts**

**Becky Rogers**  
becky.rogers@neel-schaffer.com

**Vijay Kunada**  
vijay.kunada@neel-schaffer.com

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## Meeting #3

The third meeting was held on October 4, 2023, via Microsoft Teams. The draft CRS was presented, and the MPOs were offered the opportunity to provide feedback on it prior to the public comment period. Several MPOs provided positive feedback, and no revisions were requested. NSI will send the entire Draft CRS to the MPOs so that they can review and comment on it during the public comment period. It was agreed that if applicable comments are received, another virtual meeting will be scheduled to share and discuss those comments with the MPOs after the public comment period ends.

Specific comments from the discussion are recorded below:

- Robert Smith (Montgomery MPO) mentioned a scooter sharing program in Montgomery and asked if scooters should be included as an implementation action for the Shared Mobility / Micromobility Options strategy. Becky Rogers (Neel-Schaffer) shared that scooters are included in the detailed description of this strategy within the Draft CRS. Based on this information, it was agreed that no changes are needed to the table.
- Dennis Stripling (Tuscaloosa Area MPO) asked if there will be a follow up meeting after the public comments are received. Vijay Kunada (Neel-Schaffer) responded that an additional meeting can be scheduled if needed. It was agreed that if applicable comments are received, a meeting will be scheduled to share and discuss the comments with the MPOs after the public comment period closes.
- No revisions were requested from the MPOs at this time. Scott Tillman (Birmingham MPO) and Robert Smith (Montgomery MPO) both agreed that the Draft CRS is ready for public comment.
- The Draft CRS will be sent to the MPOs for review and comment during the public comment period. Comments can be sent directly to Becky Rogers (Neel-Schaffer) who will share them with ALDOT.



## Attendance

<b>Name</b>	<b>Agency</b>
Scott Tillman	Birmingham MPO
Zane Davis	Tuscaloosa Area MPO
Anthony Johnson	Mobile Area MPO
Monica Williamson	Mobile Area MPO
Dennis Stripling	Tuscaloosa Area MPO
Casey Lewis	Montgomery MPO
Sarah Hart Sislak	Eastern Shore MPO
Tom Piper	Mobile Area MPO
Chris Henson	Decatur MPO
Lynda Temples	Columbus - Phenix City MPO
Robert Smith	Montgomery MPO
Toni Arrington	ALDOT
Sundae Ragland	ALDOT
Candy Griffin	ALDOT
James Giles	ALDOT
Robert Dees	ALDOT
Aaron Dawson	FHWA - Alabama Division
Becky Rogers	Neel-Schaffer, Inc.
Vijay Kunada	Neel-Schaffer, Inc.
Chuck LeBoeuf	Neel-Schaffer, Inc.



The slide features the Alabama Department of Transportation logo on the left. To its right, the text "Carbon Reduction Strategy" is displayed in a large, dark font. Below this, a dark blue horizontal band contains the text "Draft Report" in white. The bottom portion of the slide is a green gradient background with the text "MPO Meeting #3" and "October 4, 2023" centered.

The slide has a dark blue header with the Alabama Department of Transportation logo on the left and the text "Report Sections" in white. Below the header is a list of report sections:

- Introduction
- Existing Conditions in Alabama
- Alabama's CRS Development Process
- Vision Statement & Goals
- Focus Areas & Strategies
- Implementation Actions
- Alignment with Federal Requirements & Existing Plans
- Project Evaluation Process & Performance Measures
- Conclusion

To the right of the list is a graphic containing a photograph of a road sign that reads "Carbon Reduction Straight Ahead" with two upward-pointing arrows. Next to the sign is a blue icon of an electric vehicle charging station. Below these are four icons representing different modes of transportation: a person walking, a car with a lightning bolt, a bicycle, and a bus.

At the bottom of the slide, a green bar contains the number "2" on the left and the text "Carbon Reduction Strategy" on the right, flanked by arrows pointing towards each other.



## Introduction

- The Carbon Reduction Program (CRP) was introduced in the Infrastructure Investment and Jobs Act (IIJA).
- Alabama will receive \$128 million for CRP projects over five years.
- All states must develop a Carbon Reduction Strategy (CRS) to identify projects and programs to reduce carbon dioxide (CO<sub>2</sub>) emissions in the transportation sector.
- The Federal Highway Administration (FHWA) released guidance on April 21, 2022, to outline the CRS requirements.
- The first CRS is due to FHWA by November 15, 2023.
- CRS updates are required every four years.



3

Carbon Reduction Strategy

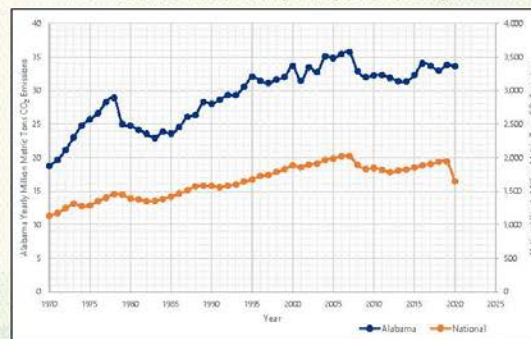


## Existing Conditions in Alabama

### Data Collection

- Freight Data
- Historical Traffic Counts
- Highway Performance Monitoring System data
- Fuel Consumption Data
- Vehicle Registration Data
- Socioeconomic Data
- Emissions Data

Transportation Sector CO<sub>2</sub> Emissions from Fossil Fuel Consumption (1970 - 2020)



4

Carbon Reduction Strategy



## Existing Conditions in Alabama

**DRAFT AASHTO State-Level Transportation GHG Calculator**  
Inputs and Summary Results

Baseline Data	Description	Default	Overwrite	Notes
State		Alabama		
VMT (in billions)		75,376	75,376	Used 2021 AL Data
State VMT (in billions)		75,365	75,365	Used 2021 AL Data
Gasoline Consumption (1000 gallons)		2,608,402	2,598,178	Used 2021 AL Data
Special Fuels Consumption (1000 gallons)		876,308	875,022	Used 2021 AL Data

Other Parameters	Description	Default	Overwrite	Notes
Analysis Period (years)		0	00	Used 00 years (2022 through 2050)
Annual GDP Growth		0.80%	1.07%	Used growth rate between 2012 and 2020
Vehicle Occupancy, Carpools		2.2	2.2	Used National ACS
Gasoline CO2 Content (kg/gallon)		8.33	8.33	Used Default
Special Fuels CO2 Content (kg/gallon)		36.39	35.97	Used Default
Percent of VMT, Buses		0.0%	0.0%	Used 2021 National Data
Percent of VMT, Single Unit Trucks and Boats		0.0%	0.0%	Used 2021 National Data
Percent of VMT, Cargo Trucks		0.0%	0.0%	Used 2021 National Data
Percent of VMT, Motorcycles		0.0%	0.0%	Used 2021 National Data
Percent of Area VMT for Other Uses		0.0%	1.0%	Used 2017 NHTS Data for https://data.and.gpo.gov/data/2017_0404_summary_area_vmt.html

**Baseline CO<sub>2</sub> Emissions in Alabama (2021)**

Measure	Baseline (2021) Emissions (metric tons)
Total Annual GHG	30,808,407
NHS Annual GHG	13,832,728

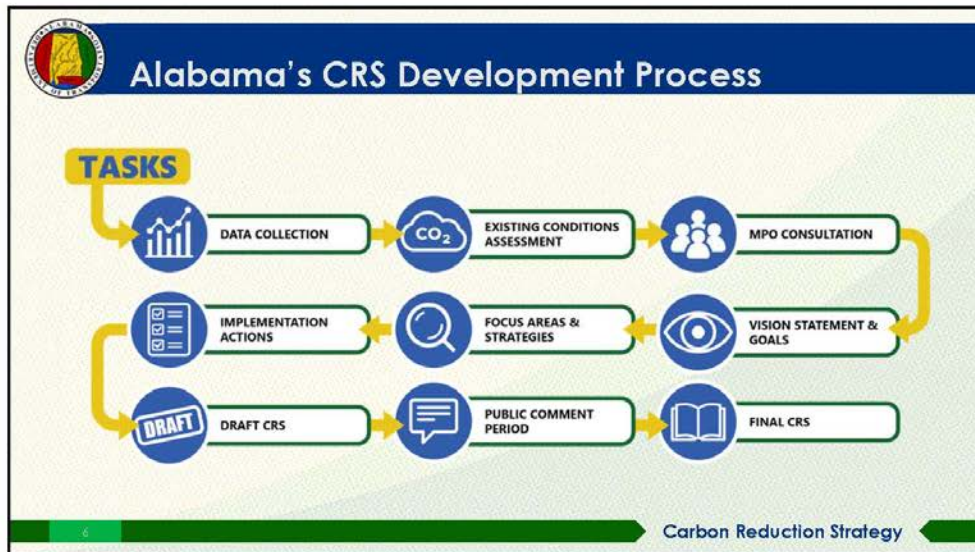
### Carbon Reduction Strategy

**TECHNICAL REPORT**  
Existing Conditions Assessment

August 2023

Prepared by  
**NEEL-SCHAFFER**

5
Carbon Reduction Strategy





## Vision Statement & Goals

**VISION STATEMENT**

Alabama's vision is to measurably reduce carbon dioxide emissions in the transportation sector by implementing a variety of strategies that will collectively result in a cleaner environment for all Alabama citizens.

**GOALS**

- Reduce vehicular carbon dioxide emissions to improve air quality and mitigate climate impacts
- Support and expand multimodal transportation options in urban and rural areas
- Apply transportation management strategies and technologies to improve overall network efficiency


7 Carbon Reduction Strategy

## Focus Areas

**FOCUS AREAS**

- ITS Technologies
- Multimodal Transportation
- Transportation Demand Management
- Energy Efficient Lighting & Traffic Control Devices
- Alternative Fuel Vehicles & Infrastructure

8 Carbon Reduction Strategy





## Strategies & Implementation Actions

ITS Technologies

Strategies	Implementation Actions
Advanced Corridor Management	Implement Regional Traffic Operations Program (RTOP)
Detection/Monitoring	Install detection devices; Install/upgrade cameras
Digital Messaging	Expand use of variable message signs; Provide traveler information
Traffic Incident Management	Expand hours & coverage at Traffic Management Centers; Promote & improve ALGO website & app

9 Carbon Reduction Strategy




## Strategies & Implementation Actions

Multimodal Transportation

Strategies	Implementation Actions
Pedestrian Facilities	Construct sidewalks, curb ramps, crosswalks, pedestrian signals, overpasses & multi-use paths/trails
Bicycle Facilities	Construct bike lanes, shared lanes, & multi-use paths/trails
Multimodal Access Improvements	Install ramps, bike racks, benches, & shelters; Provide multimodal information & navigational support;
Transit Service	Implement transit-oriented development Introduce more alternative fuel transit vehicles; Coordinate rural transit service; utilize microtransit
Shared Mobility / Micromobility Options	Implement/increase car share & bicycle share programs; Improve micromobility options

11 Carbon Reduction Strategy





## Strategies & Implementation Actions

### Multimodal Transportation

Strategies	Implementation Actions
Pedestrian Facilities	Construct/maintain sidewalks, curb ramps, crosswalks, pedestrian signals, overpasses & multi-use paths/trails
Bicycle Facilities	Construct/maintain bike lanes, shared lanes, & multi-use paths/trails
Multimodal Access Improvements	Install ramps, bike racks, benches, & shelters; Provide multimodal information & navigational support;
Transit Service	Implement transit-oriented development Introduce more alternative fuel transit vehicles; Coordinate rural transit service; Utilize microtransit
Shared Mobility / Micromobility Options	Implement/increase car share & bicycle share programs; Improve micromobility options

11 Carbon Reduction Strategy



## Strategies & Implementation Actions

### Energy Efficient Lighting and Traffic Control Devices

Strategies	Implementation Actions
Street Lighting Installations / Upgrades	Upgrade traditional street lights with LED technology; Require LED for all new lighting
Traffic Signal Retrofits	Upgrade traffic signals to include LED lighting; Require LED for all new traffic signals

12 Carbon Reduction Strategy



## Strategies & Implementation Actions

### Alternative Fuel Vehicles and Infrastructure

Strategies	Implementation Actions
Designated Alternative Fuel Corridors	Identify/implement alternative fuel corridors
EV/AF Charging/Refueling Stations	Install charging/fueling stations along key corridors & at convenient locations
Diesel Retrofits	Retrofit truck engines to improve fuel efficiency & reduce emissions
Construction Practices	Increase use of zero emission construction equipment & sustainable construction materials
EV/AF Incentives	Support rebate programs & incentives for purchasing/operating EVs/AFs

13

Carbon Reduction Strategy



## Alignment with Federal Requirements & Existing Plans

### CRS Alignment with Federal Requirements

Requirement	Corresponding Section
Coordinate with MPOs	CRS: Section 3.3, Appendix A, Appendix B
Support efforts to reduce transportation emissions	CRS: Section 4.0
Identify projects and strategies to reduce transportation emissions	CRS: Section 5.0, Section 6.0
Support the reduction of transportation emissions of the State	CRS: Section 7.2 & Section 7.3
Quantify the total carbon emissions from transportation within the State	Technical Report "Existing Conditions Assessment"; Section 4.0
Be appropriate to the population density and context of the State	Technical Report "Existing Conditions Assessment"; Section 2.0 & Section 3.0
	CRS: Section 2.0
	Technical Report "Existing Conditions Assessment"; Section 2.0

14

Carbon Reduction Strategy



## Alignment with Federal Requirements & Existing Plans

### Statewide Plans

- Alabama Statewide Transportation Plan (2017)
- Alabama Statewide Transportation Improvement Program (2024 - 2027)
- Alabama Strategic Highway Safety Plan (2022)
- Alabama Statewide Freight Plan (2022)
- ALDOT Statewide TSMO Master Plan (2019)
- Alabama Electric Vehicle Infrastructure Plan (2022)

### MPO Plans

- Long Range Transportation Plans
- Transportation Improvement Programs

15

Carbon Reduction Strategy



## Project Evaluation Process & Performance Measures

### Project Evaluation Process

- Compare new projects against CRS vision statement, goals, focus areas, and strategies for alignment
- Identify data collection activities to measure progress toward meeting carbon reduction goals
- Document and analyze data to assess continued effectiveness in reducing CO<sub>2</sub> emissions
- Utilize GHG Calculator to determine revised CO<sub>2</sub> emissions
- Analyze equity impacts of CRP projects

### Targets & Performance Measures

- Develop and add to CRS after FHWA rule is finalized

16

Carbon Reduction Strategy



## Conclusion

### ALDOT and Alabama MPO Commitment

- Support and implement programs and projects that reduce CO<sub>2</sub> emissions on Alabama's transportation network
- Identify projects that include ITS technologies, transportation demand management tools, multimodal transportation improvements, energy efficient lighting and traffic control devices, and/or alternative fuel vehicles and infrastructure
- Evaluate programs and projects for carbon reduction and equity impacts and adjust as needed to continue progress toward reduced CO<sub>2</sub> emissions and improved air quality

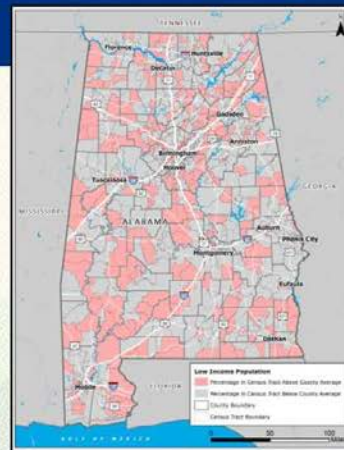
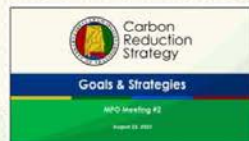
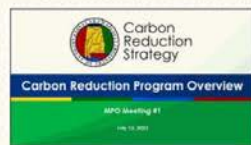
17

Carbon Reduction Strategy



## Appendices

- Appendix A: MPO Meeting Summaries
- Appendix B: Survey & Survey Results
- Appendix C: Public Engagement Summary
- Appendix D: Statewide Environmental Justice Population Maps



Source: American Community Survey 2021

18

Carbon Reduction Strategy



## Final Steps

- Edit Draft Report to reflect MPO comments
- Publish Draft Report for public comment
- Incorporate public comments
- Finalize & submit Report to FHWA

DRAFT CARBON REDUCTION STRATEGY  
PUBLIC COMMENT FORM

Name: \_\_\_\_\_

Address: \_\_\_\_\_

E-mail: \_\_\_\_\_

Involved in Project: Resident \_\_\_\_\_ Property Owner \_\_\_\_\_ Business Owner \_\_\_\_\_  
 Elected Official \_\_\_\_\_ Other \_\_\_\_\_

The Draft Carbon Reduction Strategy can be reviewed on ALDOT's website at the following link: <https://www.aldot.com/transportation/carbon-reduction>. Please use the space below to provide comments on this document.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Completed forms can be submitted in person, by mail, or by email by October 27, 2023.

In Person: 1840  
 Alabama Department of Transportation  
 Bureau of Office Engineer  
 1408 Citizens Boulevard  
 Montgomery, Alabama 36103  
 Email: [ALDOT326000@transportation.al.gov](mailto:ALDOT326000@transportation.al.gov)

19
Carbon Reduction Strategy

## Carbon Reduction Strategy

### Project Contacts

**Becky Rogers**  
becky.rogers@neel-schaffer.com

**Vijay Kunada**  
vijay.kunada@neel-schaffer.com

NEEL-SCHAFFER  
Solutions you can build upon

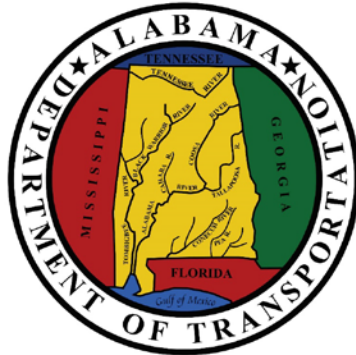
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## Appendix B: Survey & Survey Results



## Survey

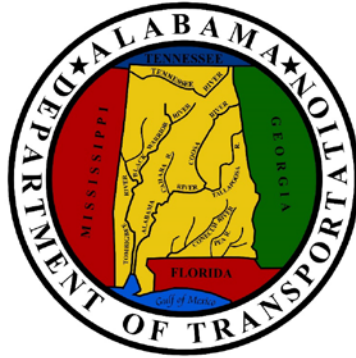


### Carbon Reduction Strategy Survey

Please complete this survey to provide input on the Carbon Reduction Strategy (CRS) for the State of Alabama. Responses to the first question will help form the vision statement and goals for the CRS. The next set of questions will ask for input on CRS strategies grouped into five categories: Alternative Fuels / Efficient Energy, Active Modes / Multimodal, Transportation Demand Management / TSMO, Technology Solutions, and Other. Within each category, please select Low Priority, Medium Priority, or High Priority to indicate how important each strategy is to your area. The remaining questions request additional ideas for reducing carbon emissions in your area.

Thank you for participating in this survey. Your feedback is important.

1. Why do you think it is important to reduce carbon emissions in Alabama?



## Carbon Reduction Strategy Survey

As part of the CRS process, strategy options were identified to reduce carbon emissions.

### 2. Please rate the priority of each Alternative Fuels/Efficient Energy strategy.

	Low Priority	Medium Priority	High Priority
Electric Vehicle (EV) Adoption and Charging Infrastructure; Heavy Duty Charging	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Alternative Fuel Vehicle (AFV) Adoption and Infrastructure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Freight Emission Reductions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Emission Reduction at Port Facilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Diesel Engine Retrofits	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Energy Efficient Lighting and Equipment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Other (please specify)



### 3. Please rate the priority of each Active Modes/Multimodal strategy.

	Low Priority	Medium Priority	High Priority
Pedestrian Facilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Bicycle Facilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transit Vehicles and Infrastructure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Expansion of Shared Mobility/Micromobility Options (ride sharing, ebikes, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Multimodal access Improvements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transit-Oriented Development (Hudson Yards, New York; Horton Plaza, San Diego; etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="text"/>		

### 4. Please rate the priority of each Transportation Demand Management/TSMO strategy.

	Low Priority	Medium Priority	High Priority
Congestion Pricing; Electronic Tolling	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Land Use Changes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Commuter Trip Reduction	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Travel Demand Management/Traffic Incident Management	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="text"/>		



## 5. Please rate the priority of each Technology Solutions strategy.

	Low Priority	Medium Priority	High Priority
Traffic Management Facilities	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adaptive Signals	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Intelligent Transportation Systems (ITS); Advanced Transportation Technologies (adaptive signals, traffic management centers, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Energy-Efficient Lighting and Traffic Control Devices; Retrofit Signals with LED Lighting (LED traffic lights, signs, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="text"/>		



## 6. Please rate the priority of these Other strategies.

	Low Priority	Medium Priority	High Priority
Traffic Flow Improvements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Calculated Carbon Reductions (lifecycle analysis, travel demand models, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sustainable Construction; Sustainable Design; Clean Construction; Sustainable Pavements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fleet and Facilities (e.g., buildings, off-road equipment, power equipment)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Carbon Sequestration - Ecological (carbon capture and storage)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rural Internet Connectivity Improvements	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other (please specify)	<input type="text"/>		

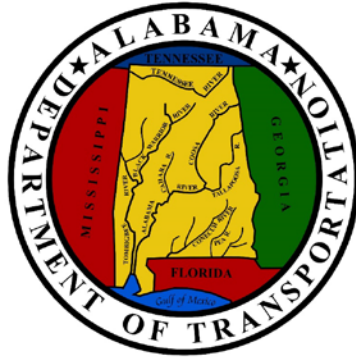


**7. Rank the categories below in order of how applicable they are to your area (1 being highest priority and 5 being lowest priority).**

- Alternative Fuels/Energy Efficiency
- Active Modes/Multimodal
- Transportation Demand Management/Transportation Systems Management and Operations
- Technology Solutions
- Other

**8. Please share other ideas for carbon reduction strategies not listed above.**

**9. What strategy or category of strategies is most likely to reduce carbon emissions in your area?**

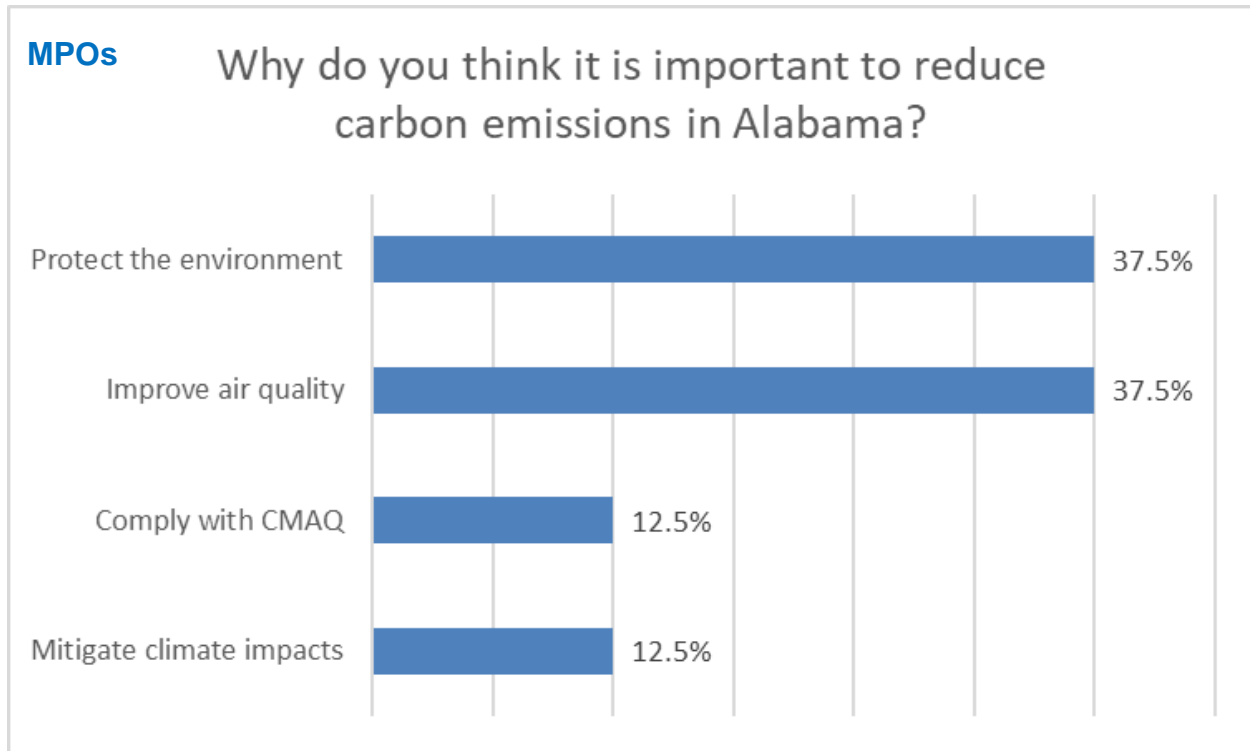


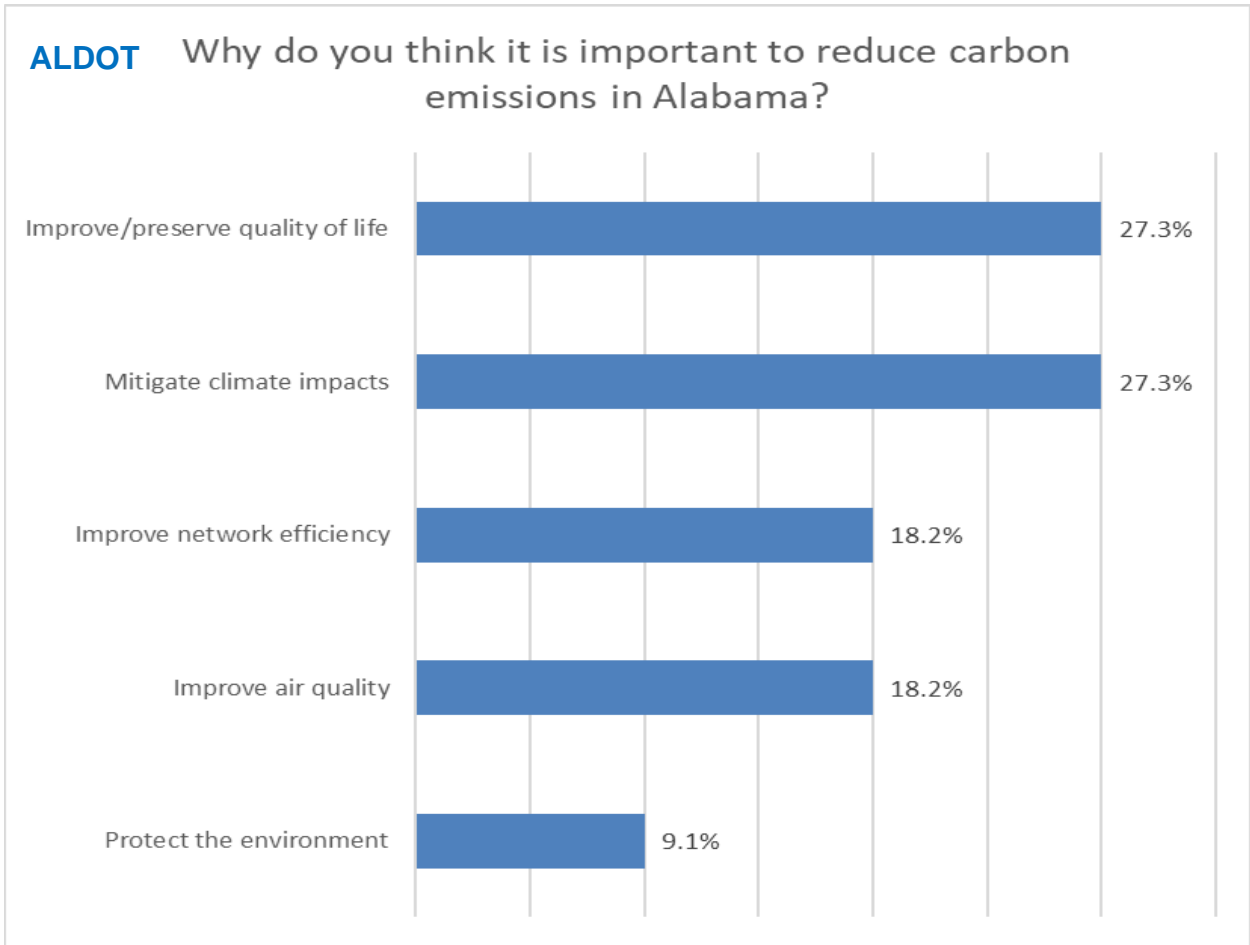
## Carbon Reduction Strategy Survey

10. What MPO do you represent?



## Survey Results

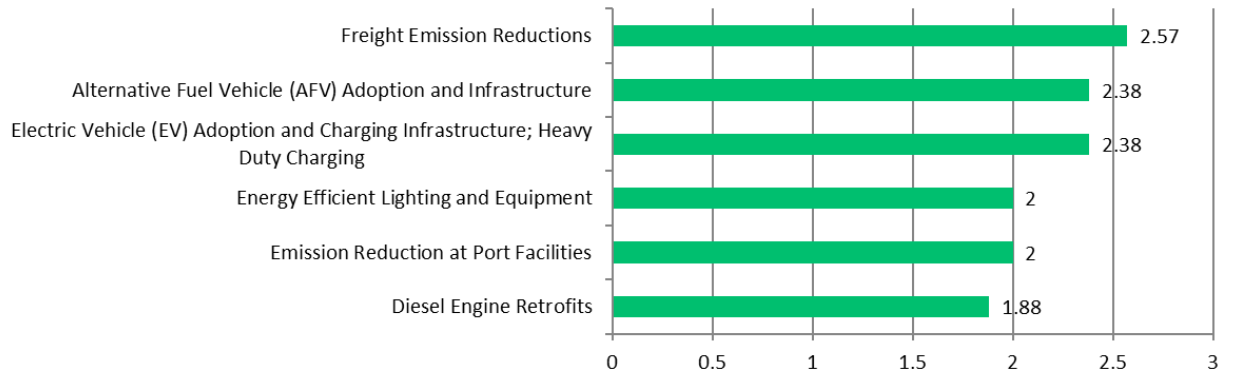






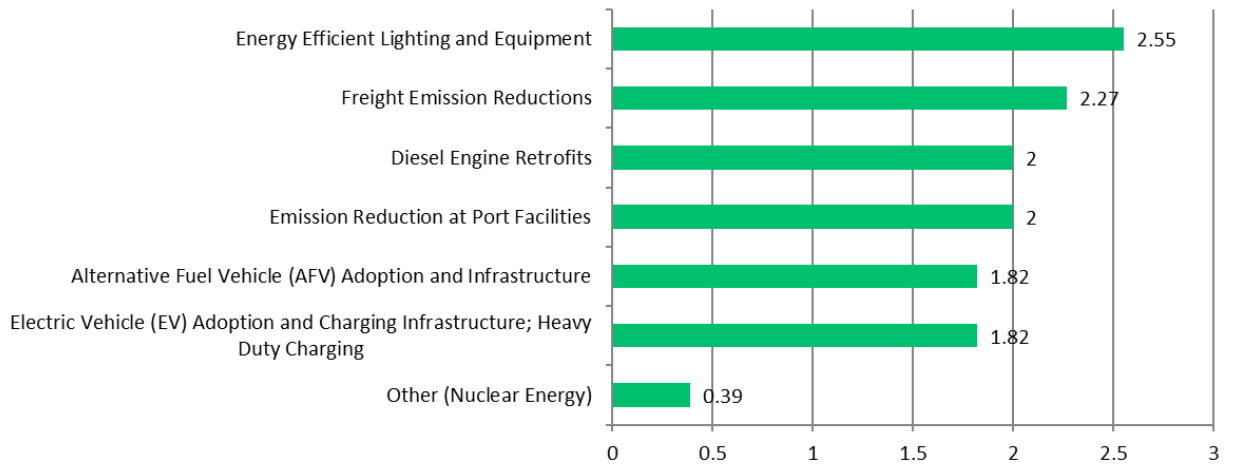
## MPOs

Please rate the priority of each Alternative Fuels/Efficient Energy strategy. (Higher value is higher priority)



## ALDOT

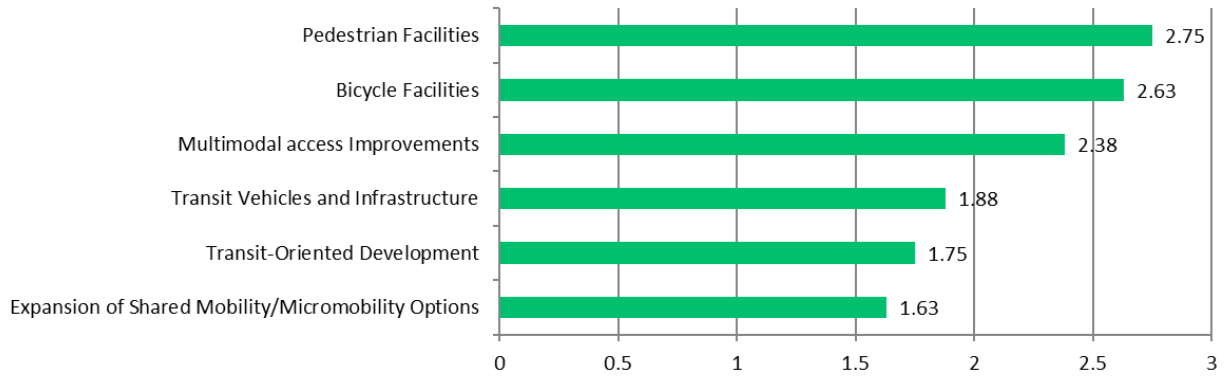
Please rate the priority of each Alternative Fuels/Efficient Energy strategy. (Higher value is higher priority)





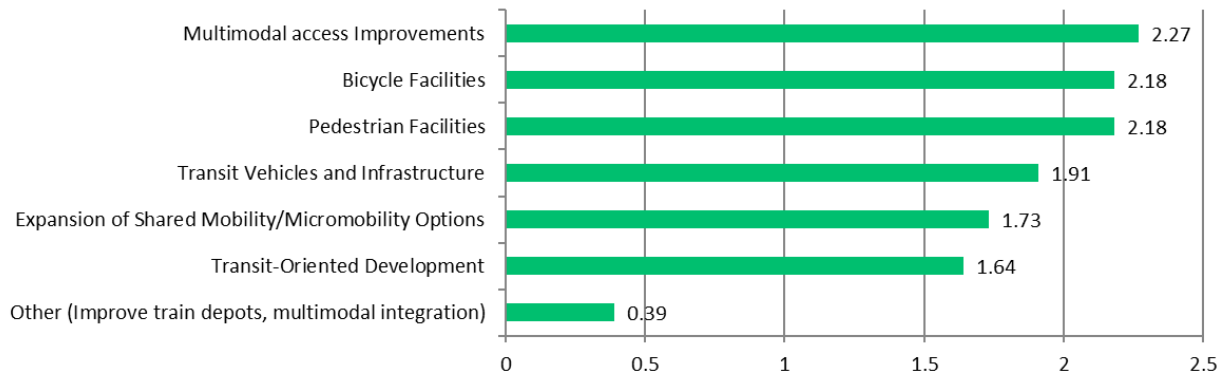
## MPOs

Please rate the priority of each Active Modes/Multimodal strategy. (Higher value is higher priority)



## ALDOT

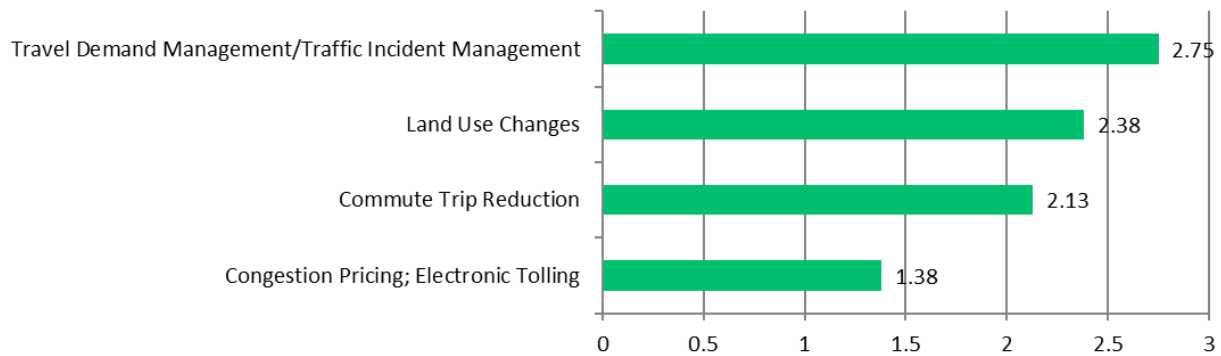
Please rate the priority of each Active Modes/Multimodal strategy. (Higher value is higher priority)





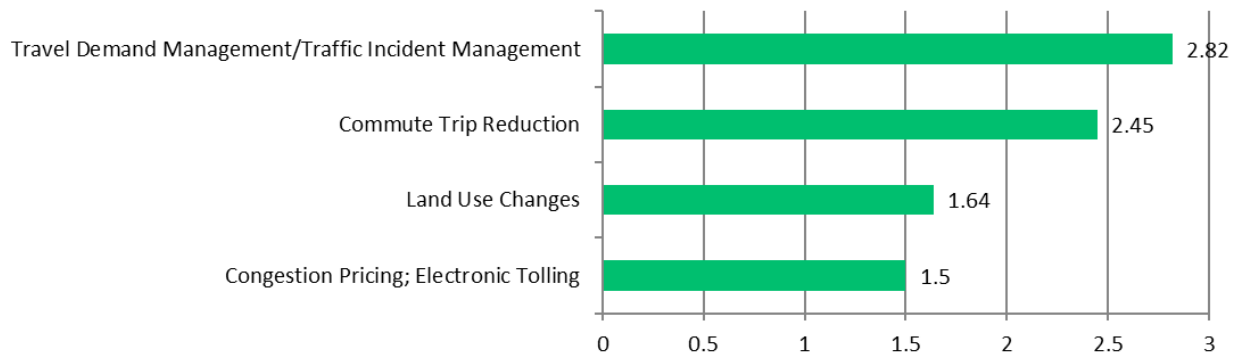
## MPOs

Please rate the priority of each Transportation Demand Management/TSMO strategy.  
(Higher value is higher priority)



## ALDOT

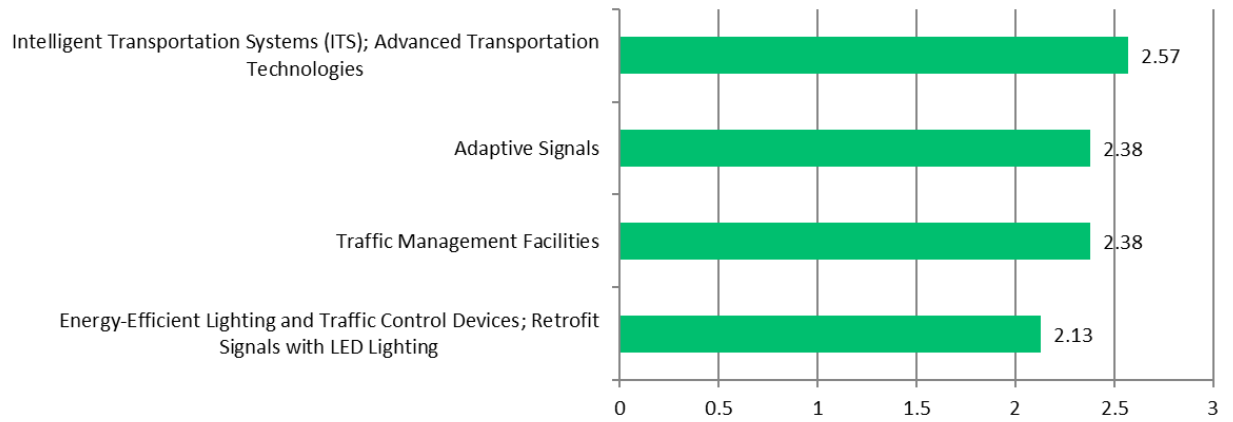
Please rate the priority of each Transportation Demand Management/TSMO strategy.  
(Higher value is higher priority)





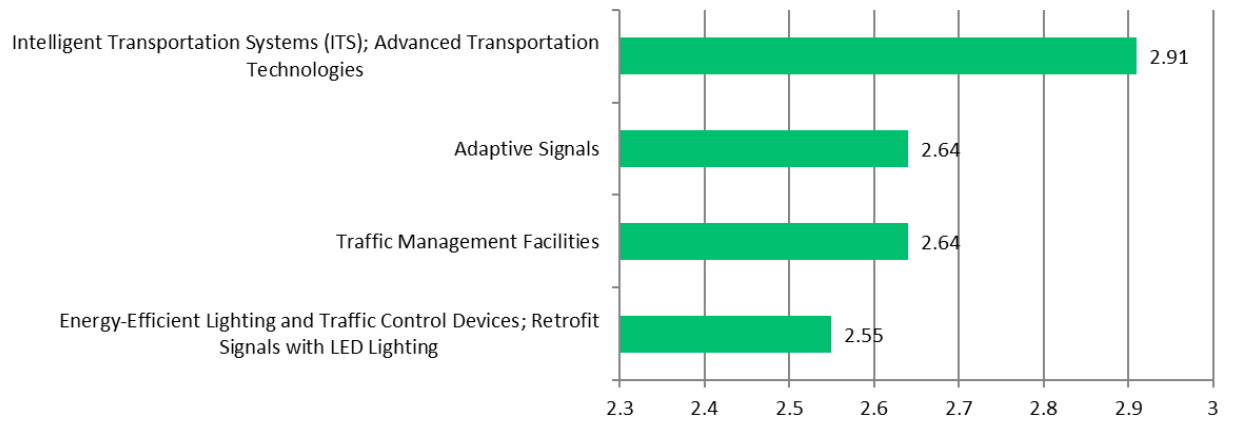
## MPOs

Please rate the priority of each Technology Solutions strategy. (Higher value is higher priority)



## ALDOT

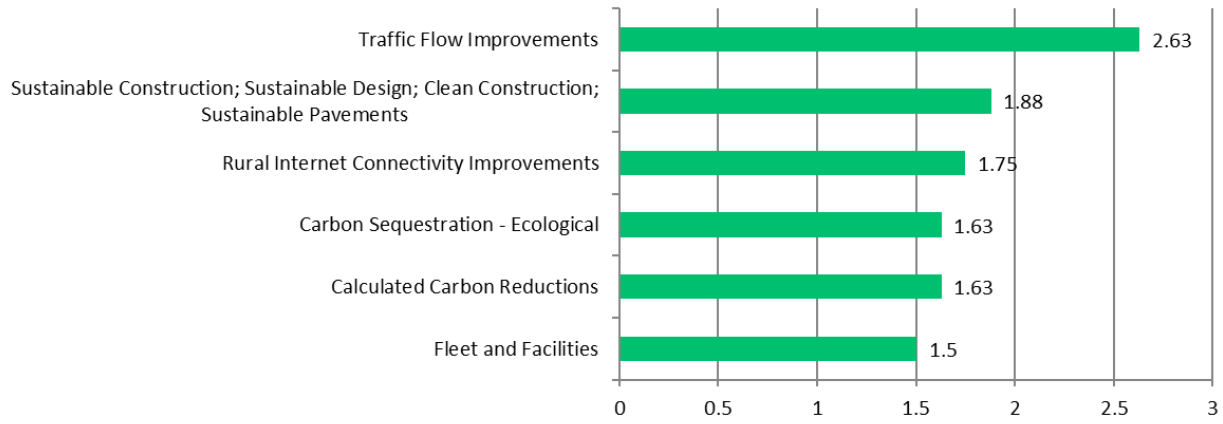
Please rate the priority of each Technology Solutions strategy. (Higher value is higher priority)





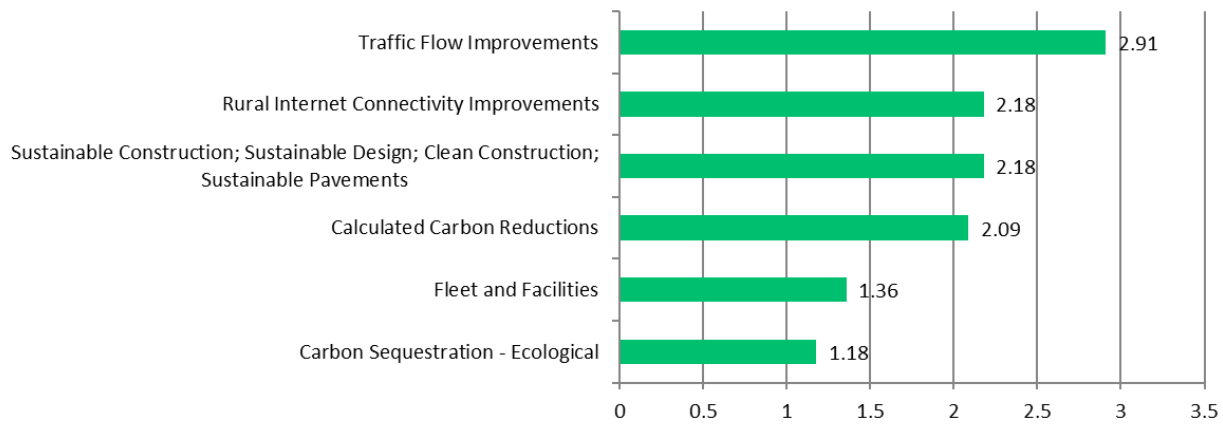
## MPOs

Please rate the priority of these Other strategies.  
(Higher value is higher priority)



## ALDOT

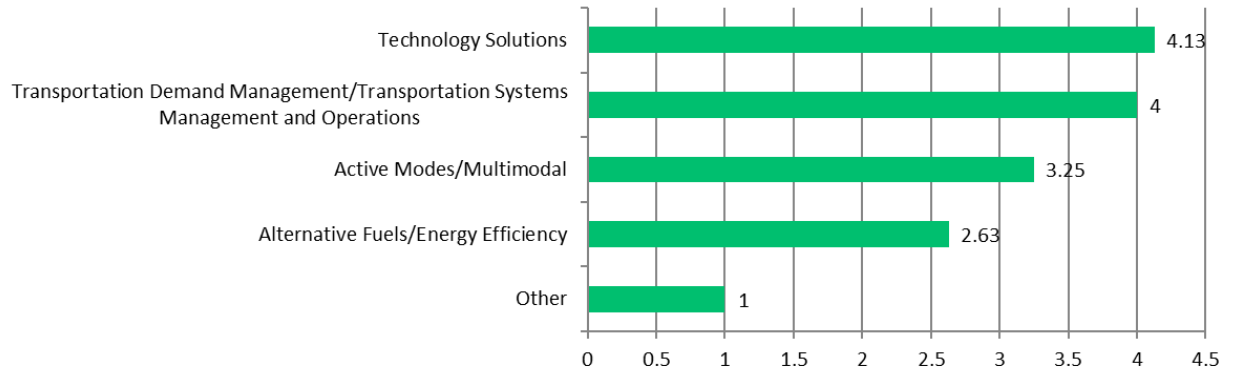
Please rate the priority of these Other strategies.  
(Higher value is higher priority)





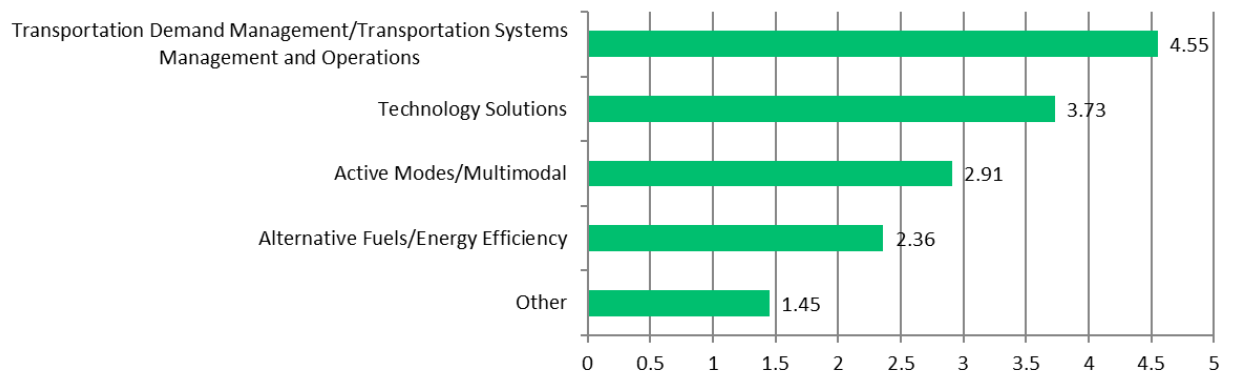
## MPOs

Rank the categories below in order of how applicable they are to your area.  
(Higher value is higher priority).



## ALDOT

Rank the categories below in order of how applicable they are to your area.  
(Higher value is higher priority).



Please share other ideas for carbon reduction strategies not listed above.

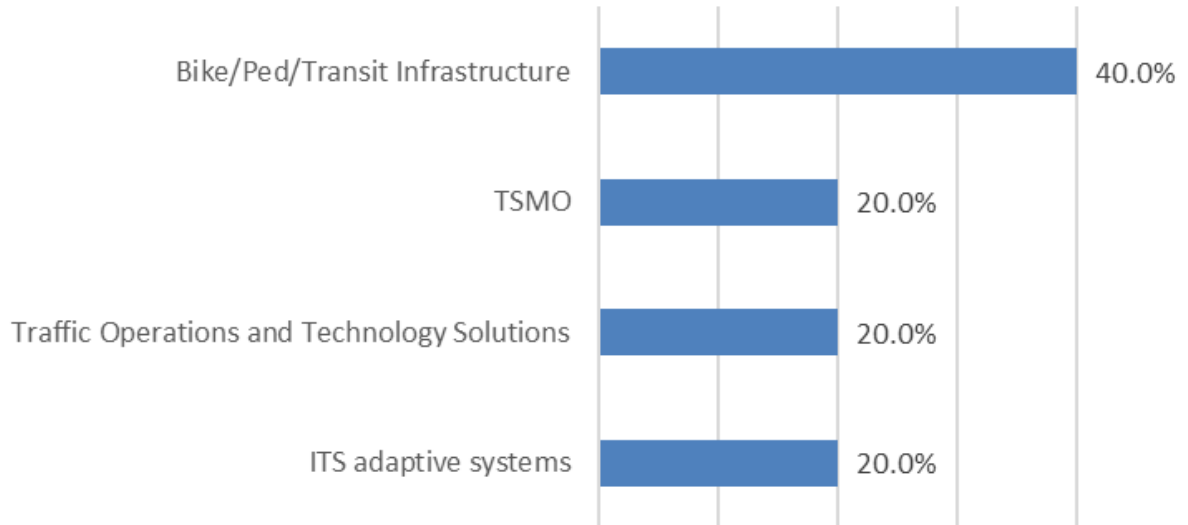
- TDM Programs
- Emissions Testing
- Use Excess ROW for Solar/Wind Power or Native Vegetation
- Improve Travel Efficiency

*(Responses reflect ideas from MPOs and ALDOT.)*



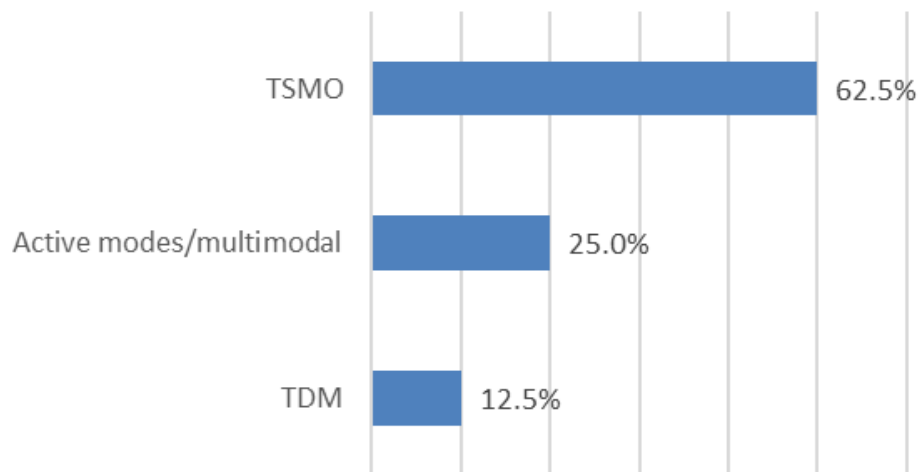
## MPOs

What strategy or category of strategies is most likely to reduce carbon emissions in your area?



## ALDOT

What strategy or category of strategies is most likely to reduce carbon emissions in your area?





# Appendix C: Public Engagement Summary



## Press Release

# **ALDOT** *Alabama Department of Transportation*

September 22, 2023

**FOR IMMEDIATE RELEASE**

### **ALDOT Seeks Input on Carbon Reduction Strategy**

**MONTGOMERY, Ala.** – The Alabama Department of Transportation is inviting the public to give input on the draft Carbon Reduction Strategy. The comment period will end on or around October 27, 2023.

It is Alabama's vision to measurably reduce carbon dioxide emissions in the transportation sector by implementing a variety of strategies that will result in a cleaner environment for all Alabama citizens.

Alabama's goals are to reduce vehicular carbon dioxide emissions to improve air quality and mitigate climate impacts, support and expand multimodal transportation options in urban and rural areas and apply transportation management strategies and technologies to improve overall network efficiency.

For more information about the Draft Carbon Reduction Strategy, visit:

<https://cpmsapps.dot.state.al.us/OfficeEngineer/Plan/Statewide2>

To participate and give feedback on the Draft Carbon Reduction Strategy, visit:  
[www.aldotinvolved.com](http://www.aldotinvolved.com).

**MEDIA CONTACT:**

**Amanda Deem**

ALABAMA DEPARTMENT OF TRANSPORTATION

Media & Community Relations Bureau

Montgomery, Alabama

334-242-6963 Office

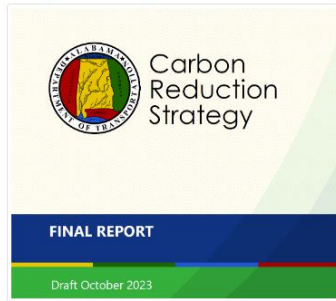
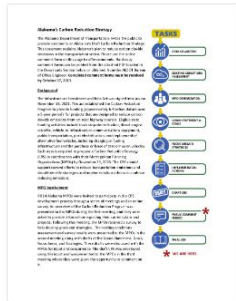
[deema@dot.state.al.us](mailto:deema@dot.state.al.us)



## Webpage Content



### Online Public Involvement: DRAFT Alabama Carbon Reduction Strategy (CRS)



### Opportunity for Public Comments

*Thank you for visiting our site.*

The Alabama Department of Transportation invites the public to provide comments on Alabama's Draft Carbon Reduction Strategy. This document explains Alabama's plan to reduce carbon dioxide emissions in the transportation sector. Please use the online comment form on this page to offer comments. Hard copy comment forms can be printed from the attached PDF located below or obtained from the ALDOT Bureau of Office Engineer.

**Completed comment forms must be received by November 6, 2023.**

[Comment Form](#)

Posted on: 10/17/2023



## Alabama's Carbon Reduction Strategy

The Alabama Department of Transportation invites the public to provide comments on Alabama's Draft Carbon Reduction Strategy. This document explains Alabama's plan to reduce carbon dioxide emissions in the transportation sector. Please use the online comment form on this page to offer comments. Hard copy comment forms can be printed from the attached PDF located in the Downloads Section below or obtained from the ALDOT Bureau of Office Engineer. **Completed comment forms must be received by November 6, 2023.**

### Background

The Infrastructure Investment and Jobs Act was signed into law on November 15, 2021. This act established the Carbon Reduction Program to provide funding (approximately 6.4 billion dollars over a 5-year period) for projects that are designed to reduce carbon dioxide emissions from on-road highway sources. Eligible state funding activities include truck stop electrification, diesel engine retrofits, vehicle-to-infrastructure communications equipment, public transportation, port electrification, and deployment of alternative fuel vehicles, including charging or fueling infrastructure and the purchase or lease of zero emission vehicles. Each state is required to prepare a Carbon Reduction Strategy (CRS) in coordination with their Metropolitan Planning Organizations (MPOs) by November 15, 2023. The CRS should support current efforts to reduce transportation emissions and should identify strategies and implementation actions to continue reducing emissions.

### MPO Involvement

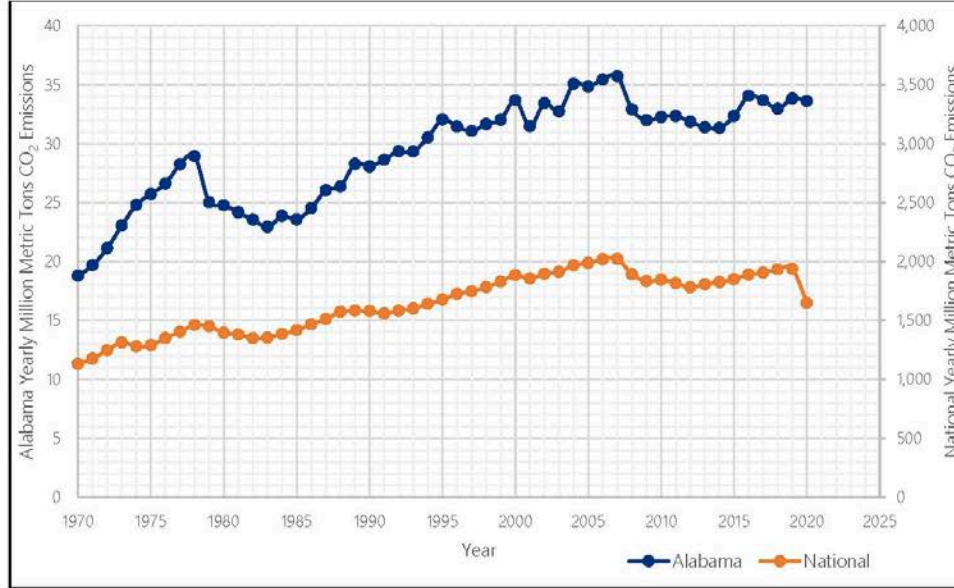
All 14 Alabama MPOs were invited to participate in the CRS development process through a series of meetings and an online survey. An overview of the Carbon Reduction Program was presented to the MPOs during the first meeting, and they were asked to provide information regarding their current plans and projects. Following this meeting, the MPOs received a survey to help develop goals and strategies. The existing conditions assessment and survey results were presented to the MPOs in the second meeting along with drafts of the Vision Statement, Goals, Focus Areas, and Strategies. These drafts were discussed with the MPOs for input and concurrence. The draft CRS was developed using this input and was presented to the MPOs in the third meeting where they were given the opportunity to comment on it.





## Current CO<sub>2</sub> Emissions Trends

Transportation Sector CO<sub>2</sub> Emissions from Fossil Fuel Consumption (1970 - 2020)\*



(Source: U.S. Energy Information Administration)

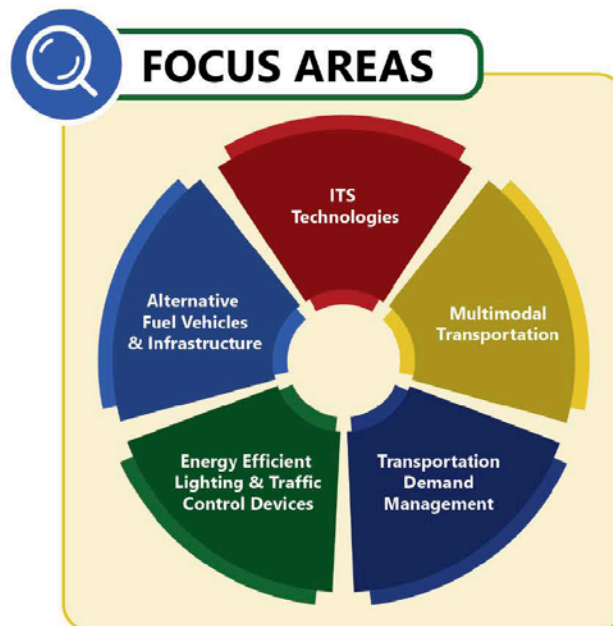
\*Note that the scale for the Alabama CO<sub>2</sub> Emissions is on the left axis while the scale for the National CO<sub>2</sub> Emissions is on the right axis.

## Vision Statement, Goals, & Focus Areas



### VISION STATEMENT

Alabama's vision is to measurably reduce carbon dioxide emissions in the transportation sector by implementing a variety of strategies that will collectively result in a cleaner environment for all Alabama citizens.



### Strategies & Implementation Actions

Multiple strategies were identified for each focus area. Implementation actions, which include types of projects and programs that support each strategy, were also identified. These strategies and focus areas are summarized in the Carbon Reduction Strategy.

### Links

- FHWA CRP Fact Sheet  
[https://www.fhwa.dot.gov/bipartisan-infrastructure-law/crp\\_fact\\_sheet.cfm](https://www.fhwa.dot.gov/bipartisan-infrastructure-law/crp_fact_sheet.cfm)



# Carbon Reduction Strategy

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- CRP Implementation Guidance  
[https://www.fhwa.dot.gov/environment/sustainability/energy/policy/crp\\_guidance.pdf](https://www.fhwa.dot.gov/environment/sustainability/energy/policy/crp_guidance.pdf)

## **Comments**

- [Comment using Online Comment Form](#)
- Comment by Email: [ALDOTStatewidePlanning@dot.state.al.us](mailto:ALDOTStatewidePlanning@dot.state.al.us)

## **Downloads**

- [Draft Carbon Reduction Strategy](#)
- [Public Comment Form](#)



## Public Comment Form



### DRAFT CARBON REDUCTION STRATEGY PUBLIC COMMENT FORM

Name: \_\_\_\_\_

Address: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

E-mail: \_\_\_\_\_

Interest in Project: Resident: \_\_\_\_\_ Property Owner: \_\_\_\_\_ Business Owner \_\_\_\_\_  
 Elected Official: \_\_\_\_\_ Other \_\_\_\_\_

The Draft Carbon Reduction Strategy can be reviewed on ALDOT's website at the following link: <https://www.dot.state.al.us/news/publicinvolvement.html>. Please use the space below to provide comments on this document.

\_\_\_\_\_  
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Completed forms can be submitted in person, by mail, or by email by November 6, 2023.

**In Person / Mail:**  
 Alabama Department of Transportation  
 Bureau of Office Engineer  
 1409 Coliseum Boulevard  
 Montgomery, Alabama 36110

Email: [ALDOTStatewidePlanning@dot.state.al.us](mailto:ALDOTStatewidePlanning@dot.state.al.us)



## Media Outreach



### CARBON REDUCTION STRATEGY DIGEST

from the Media and Community Relations Bureau

1. Cullman Times - [ALDOT seeks public input on carbon reduction strategy](#)
  - a. Total Readership: 16,322
2. Yrt News - [ALDOT seeks feedback on carbon reduction strategy](#)
  - a. Total Readership: 942
3. News 19 - [ALDOT seeking input on Carbon Reduction Strategy](#)
  - a. Total Readership: 628,208
4. Usa Jaun News - [ALDOT seeking input on Carbon Reduction Strategy](#)
  - a. Total Readership: 11,159
5. WVTM 13 News @ 4pm - [Broadcast](#)
  - a. Total Viewership: 13,157



[https://www.cullmantimes.com/news/aldot-seeks-public-input-on-carbon-reduction-strategy/article\\_dd80e372-7289-11ee-bd8e-afe1b71a4215.html](https://www.cullmantimes.com/news/aldot-seeks-public-input-on-carbon-reduction-strategy/article_dd80e372-7289-11ee-bd8e-afe1b71a4215.html)

FEATURED

## ALDOT seeks public input on carbon reduction strategy

Patrick Camp [pccamp@cullmantimes.com](mailto:pccamp@cullmantimes.com)

Oct 25, 2023



Philip Steury Photography



The Alabama Department of Transportation is offering the public a chance to weigh in on the department’s recently drafted Carbon Reduction Strategy.

The CRS was created as a requirement of the Bipartisan Infrastructure Investment and Jobs Act, which allocated \$6.4 billion throughout five years for states to fund projects aimed at reducing carbon emissions when passed in Nov. 2021. Alabama is set to receive \$128 million of these allocations, and has created a guide describing how to select and fund eligible projects.



## Carbon Reduction Strategy

All 14 of Alabama’s Metropolitan Planning Organizations met with ALDOT to examine the state’s existing carbon conditions and identified five key focus areas which are intended to work in tandem to achieve ALDOT’s goals.

“The carbon reduction strategy is required by the Federal Highway Administration with the goal of providing a cleaner environment for all Alabamians,” said ALDOT spokesperson Allison Green. “ALDOT consulted with Alabama’s 14 Metropolitan Planning Organizations to develop the vision, goals and focus areas for the Carbon Reduction Strategy. ALDOT and the Alabama MPOs are committed to supporting and implementing programs and projects that reduce carbon dioxide emissions on the state’s transportation network. The strategies and implementation actions that were identified in the plan focus on five areas where we have significant opportunities to reduce carbon emissions in Alabama. We encourage the public to provide input on the carbon reduction strategy.”

These five focus areas are:

- Intelligent Transportation Systems
- Transportation Demand Management
- Multimodal Transportation
- Energy Efficient Lighting and Traffic Control Devices
- Alternative Fuel Vehicles and Infrastructure

ALDOT has also included suggested strategies for each of the focus areas, including offering incentives for electric/alternative fuel vehicles and increasing multimodal transit options for pedestrians and cyclists to reduce congestion. All approved projects will require a local match of 10 percent for interstate projects and 20 percent for non-interstate projects.

The first CRS proposal is due to be submitted to the Federal Highway Administration by Nov. 15 and ALDOT will be accepting public comments through Nov. 6.

To participate and give feedback on the Draft Carbon Reduction Strategy, visit:  
[www.aldotinvolved.com](http://www.aldotinvolved.com).



# Carbon Reduction Strategy

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For more information about the Draft Carbon Reduction Strategy, visit:

<https://www.dot.state.al.us/news/2023/opmStatewideCRS.htm>.

Patrick Camp can be reached at 256-734-2131 ext. 238



ALABAMA NEWS

## ALDOT seeking input on Carbon Reduction Strategy

(Getty Images)

by: [Logan Sparkman](#)

Posted: Oct 23, 2023 / 10:36 PM CDT

Updated: Oct 23, 2023 / 10:37 PM CDT

SHARE



ALABAMA (WHNT) — The Alabama Department of Transportation (ALDOT) is asking the public for input on a draft Carbon Reduction Strategy (CRS).

The Bipartisan Infrastructure Law, which was adopted in November 2021, created the Carbon Reduction Program. The program provides funds for states to reduce transportation emissions.

### **Gov. Ivey approves West Alabama Corridor Project, ALDOT contracts despite disputes** ▶

ALDOT is creating a CRS to guide how to select and fund projects to reduce carbon emissions from transportation in Alabama.

"It is Alabama's vision to measurably reduce carbon dioxide emissions in the transportation sector by implementing a variety of strategies that will result in a cleaner environment for all Alabama citizens," ALDOT said.

The state wants to reduce vehicular carbon dioxide emissions to improve air quality and mitigate climate impacts, provide more transportation options in rural and urban areas, and apply transportation management strategies and technologies to improve overall network efficiency.

For more information about the Draft Carbon Reduction Strategy, you can [click here](#).

To participate and give feedback on the Draft Carbon Reduction Strategy, you can visit ALDOT's involvement website [here](#).

[Suggest a Correction](#)

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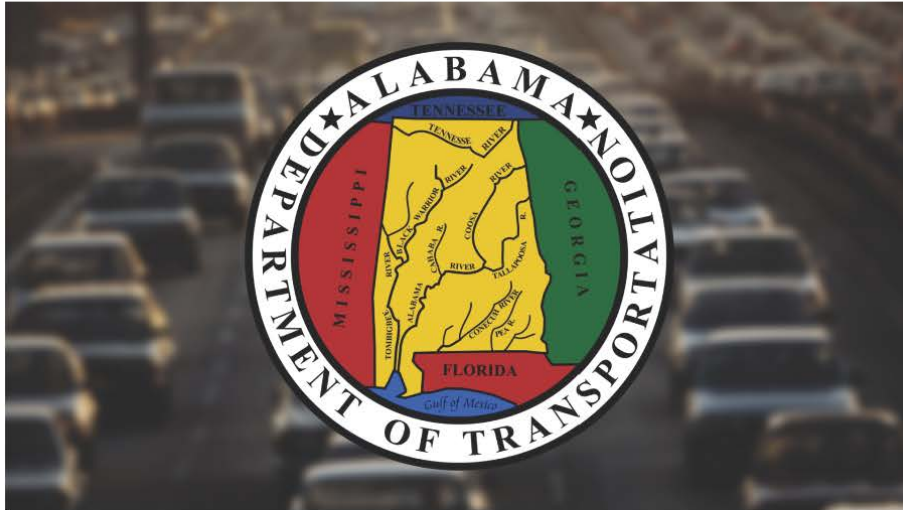
Home > Hot News

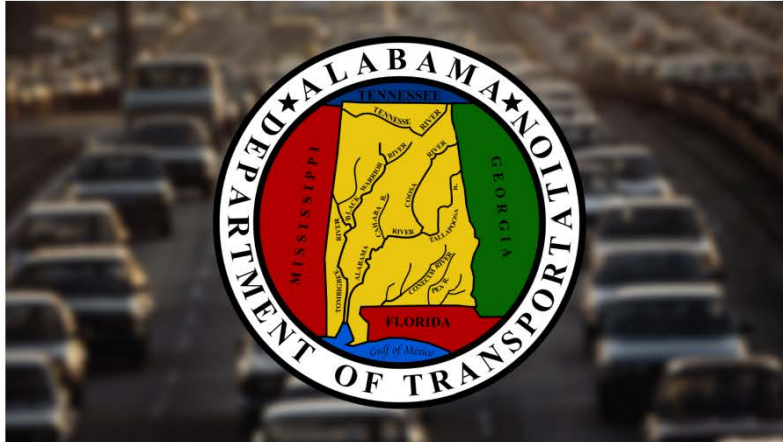
HOT NEWS

## ALDOT seeking input on Carbon Reduction Strategy

By WEB DESK October 24, 2023

26 0





ALABAMA (WHNT) — The Alabama Department of Transportation (ALDOT) is asking the public for input on a draft Carbon Reduction Strategy (CRS).

The Bipartisan Infrastructure Law, which was adopted in November 2021, created the Carbon Reduction Program. The program provides funds for states to reduce transportation emissions.

[Gov. Ivey approves West Alabama Corridor Project, ALDOT contracts despite disputes](#)

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[Source link](#)



16:35 WVTM-BIRM (NBC) - WVTM 13 News @ 4pm  
Monday, October 23, 2023

**VIEW PLAN, GIVE FEEDBACK**

THROUGH NOVEMBER 6

**ALDOTINVOLVED.COM**

PAUSED

WVTM 13 89° 4:35

16:35:58

A screenshot of a video player interface. The video content shows a blue background with the Alabama Department of Transportation logo on the left and a large white arrow pointing right towards the text "ALDOTINVOLVED.COM". Above the arrow, it says "THROUGH NOVEMBER 6". The video player controls at the bottom include a "PAUSED" indicator, navigation buttons (back, play, forward), a timestamp of "16:35:58", a volume icon, and a full-screen icon. In the top right corner of the video frame, there is a small logo for "WVTM 13" with the temperature "89°" and time "4:35".



## Summary of Public Comments

<b>Interest in Project</b>	<b>Comment</b>	<b>ALDOT Response to Commenter</b>	<b>Notes</b>
Other	I have reviewed ALDOT's draft Carbon Reduction Strategy and I approve and support the findings and recommendations in the document.	<p>Thank you for your input on the Draft Carbon Reduction Strategy for Transportation Planning. Your input is greatly appreciated. Your comments will be taken into consideration as Alabama Department of Transportation (ALDOT) endeavors to finalize the Plan.</p> <p>General comments on transportation issues will be forwarded to the appropriate ALDOT Region personnel for your area. Again, thank you for your participation.</p>	This comment expresses support for the Carbon Reduction Strategy.



Interest in Project	Comment	ALDOT Response to Commenter	Notes
Resident	<p>While the ALDOT CRS identifies some important changes to make to reduce carbon emissions, it does not go far enough. Tactics that would significantly lessen overall carbon outputs, like changing land use, are passed over in favor of less impactful changes like improving traffic signals. While all improvements are essential, ALDOT needs to concentrate on land use and expanding alternative transportation, as well as quantifying the state's emissions, to make lasting cuts to the state's carbon emissions.</p>	<p>Thank you for your input on the Draft Carbon Reduction Strategy for Transportation Planning. Your input is greatly appreciated. Your comments will be taken into consideration as Alabama Department of Transportation (ALDOT) endeavors to finalize the Plan.</p> <p>General comments on transportation issues will be forwarded to the appropriate ALDOT Region personnel for your area. Again, thank you for your participation.</p>	<p>While land use was discussed by ALDOT and the MPOs as a carbon reduction strategy, it was not specifically listed in the plan since ALDOT and the MPOs do not have jurisdictional authority over land use. These decisions are made at the local level.</p> <p>Alternative transportation (i.e., walking, biking, transit usage, etc.) is included as a focus area in this plan. Successful implementation of the strategies within this focus area will depend on appropriate and context-sensitive land use planning at the local level.</p>



Interest in Project	Comment	ALDOT Response to Commenter	Notes
Resident	<p>The ALDOT CRS fails to make substantive changes that measurably reduce our state's carbon output in the long term. We more than double the national average in carbon output, yet the best ALDOT &amp; Neel + Schaffer can offer is piecemeal solutions. The cheapest time to swap to sustainable, walkable infrastructure is now, and this plan should place much greater emphasis on land use reform and multimodal transit.</p>	<p>Thank you for your input on the Draft Carbon Reduction Strategy for Transportation Planning. Your input is greatly appreciated. Your comments will be taken into consideration as Alabama Department of Transportation (ALDOT) endeavors to finalize the Plan.</p> <p>General comments on transportation issues will be forwarded to the appropriate ALDOT Region personnel for your area. Again, thank you for your participation.</p>	<p>Alabama's carbon output is well below the national average according to Figure 2.1. The scale for Alabama's CO<sub>2</sub> emissions is shown on the left axis, while the scale for National CO<sub>2</sub> emissions is shown on the right axis.</p> <p>While land use was discussed by ALDOT and the MPOs as a carbon reduction strategy, it was not specifically listed in the plan since ALDOT and the MPOs do not have jurisdictional authority over land use. These decisions are made at the local level.</p> <p>Walkable infrastructure and multimodal transit are included under the Multimodal Transportation focus area in this plan. Implementing these strategies will depend on appropriate and context-sensitive land use planning at the local level.</p>



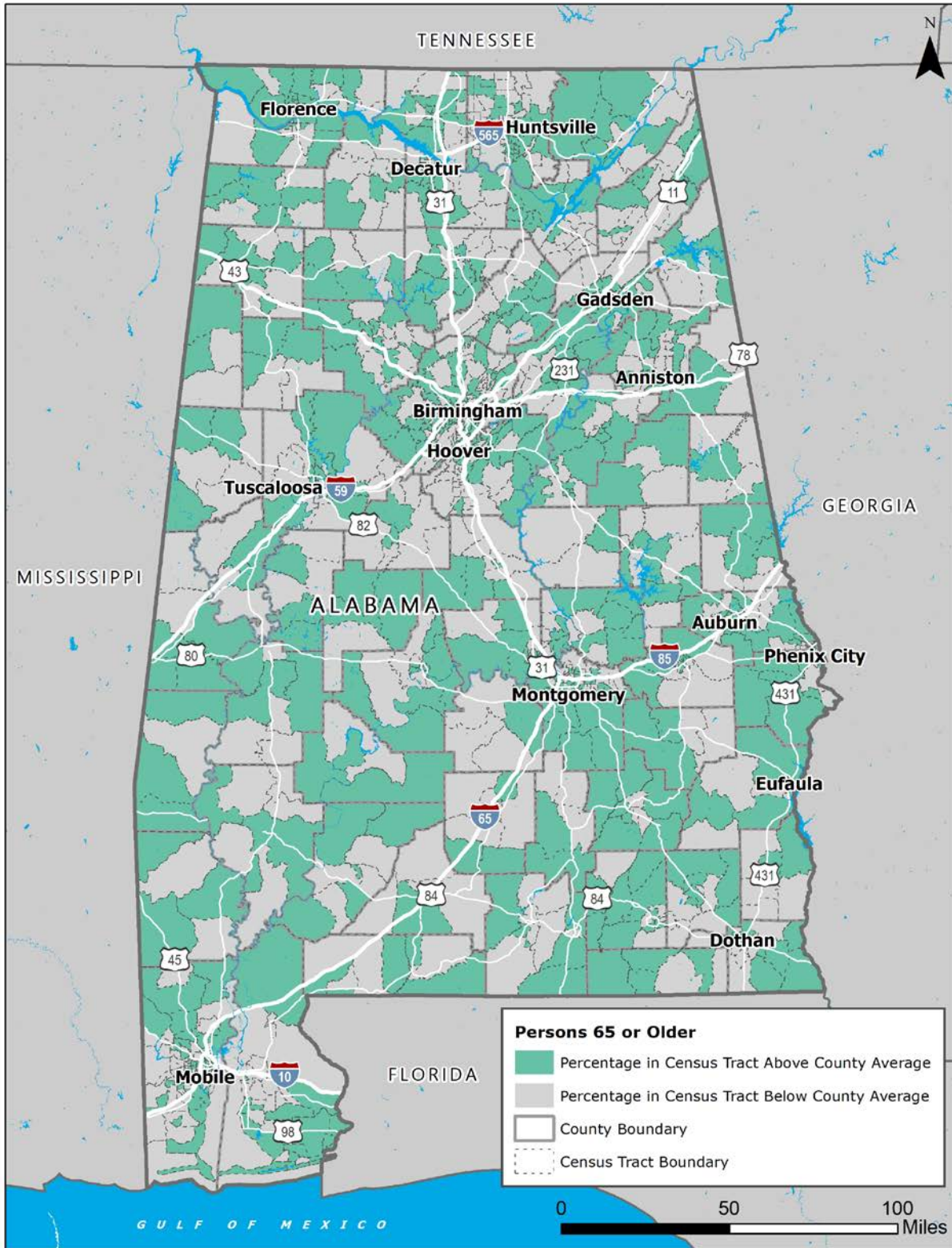
<b>Interest in Project</b>	<b>Comment</b>	<b>ALDOT Response to Commenter</b>	<b>Notes</b>
Unknown	Please stop the West AL road project. W/O federal support, we cannot afford it. I-65 is choking travel and commerce. Widen I-65.	<p>Thank you for your input on the Draft Carbon Reduction Strategy for Transportation Planning. Your input is greatly appreciated. Your comments will be taken into consideration as Alabama Department of Transportation (ALDOT) endeavors to finalize the Plan.</p> <p>General comments on transportation issues will be forwarded to the appropriate ALDOT Region personnel for your area. Again, thank you for your participation.</p>	This comment is not applicable to the Carbon Reduction Strategy.



# Appendix D: Statewide Environmental Justice Population Maps



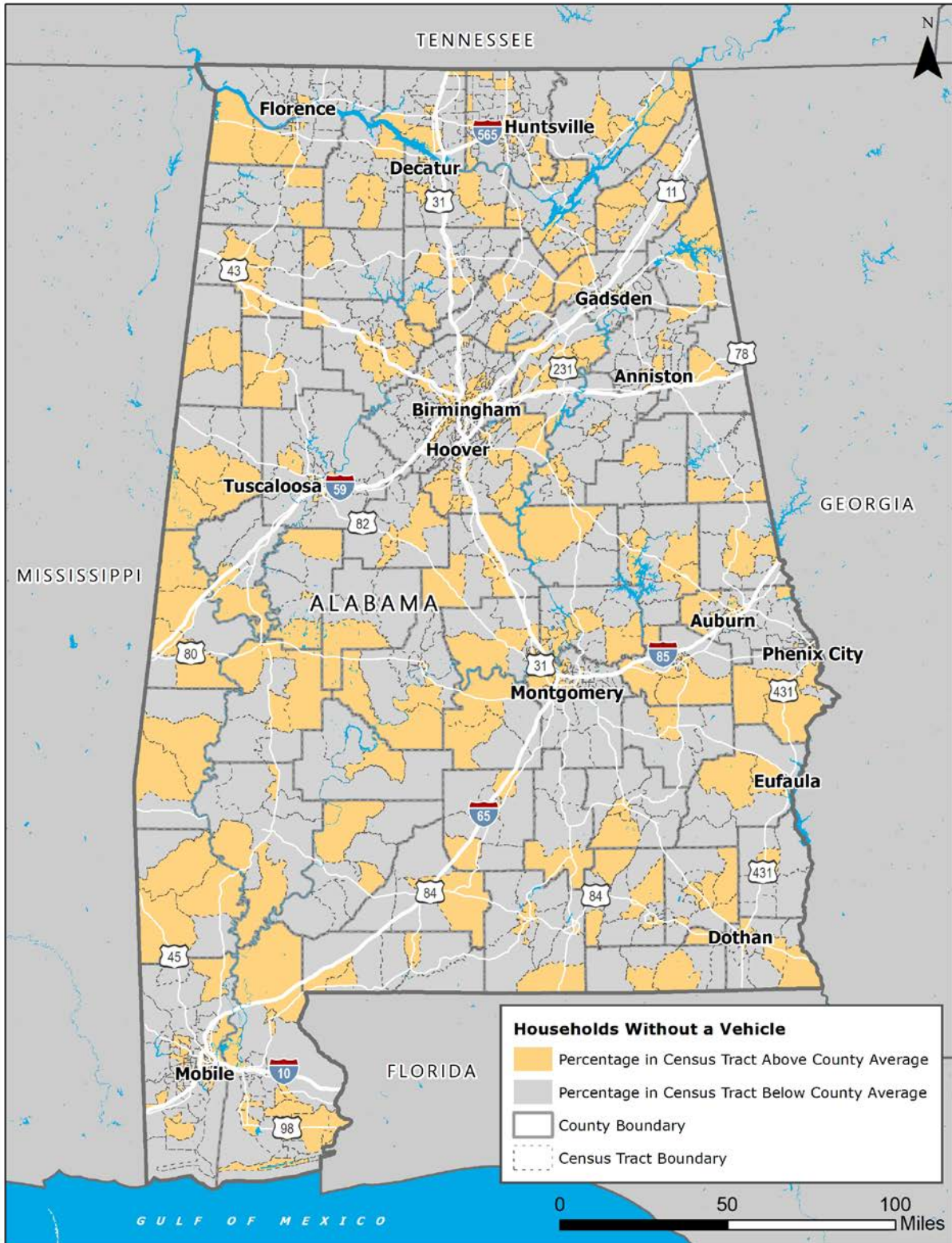
# Persons 65 or Older



Source: U.S. Census, American Community Survey (2021)



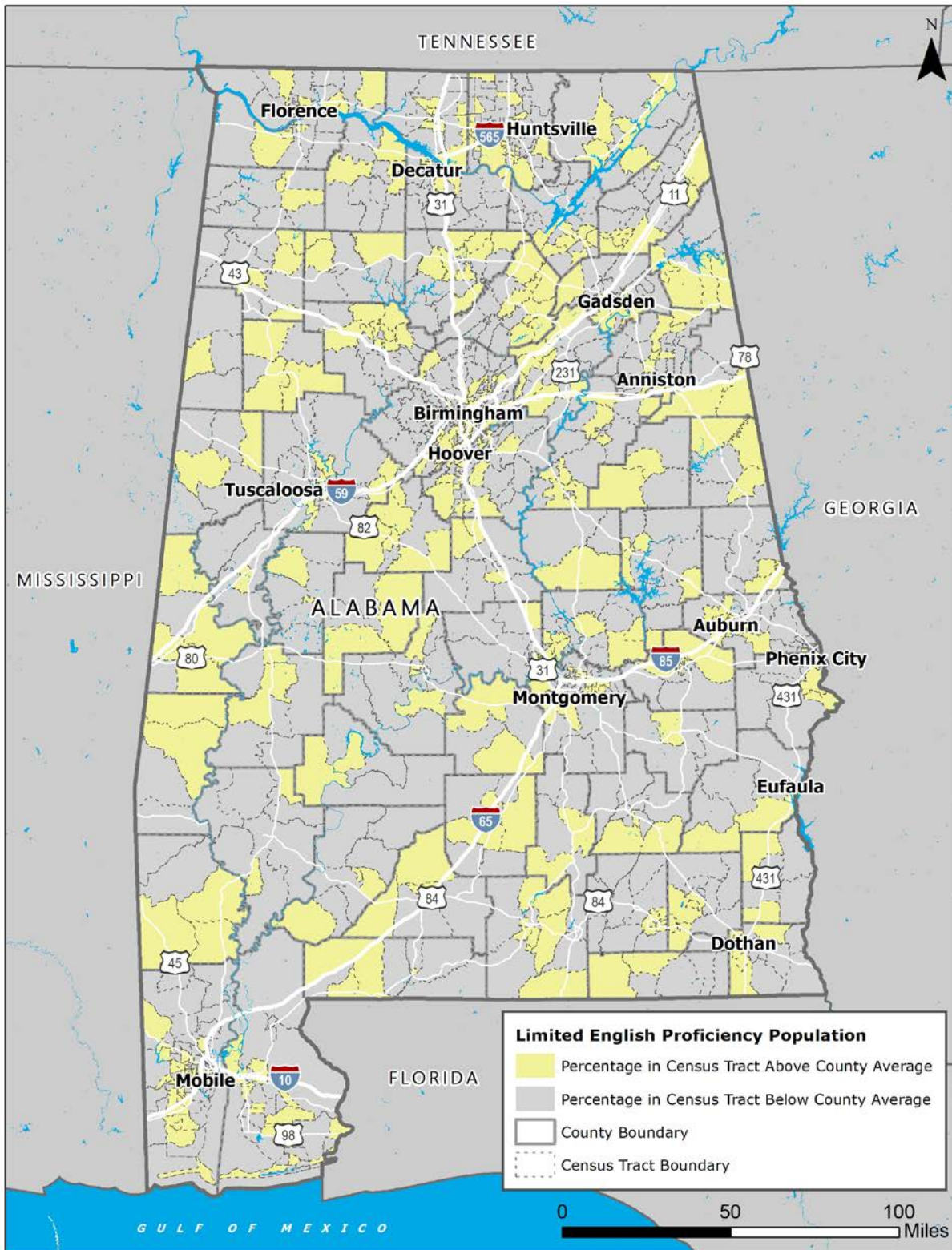
# Households Without a Vehicle



Source: U.S. Census, American Community Survey (2021)



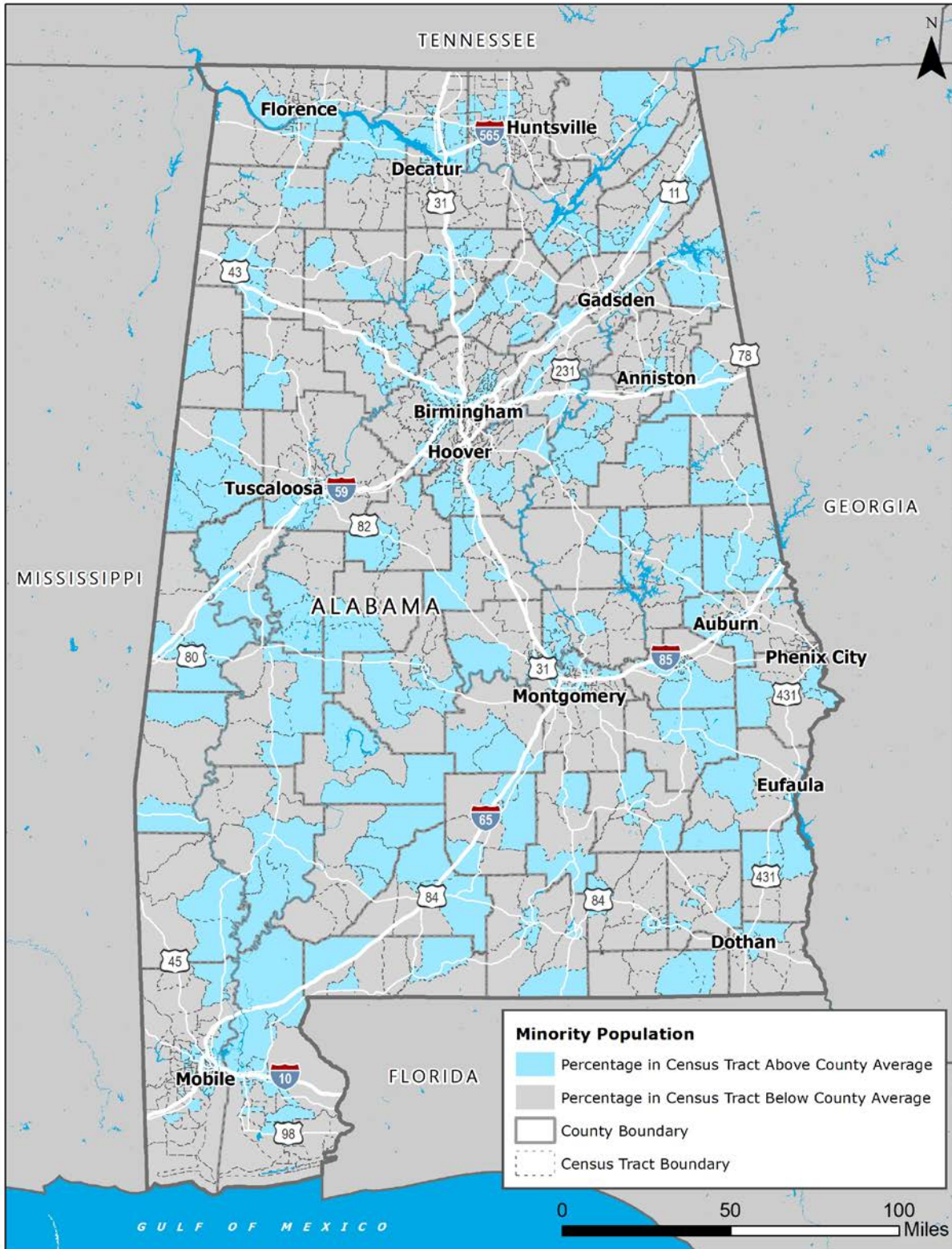
# Limited English Proficiency Population



Source: U.S. Census, American Community Survey (2021)



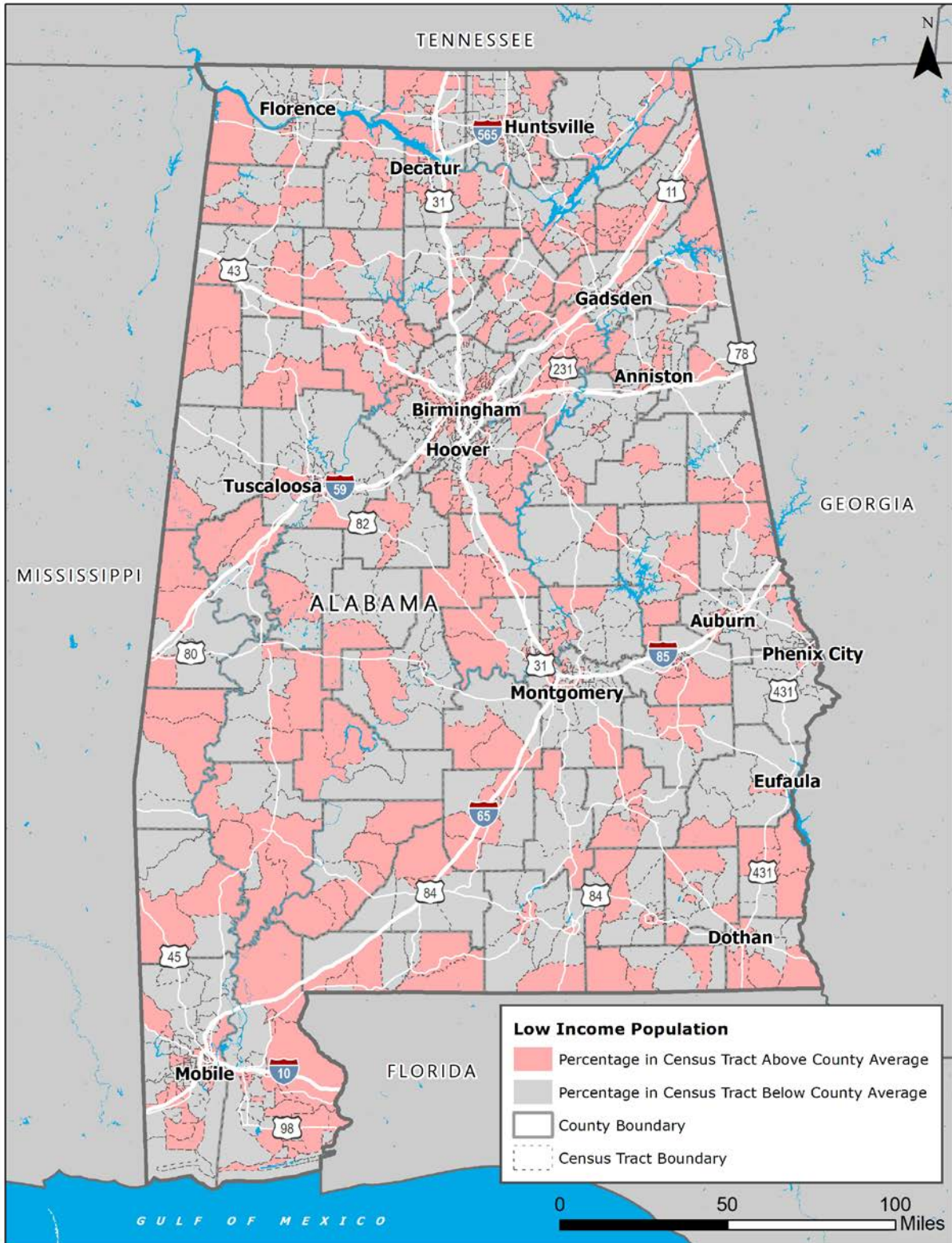
## Minority Population



Source: U.S. Census, American Community Survey (2021)



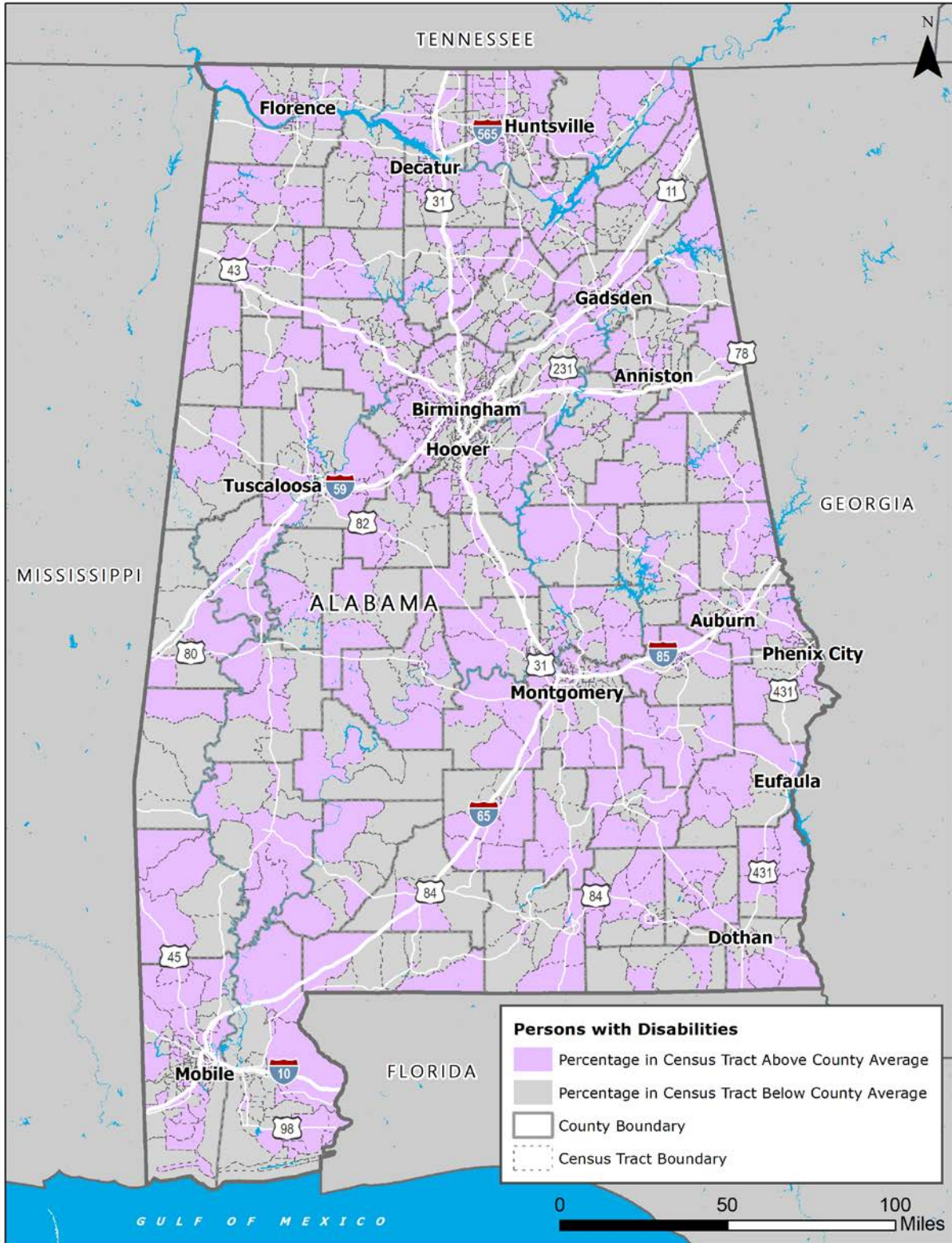
# Low Income Population



Source: U.S. Census, American Community Survey (2021)



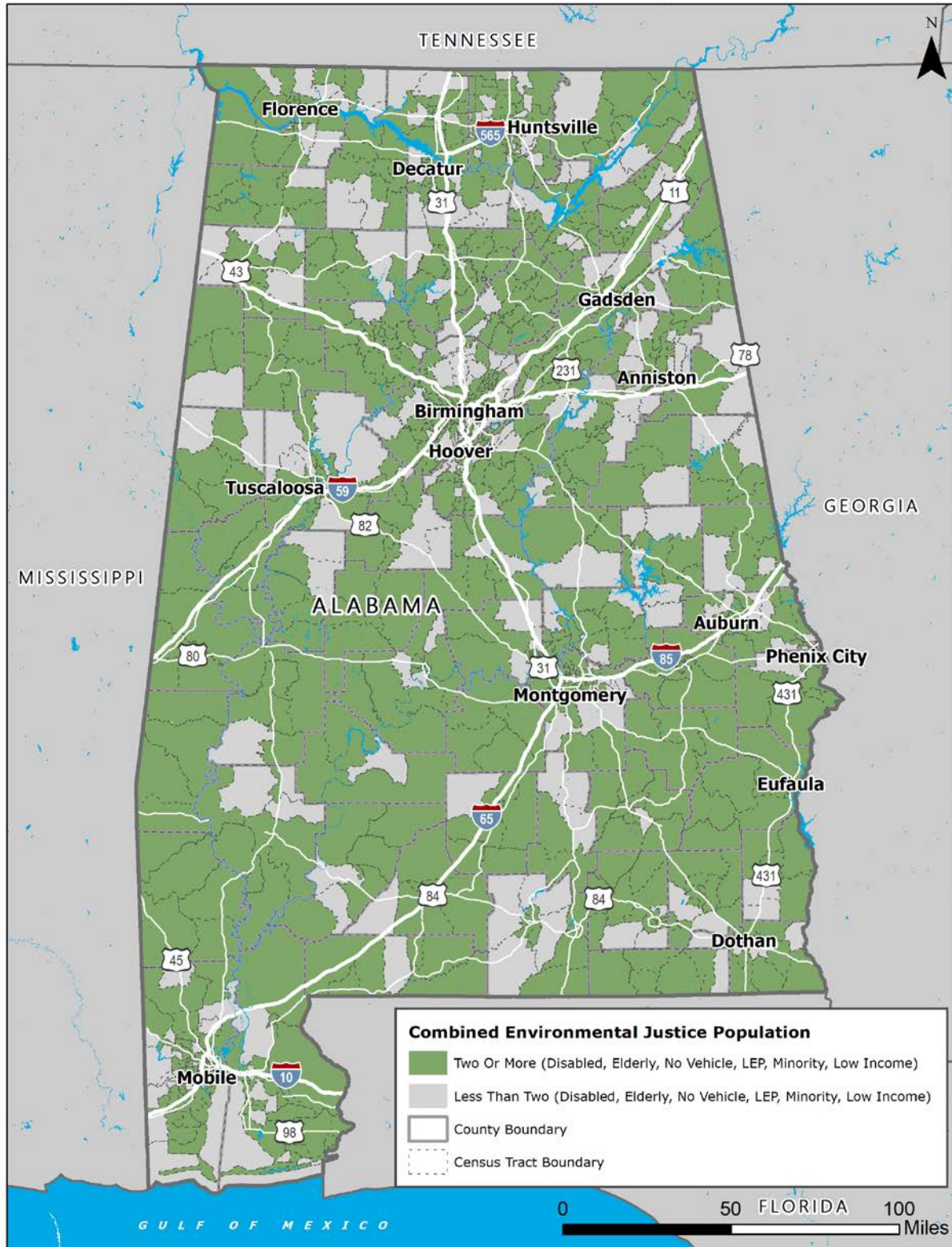
# Persons with Disabilities



Source: U.S. Census, American Community Survey (2021)



# Combined Environmental Justice Population



Source: U.S. Census, American Community Survey (2021)