Georgia Department of Transportation

CARBON REDUCTION STRATEGY

November 15, 2023

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Acronyms

AC—Advisory Committee
ADA—Americans with Disabilities Act
ARC—Atlanta Regional Commission
ATDM—Active Transportation Demand Management
BIL—Bipartisan Infrastructure Law
CMAQ—Congestion Mitigation and Air Quality
CO2—Carbon Dioxide
CRP—Carbon Reduction Program
CRS—Carbon Reduction Strategy
EMIA—Electric Mobility and Innovation Alliance
EPA—Environmental Protection Agency
EV—Electric Vehicle
FRATIS—Freight Advanced Traveler Information Systems
FHWA—Federal Highway Administration
FTA—Federal Transit Administration
GADeR—Georgia Diesel Emissions Reduction
GAMPO—Georgia Association of Metropolitan Planning Organizations
GCO—Georgia Commute Options
GDOL—Georgia Department of Labor
GDOT—Georgia Department of Transportation
GHG—Greenhouse gas
GRAD—Georgia Ready for Accelerated Development
HOT—High-occupancy toll
HOV—High-occupancy vehicle
ITS—Intelligent Transportation Systems
KG—Kilograms
LED—Light–Emitting Diode
LRSTP—Long–Range Statewide Transportation Plan
MPO—Metropolitan Planning Organization
MTP—Metropolitan Transportation Plan
NACTO—National Association of City Transportation Officials
NEVI—National Electric Vehicle Infrastructure
PCMS—Portable Changeable Message Signs
PROTECT—Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation Program
RC—Regional Commissions
RFI—Request for Information
RHST—Rural and Human Services Transportation
SOV—Single Occupant Vehicle
SR—State Road

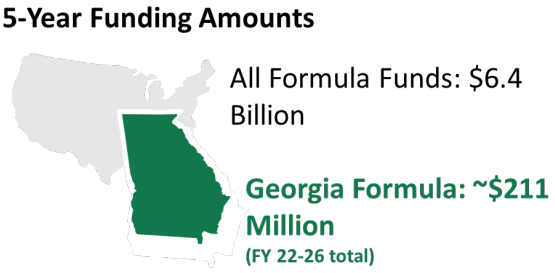
SSTP—Statewide Strategic Transportation Plan
STIP—Statewide Transportation Improvement Program
SWTP —Statewide Transportation Plan
TAC—Technical Advisory Committee
TCC—Technical Coordinating Committee
TDM—Transportation Demand Management
TMA—Transportation Management Area
TMC—Transportation Management Center
TOD—Transit-Oriented Development
TRB—Transportation Research Board
TRIP—Towing and Recovery Incentive Program
TSMO—Transportation Systems Management and Operations
USC—United States Code
USDOT—United States Department of Transportation
V2X—Vehicle-to-Everything
ZEV—Zero-Emission Vehicles

Executive Summary

Carbon Reduction Program

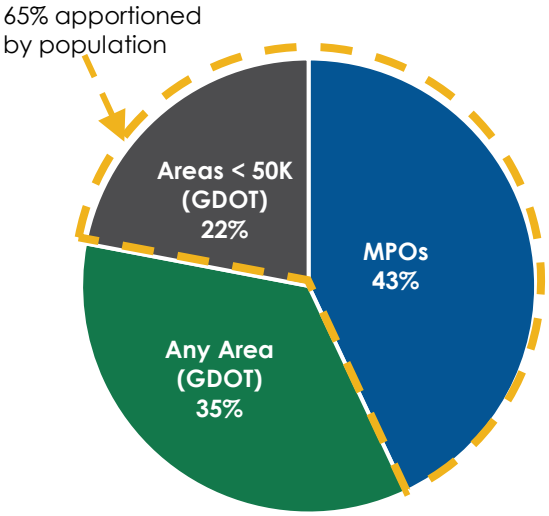
The United States Congress enacted the Bipartisan Infrastructure Law (BIL) on November 15, 2021, establishing the Carbon Reduction Program. “The purpose of the Carbon Reduction Program (CRP) is to reduce transportation emissions through the development of state carbon reduction strategies and by funding projects designed to reduce transportation emissions,” where, “transportation emissions means carbon dioxide emissions from on-road highway sources of those emissions within a State.”[1]

EXHIBIT ES-1. GEORGIA 5-YEAR FUNDING AMOUNT FOR CRP



The CRP allocates approximately $6.4 billion over 5 years to states to plan for and implement projects and strategies to reduce carbon emissions attributed to the transportation sector. The CRP will provide an estimated $211 million to Georgia for the 5-year period, 2022–2026 (inclusive) (see Exhibit ES-1).[2] This amount is to be distributed among the state and Metropolitan Planning Organization (MPO) partners according to a formula set by law,[3] with 65% apportioned to areas based on population, and the remaining 35% available in any area of the state. As Georgia Department of Transportation (GDOT) implements funds for areas with less than in 50,000 population, GDOT is responsible for spending allocations for 57% of the available funds and MPOs for 43% (see Exhibit ES-2).

EXHIBIT ES-2. GEORGIA CRP FUNDING ALLOCATIONS



Carbon Reduction Strategy

This document is Georgia’s first Carbon Reduction Strategy (CRS). It is developed in response to the CRP requirement that states develop a CRS in consultation with MPOs, by November 15,

[1] Information Memorandum: Carbon Reduction Program (CRP) Implementation Guidance based on 23 U.S.C. 175, from Gloria M. Shepherd, Associate Administrator Office of Planning, Environment, and Realty to Division Administrators Directors of Field Services, April 21, 2022.
[2] USDOT FHWA, 5-year Carbon Reduction Program by State, Available at https://www.fhwa.dot.gov/bipartisan-infrastructure-law/crp_5year_funding_by_state.cfm
[3] 23 U.S.C. 175(e)

2023, and updated every four years.[4] It is fully compliant with Federal Highway Administration (FHWA) guidance requirements,[5] which include that the CRS:

- Support the reduction of the state's transportation emissions.
- Identify strategies to reduce transportation emissions, which could include projects and strategies for safe, reliable, and cost-effective options.
- Align with the state's population density and context, including any metropolitan planning organization designated within the state.

Georgia has designed this CRS in compliance with this guidance. The main objective of the CRS is to highlight available funding and provide information on strategies consistent with the goals of the CRP that may be pursued by GDOT and the state's MPOs in planning. This strategy ensures that the various goals of the CRP are considered in the planning and project development process. This objective is achieved by compiling and qualitatively evaluating strategies. The cornerstone of this evaluation process is a set of evaluation metrics that were developed through stakeholder involvement and incorporate Georgia and federal priorities and are consistent with the state's population density and context.

GDOT is not prioritizing any individual strategy in this CRS. Instead, GDOT is providing its stakeholders with information on a set of metrics that can be used to help identify individual strategies that are suitable for their project and consistent with their priorities. Thus, it is important to note the distinction between strategies and projects. The bulk of this CRS focuses on strategies. As the details of strategies will vary depending on the specifics of the projects to which they are applied, scoring metrics presented here are necessarily generalized and somewhat subjective. The user of this document is encouraged to reference the material compiled here to identify strategies which can support the various priorities of their projects (e.g., workforce development, safety, accessibility, equity, air quality, carbon emissions reduction) and is sensitive to the context of their project in the State (e.g., urban or rural). Examples of specific projects using CRP funding to date are provided in Appendix D.

Further information on the CRP requirements and how this CRS complies is provided in Chapter 1. Further information on strategies and evaluation metrics for those strategies is provided in Chapters 4 and 5.

Georgia Context

Georgia's CRS is consistent with the state's existing priorities and mission to "deliver a transportation system focused on innovation, safety, sustainability, and mobility."[6] Georgia's Governor Brian Kemp has set a goal to become the electric mobility capital of the nation.[7] Georgia is already leading the Southeastern U.S. in electric vehicle share.[8] With these goals and other efforts, GDOT is already working in ways consistent with the priorities of the CRP. The

[4] FHWA CRP Implementation Guidance (https://www.fhwa.dot.gov/environment/sustainability/energy/policy/crp_guidance.pdf)

[5] Described in Section (F)(4) of the FHWA CRP Implementation Guidance memorandum. See Footnote 1.

[6] https://gov.georgia.gov/press-releases/2021-07-20/gov-kemp-announces-statewide-initiative-accelerate-georgias-electric

[7] https://www.wbur.org/hereandnow/2023/06/20/georgia-electric-vehicles

[8] https://www.georgia.org/mobility-infrastructure#/analyze?show_map=true&region=US-GA

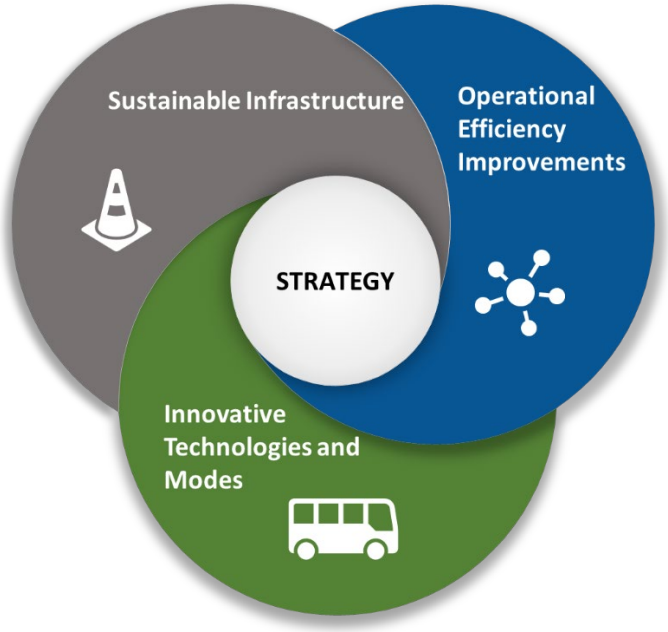
Georgia context is largely determined by urban/rural distinctions, which is captured in the evaluation metrics of this CRS.

The CRS also aligns with Georgia's 2050 Statewide Transportation Plan (SWTP)/2021 Statewide Strategic Transportation Plan (SSTP) by highlighting foundational, catalytic and innovation investments, including strategies to enhance GDOT's planning process, and complying with new federal planning requirements. Further information on Georgia's existing efforts related to the priorities of the CRP is provided in Chapter 2.

Strategic Options for Planning and Projects

This CRS provides 87 strategies to be considered in transportation planning and project development processes. It organizes these strategies into three high-level categories, as illustrated in Exhibit ES-3.

EXHIBIT ES-3. HIGH-LEVEL CATEGORIES USED TO ORGANIZE STRATEGIES



Innovative Technologies and Modes capture strategies that address public sector fleets and operations as well as consumer choice. *Operational Efficiency Improvement* strategies examine how GDOT and MPOs plan and manage road operations and traffic flows. *Sustainable Infrastructure* strategies focus on using sustainable materials in construction, maintenance, and operations related to transportation.

The organizing principle for the CRS is to provide its users with a menu of strategies that may be incorporated into their plans and projects to advance the overlapping priorities of the State and the Administration and other purposes of the CRS. Chapter 2 discusses these priorities. Chapter 5 captures this menu of strategies. Users of the CRS (GDOT, MPOs, Regional Commissions (RC), municipalities, etc.) will focus primarily on Chapter 5 to identify their strategies of interest that are appropriate for their region and consistent with State priorities.

Chapter 5 presents the 87 strategies organized into categories and subcategories, facilitating the user to identify strategies in the topic area of their interest.

To support strategy selection, Chapter 4 introduces and defines the 11 metrics used to score each strategy. Each strategy has been qualitatively evaluated in terms of:

1. **Safety**—The strategy's impact on user safety.
2. **Equity**—The strategy's impact on traditionally underserved populations.
3. **Mobility**—The extent to which a strategy provides significant benefits related to transportation options or efficiency.
4. **Resilience**—The strategy's impact on operational improvements or strength of infrastructure, and may be consistent with Promoting Resilient Operations for Transformative, Efficient, and Cost-saving Transportation Program (PROTECT) and other state programs.
5. **Air Quality Co-benefits**—The strategy's ability to reduce air pollution from transportation, including alignment with Congestion Mitigation and Air Quality (CMAQ) and other successful state programs.
6. **Implementation Factors**—The strategy's readiness for implementation.
7. **Potential to Reduce Carbon Emissions**—Indicators of the strategy's effect on carbon emissions.
8. **Consumer Savings**—The strategy's ability to save consumers money and/or time.
9. **Economic and Workforce Development**—The potential to create employment opportunities.

Additional, important considerations are also applied to the strategies, including:

10. **Eligibility for CRP Funding**—Is the strategy consistent with funding criteria outlined in FHWA's CRP guidance?
11. **Geographical Context**—Is the strategy likely to be most effective in rural and/or urban parts of the state?

Of the 87 strategies in the CRS, 27 are categorized under Innovative Technologies and Modes, 52 are under Operational Efficiency Improvements, and 8 are under Sustainable Infrastructure. An overview of the types of strategies found in the three buckets is shown in Exhibit ES-4.

Integrating these strategies into existing and future transportation planning will provide benefits to Georgians, including in the areas identified by the scoring metrics.

EXHIBIT ES-4. TYPES OF STRATEGIES IN EACH CATEGORY

Innovative Technologies and Modes	Operational Efficiency Improvements	Sustainable Infrastructure
Alternative Fuel Vehicles for Public Sector Fleets	Traffic Incident Management	Environmentally Sustainable Construction Practices
Freight-related Emissions Reduction	Arterial Management	Renewable Energy Development
Port Electrification and Facilities Improvements	Freeway Management (e.g., Managed Lanes)	Reduction in Operation and Maintenance Energy Consumption
Zero-Emission Vehicle (ZEV) Fueling Infrastructure (including electricity and hydrogen)	Public Transportation Operational Improvements	
Bicycle, Pedestrian and Nonmotorized Transportation Facilities Improvements	Active Transportation	
Transit Infrastructure Improvements	Parking Management	
Transit Service Improvements	Real-Time Traveler Information Improvements	
Transit Access Improvements	Transportation Demand Management	
Land Use and Community Design	Congestion Pricing	
	Freight Management	

Outreach and Engagement

FHWA Guidance also required states to coordinate with MPOs in the development of their CRS. Chapter 3 of the CRS summarizes coordination, outreach, and engagement efforts conducted for this process, with further details found in Appendix A. GDOT conducted stakeholder and public engagement at four levels:

- **Advisory Committee—**Strategy development and technical analysis.
- **MPO Coordination—**MPO needs and input on approach.
- **Regional Commissions—**Input on regional coordination and rural perspectives.
- **General Public—**Feedback via GDOT's CRS website.

GDOT selected a group of experts from across the state to make up the Advisory Committee (AC) for this effort. Members selected included staff from various GDOT offices, as well as other important federal, state, and local agencies. The role of the Advisory Committee was to provide technical guidance on the development of the CRS, particularly the strategies and metrics in Chapters 4 and 5. The Advisory Committee met three times throughout the project to provide input.

With the CRS primarily being designed to help MPOs make informed decisions on strategic investments with their CRP funding, GDOT emphasized outreach with each of the state's 16 MPOs. GDOT conducted two series of one-on-one meetings with each MPO, as well as presented at two Georgia Association of Metropolitan Planning Organizations (GAMPO)

meetings. These meetings provided MPOs with the opportunity to learn about the CRS and funding eligibility, as well as ask any questions they may have.

Outreach to all Georgians was accomplished through the Regional Commissions (RC) and public facing materials. RCs were included to capture planning authority for rural Georgians. RCs and the public were engaged through similar methods. GDOT developed a webpage to share information with RCs and the public. This repository of CRS information, resources, and outreach support included an overview on the CRP, brief CRS summary documents in English and Spanish, a webcast recording of a project summary presentation, and a podcast—recorded by GDOT for its "Ahead of the Curve" series—that discusses the CRS and related issues. An email address was also established specifically for the CRS to channel public feedback to GDOT.

CRS Content Overview

The CRS document consists of six chapters and three appendices.

- **Chapter 1** provides an introduction and overview of the document and its purpose.
- **Chapter 2** describes the existing conditions in Georgia relevant to this CRS. It includes a summary of Georgia's transportation priorities and provides examples of programs already implemented in the State promoting the priorities of this CRS. It discusses the geographic context under which projects in Georgia must be considered. It also discusses historic and projected carbon emissions in the State.
- **Chapter 3** recounts the stakeholder engagement approach used to develop this CRS. Consistent with Federal CRP guidelines that MPOs be consulted in the development of the CRS, this chapter describes the outreach GDOT conducted with MPOs and the Advisory Committee to establish the priorities outlined in this document.
- **Chapter 4** introduces and defines the evaluation approach used for the individual strategies in Chapter 5. This is a series of 11 metrics that are applied to the strategies to assist users of the document in identifying suitable strategies for their projects. Chapter 4 lists, describes, and defines the rating scale used for these metrics.
- **Chapter 5** presents each of the 87 identified strategies that may be considered by practitioners, planners, and decision-makers in Georgia seeking CRP funding for their projects. This chapter presents these strategies, organized by the three categories shown in Exhibit ES-3. Each strategy receives a brief description, including guiding text to educate practitioners on its use, and a summary table of the strategy evaluated against each of the 11 evaluation metrics.
- **Chapter 6** summarizes the implementation of and next steps for this CRS.

Next Steps

GDOT plans the following for this CRS:

- Implement the CRS
- Update the CRS every four years
- Support collaboration with MPOs and other partners
- Consider the priorities identified in this CRS in planning

- Implement and expand existing policies and programs consistent with this CRS
- Identify Opportunities for Innovation.

Chapter 1 Introduction and Overview

1.1 Carbon Reduction Program

The United States Congress enacted the Bipartisan Infrastructure Law (BIL) on November 15, 2021, establishing the Carbon Reduction Program (CRP). "The purpose of the Carbon Reduction Program (CRP) is to reduce transportation emissions through the development of state carbon reduction strategies and by funding projects designed to reduce transportation emissions," where, "transportation emissions means carbon dioxide emissions from on-road highway sources of those emissions within a State."[9]

The CRP also promotes other priorities, including promoting labor and workforce development, improving travel alternatives and congestion, improving safety and equity, enhancing accessibility, incorporating equity, and truck parking. The CRP provides states with funds for projects designed to reduce carbon emissions from transportation sources.[10]

1.1.1 Carbon Reduction Program Funding

The Federal CRP will provide an estimated $211 million to Georgia for the 5-year period 2022–2026 (inclusive) (see Exhibit 1).[11] This amount is to be distributed among the state and metropolitan planning organization (MPO) partners according to a formula set by law,[12] with 65% apportioned to areas based on population and the remaining 35% available in any area of the state (see Exhibit 2).[13] As GDOT implements the smallest urban areas, GDOT is responsible for spending allocations for 57% of the available funds and MPOs for 43%.

[9] Information Memorandum: Carbon Reduction Program (CRP) Implementation Guidance based on 23 U.S.C. 175, from Gloria M. Shepherd, Associate Administrator Office of Planning, Environment, and Realty to Division Administrators Directors of Field Services, April 21, 2022.
[10] Consistent with this definition, the terms Greenhouse Gas (GHG) emissions, Carbon Dioxide emissions, carbon dioxide equivalent (CO_2e), and carbon emissions are used synonymously in this document. Cases where additional specificity may be required are highlighted.
[11] USDOT FHWA, 5-year Carbon Reduction Program by State, Available at https://www.fhwa.dot.gov/bipartisan-infrastructure-law/crp_5year_funding_by_state.cfm
[12] 23 U.S.C. 175(e)
[13] FHWA CRP Fact Sheet (https://www.fhwa.dot.gov/bipartisan-infrastructure-law/crp_fact_sheet.cfm)

EXHIBIT 1. FUNDING AMOUNTS AND DISTRIBUTION

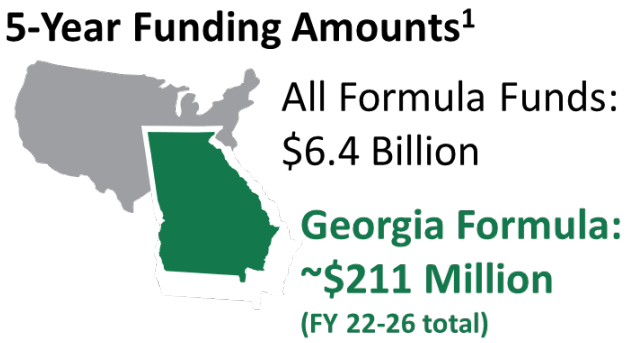
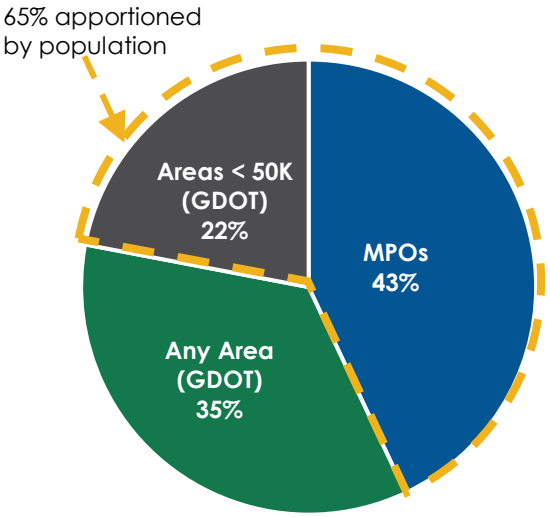


EXHIBIT 2. GEORGIA CRP FUNDING ALLOCATIONS



The BIL identifies numerous project types eligible for funding;[14] these include the following:

- Transit
- Transportation demand management
- Retrofit with light-emitting diode (LED) lighting
- Alternative fuel vehicles
- Capital improvements to intelligent transportation systems
- Development of carbon reduction strategy.

[14] FHWA Carbon Reduction Program Fact Sheet (https://www.fhwa.dot.gov/bipartisan-infrastructure-law/crp_fact_sheet.cfm)

1.1.2 Carbon Reduction Strategy Federal Requirements

One requirement of the CRP is that states develop a Carbon Reduction Strategy (CRS) document, in consultation with MPOs, by November 15, 2023.[15] FHWA guidance requires the CRS to:[16]

A. Support efforts to reduce transportation emissions.

B. Identify projects and strategies to reduce transportation emissions, which could include projects and strategies for safe, reliable, and cost-effective options:

i. to reduce traffic congestion by facilitating the use of alternatives to single-occupant vehicle trips, including public transportation facilities, pedestrian facilities, bicycle facilities, and shared or pooled vehicle trips within the State or an area served by the applicable MPO, if any;

ii. to facilitate the use of vehicles or modes of travel that result in lower transportation emissions per person-mile traveled as compared to existing vehicles and modes; and

iii. to facilitate approaches to the construction of transportation assets that result in lower transportation emissions as compared to existing approaches.

C. Support the reduction of the state's transportation emissions.

D. Quantify (at the state's discretion) the total carbon emissions from the production, transport, and use of materials used in transportation construction within the state.

E. Align with the state's population density and context, including any metropolitan planning organization designated within the state.

1.2 Georgia's Carbon Reduction Strategy

This document is Georgia's first Carbon Reduction Strategy. It was prepared to meet the requirements of the federal CRP and is compliant with FHWA guidelines. The main objective of the CRS is to highlight available funding and provide information on strategies consistent with the goals of the CRP that may be pursued by GDOT and the state's MPOs. The evaluation metrics applied to each strategy ensure that considerations of reducing the State's transportation emissions (requirements A and C), safety and consumer savings (B), regional context (E) and other metrics are included in projects and planning receiving CRP funding, including a category of strategies on Sustainable Infrastructure (D). Specific strategy categories address the remaining requirements.

[15] U.S.C. 175(d) (info from fact page) under CRS.
[16] FHWA CRP Implementation Guidance (https://www.fhwa.dot.gov/environment/sustainability/energy/policy/crp_guidance.pdf)

1.2.1 Carbon Reduction Strategy Purpose and Types

This CRS is designed to support GDOT and the state's MPOs, and others in the state to identify strategies that may be incorporated into their projects and plans to receive federal CRP funds, reduce transportation carbon emissions, and advance other CRP priorities listed above.

The approach used for this CRS ensures that the various goals of the CRP are considered in the planning and project development process. This objective is achieved by compiling and qualitatively evaluating strategies. The cornerstone of this evaluation process is a set of evaluation metrics that were developed through stakeholder involvement and incorporate Georgia and federal priorities and are consistent with the state's population density and context.

GDOT is not prioritizing any individual strategy in this CRS. Instead, GDOT is providing its stakeholders with information to help identify individual strategies that are suitable for their project and consistent with their priorities. Thus, it is important to note the distinction between strategies and projects. The bulk of this CRS focuses on strategies. As the details of strategies will vary depending on the specifics of the projects to which they are applied, scoring metrics presented here are necessarily generalized and somewhat subjective. The user of this document is encouraged to reference the material compiled here to identify strategies which can support the various priorities of their projects (e.g., workforce development, safety, accessibility, equity, air quality, carbon emissions reduction), is sensitive to the context of their project in the State (e.g., urban or rural). Examples of specific projects using CRP funding to date are provided in Appendix D.

The main objective of this document is to highlight available funding and to provide GDOT and MPOs with information related to a selection of eligible strategies that may be incorporated in their projects.

Innovative technologies and modes address public sector fleets and operations as well as consumer choice strategies, such as what type of vehicle or fuel Georgians purchase, and transportation alternatives such as biking, walking, or taking public transit. There are 27 strategies under this category, grouped into two subcategories: (1) clean vehicle technologies and (2) multimodal travel choices and travel behavior strategies. (This is a higher-level sorting. Another set of more-refined subcategories is also presented in Exhibit ES-4 and in Exhibit 14.) The adoption of clean vehicles such as alternative and low carbon fuel vehicles among public fleets and the general public can produce substantial air quality co-benefits and carbon emission reductions and may promote innovative jobs throughout the state. Increasing multimodal travel choices such as transit, ridesharing, cycling, or walking can reduce the number of single-occupant vehicle (SOV) trips being made. Benefits related to this group of strategies may contribute to consumer savings, transportation equity, and the expansion of mobility options for Georgians.

Operational efficiency examines how GDOT and MPOs plan and manage road operations and traffic flows. Since congestion is a substantial contributor to transportation source emissions, mitigating and improving impacts surrounding road operations and traffic flows can result in emission reductions and create air quality and carbon emission benefits. In this category, 52 strategies are grouped into three subcategories: (1) event management, (2) facility

management, and (3) multimodal support and demand management. Event management strategies focus on traffic incidents and work zone management projects that can promote safety, improve the transportation system's resilience, and reduce congestion. Facility management strategies include arterial management, freeway management, and public transportation operational improvements. These strategies contribute to creating a safer, more reliable, and sustainable transportation system for Georgians. Multimodal support and demand management highlight 31 strategies related to active transportation and demand, parking management, real-time traveler information, transportation demand management (TDM), congestion pricing, and freight management. This group of strategies can generate myriad benefits for Georgians, including safety, resilience, mobility, consumer savings, air quality co-benefits, and emission reduction.

The third category, sustainable infrastructure, focuses on using sustainable materials in construction, maintenance, and operations related to transportation. For example, sustainable materials may be procured for steel and pavements used or utilizing native plants along roadway corridors to reduce maintenance needs for GDOT's projects. Sustainable infrastructure strategies are grouped into three subcategories: (1) environmentally sustainable construction, (2) renewable energy development, and (3) reduction in operation and maintenance energy consumption. Most of these strategies can be implemented in a relatively short time frame, support economic and workforce development, and have the potential to reduce emissions over a project's full lifecycle.

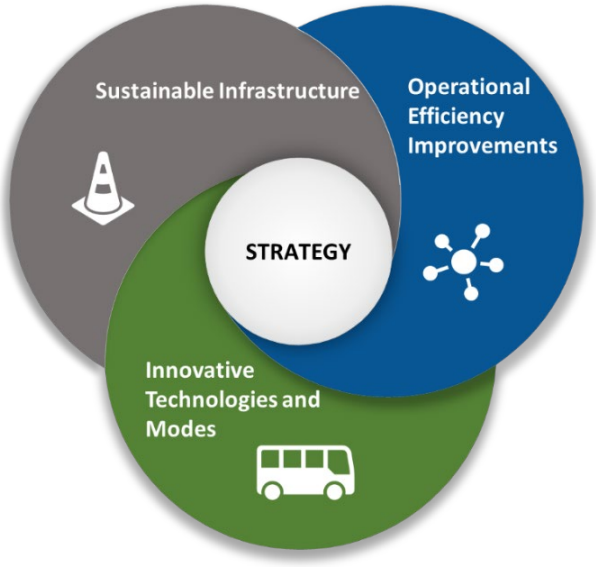
1.2.2 Content Overview

This CRS document consists of six chapters and four appendices.

- Chapter 1 provides an introduction and overview of the document and its purpose.
- Chapter 2 describes the existing conditions in Georgia relevant to this CRS. It includes a summary of Georgia's transportation priorities and provides examples of programs already implements in the State promoting the priorities of this CRS. It discusses the geographic context under which projects in Georgia must be considered. It also discusses historic and projected carbon emissions in the State.
- Chapter 3 recounts the stakeholder engagement approach used to develop this CRS. Consistent with Federal CRP guidelines that MPOs be consulted in the development of the CRS, this chapter describes the outreach GDOT conducted with MPOs and the local Advisory Committee to establish the priorities outlined in this document.
- Chapter 4 introduces and defines the evaluation approach used for the individual strategies in Chapter 5. This is a series of 11 metrics that are applied to the strategies to assist users of the document in identifying suitable strategies for their projects. Chapter 4 lists, describes, and defines the rating scale used for these metrics.
- Chapter 5 presents each of the 87 identified strategies that may be considered by practitioners, planners, and decision-makers in Georgia seeking CRP funding for their projects. This chapter presents these strategies, organized by the three categories shown in Exhibit 3. Each strategy receives a brief description, including guiding text to educate practitioners on its use, and a summary table of the strategy evaluated against each of the 11 evaluation metrics.

- Chapter 6 summarizes the implementation of and next steps for this CRS.

EXHIBIT 3. HIGH-LEVEL CATEGORIES USED TO ORGANIZE STRATEGIES



1.3 How to Use this Document

The organizing principle for this document is to provide its users with a menu of strategies that may be incorporated into their plans and projects, as discussed in Section 1.2.1. Chapter 5 is this menu. Users of this document (GDOT, MPOs, Regional Commissions, municipalities, etc.) will focus primarily on this chapter to identify their strategies of interest that are appropriate for their region and consistent with State priorities.

To support this selection, Chapter 4 introduces the organization of these 87 strategies into categories and subcategories, facilitating the user to identify strategies in the topic area of their interest. Chapter 4 also defines the metrics and scoring that are applied to each strategy. Accordingly, each strategy has been qualitatively evaluated in terms of:

1. **Safety—**The strategy's impact on user safety.
2. **Equity**—The strategy's impact on traditionally underserved populations.
3. **Mobility—**The extent to which a strategy provides significant benefits related to transportation options or efficiency.
4. **Resilience—**The strategy's impact on operational improvements or strength of infrastructure and may be consistent with PROTECT and other state programs.
5. **Air Quality Co-benefits**—The strategy's ability to reduce air pollution from transportation, including alignment with CMAQ and other successful state programs.
6. **Implementation Factors**—The strategy's readiness for implementation.
7. **Potential to Reduce Carbon Emissions—**Indicators of the strategy's effect on carbon emissions.
8. **Consumer Savings—**The strategy's ability to save consumers money and/or time.
9. **Economic and Workforce Development—**The potential to create employment opportunities.

Additional, important considerations are also applied to the strategies, including:

10. **Eligibility for CRP Funding—**Is the strategy consistent with funding criteria outlined in FHWA's CRP guidance?
11. **Geographical Context**—Is the strategy likely to be most effective in rural and/or urban parts of the state?

Users of this document will most likely determine a category and set of metrics that are most important to them. They will then peruse the available strategies to identify those that best match their priorities. This approach empowers users to select their own strategies to include in planning and maximize the available benefits and resources.

GDOT is not prioritizing any individual strategy. Instead, GDOT is providing its stakeholders with subjective information on a set of metrics we developed that the MPOs and the public can use to review individual strategies before they are implemented or incorporated into a project. This list of strategies has undergone a qualitative evaluation against a set of criteria identified by planners, experts, and stakeholders across the State. The evaluation metrics can guide GDOT and MPOs to identify those strategies that address the needs of their projects or plans, advance carbon emission reduction and other priorities, and meet Georgia's goals and planning objectives.

Chapter 2 Existing Conditions

2.1 Georgia's Transportation Priorities and the Carbon Reduction Strategy

Georgia's Carbon Reduction Strategy is consistent with Georgia's existing priorities.[17] Georgia Governor Brian Kemp has set forth goals to become the electric mobility capital of the country.[18] In fact, Georgia is leading the Southeastern U.S. in electric vehicle registrations.[19] The Governor's other strategic goals include continuing Georgia's ranking as the number one state for small business, reforming state government, strengthening rural Georgia, and putting Georgians first.[20]

GDOT is already working to improve the lives of Georgians in ways consistent with the priorities of the Carbon Reduction Program, including improved safety, advancing complete streets, improving ADA (Americans with Disabilities Act) accessibility, promoting equity, reducing carbon emissions, increasing sustainability, promoting economic and workforce development, and providing truck parking. GDOT's long-range and modal plans have their own goals, objectives, and/or strategies to help the agency achieve its mission to "Deliver a transportation system focused on innovation, safety, sustainability and mobility." GDOT is implementing other state level plans, including the Statewide Transportation Plan (SWTP)/Statewide Strategic Transportation Plan (SSTP), State Freight Plan, Bicycle Safety Action Plan, Transit Plan, National Electric Vehicle Infrastructure (NEVI) Deployment Plan, State Rail Plan, and Rural and Human Services Transportation (RHST) Plan. The SWTP/SSTP is a combined document that includes Georgia's federally required long-range comprehensive transportation plan and GDOT's strategic business case for transportation investments.[21] These plans incorporate goals, objectives, and/or strategies consistent with the CRP.

In developing this CRS, GDOT collaborated with the metropolitan planning organizations (MPOs) to identify existing plans and programs consistent with both the state's priorities and those of the CRP. This section documents the work already taking place in the state that promotes these goals. It provides an overview of these plans and Georgia's efforts in the following areas:

- Promoting labor and workforce development
- Improving travel alternatives and congestion
- Reducing transportation emissions
- Improving safety
- Enhancing accessibility
- Incorporating equity

[17] https://gov.georgia.gov/press-releases/2021-07-20/gov-kemp-announces-statewide-initiative-accelerate-georgias-electric
[18] https://www.wbur.org/hereandnow/2023/06/20/georgia-electric-vehicles
[19] https://www.georgia.org/mobility-infrastructure#/analyze?show_map=true&region=US-GA
[20] https://gov.georgia.gov/about-us/initiatives-and-priorities
[21] GDOT SWTP/SSTP FAQs - https://www.dot.ga.gov/InvestSmart/SSTP/SWTP-SSTP%20Reports/FAQ/FAQs.pdf

- Truck parking

This section presents representative examples of the work Georgia is doing to address these common priorities.

2.1.1 Promoting Labor and Workforce Development

Led by the Georgia Department of Economic Development, Georgia's Electric Mobility and Innovation Alliance (EMIA) was established in July 2021. Among the EMIA's priorities that are consistent with those of the CRP are identifying opportunities to advance high-quality jobs.[22] EMIA's statewide initiatives are focused on cultivating the electric mobility ecosystem and "strengthening Georgia's position in electrification-related manufacturing and innovation."[23] The EMIA is a partnership between key stakeholders including the government, industries, electric utilities and nonprofits, and other relevant agencies.[24]

GDOT's 2022 National Electric Vehicle Infrastructure (NEVI) Plan is also being leveraged and advanced by the EMIA to support job creation as it has the vision to catalyze further investment in electric vehicle (EV) charging stations across the state where utilization is anticipated but the private sector may not otherwise be economically motivated to install and operate EV charging stations.[25]

Furthermore, the Georgia Department of Labor (GDOL) is promoting labor and workforce development opportunities statewide. It established Career Pathways for Green Jobs in Georgia to support the green economy.[26] GDOL also established a

PROMOTING LABOR AND WORKFORCE DEVELOPMENT IN GEORGIA

The EMIA, in conjunction with GDOTs NEVI (2022) initiative, describes the following potential actions and focus areas that could contribute to labor and workforce development in rural Georgia:

- Growth of automotive-related supply chain manufacturing opportunities in rural communities
- Development of an e-mobility workforce in rural Georgia that can support both manufacturing and maintenance
- Charging in rural areas
- Study of how electrified fleet operations could catalyze investment in underserved areas, rural and urban
- Rural areas of the state that offer opportunities for manufacturing sites
- Development of state-level projections of EV demand to support planning, develop policies, and communicate opportunities to businesses, particularly in rural Georgia.

GDOL's Career Pathways in Green Jobs initiative has green business activities and jobs that align with the state's CRP: renewable energy; energy efficiency; pollution reduction and removal, GHG reduction; recycling and reuse; and environmental compliance, education, and public awareness.

According to the SWTP, the freight sector is to be targeted for workforce development to improve its performance throughout the state.

[22] EMIA 2021-2022 Report (https://www.georgia.org/sites/default/files/2023-01/emia_report_-_22mcie121_12-2022_1.pdf)
[23] EMIA (https://www.georgia.org/EMIA)
[24] GDOT NEVI Deployment Plan (https://www.house.ga.gov/Documents/CommitteeDocuments/2022/RDC/GDOT_Presentation.pdf)
[25] GDOT NEVI (https://nevi-gdot.hub.arcgis.com/)
[26] GDOL Career Pathways for Green Jobs ((https://explorer.gdol.ga.gov/vosnet/mis/current/green_Pathways.pdf)

green jobs portal to help Georgians identify career opportunities and workforce training in the booming green economy.[27]

The 2050 Statewide Transportation Plan (SWTP) specifies the state's intentions to direct investments that can create greater access to jobs and more available time for work and personal life.[28] By improving efficient travel times, employers and businesses can attract workers as well as the delivery market businesses serve. GDOT's Bike Safety Plan recognizes that businesses gain an advantage from bicycling and pedestrian investments by generating higher productivity and reducing absenteeism among the state's workforces.

2.1.2 Improving Travel Alternatives and Congestion

Supporting and expanding alternative transportation options can play a crucial role in reducing single-occupant vehicle trips and congestion. More efficient movement of people and goods, in turn, can lead to reduced carbon emissions. FHWA's CRP guidance recognizes the significance to this goal of prioritizing investments in transit, nonmotorized transportation, freight operations, and traffic management. GDOT programs and plans that reflect CRP priorities include the Statewide Transit Plan, Statewide Strategic Transportation Plan, Georgia Commute Options, and State Rail Plan. Local strategies that align with the state's CRS objectives include the Atlanta Regional Commission's (ARC) TSMO Plan and the City of Savannah's Clean Energy Plan.

GDOT's Statewide Transit Plan, published in 2020, describes the direction of transit programs in Georgia through 2050 and aims to improve access and connectivity.[29] This plan has a strong connection to the CRS transit strategies. It is meant to help GDOT coordinate with local agencies and transit providers to create strategies to ensure everyone has access to public transit. The Statewide Transit Plan has five main goals compatible with the strategies and metrics in the CRS as well as related objectives, some of which connect to CRS strategies. The plan also includes performance measures and strategies. These objectives and strategies and how they relate to the CRS are discussed below (see Exhibit 4 and Exhibit 5).

The Statewide Transit Plan also highlights transit expansion strategies for new services, expanding capacity, and regional collaboration, as well as strategies addressing vehicle technologies, efficiency and reliability improvements, and rider experience. It prioritizes improvements in both rural and urban areas.

The SWTP, which covers GDOT's long-range vision for transportation planning and investment, also lays out relevant strategies. Its investment categories are foundational investments, catalytic investments, and innovation investments. These investments cover Metro Atlanta, emerging metro areas, and rural Georgia. Investment strategies address advanced technology, congestion reduction, and rural equity. Exhibit 6 shows a summary of these strategies taken from the SWTP.[30]

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[27] GA Green Jobs Portal (greenjobs4georgia.com)
[28] GDOT 2050 SWTP (https://www.dot.ga.gov/InvestSmart/SSTP/GDOT_FINAL_2021SSTP.pdf)
[29] GDOT Statewide Transit Plan (dot.ga.gov/InvestSmart/Transit/Documents/TransitPlan/2020 SWTRP Plan/2 Statewide Transit Plan Final Report.pdf)
[30] GDOT 2050 SWTP (https://www.dot.ga.gov/InvestSmart/SSTP/GDOT_FINAL_2021SSTP-2050SWTP.pdf)

EXHIBIT 4. STATEWIDE TRANSIT SERVICE EXPANSION STRATEGIES

Type of Strategy	Strategy	Funding	Area
New Service	Provide rural service to the 37 counties without local public transit	$11 million + $31.3 million per year	Rural
	Launch new urban service for cities without service	$28.2 million	Urban
	Provide commuter transit service to meet workforce needs outside metro Atlanta	$58 million + $70 million per year	All
Expand Capacity	Expand hours to better align with workforce needs	$12 million per year	All
	Expand capacity of existing rural systems to serve unmet trip needs	$13 million–$95 million per year	Rural
	Add capacity to existing urban systems and improve service frequency where needed	$38 million per year	Urban
	Implement other locally identified projects	$1.1B	All
Regional Collaboration	Regionalize transit service	N/A	All
	Expand transit service to intercity bus and passenger rail stations	N/A	All

Source: GDOT 2020 Statewide Transit Plan

EXHIBIT 5. STATEWIDE TRANSIT SERVICE ENHANCEMENT STRATEGIES

Type of Strategy	Strategy	Funding	Area
Transit Vehicle Technologies	Implement interoperable Automatic Vehicle Locator and Automatic Passenger Counter System	$316,000 per year	Rural
	Implement fleet-wide on-board security features	$281,000 per year	Urban
	Leverage signal technology to improve transit operations	$135,000 per year	All
Efficiency and Reliability Improvements	Maintain State-of-Good Repair statewide	$307 million per year	All
	Implement zero-emission transit vehicles	N/A	All
	Deploy mobile fare payment options and unify fares among providers	$708,000 per year	All
	Optimizing routing of fixed-route service	N/A	Urban
	Implement regional shared fleet and dispatching services	$1.5 million per system	All
Enhanced Rider Experience	Implement statewide trip planning app and website	$2.1 million	All
	Improve first-and-last-mile connectivity	$760,000 per year	All
	Enhance transit stops with amenities and ensure ADA compliance	$1.3 million per year	All

Source: GDOT 2020 Statewide Transit Plan

GEORGIACOMMUTEOPTIONS

EXHIBIT 6. SWTP INVESTMENT STRATEGY CATEGORIES

Category	Statewide Freight and Logistics	People Mobility in Metro Atlanta	People Mobility in Emerging Metros and Rural Georgia
Foundational Investments—***Taking care of our existing transportation system***	• Commercial motor vehicle and rail safety • Asset management for key freight corridors including truck routes and GDOT-owned rail corridors • New Freight Operations Lump Sum Program	• Highway safety, including driver education, bicyclists and pedestrians, and work zones • Asset management with cost-effective maintenance of pavement and bridges • Intelligent Transportation Systems (ITS), including regional traffic operations and incident management • Multimodal connectivity options	• Highway and rail safety • Asset management, especially bridges in freight-intensive areas • ITS and regional traffic operations and incident management • New Rural Development Lump Sum Program • Emergency response, including evacuation routing
Catalytic Investments—***Strategic expansion to support economic development***	• Major Mobility Investment Program, including truck only lanes in Central Georgia and Savannah area connections • Options to address freight bottlenecks • Intermodal connections based on freight demand • Connectivity to Georgia Ready for Accelerated Development (GRAD) sites and other industrial and agricultural sites • Rail capacity projects on GDOT-owned corridors	• Managed lanes, including Express Lanes as public-private partnerships • Other Major Mobility Investment Program projects • Other targeted efficiency and mobility improvements	• Strategic capital investments in rural corridors • Strategic capacity investments in emerging metro areas • Enhanced connectivity to GRAD sites and other industrial and agricultural sites
Innovation Investments—***Positioning Georgia's transportation system for the future***	• Real-time information sharing • Freight vehicle technologies • Freight corridor technologies • Supply chain management systems	• Preparing for connected and automated vehicles • Integrated corridor management, including traffic signal priority for emergency response vehicles and public transit buses	• Rural broadband infrastructure for transportation technologies • Preparing for connected and automated vehicles • Integrated corridor management, to maximize use of existing rights-of-way

Source: GDOT 2050 SWTP

Georgia Commute Options (GCO) is a nationally recognized statewide TDM program that envisions reducing the number of single-occupant vehicles to improve air quality and congestion.[31] GCO works with partners around the state to identify and incentivize alternative transportation options, including carpooling, vanpooling, ride matching, transit, and nonmotorized options for employers, students, and commuters. GCO collaborated with Georgia's State Road and Tollway Authority to introduce the Commuter Credits program along Interstate 85 (I-85) in the Atlanta region.[32] I-85 is the first managed-lane facility in the United States to go through a conversion of a high-occupancy vehicle lane to a high-occupancy toll lane.

The Georgia State Rail Plan, published in 2021, envisions "a safe, efficient, and reliable state rail system that expands access and mobility for people and goods to sustain and strengthen Georgia's economic competitiveness."[33] It includes six goals aligned with Georgia's CRS:

- Enhance rail system safety and security.
- Support an improved and expanded passenger rail system.
- Upgrade and expand connectivity and access to rail for people and goods.
- Promote rail as an energy-efficient and environmentally sustainable choice, including through lower energy consumption and emissions.
- Maintain and improve rail assets to enhance reliability.

The State Rail Plan includes the following objectives:

- Increase access to passenger rail for all users
- Encourage multimodal integration and transit-oriented development to facilitate passenger rail use
- Increase the visibility of rail as an attractive choice by highlighting the reliability, safety, cost, and environmental benefits of rail
- Consider infrastructure interoperability for passenger and freight operations.

The Statewide Transit Plan (2020) strategies support GDOT's goals of providing safe and sustainable transit, optimizing public transit programs, supporting mobility and access for all, and leveraging technology and innovation to support transit:

- Goal 1 is to support transit in order to mitigate traffic congestion and related emissions in urban areas.
- Performance measures include the share of the transit fleet made up of no-emission or renewable-fuel vehicles and the numbers of managed lane miles and dedicated transit facility miles.
- Strategies include implementing zero-emission transit vehicles.

The 2050 Rural and Human Services Transportation Coordination Plan provides a framework for coordination among state agencies to deliver mobility services for rural transit, human services transportation, and non-emergency medical transportation with the following goals:

- Improve safety and sustainability with innovative technologies
- Identify opportunities for first- and last-mile connectivity such as bicycle and pedestrian infrastructure near transit and mobility on demand, focusing on ADA accessibility.
- Implement micromobility or microtransit.

The Commuter Credits program, led by the State Road and Tollway Authority, to reduce congestion on I-85 Express Lanes, gives participants toll credits for commuting off peak and using transit and carpooling on managed lanes.

[31] Georgia Commute Options (https://gacommuteoptions.com/)
[32] Georgia Commuter Credits (https://wstc.wa.gov/wp-content/uploads/2020/01/2016-1213-BP1-GeorgiaCommuterCredits.pdf)
[33] GDOT State Rail Plan (https://www.dot.ga.gov/GDOT/pages/StateRailPlan.aspx)

- Further Georgia's economic development and competitiveness statewide through rail.

ARC published its transportation system management and operations (TSMO) strategic plan in 2020 to develop a robust, world-class intelligent transportation system (ITS) for the movement of travelers and freight in the Atlanta region.[34] By embracing innovation, data sharing, and collaboration, and focusing operations on moving people and goods, this plan advances GDOT's CRS goals of improving mobility and safety and reducing congestion. The TSMO plan strategic vision has five goals: optimization of safety; reliable travel times; efficient, seamless travel; equitable access; and environmental benefits.

2.1.3 Reducing Transportation Emissions and Increasing Sustainability

The City of Savannah's Clean Energy Plan emphasizes adoption of alternative fuel vehicles to reduce transportation emissions and promote sustainability.[35] The plan calls for achieving 100% renewable electricity communitywide by 2035 and 100% renewable energy communitywide by 2050, achievable through improved energy efficiency, renewable energy, transportation and mobility, community and economic development, and education and engagement.

Many universities and colleges throughout the state, including the Georgia Institute of Technology, University of Georgia, Agnes Scott College, and Emory University, have also adopted climate action or other sustainability-related plans. What is more, Georgia's NEVI Deployment Plan outlines how the state will deploy EV charging stations, supporting the use of zero-emission vehicles. Moreover, because hydrogen is one of the eligible projects mentioned in FHWA's CRP guidance, Georgia supports the deployment of alternative

The NEVI Plan includes strategy discussion for EVSE Operations and Maintenance, identifying EV charging service providers and station owners, EVSE data collection and sharing, resilience/emergency evacuation/ seasonal needs, and more.

The State Freight Plan advances freight through environmental stewardship, equitable practices, and responsible development.

Transportation and mobility strategies in Savannah's Clean Energy Plan include:

- Community bulk purchase of electric vehicles
- Charging infrastructure buildout
- EV dealer incentives
- EV customer incentives
- Electric car, bike, and scooter share
- Municipal fleet electrification
- Public transit improvement and expansion
- Public transit electrification
- Pedestrian infrastructure improvements
- Improved connectivity of pedestrian and transit networks

Georgia Tech's Sustainability Next Plan has a goal for the university to reduce greenhouse gas emissions by 50% by 2030 and to achieve carbon neutrality by 2050. Strategies include:

- Optimizing the fleet for electrification
- Implementing Transportation Demand Management (TDM) strategies.

Agnes Scott College and the City of Decatur's Climate Resilience Plan emphasizes developing a multimodal transportation network that allows for reductions in carbon emissions.

[34] Atlanta Regional Commission TSMO Strategic Plan (https://cdn.atlantaregional.org/wp-content/uploads/arc-tsmo-strategic-plan-final-2020.pdf)
[35] City of Savannah 100% Clean Energy Plan (https://www.savannahga.gov/3451/The-Plan)

fuel vehicles, including the acquisition, installation, or operation of publicly accessible hydrogen stations.[36]

2.1.4 Improving Safety

With FHWA recognizing that no deaths are acceptable on our roads, the CRP implementation guidance calls out safety as a priority for funding. FHWA encourages states to prioritize safety in all Federal highway investments and other projects as appropriate, using data-driven safety analyses to ensure safety is a key input in decision-making and that the safety of all road users are considered. This connects to United States Department of Transportation's (USDOT) Safe System Approach, which FHWA encourages state and local agencies to utilize with CRP funds. This approach entails a multimodal safety mindset that addresses the safety of all road users, no matter the mode they use (e.g., walking, biking, driving, taking transit) such as through a Complete Streets approach.

GDOT already places a heavy emphasis on safety, with the agency's mission being to "deliver a transportation system focused on innovation, safety, sustainability, and mobility."[37] Safety-related investment strategies are considered a foundational investment in priority categories (freight and logistics, people mobility in metro Atlanta, and people mobility in emerging metros and rural Georgia) in GDOT's SWTP. GDOT addresses safety in numerous other plans, including the Bicycle Safety Action Plan.[38]

IMPROVING SAFETY IN GEORGIA

- GDOT's 2050 SWTP includes the following safety investment strategies under its foundational investments category:
- Freight and Logistics: Commercial motor vehicle and rail safety
- People Mobility in Metro Atlanta: Highway safety, including driver education, bicyclists and pedestrians, and work zones
- People Mobility in Emerging Metros and Rural Georgia: Highway and rail safety

GDOT's Bicycle Safety Action Plan from 2018 assesses the current state of bicycle safety in Georgia and provides guidance and strategies for bicycle safety solutions. The plan focuses on safety, but emphasizes the importance of better bicycle infrastructure, with an objective to "Systematically and reliably incorporate proven bicyclist safety countermeasures during the design process." This objective includes the following strategies:

- Develop and implement procedures for incorporating bicycle safety improvements into maintenance projects on corridors identified by crash data as high risk for bicyclists.
- Assess state and federally funded projects for bicycle improvements early in the planning stage.

[36] Georgia Hydrogen Fueling Stations Press Release (https://gov.georgia.gov/press-releases/2023-08-07/georgia-takes-lead-preparations-hydrogen-fueling-stations). See Appendix B.
[37] GDOT About Us Webpage (https://www.dot.ga.gov/GDOT/Pages/AboutGDOT.aspx)
[38] GDOT Bicyle Safety Action Plan (https://www.dot.ga.gov/DriveSmart/Travel/BikePed/5201%20ga%20bikes%20BSAP%20report_3.pdf)

2.1.5 Enhancing Accessibility

GDOT already places an emphasis on accessibility—ensuring equal opportunity and access for people with disabilities—in its statewide plans and programs, such as the SWTP and the 2050 RHST Plan,[39],[40] which include strategies related to accessibility. Other GDOT plans, like the State Rail Plan and Statewide Transit Plan,[41],[42] highlight strategies for ADA investments in the state.

ACCESSIBILITY IN GEORGIA

The 2050 SWTP includes a rural-focused strategy to "develop performance measures emphasizing connectivity, accessibility, and economic development to better understand the need for and benefits of rural capital projects." Specific accessibility strategies include:

- Amtrak investing in ADA improvements to passenger stations help enhance the passenger experience and ensure compliance with the ADA.
- Exploring making Atlanta's Peachtree Amtrak Station incorporate space for a completely ADA-accessible "signature" station building.

The Statewide Transit Plan notes that transit services and connecting infrastructure need to be fully ADA compliant and accessible to all users, regardless of age or physical ability. Ensuring ADA compliance and accessibility includes equipping all rural vehicles with wheelchair lifts, and enhancing fixed route transit stops with amenities:

2050 RHST Plan emphasizes ADA accessibility with objectives to "increase ADA compliance", "improve accessibility for persons with disabilities", "ensure ADA compliance among vehicles", and "identify opportunities for first- and last-mile connectivity such as bicycle and pedestrian infrastructure near transit and mobility on demand, focusing on ADA accessibility.

State Rail Plan includes potential station improvements to ensure ADA compliance. The Toccoa Amtrak Station is undergoing renovations that will improve accessibility by raising the boarding platform to be level with the passenger floor cars.

2.1.6 Incorporating Equity

Enabling a transportation network that serves all community members is a priority under the CRP and for Georgia. FHWA has noted that it will, "work with States to ensure consideration of using CRP funds for projects and inclusion of project elements that proactively address racial equity, workforce development, economic development, and remove barriers to opportunity, including automobile dependence in both rural and urban communities as a barrier to opportunity or to redress prior inequities and barriers to opportunity."[43]

[39] GDOT 2050 SWTP (https://www.dot.ga.gov/InvestSmart/SSTP/GDOT_FINAL_2021SSTP-2050SWTP.pdf)
[40] GDOT RHST Plan (https://rhst-gdot.hub.arcgis.com/)
[41] GDOT State Rail Plan (www.dot.ga.gov/GDOT/Pages/StateRailPlan.aspx)
[42] GDOT Statewide Transit Plan (https://www.dot.ga.gov/InvestSmart/Transit/Documents/TransitPlan/2020%20SWTRP%20Plan/2%20Statewide%20Transit%20Plan%20Final%20Report.pdf)
[43] FHWA CRP Implementation Guidance (https://www.fhwa.dot.gov/environment/sustainability/energy/policy/crp_guidance.pdf)

GDOT and Georgia's regional agencies are already developing strategies and taking action around equity. Georgia Municipal Association's Equity and Inclusion Advisory Council (EIAC) consists of multiple representative members of various municipalities working collectively to advance equity and inclusion initiatives. Additional efforts include establishing an Equity and Community Advisory Technical Advisory Committee (TAC) for the Statewide Transit Plan, developing a fare policy toolkit, considering equity in EV deployment, and more.[44]

ADVANCING EQUITY IN GEORGIA

GDOT's EV Infrastructure Deployment Plan addresses equity, noting that transportation electrification provides an opportunity to address social equity concerns around air quality and energy burden. Some of the ways GDOT plans to consider equity through this plan include:

- Focusing outreach on disadvantaged communities, organized around both listening to members of these communities and educating historically disadvantaged communities on opportunities and challenges around electrification.
- Identifying, quantifying, and measuring disadvantaged community benefits around four broad categories (energy burden, dependence on fossil fuels, exposure to environmental and climate hazards, and social vulnerability).
- Showcasing Georgia's commitment to equity through NEVI investment.

The Statewide Transit Plan's Equity and Community Advisory TAC included participants from six community groups in the state, including the Urban League of Greater Atlanta and the Georgia Council on Aging. Engagement with the TAC addresses transit needs and opportunities, involving equity groups in the transit planning process, outreach to limited English proficiency populations, and collecting relevant demographic data.

GDOT's Transit Plan includes a strategy on developing fare policy, facilitating transit providers to set their own fare policy and understand issues associated with various fare policies.

The Athens-Clarke County Clean and Renewable Energy Plan's transportation discussion addresses equity in nine transportation actions by providing an equity score indicating how likely an action is to reduce or exacerbate inequity.

[44] GDOT Statewide Transit Plan (https://www.dot.ga.gov/InvestSmart/Transit/Documents/TransitPlan/2020%20SWTRP%20Plan/2%20Statewide%20Transit%20Plan%20Final%20Report.pdf)

2.1.7 Truck Parking

GDOT addresses truck parking in the SWTP and its State Freight Plan,[45],[46] which includes a commitment to exploring truck parking partnerships and an allocation of funds for related investments.[47] The freight plan also notes that, although there are still truck parking shortage issues in the state, Georgia has successfully been increasing its safe truck parking supply, with the 2019 Jason's Law survey ranking Georgia in the top tier among states for total truck parking spaces per 100 miles of the National Highway System. Shortages are prevalent in freight corridors and large metropolitan areas.

IMPROVING TRUCK PARKING IN GEORGIA

GDOT's State Freight Plan includes sections on truck parking that catalog the existing conditions and needs of truck parking throughout the state. Additionally, the freight plan's constrained project list includes an allocation of funds for improving public truck parking.

GDOT's 2050 SWTP includes a strategy to "explore truck parking partnership opportunities with the private sector and local governments to increase truck parking options and share real-time information on available capacity."

2.2 The Georgia Context

Georgia's CRS is intended to reflect and be appropriate to Georgia's geographical context, which is largely rural. Of 159 counties, less than one-third are represented by the 16 MPOs in the state.[48] But all counties are represented by one of the 12 regional commissions.[49] Exhibit 7 shows MPOs in Georgia and Exhibit 8 the regional commissions.

MPOs play a critical role in leveraging funding to advance carbon reduction strategies. 43% of Georgia's CRP funding is allocated to MPOs, with a distribution based on population. Consequently, outreach to MPOs is a critical component of the development of this CRS (see Chapter 3). Regional commissions are integral for advancing carbon reduction strategies and other planning initiatives in rural areas and other areas not served by MPOs.

[45] GDOT 2050 SWTP (https://www.dot.ga.gov/InvestSmart/SSTP/GDOT_FINAL_2021SSTP-2050SWTP.pdf)
[46] GDOT Freight Webpage (https://www.dot.ga.gov/GDOT/pages/freight.aspx)
[47] GDOT Freight Constrained Project List (https://www.dot.ga.gov/InvestSmart/Freight/GeorgiaFreight/NHFP_Constrained_Project_List.pdf)
[48] GDOT STIP FY21-24 (https://www.dot.ga.gov/InvestSmart/STIP/FY21-24/DRAFTSTIP-FY21-24_v2.pdf)
[49] Georgia Department of Community Affairs - Regional Commissions (https://www.dca.ga.gov/local-government-assistance/planning/regional-planning/regional-commissions)

Nevertheless, the population distribution in Georgia skews urban. There are about 10.8 million residents in Georgia, with roughly 21% of the population living in Georgia's rural counties and the rest distributed among Georgia's 39 urban counties.[50] Rural Georgia refers to areas outside designated MPOs, including smaller urban areas that do not meet the threshold for federal designation as an MPO planning area. About 56% of the State's population lives in Metro Atlanta, the 22 counties represented by three MPOs: Atlanta Regional Commission, Cartersville-Bartow MPO, and Gainesville-Hall MPO. The remaining urban population is distributed among the emerging metro areas covered by the other 13 MPOs. Exhibit 9 shows a map of the urban and rural geographic distribution.

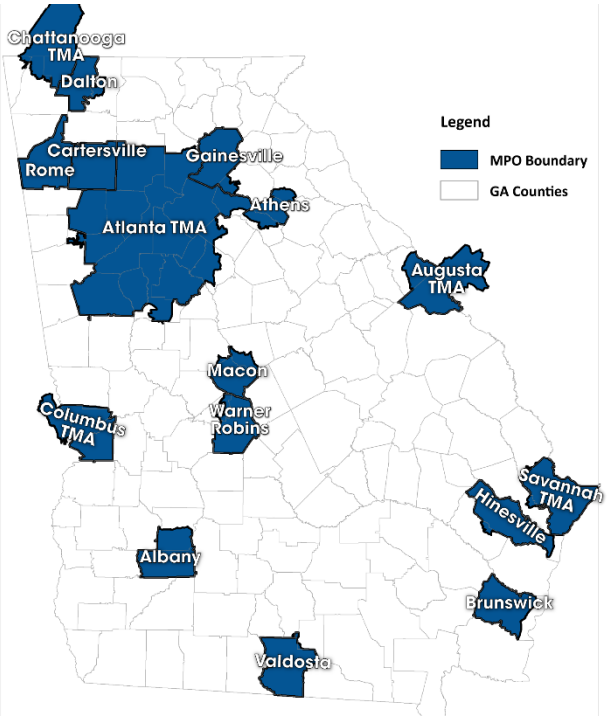
MPOs IN GEORGIA

Georgia has the following MPOs:

- Doughtery Area Regional Transportation Study (Albany)
- Madison-Athens-Clark-Oconee Transportation Study (Athens)
- Atlanta Regional Commission (Atlanta)
- Augusta Regional Transportation Study (Augusta)
- Brunswick Area Transportation Study (Brunswick)
- Bartow County Community Development Department (Cartersville Bartow)
- Chattanooga Urban Area Transportation Study (Chattanooga)
- Columbus-Phenix City Transportation Study (Columbus)
- Dalton MPO (Dalton)
- Gainesville-Hall MPO (Gainesville)
- Hinesville Area MPO (Hinesville)
- Macon Area Transportation Study (Macon)
- Floyd County-Rome MPO (Rome)
- Coastal Region MPO (Savannah)
- Valdosta-Lowndes MPO (Valdosta)
- Warner Robins Area Transportation Study (Warner Robins)

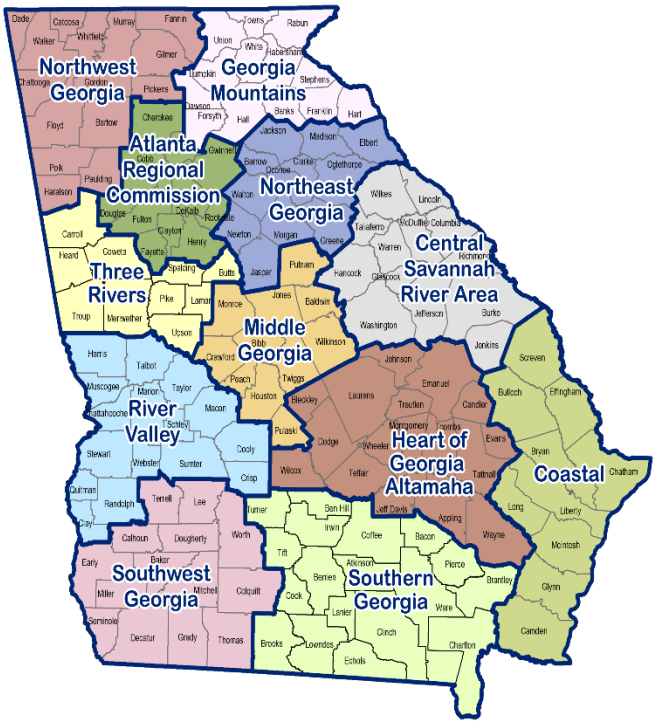
[50] Rural Georgia in Focus Presentation (https://www.house.ga.gov/Documents/CommitteeDocuments/2021/Rural_Development_Council/CVIOG%202020%20Census%20Data.pdf)

EXHIBIT 7. MAP OF GEORGIA'S MPOS



Source: GDOT FY 21-24 STIP (https://www.dot.ga.gov/systems/ProjectDocuments/STIP/MPO_Map.png)

EXHIBIT 8. MAP OF GEORGIA'S REGIONAL COMMISSIONS

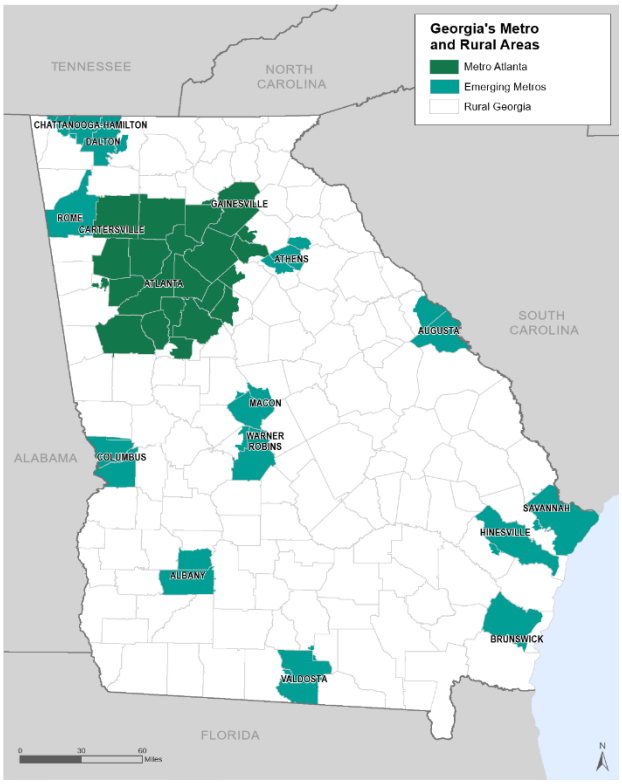


REGIONAL COMMISSIONS IN GEORGIA

- Atlanta Regional Commission
- Central Savannah River Area
- Coastal
- Georgia Mountains
- Heart of Georgia Altamaha
- Middle Georgia
- Northwest Georgia
- Northeast Georgia
- River Valley
- Southern Georgia
- Southwest Georgia
- Three Rivers

Source: Georgia Department of Community Affairs (https://www.dca.ga.gov/sites/default/files/rcjuly2021.pdf)

EXHIBIT 9. MAP OF GEORGIA'S URBAN AND RURAL AREAS



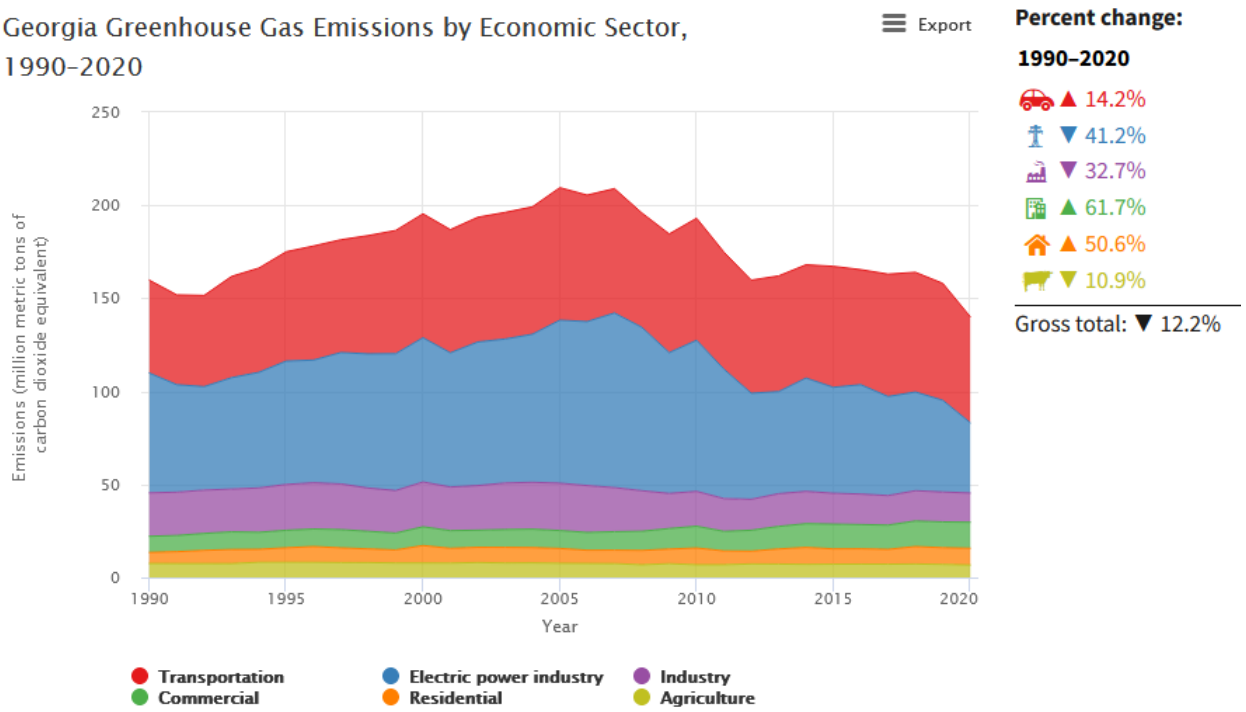
Source: GDOT 2050 SWTP

2.3 Carbon Emissions in Georgia

According to the Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990–2021 (the national inventory that the United States prepares annually under the United Nations Framework Convention on Climate Change), transportation accounted for the largest share of total U.S. GHG emissions in 2021, at 29%. Cars, trucks, commercial aircraft, and railroads, among other sources, all contribute to transportation end-use sector emissions.

Changes in carbon dioxide (CO_2) emissions from fossil fuel combustion are influenced by many long-term and short-term factors, including population growth, economic growth, changing energy prices, new technologies, and changing behavior. According to US Environmental Protection Agency (EPA) data, Georgia has successfully reduced its overall, statewide emissions about 12.2% between 1990 and 2020, primarily to reductions in the electricity-generating and industrial sectors. (See Exhibit 10).

EXHIBIT 10. HISTORIC GHG EMISSIONS IN GEORGIA



Source: US EPA (https://cfpub.epa.gov/ghgdata/inventoryexplorer)

2.4 Current Implementation of CRP Funding

There are currently 13 projects programmed in Georgia that are leveraging fiscal years of 2022 and 2023 CRP funds. This section provides a summary of these projects by their eligibility criteria. Appendix C provides a full list of these projects.

Three of the projects include alternative transportation strategies. The first project, in coordination with the Atlanta Transportation Management Areas (TMA), is enhancing sidewalks along State Route (SR) 236 from Leafmore Place to Pangborn Road. Also, in coordination with the Atlanta TMA, a project is being implemented to enhance a multi-use trail from Loridans Drive to Sandy Springs City Limit. Lastly, GDOT is implementing a rails-to-trails project from downtown Vidalia to Cedar Crossing Road in Toombs County for pedestrian and bicycle use. All of these projects are eligible for funding under Section (G)(3)(C) of FHWA CRP Guidance.

Three projects involve traffic flow improvement strategies without major capacity expansion. In coordination with the Rome MPO, one of the projects consists of reconstructing/rehabilitating a roadway to a single lane hybrid roundabout with southbound separate lanes for thru and left turns. Another project, which is being done in coordination with the Atlanta TMA, consists of reconstructing/rehabilitating a roadway to add northbound and southbound turn lane additions to allow for triple left turn lanes with traffic signal modifications. An additional traffic flow improvement project is being done in coordination with the Atlanta TMA. This project consists of improving an intersection by reconstructing/rehabilitating a roadway to widen lanes, adding a

right turn lane, as well as a traffic signal. All of these projects are eligible for funding under Section (G)(3)(L) of FHWA CRP Guidance.

Four projects receiving CRP funds include Intelligent Transportation Systems (ITS) strategies. All of these are vehicle-to-everything (V2X) implementation and installation projects. The GDOT Office of Traffic Operations is leading two projects (one for FY 2022 and one for FY 2023) for the statewide implementation of V2X technology under its SigOps program, which advances emergency vehicle preemption, traffic signal priority, freight priority and information, and signal phasing and timing projects. In addition, the GDOT Office of Traffic Operations is leading Phase I and Phase II of a C-V2X installation. Phase I incorporates I-75, I-475, and I-575, while Phase II includes I-16, I-20, I-75, I-516, and I-575. All of these projects are eligible for funding under Section (G)(3)(E) of FHWA CRP Guidance.

One project includes strategies related to deployment of alternatively fueled vehicles. For this project, the Atlanta Regional Commission is coordinating with the Atlanta TMA to implement a pilot regional bus and bus facilities electrification program. This transit project is flexing CRP funds to FTA.

Two projects involve public transportation strategies. For one of the projects, the Atlanta TMA is coordinating with Cobb County to replace its existing fixed route bus fleet. For the other project, the Gainesville-Hall MPO is coordinating with Hall County to procure a new public transit fleet. Both projects are flexing CRP funds to FTA.

Five of these 13 projects are being implemented in non-urban areas. This includes all four V2X projects and the rails-to-trails project in the non-urban Toombs County area.

Chapter 3 Outreach and Coordination

Chapter 2 discussed the Georgia context and introduced the MPOs and RCs representing the people in State planning actions. This chapter summarizes GDOT's process of stakeholder coordination, outreach, and engagement that is fundamental to the creation of this CRS within the proper context of the State. Details of GDOT's coordination approach are provided in Appendix A.

FHWA guidance requires states to coordinate with MPOs to develop their Carbon Reduction Strategies because these strategies are recognized as an integral part of transportation planning.[51] The CRS can be advanced by integrating the strategies into the state's Long-Range Statewide Transportation Plan (LRSTP) or the MPO's Metropolitan Transportation Plan (MTP), or by developing a separate document that is incorporated by reference into the LRSTP and MTP. To accomplish this directive, GDOT coordinated throughout the development of this CRS with the MPOs in the state individually in the technical coordinating committees (TCC) and collectively through the Georgia Association of MPOs (GAMPO). This document was also guided by a technical advisory committee to collaborate on the development of the state's CRS with members and stakeholders. To ensure that this CRS is consistent with the context and priorities of the State of Georgia, GDOT developed this document using a four-fold approach to coordination, as shown in Exhibit 11.

EXHIBIT 11. REPRESENTATION OF THE OUTREACH APPROACH

[51] FHWA CRP Implementation Guidance (https://www.fhwa.dot.gov/environment/sustainability/energy/policy/crp_guidance.pdf)

3.1 Metropolitan Planning Organizations

MPOs represent the urbanized populated areas of the state and are allocated 43% of available CRP funding. (Section 1.1) GDOT designed this CRS primarily to help MPOs make informed decisions on strategic investments with their CRP funding.

GDOT conducted one-on-one meetings with each of the State's 16 MPOs (listed in Chapter 2) to share information, develop priorities for the development of the State's CRS, and share information on Georgia's approach for this CRS. GDOT also presented regular updates at statewide Georgia Association of MPOs (GAMPO) meetings throughout the project. Methods used to communicate with the MPOs included e-mail, PowerPoint presentations, meetings via Microsoft Teams/ Zoom/ Webex, and in-person meetings.

Two series of one-on-one meetings were conducted with the MPOs, the first being in Spring 2023 and the second being in Fall 2023. To collaborate with MPOs, in-person and virtual presentations were conducted at MPO Technical Coordinating Committee (TCC) meetings. This first set of MPO meetings focused on providing each MPO's TCC with background information on the CRS. This included information on the project team, how CRP funds are allocated in Georgia, examples of the types of projects eligible for funding, the purpose of the CRS, how GDOT is planning to organize the strategies, and the project schedule. These meetings were designed for information sharing and gave MPOs the opportunity to ask questions and follow up with GDOT. The second series of one-on-one MPO meetings was held in Fall 2023 and focused on collecting feedback on the draft CRS document.

GDOT presented at the GAMPO meeting in March 2023 to provide additional information on the CRS, including a draft outline of the document, potential performance metrics, and a draft list of strategies. Guided discussion at the March GAMPO addressed the metrics included in the CRS and whether these combined strategies and metrics (see Chapters 4 and 5) give stakeholders what is needed for strategy selection and evaluation. GDOT will also present the draft CRS and its use at the November 2023 GAMPO meeting.

Feedback obtained from MPO stakeholder engagement was incorporated in the development of this CRS. Appendix A provides additional information on coordination with MPOs.

3.2 Advisory Committee

The Advisory Committee was formed to provide technical guidance on the development of the CRS, particularly the strategies and metrics in Chapters 4 and 5. Members of the committee are experts from across the state; they include staff from GDOT and federal, state, and local agencies. The advisory committee met three times: in January, April, and August 2023. The first meeting focused on an overview of the CRS process, timeline, expectations, and deliverables and ended with questions asking about information or resources that members could use to help with this effort, information that would be helpful to have in the CRS, and state-level strategies to prioritize in the plan. The second meeting introduced an outline of the CRS to committee members, including strategies and evaluation methods planned for the document.

This meeting included an interactive discussion focused on what metrics may be missing, how metrics can be improved, the measurement scale to use, and the need for any additional information. Appendix A provides a detailed list of questions and responses from this meeting. This discussion informed the development of the CRS document, including adding air quality co-benefits as a metric and refining the measurement scale (see Chapter 4). During the third meeting the content of chapters 4 and 5 was discussed and changes were recommended.

ADVISORY COMMITTEE MEMBERS

- GDOT Construction
- GDOT Program Delivery
- GDOT Intermodal
- GDOT Materials and Testing
- GDOT Environmental Services
- GDOT Performance-based Management and Research
- Georgia Environmental Protection Division
- Georgia Department of Economic Development
- Georgia Regional Transportation Authority
- Georgia Bike/Ped Coordinator
- Clean Cities GA
- Georgia Institute of Technology
- GAMPO President
- FHWA Georgia Division
- US EPA Region 4

3.3 Regional Commissions and the General Public

Outreach to all Georgians was accomplished through the Regional Commissions and public facing materials. Regional commissions were included for increased public engagement outside of the MPO areas and to make sure the rural part of the state is included in the process. Regional commissions and the public were engaged through similar methods. GDOT developed a webpage to share information with the public. This repository of CRS information, resources, and outreach support includes an overview on the CRP, brief CRS summary documents in English and Spanish, a webcast recording of a project summary presentation, and a podcast—recorded by GDOT for its “Ahead of the Curve” series—that discusses the CRS and related issues. An email address was also established for the CRS to channel public feedback to GDOT.

Chapter 4 Strategy Organization and Review

4.1 Strategy Organization

Eighty-seven strategies are listed that may be eligible for implementation under the Carbon Reduction Program. To facilitate the selection of strategies that may be suitable for implementation, this document organizes these strategies into three categories:

- **Innovative technologies and modes—**This category addresses consumer choice strategies, such as the purchase and use of alternative or lower-carbon fuels and alternative modes of transportation.
- **Operational efficiency improvements—**This includes strategies influencing how GDOT and MPOs plan and manage road operation and flow.
- **Sustainable infrastructure—**This includes use of more sustainable materials for infrastructure construction and maintenance, including sustainable pavements, alternative construction materials, and maintenance practices.

Exhibit 3 in Chapter 1 illustrates these categories. Chapter 5 describes these strategies in detail.

4.2 Scoring Elements

The rating scale used in the evaluation of strategies in Chapter 5 is described in Exhibit 12. Strategies are rated on a three-tiered system, with a fourth tier to account for no benefits.

EXHIBIT 12. STRATEGY EVALUATION CRITERIA AND RATING SCALE

Criterion	Evaluation	Impact Rating Scale
Safety *("Safety")* 	Approximation of expected impact on user safety	• **No benefit:** Strategy expected to have no benefit or negative benefits—indicated by a dash. • **Low:** Low or uncertain impact. • **Medium:** Strategy may reasonably be expected to directly improve the safety of vulnerable roadway users. • **High:** Strategy, such as known infrastructure modifications, has a history of directly improving the safety of vulnerable roadway users.
Equity *("Equity")* 	Determined by the extent to which the strategy may serve or impact traditionally underserved populations	• **No benefit:** Strategy expected to have no benefit or negative benefits—indicated by a dash. • **Low:** Minimal or uncertain direct impact on known disadvantaged populations. • **Medium:** Strategy may reasonably be expected to indirectly benefit disadvantaged populations. • **High:** Strategy is designed to directly benefit disadvantaged populations.

Criterion	Evaluation	Impact Rating Scale
Mobility *("Mobility")* 	Determined by the extent of the population served and significance of benefit (i.e., higher score for projects that provide additional transportation options, lower for those that make existing options faster)	• **No benefit:** Strategy expected to have no benefit or negative benefits—indicated by a dash. • **Low:** Strategy either indirectly improves mobility or has uncertain benefits. • **Medium:** Strategy increases the number of transportation options. • **High:** Strategy increases transportation options and improves overall travel performance (e.g., speeds, reliability).
Resilience *("Resilience")* 	Determined by assessment of the impact on supporting a more resilient transportation system[a]	• **No benefit:** Strategy expected to have no benefit or negative benefits—indicated by a dash. • **Low:** Strategy has low or uncertain impacts on resiliency factors to improve the ability of the transportation system's resiliency. • **Medium:** Strategy supports infrastructure resiliency only indirectly. • **High:** Strategy directly supports resiliency of existing or new infrastructure including through planning or initiatives.
Air quality co—benefits *("Air Quality")* 	Determined by assessment of the strategy to provide neutral or positive air quality benefits	• **No benefit:** Strategy expected to have no benefit or negative benefits—indicated by a dash. • **Low:** Strategy is expected to have low or uncertain impacts on air quality. • **Medium:** Strategy may be expected to have indirect benefits to air quality. • **High:** Strategy directly leads to reduced emissions of traditional air pollutants.
Implementation factors *("Readiness")* 	Determined by estimation of the time to implement the strategy	• **No benefit:** Strategy expected to have no benefit or negative benefits—indicated by a dash. • **Low:** Strategy is uncertain, relies on or promotes unproven technology, or has no demonstrated path to implementation. • **Medium:** Strategy has been demonstrated successfully and specific projects can be implemented in the medium to long term. • **High:** Strategy is currently or recently used successfully in a similar area or projects including such strategies are feasible in the short term.
Potential to reduce carbon emissions *("C. Emissions")* 	Approximation of strategy effects on carbon reduction in the Georgia context	• **No benefit:** Strategy expected to have no benefit or negative benefits—indicated by a dash. • **Low:** Low or uncertain impact on CO_2 emissions from transportation over the lifecycle of a project it includes. • **Medium:** Strategy shows potential for CO_2 emissions reduction over the strategy's lifecycle with reasonable confidence or has been proven to reduce emissions but only in moderate amounts. • **High:** Strategy has been successfully demonstrated to result in substantial carbon emission reductions.

Criterion	Evaluation	Impact Rating Scale
Consumer savings *("Savings")* 	Approximation of consumer savings	• **No benefit:** Cases expected to have no benefit or negative benefits are indicated by a dash. • **Low:** Low or uncertain direct cost savings for consumers, including fuel, capital costs, travel costs, etc. • **Medium:** Strategy may reasonably be expected to lead to only indirect cost savings, including reduced time. • **High:** Strategy has been demonstrated to lead to direct consumer cost savings that may be related to time, fuel, capital costs, travel cost, etc.
Economic or workforce development *("Jobs")* 	Approximation of the potential to advance high-quality job creation [b]	• **No benefit:** Cases expected to have no benefit or negative benefits are indicated by a dash. • **Low:** Strategy is unlikely to support job growth in Georgia or is uncertain. • **Medium:** Strategy may lead to small amounts of job growth, expected growth is of short duration, or job location is unknown. • **High:** Strategy implementation may be directly related to employment in Georgia.
Meets eligibility for Carbon Reduction Program funds *("Eligibility")* 	Eligibility for CRS funds consistent with FHWA CRP Guidance	• When a strategy is listed as ineligible or when it may not reasonably be expected to be consistent with CRP guidelines, it is shown with a dash. • **Low:** Strategy may reasonably be expected to show carbon reductions over a project's lifecycle but is not addressed in guidance or is uncertain. • **Medium:** Strategy is listed as potentially eligible in FHWA guidance and is mentioned as relevant or encouraged in FHWA guidance. • **High:** Strategy is listed as "eligible" or consistent with "eligible" projects in FHWA guidance.
Geographical context *("Context")* 	Characteristics of an area or context that would make the strategy most effective	• **Urban:** Strategy may reasonably be expected to be effective in areas represented by MPOs and with a population of at least 50,000. • **Rural:** Strategy may reasonably be expected to be effective in areas with a population of less than 50,000. • **All:** Strategy may reasonably be expected to be effective in any area. • **None or uncertain:** Strategy is not expected to be effective in any area, or effectiveness is uncertain.

a. Resilience is defined as "the ability to anticipate, prepare for, and adapt to changing conditions and withstand, respond to, and recover rapidly from disruptions," in the Vulnerability Assessment and Adaptation Framework, Third Edition, FHWA Office of Planning, Environment, and Realty (FHWA-HEP-18-020)

b. Consistent with FHWA CRS Guidance, p. 8, and Information Memorandum "Carbon Reduction Program Implementation Guidance," by Gloria M. Shepherd, April 21, 2022.)

Exhibit 13 Exhibit 1Exhibit presents how the impact rating scale from Exhibit 12 are presented for the metrics. Excepting Geographical Context, this is a low-medium-high approach, with the "uncertain" category grouped with "low." This will be when the impact of a project is unclear or

depends strongly on the project type. For example, impact on equity will depend on the location of the project.

This evaluation is qualitative and necessarily subjective. Strategies are evaluated here while results for actual projects will vary depending on the specifics of each project. These values are intended for guidance only.

EXHIBIT 13. EVALUATION SCALE

Symbol	Meaning
—	No, Negative, or Not Applicable
	Low or Uncertain
	Medium
	High

Chapter 5 Carbon Reduction Strategies

5.1 Introduction and Overview

This chapter provides 87 strategies that may be eligible for Carbon Reduction Program funding in the state. The strategies are organized and evaluated using the categories and criteria discussed in Chapter 4. For each strategy, references are provided, where available, and the rating is based on the cumulative experiences of the preparers of this document.

Strategies are given by main category and subcategory; subcategories are provided to help users narrow down their search for strategies relevant for their projects. Exhibit 14 lists all strategies evaluated. Refer to Exhibit 12 in Chapter 4 for a description of the evaluation metrics.

Section 5.2 presents the 27 strategies in the innovative technologies and modes category. Although not explicitly noted in the strategy evaluations, public health benefits may be created by implementing strategies in the multimodal travel choices and travel behavior subcategories. Section 5.3 presents the 52 strategies in the operational efficiency improvements category. Section 5.4 presents the 8 strategies in the sustainable infrastructure category.

The information presented in this Chapter applies to general CRS strategies. When applied to specific projects, the details of that project must be considered. Projects implementing strategies that are not considered explicitly eligible in FHWA's guidance memorandum may require documentation showing the potential for the proposed project to reduce transportation emissions over the project's lifetime.[52] Please see the guidance memorandum for FHWA's eligibility guidelines.

EXHIBIT 14. SUMMARY OF STRATEGIES EVALUATED *(EACH STRATEGY LISTED BELOW IS HYPERLINKED—CTRL-CLICK ON THE LINK TO JUMP TO THE INFORMATION)*

[52] Information Memorandum: Carbon Reduction Program (CRP) Implementation Guidance based on 23 U.S.C. 175, from Gloria M. Shepherd, Associate Administrator Office of Planning, Environment, and Realty to Division Administrators Directors of Field Services, April 21, 2022.

A. Bicycle, Pedestrian, and Nonmotorized Transportation Facilities Improvements
Strategy 12. On-Road and Off-Road Multiuse Paths and Trails for Pedestrians, Bicyclists, and Other Nonmotorized Forms of Transportation
Strategy 13. On-Road Bicycle Lanes, Separated Lanes
Strategy 14. Addition of Sidewalks and Crosswalks
Strategy 15. Bicycle/Pedestrian Safety Enhancements
B. Transit Infrastructure Improvements
Strategy 16. Transit Stops Enhancements
Strategy 17. Park-and-Ride Facilities
C. Transit Service Improvements / Expansions
Strategy 18. Expanding Coverage/Adding New Bus Transit Services
Strategy 19: Expanding Coverage/Adding New Rail Transit Services
Strategy 20. Add New Express Bus Services
Strategy 21. Increasing Frequency of Transit Services
Strategy 22. Transit Reliability Improvements
Strategy 23. Dynamic Transit/ Demand-Response Transit
D. Transit Access Improvements
Strategy 24. Improving Nonmotorized Access to Transit
Strategy 25. Microtransit/Commuter Shuttles
Strategy 26. Multimodal Transportation Centers/Mobility Hubs
E. Land Use and Community Design
Strategy 27. Transit-Oriented Development

5.3 Category 2: Operational Efficiency Improvements

5.3.1 Event Management

A. Traffic Incident and Work Zone Management
Strategy 1. Incident Detection and Verification
Strategy 2. Traffic Incident Management Coordination
Strategy 3. Towing Programs
Strategy 4. Work Zone Traffic/Pedestrian Control and Alerts
Strategy 5. Work Zone Demand Management
Strategy 6. Work Zone Speed Management

5.3.2 Facility Management

A. Arterial Management
Strategy 7. Traffic Signal Improvements
Strategy 8. Traffic Signal Coordination
Strategy 9. Adaptive Traffic Signals / Smart Signals and Intersections
Strategy 10. Access Management
Strategy 11. Curb Space Management
Strategy 12. Signal Alternatives or Removal
Strategy 13. Dynamic Lane Reversal or Contraflow Lane Reversal
Strategy 14. Intersection Improvements
B. Freeway Management
Strategy 15. Adaptive Ramp Metering (Ramp Control)
Strategy 16. Dynamic Junction Control
Strategy 17. Variable Lane Use Control
Strategy 18. Queue Warning
Strategy 19. Variable Speed Limits
Strategy 20. Temporary Shoulder Use
Strategy 21. Managed Lanes
Strategy 22. Road Weather Advisory Strategies
Strategy 23. Road Weather Control Strategies
C. Public Transportation Operational Improvements (improvements to the speed and efficiency of bus operations)
Strategy 24. Transit Signal Priority
Strategy 25. Bus Only Lanes
Strategy 26. Transit Queue Jump Lanes at Signalized Intersections
Strategy 27. First-mile/Last-mile Connectivity Strategies

5.3.3 Multimodal Support and Demand Management

A. Active Transportation and Demand Management (ATDM)
Strategy 28. Bicycle/Pedestrian Traffic Signals and Signal Timing
Strategy 29. Traffic Calming/Operations to Support Bicycle/Pedestrian Activity
Strategy 30. Micromobility

B. Parking Management
Strategy 31. Dynamic Wayfinding
Strategy 32: Dynamic Parking Reservation
Strategy 33. Dynamic Overflow Transit Parking
Strategy 34. Preferential Parking for Carpools/Vanpools
C. Real-time Traveler Information Improvements (travel information and advisories)
Strategy 35. Real-Time System Monitoring/Management Information
Strategy 36. Real-Time Traveler Information
Strategy 37. Variable Message Signs
Strategy 38. Transportation Management Centers
Strategy 39. Freight Advanced Traveler Information System
D. Transportation Demand Management
Strategy 40. Rideshare Support / Commuter Programs Support
Strategy 41. Car Sharing
Strategy 42. Priced Vehicle Sharing and Dynamic Ridesharing
Strategy 43. Dynamic Rerouting
Strategy 44. Employer Incentives and Support
Strategy 45. Telecommuting and Flexible Work Arrangements
Strategy 46. Public Outreach and Marketing
E. Congestion Pricing
Strategy 47. Express Lane Tolling
Strategy 48. Pay as You Drive
F. Freight Management
Strategy 49. Real-Time Truck Routing/Parking Information (Freight-Specific Dynamic Travel Planning)
Strategy 50. Freight Signal Priority
Strategy 51. Truck Lane Management/Restrictions
Strategy 52. Truck Parking

5.4 Category 3: Sustainable Infrastructure

5.4.1 Sustainable Infrastructure

A. Environmentally Sustainable Construction Practices
Strategy 1. Green Construction Materials
Strategy 2. Sustainable Pavements
B. Renewable Energy Development
Strategy 3. Use of Highway Right-of-Way for Renewable Energy
Strategy 4. Installation of Solar Power on Transit Stations, Parking, Buildings
C. Reduction in Operation and Maintenance Energy Consumption
Strategy 5. Retrofit Street Lighting with LED
Strategy 6. Replace Street Lighting and Traffic Control Devices with Energy-Efficient Alternatives
Strategy 7. Low-Carbon Construction Equipment and Fuels
Strategy 8. Alternative Vegetation Management

5.2 Category 1: Innovative Technologies and Modes

This set of strategies generally addresses consumer choice, including choices related to vehicle purchases and travel choices. There are two approaches in this category of strategies: (1) adoption of vehicle technologies, such as use of alternative and low-carbon fuels vehicles (e.g., electric vehicles), which could include investments that incentivize purchases of cleaner vehicles, as well as direct purchases of low-carbon fuel vehicles for public fleets (e.g., transit buses, school buses); and (2) increasing multimodal travel choices, such as choices to use transit, ridesharing, bicycling, or walking, as well as reducing vehicle trip lengths or avoiding trip-making (such as through telecommuting). While these strategies relate to the behavior of the traveler, public transportation projects and investments play a key role in making these options viable.

5.2.1 Clean Vehicle Technologies

A. Alternative Fuel Vehicles for Public Sector Fleets

Strategy 1. Electric or Alternative Fuel Purchases for Public Sector Fleet Vehicle Replacements (Transit Buses, School Buses, Public Fleets)

This strategy describes the acquisition of electric and alternative fuel vehicles to replace fossil fuel burning vehicles owned by public agencies such as state and local agencies, transit providers, and school districts. The use of alternative fuel vehicles has been demonstrated to result in substantial reductions in carbon emission for public sector fleets. Many public sector fleets, such as transit agencies, are implementing this strategy to curb transportation-source emissions. According to FHWA CRP guidance, projects supporting the deployment of alternative vehicles, including electric vehicles, are eligible under Section (G)(3)(J).

Learn more: The Federal Transit Administration (FTA) promotes the Transportation Research Board's (TRB) Guidebook for Deploying Zero-Emission Transit Buses: https://nap.nationalacademies.org/catalog/25842/guidebook-for-deploying-zero-emission-transit-buses

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	—	—	—	🍃	🍃🍃🍃	🍃🍃	🍃🍃🍃	🍃	🍃🍃	🍃🍃🍃	All

Strategy 2. Electric Vehicle/Zero-Emission Charging or Refueling Infrastructure for Public Sector Fleets

Supporting zero-emission vehicle purchase and use by public sector fleets, such as electric or hydrogen fueled vehicles, this strategy advances the charging infrastructure and equipment necessary to supply power or fuel to vehicles owned by public agencies or organizations. By investing in supportive infrastructure for ZEVs, emission reductions of traditional air pollutants can be realized.

Over time, this strategy can lead to further job growth related to low-carbon or EV equipment, construction, and maintenance. By incorporating complementary energy resilience infrastructure such as microgrids this strategy can improve the overall performance of various public sector agencies (e.g., transit agencies, etc.,) during disruptive events.

According to FHWA CRP guidance, projects supporting the deployment of alternative vehicles, including electric vehicles, are eligible under Section (G)(3)(J).

An example of this strategy is currently being implemented with CRP funding. The Atlanta Regional Commission is piloting a regional bus and bus facility electrification program (Section 2.4 provides additional details).

Learn more: The FTA provides guidance on developing a Zero-Emission Transition Plan: https://www.transit.dot.gov/funding/grants/zero-emission-fleet-transition-plan

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	—	—	🍃	🍃🍃	🍃🍃🍃	🍃🍃	🍃🍃🍃	🍃	🍃🍃	🍃🍃🍃	All

B. Freight-related Emissions Reduction

Strategy 3. Advanced Truck Stop Electrification Systems

To reduce tailpipe emissions from freight trucks while hoteling, this strategy leverages the use of off-board power and equipment to support truck drivers' rest-period needs such as heating, air conditioning, electricity, or communications. It is reported that this technology can save about a gallon of diesel per hour caused during engine idling at rest stops.[53]

This strategy is eligible for CRP funds and has optimal potential to create air quality co-benefits as well as reduce carbon emissions over time. Electrifying truck stops may spur economic development by creating new job opportunities that advance the state's ambitions to become the electric mobility capital of America.

Advanced truck electric systems are explicitly described to be eligible for CRP funds under Section (G)(3)(A) in the FHWA CRP guidance document.

Learn more: Examples of truck stop electrification projects can be found on FHWA's Freight Management and Operations webpage: https://ops.fhwa.dot.gov/freight/infrastructure/truck_parking/workinggroups/funding_finance_reg/product/grant_programs.htm. Discussion of benefits and technical details are provided by the U.S. Environmental Protection Agency (EPA) in Technical Bulletin EPA420-F-03-020, June 2003.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	—	—	—	🍃	🍃🍃🍃	🍃🍃	🍃🍃🍃	🍃	🍃🍃	🍃🍃🍃	All

Strategy 4. Diesel Replacements or Retrofits

The enhancement of the diesel engine of a vehicle to reduce toxic and other emissions into the atmosphere (e.g., adding a diesel particulate filter) is not specifically a carbon reduction

[53] https://carbonfund.org/project/truck-stop-electrification/

strategy, as it focuses instead on diesel exhaust, especially particulate matter, but is explicitly eligible under the Carbon Reduction Program.

This strategy may include non-road engines, such as Locomotive and Marine Engine Retrofit, so long as they meet the requirements of 23 USC 149(b)(8) for a diesel engine retrofit. This strategy offers air quality co-benefits and is being implemented by many heavy-duty owners around the country, including the Georgia Diesel Emissions Reduction (GaDER) program administered by the state's Environmental Protection Division.[54] When equipment is in use near overburdened communities, this strategy has strong potential for improved air quality and equity benefits.

Referenced in FHWA CRP guidance, projects described under 23 United States Code (USC) (149)(b)(8) are eligible under Section (G)(3)(K).

Learn more: FHWA publication highlighting successful diesel retrofit projects is at https://www.fhwa.dot.gov/ENVIRonment/air_quality/cmaq/reference/cmaq_diesel_retrofits/cmaqdiesel.pdf

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	—	🍃	—	🍃	🍃🍃🍃	🍃🍃🍃	🍃	🍃	🍃🍃	🍃🍃🍃	All

C. Port, Industrial, and Other Electrification and Facilities Improvement

Strategy 5. Charging Infrastructure Upgrades

This strategy coincides with enhancements to technology and equipment used to supply electricity to electric vehicles and further supports travel performance for ports, industrial, and other facilities' adoption of electric vehicles. Equity can be incorporated into this strategy by ensuring that adequate investments are made in underserved communities.

Energy resilience may be enhanced through this strategy by coupling charging infrastructure upgrades with microgrids, for example, to ensure that there is continuity in service during disruptive or emergency events. Similar to the strategy focused on public sector fleets, charging infrastructure projects can produce air quality co-benefits, supports emission reduction, and advances the state's goals of creating jobs in the electric mobility industry.

Strategies that result in projects that reduce transportation emissions at port facilities, including through the advancement of port electrification, are eligible as described in Section (G)(3)(M) of the FHWA CRP guidance document. Private companies such as industrial corporations are not eligible for CRP funding unless their operations are publicly accessible.

Learn more: The USDOT's Maritime Administration Office published a case study that focuses on the macroeconomic and environmental impacts of port electrification https://www.maritime.dot.gov/innovation/meta/port-electrification-marad-final-report

[54] https://epd.georgia.gov/air-protection-branch/air-branch-programs/georgia-diesel-emissions-reduction

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	—	🍃	—	🍃🍃🍃	🍃🍃🍃	🍃🍃🍃	🍃🍃🍃	—	🍃🍃🍃	🍃🍃🍃	All

Strategy 6. Cold Ironing

This strategy consists of utilizing shoreside electrical power for power while a vessel is at berth. In most cases the main engines are turned off and vessel power comes from auxiliary engines (although this varies by vessel types). Under shore power, shoreside electricity is used instead of the on-board auxiliary engines. Cold ironing has a high potential to generate significant air quality co-benefits and likely to reduce carbon emissions depending on the source of the electricity. The EPA concluded that shore power has the potential to significantly reduce emissions.[55] As port and intermodal facilities are often located near overburdened communities, this strategy has strong potential for equity benefits due to improved air quality.

Like other infrastructure-related strategies, cold ironing projects can create jobs by increasing the number of employment opportunities available to upgrade and maintain shoreside electrical power statewide. Strategies that result in projects that reduce transportation emissions at port facilities, including through the advancement of port electrification, are eligible as described in Section (G)(3)(M) of the FHWA CRP guidance document. As a major infrastructure upgrade, shore power installation is likely to be combined with other infrastructure improvements that also increase resilience.

Learn more: The USDOT Volpe Center describes how new CMAQ improvement tools can be applied to incorporate electrification strategies including cold ironing at port and intermodal facilities: https://www.volpe.dot.gov/news/new-congestion-mitigation-and-air-quality-improvement-tools-estimating-emissions-benefits

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	—	🍃🍃	—	🍃🍃	🍃🍃🍃	🍃🍃	🍃🍃🍃	—	🍃🍃	🍃🍃🍃	All

Strategy 7. Electric Cargo Handling Equipment

Electrifying the various off-road equipment used to move cargo from another vehicle or perform maintenance and repair activities at ports, rail, and other facilities is an effective strategy for reducing carbon emissions and operational expenses over time. This strategy is being implemented by various port, rail, and freight operators across the country, such as the Georgia Port Authority.[56] Like other electrification infrastructure projects, this strategy can directly support existing or new infrastructure resiliency initiatives by ensuring that the energy source can withstand uncontrollable events such as widespread power outages or climate emergencies. As

[55] U.S. EPA (https://www.epa.gov/ports-initiative/shore-power-technology-assessment-us-ports)
[56] Georgia Ports (https://gaports.com/blog/port-of-savannah-receives-five-new-electric-rubber-tired-gantry-cranes/)

port and intermodal facilities are often located near overburdened communities, this strategy has strong potential for air quality and equity benefits.

Strategies that result in projects that reduce transportation emissions at port facilities, including through the advancement of port electrification, are eligible as described in Section (G)(3)(M) of the FHWA CRP guidance document.

Learn more: The US EPA awarded the Northwest Seaport Alliance with funding to install a fleet of electric cargo handling equipment: https://www.epa.gov/newsreleases/epa-and-tacoma-power-grants-help-northwest-seaport-alliance-install-first-permanent

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	—	🍃🍃	—	🍃	🍃🍃🍃	🍃🍃🍃	🍃🍃🍃	—	🍃🍃	🍃🍃🍃	All

Strategy 8. Drayage Trucks

This strategy features the replacement of traditional heavy-duty vehicles used to move goods and containers short distances between ports, railyards, and warehouses with zero-emitting alternatives. Upgrading drayage trucks with electrified or alternative fuel options can contribute to reduced transportation-source emissions from the port sector. This strategy is eligible for CRP funding and may eventually lead to operational savings for operators, however the upfront cost is substantial. However, as drayage trucks often traverse overburdened communities around intermodal facilities, there may be an opportunity for substantial air quality and equity benefits.

According to FHWA CRP guidance, projects reducing the environmental and community impacts of freight movement or supporting the deployment of alternative vehicles, including electric vehicles, are eligible under Section (G)(3)(I) or (G)(3)(J).

Learn more: The California Air Resource Board published a fact sheet outlining their approach to transitioning medium and heavy-duty fleets to ZEV alternatives: https://ww2.arb.ca.gov/resources/fact-sheets/advanced-clean-fleets-regulation-summary

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	—	🍃🍃	—	🍃	🍃🍃🍃	🍃🍃	🍃🍃🍃	—	🍃🍃	🍃🍃🍃	All

D. Zero-Emission Vehicle Fueling Vehicle Infrastructure

Strategy 9. Electric Vehicle Charging Infrastructure

This strategy focuses on privately owned vehicles (rather than public sector fleets) and consists of installing equipment used to supply power or alternative fuels to vehicles. This strategy is essential to reduce carbon emissions statewide as personal vehicle trips contribute to a significant portion of transportation-source emissions.

The implementation of an EV Charging and Fueling infrastructure network statewide has a high potential to improve air quality, reduce carbon emissions, and provide consumer savings. To this point, in 2022, Georgia DOT received a federal designation to add two new Alternative Fuel Corridors from the FHWA.[57] Equity can also be addressed by this strategy by leveraging the investment of funding in areas that are historically underserved and by reducing the pollution burden in areas that have historically borne an undue share, such as near-road communities.

According to FHWA CRP guidance, projects supporting the deployment of alternative vehicles, including electric vehicles, are eligible under Section (G)(3)(J).

Learn more: FHWA has resources on electric vehicles and supportive infrastructure: https://www.transportation.gov/tags/electric-vehicles

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	—	2	2	1	3	3	3	3	3	3	All

Strategy 10. Other Alternative Fuels

This strategy supports the fueling supply of hydrogen, biodiesel, ethanol, or other fuels used in alternative-fuel vehicles, either internal combustion or fuel cell, as appropriate. Economic development can also be advanced through this strategy by supporting the adoption of alternative vehicles and creating supportive jobs. Alternative fuel vehicles can play a significant role in producing air quality co-benefits and generating consumer savings.

As an example, in August 2023, the Governor's office has directed GDOT to identify the best approach for the deployment of hydrogen fueling stations for commercial vehicles in the state (see Appendix B). Other, similar alternative fuel support projects could fall under this strategy.

According to FHWA CRP guidance, projects supporting the deployment of alternative vehicles are eligible under Section (G)(3)(J).

Learn more: FHWA has resources on alternative fuels and vehicles https://highways.dot.gov/public-roads/spring-2020/resources-alternative-fuels-and-vehicles#:~:text=These%20fuel%20types%20include%20biodiesel,and%20liquefied)%2C%20and%20propane.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	—	1	1	3	3	3	3	3	2	3	All

[57] Federal Alternative Fuel Corridor Designations (http://metroatlantaceo.com/news/2022/07/georgia-expands-electric-vehicle-charging-network-federal-alternative-fuel-corridor-designations/)

Strategy 11. Public Outreach and Marketing

Public outreach and marketing are effective programming strategies designed to educate the public on alternative fuel infrastructure to encourage its use. In tandem with infrastructure investments, the widespread adoption of alternative fuel vehicles will rely heavily on positive information sharing that is promoted through public outreach and marketing. Equity can also be incorporated into public outreach and marketing by ensuring that marginalized and underserved communities are targeted.

Public outreach strategies may be eligible depending on the content. According to FHWA CRP guidance, projects supporting the deployment of alternative vehicles are eligible under Section (G)(3)(J), which may include outreach and marketing initiatives. GDOT has also confirmed that such strategies would be eligible.

Learn more: Georgia Commute Options is the state's TDM program, and its services can be leveraged for outreach and marketing services: https://gacommuteoptions.com/

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	—	3	2	1	2	3	1	3	2	3	All

5.2.2 Multimodal Travel Choices and Travel Behavior

A. Bicycle, Pedestrian, and Nonmotorized Transportation Facilities Improvements

Strategy 12. On-Road and Off-Road Multiuse Paths and Trails for Pedestrians, Bicyclists, and Other Nonmotorized Forms of Transportation

This strategy focuses on the enhancements to pathways dedicated to non-motorized use, which could include connectivity to an extended network, longer sight distances, and better pavement/ground grades and conditions. Vulnerable roadway users include pedestrians, cyclists, and other users of non-motorized transportation; thus, creating these exclusive pathways can offer moderate to high safety benefits depending on other factors of the project implementation, such as adding live surveillance or installing lighting to maximize safety benefits.


Photo Courtesy GDOT Flickr

Traditionally, investments to support non-motorized traffic such as pedestrians and cyclists are prioritized lower than vehicles; advancing active transportation infrastructure supports

alternative mode choices and vulnerable roadway users. Air quality co-benefits, the potential to reduce carbon emissions, and consumer savings related to travel expenses may vary depending on the project because encouraging mode shifts and influencing travel behaviors often rely on other strategies such as outreach and adjacent land uses. While potential climate and air quality benefits are high for these zero-emitting transit modes, the impact is set by the number of vehicle trips offset.

Transportation alternative projects, including on-road and off-road facilities for vulnerable roadway users, are eligible for CRP funding as described under Section (G)(3)(C) of FHWA's CRP guidance memorandum.

An example of this strategy is currently being implemented with CRP funding. GDOT is implementing a rails-to-trails project that will promote cycling and pedestrian facilities in Toombs County (Section 2.4 provides additional details).

Learn more: Guidance on the transportation alternatives program administered by the FHWA can be reviewed by visiting:
https://www.fhwa.dot.gov/environment/transportation_alternatives/guidance/ta_guidance_2022.pdf

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	2	3	3	1	2	3	2	2	2	3	All

Strategy 13. On-Road Bicycle Lanes, Separated Lanes

This strategy describes constructing an exclusive facility for bicyclists that is located in or directly adjacent to the roadway and that is physically separated from motor vehicles traffic with a vertical element; improvements could include connectivity to an extended network, longer sight distances, better pavement conditions, better roadway crossing and lower vehicle lower speeds.

Safety can be dramatically improved for cyclists as they are recognized as vulnerable roadway users, especially in areas with higher-than-average incident or fatality rates, especially if the separated lanes are buffered or protected with parking or flexible posts and bollards. Constructing on-road separated bicycle lanes is demonstrated in research to attract more users than those that are not separated from vehicular traffic. Similar to off-road nonmotorized pathways, the effectiveness of on-road separated bike lanes may rely on other factors such as outreach, vehicular speed limits along the roadway, bike network connectivity, and more.

Transportation alternative projects, including separated bike lane projects, are eligible for CRP funding as described under Section (G)(3)(C) of FHWA's CRP guidance memorandum.

Learn more: FHWA developed planning and design guidance for separated bike lanes
https://highways.dot.gov/safety/pedestrian-bicyclist/safety-tools/pg-89-101-separated-bike-lane-planning-and-design-guide

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	●●	●●●	●●●	●	●●	●●●	●●	●	●●	●●●	All

Strategy 14. Addition of Sidewalks and Crosswalks

The construction of new pedestrian sidewalks and street crossings for pedestrians to utilize is a strategy that can bolster a region's active transportation network throughout the state. Adding sidewalks and crosswalks enhances the safety and mobility of nonmotorized traffic and other vulnerable roadway users.

Safety can be maximized in projects that consist of new sidewalks or crosswalks construction with additional investments in pedestrian crossing detection technology to further prevent incidents or collisions with motorized traffic. In areas that need improved first/last-mile connectivity, air quality co-benefits and reduced carbon emissions may be realized by supporting walkability, transit-oriented development, or advancing Complete Streets design principles.

Transportation alternative projects, including pedestrian facilities and Complete Streets, are eligible for CRP funding as described under Section (G)(3)(C) of FHWA's CRP guidance memorandum. As with other bike/pedestrian strategies, although moving to zero emission alternatives, the number of vehicle miles offset determines the overall carbon emissions and air quality impact.

An example of this strategy is currently being implemented with CRP funding. The Atlanta TMA is implementing a sidewalk enhancement project in Dekalb County (Section 2.4 provides additional details).

Learn more: FHWA created a fact sheet focusing on crosswalk visibility enhancement projects: https://highways.dot.gov/sites/fhwa.dot.gov/files/2022-06/techSheet_VizEnhancemt2018.pdf

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	●●	●●	●●●	●	●	●●●	●	●	●●	●●●	All

Strategy 15. Bicycle/Pedestrian Safety Enhancements

In conjunction with nonmotorized infrastructure, this strategy consists of improvements to bicycle and pedestrian conditions that prevent or mitigate the risk of injury. These strategic improvements could include traffic calming, lighting, lane markings, etc. Safety enhancements that support cyclists and pedestrians can complement many projects focused on active transportation to increase safety benefits and indirectly create air quality co-benefits and consumer travel savings by supporting mode shift from vehicles for shorter trips and may encourage transit ridership.

Transportation alternative projects, including safety enhancements, are eligible for CRP funding as described under Section (G)(3)(C) of FHWA's CRP guidance memorandum.

Learn more: FHWA has a landing page that features resources on planning and implementing safety projects: https://highways.dot.gov/safety/pedestrian-bicyclist

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	3	2	3	1	2	3	2	1	2	3	All

B. Transit Infrastructure Improvements

Strategy 16. Transit Stops Enhancements

Improvements to the amenities located at transit stops, such as transit stop shelters and lighting, to increase access and/or comfort for customers can be an effective strategy for boosting transit ridership. A sheltered bus stop increases comfort for transit riders in the event of adverse weather events and hot sunny days. Shelters at bus stops in transit-dependent or underserved communities can advance equity.[58]

Transit mobility may also be enhanced indirectly by integrating transit stop enhancements. Transit-centric strategies may foster air quality co-benefits and emission reductions by reducing trips that may have otherwise occurred with vehicles.

Transit stop enhancements are a capital project that may be eligible for CRP funding as described under Section (G)(3)(B) of FHWA's CRP guidance memorandum.

Learn more: FHWA's pedestrian safety for transit page, https://safety.fhwa.dot.gov/ped_bike/ped_transit/ped_transguide/ch1.cfm.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	2	2	1	2	1	3	1	1	2	2	All

Strategy 17. Park-and-Ride Facilities

Park-and-ride lots allow commuters to park their individual vehicles and then take transit or shared-mobility options. Park-and-ride lots can help reduce single-occupant vehicles on the road, provide travel alternatives, increase the size of a transit collection area, and improve time management for passengers.

This strategy consists of promoting and constructing specialized parking lots that are in strategically placed areas away from heavy congestion corridors to facilitate easy access to alternative modes of transportation including fixed transit routes, express bus service, carpool,

[58] For example, see: https://nitc.trec.pdx.edu/equitable-mobility-research.

and vanpool parking. Park-and-ride facilities support mobility by essentially creating a hub that supports alternative and multimodal modes of transportation.

Air quality co-benefits and the potential to reduce emission benefits are moderate because park-and-ride users may still be traveling from relatively long distances to utilize the facilities. Despite this, consumer savings can be generated by further reducing the need for drivers to generate additional travel expenses such as fuel by carpooling or riding transit. Park-and-ride facilities already exist throughout the state of Georgia, however, expanding the number of facilities available will further advance mode shift opportunities. [59] The implementation of park-and-ride facilities may range from simply designating paved parking lots to parking garages, which can cost millions of dollars.

Park-and-ride facilities are eligible for CRP funding as described under Section (G)(3)(B) of FHWA's CRP guidance memorandum.

Learn more: See Caltrans' Park and Ride Program Resource Guide at https://dot.ca.gov/-/media/dot-media/programs/traffic-operations/documents/managed-lanes/f0019533-park-and-ride-program-resource-guide.pdf.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃	🍃	🍃🍃	—	🍃🍃	🍃🍃	🍃🍃	🍃	—	🍃🍃🍃	All

C. *Transit Service Improvements / Expansions*

Strategy 18. Expanding Coverage/Adding New Bus Transit Services

The addition of bus service on existing or new routes to better serve customers can be an effective strategy to reduce emissions by improving the overall transit system for both rural and urban communities. When combined with electric and other alternatively fueled fleets, air quality co-benefits and carbon emission reductions may be increased. Moreover, increasing transit ridership is essential to reach maximum emission reductions and air quality benefits that can be produced by these strategies.

Depending on transit routes selected for expansion or new service, equity can also be enhanced if they are serving underserved or marginalized communities. Expanding or adding new bus services can also contribute to both consumer savings for new transit riders and even promote economic development by increasing the need for more transit bus drivers. Transit expansions have been documented to be a safer mode of travel than private vehicles.[60]

[59] GDOT Statewide Park and Ride Lots https://www.dot.ga.gov/InvestSmart/Transit/Documents/Statewide%20Park%20and%20Ride%20Lots.pdf

[60] Is Public Transportation Safer than Individual Transport? (https://www.modeshift.com/is-public-transportation-safer-than-individual-transport/#:~:text=Furthermore%2C%20he%20adds%20that%20using,when%20compared%20to%20personal%20transportation)

Public transportation projects are eligible for CRP funding as described under Section (G)(3)(B) of FHWA's CRP guidance memorandum. The air quality and carbon emission impacts will be determined by the amount of vehicle miles reduced and, to some extent, the fuel used in the new transit system.

Learn more: The Georgia DOT Statewide Transit Plan discusses the need for regional coordination among transit agencies to improve transit access and coverage: https://www.dot.ga.gov/InvestSmart/Transit/Documents/TransitPlan/2020%20SWTRP%20Plan/2%20Statewide%20Transit%20Plan%20Final%20Report.pdf

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	●●●	●●	●●	—	●●	●●	●●	●●	●●	●●●	All

Strategy 19: Expanding Coverage/Adding New Rail Transit Services

This strategy consists of adding rail service on existing or new routes to customers. Similar to the expansion and new bus transit services strategy, rail services that are not being developed with additional carbon reduction emissions in mind, such as upgrading fuel rail trains to utilize alternative fuels, have limited potential to produce air quality co-benefits and reduce emissions derived from their operations. Nevertheless, rail ridership reflects reduced vehicular trips which does contribute to reduced vehicular emissions. Mobility is also positively impacted whenever rail transit services are expanded or added.

Additionally, public outreach and marketing strategies will play an essential role in attracting new transit rail riders. By riding rail, users are also subjected to safety and mobility benefits through the reduction of vehicular trips. Safety benefits are incurred for rail riders by avoiding roadway traffic as statistics highlight driving to be more dangerous than riding rail. Jobs can also be created by expanding coverage by increasing the demand for maintenance and conductors to support rail operations.

Public transportation projects are eligible for CRP funding as described under Section (G)(3)(B) of FHWA's CRP guidance memorandum.

Learn more: The Georgia DOT Statewide Transit Plan prioritizes the expansion of rail transit services: https://www.dot.ga.gov/InvestSmart/Transit/Documents/TransitPlan/2020%20SWTRP%20Plan/2%20Statewide%20Transit%20Plan%20Final%20Report.pdf

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	●●●	●●●	●●●	—	●●	●●	●●	●●	●●	●●●	All

Strategy 20. Add New Express Bus Services

This strategy coincides with quicker transit options, such as bus rapid transit to new express bus routes, through the addition of new bus service to customers that provides faster than normal bus services between destinations with some express routes oriented around expressways.[61] This strategy has similar limitations and benefits as other transit-focused strategies listed throughout this document but has a higher potential to increase mobility as these faster transit services may attract new transit riders to shift from driving to their destination.

New transit services are eligible for CRP funding as described under Section (G)(3)(B) of FHWA's CRP guidance memorandum.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃🍃🍃	🍃🍃	🍃🍃🍃	—	🍃🍃	🍃🍃	🍃🍃	🍃🍃	🍃🍃	🍃🍃🍃	All

Strategy 21. Increasing Frequency of Transit Services

This strategy differs from express bus transit services because it solely focuses on the decrease in bus arrival time between destinations, which can be accomplished by increasing the number of buses being operated on a single transit route. Increasing the frequency of transit services offers similar benefits to other transit-related strategies as it may also require additional public outreach and marketing strategies to attract new riders. Safety benefits are well documented with the implementation of this strategy.[62]

Public transportation projects are eligible for CRP funding as described under Section (G)(3)(B) of FHWA's CRP guidance memorandum. Transit service improvement projects are potentially eligible for CRP funding as they maximize the potential for mode shift from personal vehicles according to FHWA's CRP guidance memorandum.

Learn more: The Washington State Department of Transportation conducted a transit frequency study to develop recommendations for service improvements: https://wsdot.wa.gov/sites/default/files/2022-12/Frequent-Transit-Service-Study-Initial-Report-Dec2022.pdf

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	—	🍃🍃🍃	🍃🍃🍃	—	🍃🍃	🍃🍃🍃	🍃🍃	🍃🍃	🍃🍃	🍃🍃🍃	All

Strategy 22. Transit Reliability Improvements

Transit reliability improvements may be realized by installing live bus tracking to communicate with drivers on whether they are running on time, late, or too fast in real-time. Additionally, real-time bus tracking technology also improves customer's experiences by providing users with information on whether their bus is delayed or already passed, which can thereby increase the

[61] FTA (https://www.transit.dot.gov/research-innovation/bus-expressway)
[62] On bus ridership and frequency (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9759415/)

reliability of the transit system. New transit riders may be attracted to the system by marketing and educating the public about transit reliability enhancements. Implementing fixed-route ITS that supports real-time bus tracking is increasing among transit agencies statewide, however, readiness factors are dependent on funding and technical expertise to install and maintain such technology.

Transit service improvement projects are potentially eligible for CRP funding as they maximize the potential for mode shift from personal vehicles according to FHWA's CRP guidance memorandum. Additionally, transit service improvements may be eligible for FTA funding, which can be flexed with CRP funding as described under Section (E)(3) of FHWA's CRP guidance memorandum.

Learn more: The Pennsylvania Department of Transportation is implementing a Fixed-Route Intelligent Transportation Systems (FRITS) program to deploy modernized transit technology on all its public transit fleets statewide: https://www.penndot.pa.gov/Doing-Business/Transit/InformationandReports/Documents/PennDOT%20Group%20TAM%20Plan%209.2022.pdf

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	—	2	2	—	2	3	2	2	1	2	All

Strategy 23. Dynamic Transit/ Demand-Response Transit

Dynamic transit and demand-response transit services are a non-fixed-route, flexible transit service. Demand-response transit provides curb-to-curb or door-to-door pickups and drop-offs on customers' request and usually requires advanced scheduling by the customer. These transit services often serve customers that are disabled, elderly, or individuals in areas with inadequate fixed-route services. As a result, the availability of dynamic and demand-response transit services directly advances transportation equity. However, these trips usually cost the rider and the transit system more than fixed-route services. Implementing dynamic transit and demand-response system that is efficient requires advanced reservation, scheduling, and dispatch technology that can be costly to operate.

Transit service projects such as demand-response transit are potentially eligible for CRP funding as they maximize the potential for mode shift from personal vehicles according to Section (G)(3)(B) of FHWA's CRP guidance memorandum.

Learn more: A thorough description of demand-response transit services is provided by the FTA: https://www.transit.dot.gov/regulations-and-guidance/access/charter-bus-service/demand-response-service-explained

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	—	3	3	—	2	2	2	2	2	2	All

D. Transit Access Improvements

Strategy 24. Improving Nonmotorized Access to Transit

This strategy consists of enhancements to amenities that would encourage transit to be more accessible by walking and bicycling and removing barriers to transit access for individuals. Planning for proximate bike parking and bike/walk connectivity to transit can lead to increased ridership and demand for transit services. Depending on the project's implementation plan, safety benefits are uncertain due to whether complimentary strategies that emphasize safety are also leveraged. Implementing this strategy in rural areas may also be more difficult because those communities may have less existing pedestrian or cycling amenities and transit services.

Transit access improvement projects are potentially eligible for CRP funding as they maximize the potential for mode shift from personal vehicles according to FHWA's CRP guidance memorandum..

Learn more: The FTA published a manual focusing pedestrian and bicycle connections to transit: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/64496/ftareportno0111.pdf

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃	🍃🍃	🍃🍃🍃	—	🍃🍃	🍃🍃	🍃🍃	🍃🍃	🍃🍃	🍃🍃	All

Strategy 25. Microtransit/Commuter Shuttles

Microtransit and commuter shuttles are a similar type of on-demand mobility service that can be dispatched directly to riders and is usually provided by a private entity. Since the private sector may need to be engaged to implement such services, the implementation process may require additional coordination to identify and contract a microtransit or commuter shuttle provider. Nonetheless, this strategy directly increases transportation mobility by offering mobility services to destinations that cannot be easily accommodated with changes to the existing fixed-route transit network. For example, commuter shuttles are common to airport agencies to ensure that guests and employees have increased mobility to get to, from, and around the airport to destinations such as nearby parking lots or rent-a-car facilities.

Microtransit services and commuter shuttles may be eligible for FTA funding, which can be flexed with CRP funding as described in Section (G)(3)(B) of FHWA's CRP guidance memorandum.[63]

Learn more: Both microtransit and commuter shuttles are considered to be shared-mobility concepts by the FTA, more information can be found by visiting this online resource: https://www.transit.dot.gov/shared-mobility

[63] FTA (https://www.transit.dot.gov/are-micro-transit-services-eligible)

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃🍃	🍃🍃	🍃🍃🍃	—	🍃🍃	🍃🍃	🍃🍃	🍃🍃	🍃🍃	🍃🍃	All

Strategy 26. Multimodal Transportation Centers/Mobility Hubs

Multimodal transportation centers and mobility hubs are designated multimodal places in a community that bring together public transit, bike share, car share and other ways for people to get where they want to go without a private vehicle. Mobility hubs advance mobility by ensuring that riders have a centralized access point to multiple transportation alternatives. This strategy may consequentially contribute to air quality co-benefits and reduce emissions as well as generate consumer savings by riding transit and saving money on fuel costs associated with operating a personal vehicle.

Multimodal transportation centers and mobility hubs may be eligible for FTA funding, which can be flexed with CRP funding as described under Section (G)(3)(B) of FHWA's CRP guidance memorandum. In 2018, the FTA approved the construction of two multimodal transportation center projects under the discretionary Buses and Bus Facilities Infrastructure Investment Program.[64]

Learn more: The Broward MPO published a program interview describing the leveraging of FTA funding and implementation of its regional mobility hubs program: https://www.browardmpo.org/images/MobilityHubs_ProgramOverview_Tier2.pdf

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	—	🍃🍃	🍃🍃🍃	—	🍃🍃	🍃🍃	🍃🍃	🍃🍃	🍃🍃	🍃🍃	All

E. Land Use and Community Design

Strategy 27. Transit-Oriented Development

Transit-oriented development (TOD) refers to land use and development patterns that are designed to promote transit and mobility by strategically implementing a diverse mix of real estate development concentrated around a transit facility that provides access to reliable public transit and other mobility services. TOD that also provides affordable or workforce housing can advance equity.[65] This strategy can conduce air quality co-benefits and reduce carbon emissions for residents living in transit-oriented communities because they will be able to live a car-free lifestyle by having increased transit and mobility options nearby. Consumer savings can be generated for residents in the community by reducing the need for them to own a personal vehicle to reach their jobs, eat, shop, and complete many other daily activities. This strategy is

[64] Grant allows for multimodal transportation center in Jacksonville (https://www.witn.com/content/news/Grant-allows-for-multimodal-transportation-center-in-Jacksonville-478931133.html)
[65] https://gov.georgia.gov/press-releases/2023-09-08/gov-kemp-announces-first-grant-recipients-rural-workforce-housing

applicable to urbanized communities due to the higher development density requirements of transit-oriented development.

By reducing the need for vehicle trips, land use strategies can be among the most effective at reducing vehicle miles traveled, but typically operate over a long time horizon.

Projects involving transit-oriented development strategies may be limited in their eligibility for CRP funds. Such strategies are described as potentially eligible under Section (C)(3) of FHWA's CRP guidance memorandum, which notes that CRP funding recipients are encouraged to use funding flexibility for transit or multimodal-related projects that incorporate several strategies, including using equitable and sustainable practices while developing TOD. However, Section (C) does not determine eligibility and only transportation infrastructure projects that can demonstrate they may reduce emissions over the project lifetime are eligible. Please refer to FHWA's guidance for eligibility criteria.

Learn more: The FTA has a webpage that houses a plethora of resources on planning, designing, and implementing TOD projects: https://www.transit.dot.gov/TOD

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	—	2	3	—	2	2	2	2	2	1	Urban

5.3 Category 2: Operational Efficiency Improvements

This set of strategies addresses how GDOT, and other transportation agencies manage and operate the transportation system to optimize system performance, reduce unnecessary delay, and smooth traffic flow to reduce motor vehicle emissions. These strategies often rely on ITS technologies and coordination across different agencies operating services, as well as more advanced techniques, such as connected vehicle technologies.

Section (G)(3)(L) of FHWA's CRP guidance memorandum notes that certain types of projects to improve traffic flow that are eligible under CMAQ and do not involve construction of new capacity are eligible under CRP, citing 23 U.S.C. 149(b)(5). That section of Federal law states projects that, "improve traffic flow, including projects to improve signalization, construct high-occupancy vehicle lanes, improve intersections, add turning lanes, improve transportation systems management and operations that mitigate congestion and improve air quality, and implement intelligent transportation system strategies and such other projects", are eligible. Thus, strategies in this section are generally expected to be eligible, as discussed for each below.

5.3.1 Event Management

A. Traffic Incident and Work Zone Management

Strategy 1. Incident Detection and Verification

This strategy helps with determining if an incident of some type has occurred. Incidents may be detected in person by motorists or response personnel or automatically using crowdsourcing (i.e., electronic loop detectors and associated incident detection algorithms). Verification is the determination of the precise location and nature of the incident.

Accurate and detailed information about the incident can help to ensure that the most appropriate personnel and resources are dispatched to the scene. Verification can be accomplished in the field utilizing on-site response personnel or remotely using video detection. This strategy may be considered eligible for CRP funding under Section (G)(3)(D), (G)(3)(E) or (L) of FHWA's CRP guidance memorandum.

Proper incident detection and verification can help transportation agencies alert roadway users quicker and reduce clearance time, which can prevent further congestion and delays. Since congestion from cars idling in traffic adds to carbon emissions, having an efficient incident detection process can help meet carbon reduction goals. This strategy also has a strong safety component to it by helping streamline emergency response and traffic management.

Learn more: FHWA's Traffic Incident Management page can provide further information on incident management, as well as FHWA's Best Practices in Traffic Incident Management report.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	3	—	1	2	2	3	1	2	1	2	All

Strategy 2. Traffic Incident Management Coordination

This strategy focuses on the planning and coordination efforts between various stakeholders for traffic incident management. It requires active and ongoing coordination between law enforcement, transportation departments, and the responder community (e.g., fire, emergency medical services, and towing), including after action reviews/debriefs to continually identify areas for improvement. This strategy is considered eligible for CRP funding under Section (G)(3)(A) or (L) of FHWA's CRP guidance memorandum. Resiliency benefits can incur through the implementation by mitigating the impacts of disruptive events such as accidents,

By helping make traffic incident management more efficient through thoughtful coordination, this strategy can help limit traffic delays and congestion from incidents, thus reducing motor vehicle emissions. With the end result being vehicle emissions reduction, traffic incident management coordination can contribute to carbon reduction. This strategy also has a strong safety component to it by helping streamline emergency response and traffic management.

Learn more: FHWA's Traffic Incident Management page can provide further information on incident management, as well as FHWA's Best Practices in Traffic Incident Management report.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃🍃🍃	—	🍃	🍃🍃🍃	🍃🍃	🍃🍃🍃	🍃	🍃🍃	🍃	🍃🍃🍃	All

Strategy 3. Towing Programs

Towing and recovery operations clear the roadway of disabled or damaged vehicles and their cargos, restoring the roadway to its full capacity. Timely dispatch of appropriate towing and recovery assets to an incident scene can be facilitated through towing and recovery companies who have been pre-approved and on-call. This strategy could be considered eligible for CRP funding under Section (G)(3)(A) or (L) of FHWA's CRP guidance memorandum.

Efficient towing and recovery operations can decrease incident clearance times, leading to less roadway congestion and delays. This helps reduce vehicle emissions, thus contributing to carbon reductions. Similar to other traffic incident strategies, towing programs have a notable safety component to them by helping clear roadways quickly.

Georgia already has a successful Towing and Recovery Incentive Program (TRIP) that is currently being implemented in the metro Atlanta area, with plans to expand statewide. GDOT created an online dashboard that provides information on response times, activations, and more.

Learn more: FHWA's Best Practices in Traffic Incident Management report helps show how towing and recovery operations can fit into traffic incident management efforts.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃🍃🍃	—	🍃	🍃	🍃	🍃🍃🍃	🍃	🍃🍃	🍃	🍃🍃	All

Strategy 4. Work Zone Traffic/Pedestrian Control and Alerts

This strategy focuses on information, actions, and plans to address how vehicles will move safely through a work zone. Work zone traffic / pedestrian control and alerts involves both site traffic control and internal traffic control. Examples of site traffic control include incident management service patrols, portable changeable message signs, selective on-ramp closures, and temporary rumble strips. Internal traffic control can include designated entry and exit points, as well as buffer zones using cones, barriers, etc. to separate work zones from general traffic.

This strategy could be considered eligible for CRP funding under Section (G)(3)(L) of FHWA's CRP guidance memorandum. Work zone traffic/pedestrian control and alerts help keep roadways running smoothly despite potential disruptions to lanes and traffic patterns due to construction. By helping optimize the available roadway space, proper implementation of this strategy can help limit congestion, reduce vehicle emissions, and contribute to carbon reductions.

Learn more: FHWA's Office of Operations Traffic Control website can provide further information on resources work zone traffic control. Pavement Interactive's website on work zone traffic control best practices provides more detail on examples of traffic control.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	3	—	1	1	1	3	1	2	1	2	All

Strategy 5. Work Zone Demand Management

Work zone demand management focuses on actions to encourage people to avoid traveling on an affected route, to shift their time of travel, or use other modes. This strategy particularly works for large projects that have long-lasting impacts on-road capacity. Examples of this strategy can include transit incentives, telecommuting and variable work hours, park and ride promotions, and more.

This strategy could be considered eligible for CRP funding under Section (G)(3)(H) of FHWA's CRP guidance memorandum. These methods help reduce travel on work zone roadways, which helps reduce vehicle emissions and contributes to carbon reduction. Although this strategy may be implemented for work zones specifically, many of the examples of work zone demand management (e.g., transit incentives) can have a larger impact on mode choices people make.

Learn more: A list of work zone demand management strategies can be found in this document from Minnesota DOT.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	2	—	2	1	1	3	1	2	1	2	All

Strategy 6. Work Zone Speed Management

Work zone speed management includes a variety of methods and technologies that can be used to help manage and enforce speed limits in work zones. These methods include variable speed limit systems, automated enforcement, law enforcement, and speed advisory systems.

This strategy could be considered eligible for CRP funding under Section (G)(3)(D) of FHWA's CRP guidance memorandum. Speed management in work zones improves the safety of

roadways, which can help limit further incidents and ensure the flow of traffic stays consistent. This helps reduce vehicle emissions and contributes to carbon reduction.

Learn more: FHWA's Work Zone Speed Management website provides further information on examples and resources relates to this strategy.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃🍃🍃	—	🍃	🍃	🍃	🍃🍃🍃	🍃	🍃🍃	🍃	🍃🍃	All

5.3.2 Facility Management

A. Arterial Management

Strategy 7. Traffic Signal Improvements

Traffic signal improvements can include a variety of methods that help improve traffic flow and minimize vehicle queues. Examples of improvements include traffic signal coordination, adaptive signals, and emergency vehicle preemption.

This strategy is eligible for CRP funding under Section (G)(3)(D) of FHWA's CRP guidance memorandum. By helping maintain or improve traffic flow and limiting vehicle idling, this strategy reduces vehicle emissions and contributes to carbon reduction.

Learn more: Chapter 6 of FHWA's Traffic Signal Timing Manual provides more information on traffic signal coordination.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃🍃	—	🍃	🍃	🍃🍃	🍃🍃	🍃🍃	🍃🍃	🍃	🍃🍃🍃	Urban

Strategy 8. Traffic Signal Coordination

Traffic signal coordination focuses on synchronizing the timing of multiple intersections in order to improve traffic flow and minimize vehicle queues. This strategy can be considered a type of traffic signal improvement.

This strategy is considered eligible for CRP funding under Section (G)(3)(D) of FHWA's CRP guidance memorandum. By helping maintain or improve traffic flow and limiting vehicle idling, this strategy reduces vehicle emissions and contributes to carbon reduction.

Learn more: Chapter 6 of FHWA's Traffic Signal Timing Manual provides more information on traffic signal coordination.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	●●	—	●	●	●●	●●●	●●	●●	●	●●●	Urban

Strategy 9. Adaptive Traffic Signals / Smart Signals and Intersections

This strategy involves equipment and software to make timing changes to traffic signals in response to traffic conditions with timing calculated in real-time based on traffic demand. This can adjust with each cycle using automated algorithms rather than predetermined timing plans.

This strategy is eligible for CRP funding under Section (G)(3)(D) of FHWA's CRP guidance memorandum. By helping maintain or improve traffic flow and limiting vehicle idling, this strategy reduces vehicle emissions and contributes to carbon reduction.

An example of this strategy is currently being implemented with CRP funding. The GDOT Office of Traffic Operations is using funds to advance V2X technology, which includes smart signals and intersections that support both freight and transit signal priority (Sections 2.4 provides additional details).

Learn more: Washington State DOT's webpage on adaptive signals provides further information on strategy implementation.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	●●	—	●	●	●●	●●●	●●	●●	●	●●●	Urban

Strategy 10. Access Management

Access management involves street design techniques that control where vehicles enter and exit a roadway. Techniques can include access spacing, driveway spacing, safe turning lanes, median treatments, and right-of-way management. This strategy can improve traffic flow, reduce crashes, and minimize vehicle conflicts.

This strategy could be considered eligible for CRP funding under Section (G)(3)(D) of FHWA's CRP guidance memorandum. Effective implementation of access management techniques can reduce travel delays and maximize efficiency, thus contributing to vehicle emissions and carbon reductions.

Learn more: FHWA's Access Management website provides further information on this strategy.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	●●●	—	●	●	●	●●	●	●	●	●●	Urban

Strategy 11. Curb Space Management

Curb space management focuses on actions that promote organizing the use of curb space to optimize a variety of uses. This strategy can have a particular impact on efficient delivery in urban areas with methods like off-hours delivery program, a parking reservation system, urban delivery permits, loading/unloading goods, and color-coded loading zones. Other methods can include pickup/drop off for passengers, clearing the way for transit, and/or bicycle and pedestrian activity.

This strategy could be considered eligible for CRP funding under Section (G)(3)(L) of FHWA's CRP guidance memorandum. By making more efficient use of curb space, this strategy can contribute to carbon reductions efforts. Proper curb space management can reduce the amount of waiting or circling, especially for freight drivers, and prevent unsafe staging.

Learn more: The National Association of City Transportation Officials' (NACTO) Curb Appeal guidance document provides further information on this strategy, as well as ARC's TSMO Local Agency Deployment Guide.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	2	1	1	1	2	3	2	1	2	2	Urban

Strategy 12. Signal Alternatives or Removal

Signal alternatives or removal are tools for managing traffic at intersections. Common tools are roundabouts and stop signs. Roundabouts help allow for slow but continuous traffic flow, while stop signs provide a simple, low-cost option to manage low traffic volumes and improve bicycle/ pedestrian safety. Signal removal may make sense for intersections with low traffic volumes that have been studied to show a signal may not be needed. Signal alternatives may help with safety, congestion, or environmental concerns.

This strategy is eligible for CRP funding under Section (G)(3)(L) of FHWA's CRP guidance memorandum. Correct signal choices can help reduce the number of start/stop conditions and vehicle idling in an area, which can contribute to carbon reduction efforts.

Learn more: WSDOT's Signalization & signal alternatives or removal webpage offers guidance on these strategies. GDOT's work in this area is noted in its SigOps webpage.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	3	—	1	1	2	3	2	2	1	3	All

Strategy 13. Dynamic Lane Reversal or Contraflow Lane Reversal

Dynamic lane reversal, also known as contraflow lane reversal, focuses on the reversal of lanes to temporarily increase the capacity of congested roads during rush hour and emergency evacuation. This dynamic strategy allows congested roadways to adjust capacity based on

traffic demand throughout the day (off-peak versus peak hours). Bridges and tunnels are common places to implement dynamic lane reversal, however this strategy can be applied throughout freeways or arterials. This strategy can also be implemented for managed lanes (e.g., bus only lanes in a tunnel).

This strategy is eligible for CRP funding under Section (G)(3)(L) of FHWA's CRP guidance memorandum. The ability to add capacity to a roadway during high-demand hours helps limit vehicle idling and congestion, which helps reduce emissions and contributes to carbon reduction.

Learn more: FHWA's Active Traffic Management Feasibility and Screening Guide includes information on dynamic lane reversal.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	●●	—	●	●	●●	●●	●●	●●	●	●●●	Urban

Strategy 14. Intersection Improvements

Intersection improvements focus on construction or improvement relating to intersections, often to improve safety or capacity. Improvement methods can include the construction, installation or upgrade of traffic control devices, turn lanes, raised medians, bicycle lanes, and roundabouts.

This strategy could be considered eligible for CRP funding under Section (G)(3)(L) of FHWA's CRP guidance memorandum. For a relatively low cost, intersection improvements can help maximize capacity/reduce delays, allowing for less congestion and contributing to carbon reduction efforts. This strategy can also increase safety at intersections by reducing collisions.

An example of this strategy is currently being implemented with CRP funding. The Rome MPO is constructing a roundabout and separate turn lanes in Floyd County (Section 2.4 provides additional details).

Learn more: The Texas A&M Transportation Institute's fact sheet on intersection improvements provides further guidance on this strategy.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	●●●	—	●	●	●	●●●	●	●●	●	●●	All

B. Freeway Management

Strategy 15. Adaptive Ramp Metering (Ramp Control)

Adaptive ramp metering, also referred to as ramp control, utilizes traffic control devices such as signals at entrance ramps to limit the number of vehicles entering traffic. This is done to reduce freeway congestion and make the merge of vehicles entering the freeway from an entrance ramp smoother. Adaptive ramp metering changes the level of control based on traffic.

This strategy could be considered eligible for CRP funding under Section (G)(3)(D) of FHWA's CRP guidance memorandum. It limits on-ramp volumes and increases average speeds, which can result in reduced congestion and fewer incidents. All of this can help contribute to carbon reduction efforts.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃🍃	—	🍃	🍃	🍃	🍃🍃	🍃	🍃🍃	🍃	🍃🍃	Urban

Strategy 16. Dynamic Junction Control

Dynamic junction control involves the management of vehicle entry in a specific area using traffic signals to open or close traffic lanes based on traffic demand. The dynamic aspect of this strategy automatically manages vehicle entry to help with merging. Light-up signs can be utilized to open or close an extra lane at an exit or entrance ramp based on traffic demand.

This strategy could be considered eligible for CRP funding under Section (G)(3)(D) of FHWA's CRP guidance memorandum. This strategy can help delay or stop congestion, improve safety, and increase throughput. By increasing capacity and reducing congestion, dynamic junction control can help achieve carbon reduction.

Learn more: The Texas A&M Transportation Institute's fact sheet on dynamic merge control provides further guidance on this strategy.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃🍃	—	🍃	🍃	🍃	🍃🍃	🍃	🍃🍃	🍃	🍃🍃	Urban

Strategy 17. Variable Lane Use Control

Variable lane use control involves the usage of variable message signs to indicate information about specific lane openings or closures. The lane may change during specific times of day or during traffic incidents to maximize road capacity or help prevent secondary incidents. This strategy can either be implemented through preset arrangements or dynamically. Preset arrangements will have lanes open at a set time of day (e.g., peak periods). Dynamic lane use control allows for opening or closing lanes based on specific needs (e.g., an accident).

This strategy could be considered eligible for CRP funding under Section (G)(3)(L) of FHWA's CRP guidance memorandum. By helping maximize road capacity, this strategy can reduce congestion and contribute to carbon reduction efforts.

Learn more: Florida DOT's TSMO Strategy Guide provides further information on dynamic lane use control.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	●●	—	●	●	●	●●	●	●●	●	●●	Urban

Strategy 18. Queue Warning

Queue warning systems utilize traffic signs, flashing lights, or portable changeable message signs to communicate to drivers about traffic conditions, such as delays. Information about conditions can help drivers navigate heavy traffic. This strategy can be particularly helpful in areas with low driver awareness (e.g., temporary lane closures or rural areas).

This strategy could be considered eligible for CRP funding under Section (G)(3)(L) of FHWA's CRP guidance memorandum. Queue warning systems can help reduce crashes and severity of crashes, delay congestion, and decrease emissions, noise, and fuel consumption.

Learn more: More information on queue warning systems can be found in ARC's TSMO Local Agency Deployment Guide, as well as Florida DOT's TSMO Strategy Guide.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	●●	—	●	●	●	●●●	●	●●	●	●●	Urban

Strategy 19. Variable Speed Limits

This strategy utilizes speed limit signs that can change when roadway sensors detect congestion or dangerous weather conditions. If something is detected, the speed limit will automatically lower to slow traffic evenly and delay congestion. Variable speed limits can also be especially helpful for reducing speeds when approaching work zones. For increased impact, speed limit signs can be used in conjunction with automated speed enforcement and real-time traveler information.

Photo Courtesy GDOT Flickr

This strategy could be considered eligible for CRP funding under Section (G)(3)(D) of FHWA's CRP guidance memorandum. By helping keep traffic flowing smoothly, this strategy limits increased vehicle emissions from slowdowns, thus contributing to carbon reductions.

Learn more: More information on variable speed limits can be found in ARC's TSMO Local Agency Deployment Guide.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃🍃🍃	—	🍃	🍃	🍃	🍃🍃🍃	🍃	🍃🍃	🍃	🍃🍃	All

Strategy 20. Temporary Shoulder Use

Temporary shoulder use involves allowing vehicles to drive on the shoulder of a road, typically at reduced speed limits, to make room for more traffic during peak periods. This strategy can be implemented in a variety of ways. The shoulder can be open during designated time periods, or it can be dynamic based on real-time conditions. The shoulder can also be open to all vehicles, or it can be open to transit vehicles only.

This strategy could be considered eligible for CRP funding under Section (G)(3)(L) of FHWA's CRP guidance memorandum. Temporary shoulder use helps increase capacity, avoid congestion, and decrease crash rates through improved operating conditions.

Learn more: More information on temporary shoulder use can be found in Texas A&M Transportation Institute's temporary shoulder use fact sheet.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃🍃	—	🍃	🍃	🍃	🍃🍃🍃	🍃	🍃🍃	🍃	🍃🍃	Urban

Strategy 21. Managed Lanes

Managed lanes involve the strategic operation of traffic lanes to provide special lane access to vehicles based on roadway conditions. Often managed lanes are executed through controlling pricing, vehicle eligibility, or access control. Example facilities include high-occupancy vehicle (HOV) lanes, high-occupancy toll (HOT) lanes, express toll lanes, truck-only lanes, and bus only lanes.

This strategy is eligible for CRP funding under Section (G)(3)(H) or (L) of FHWA's CRP guidance memorandum. By increasing speed, efficiency, and travel time reliability through additional travel options and capacity, this strategy helps limit vehicle emissions and contribute to carbon reduction.

Learn more: FHWA's Integrated Corridor Management, Managed Lanes, and Congestion Pricing: A Primer provides further information on this strategy, as well as Texas A&M Transportation Institute's managed lanes fact sheet.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃🍃	—	🍃	🍃	🍃🍃	🍃🍃🍃	🍃🍃	🍃🍃	🍃	🍃🍃🍃	Urban

Strategy 22. Road Weather Advisory Strategies

Road weather advisory strategies focus on providing information on current or predicted conditions to roadway users and transportation managers. Information is often provided through dynamic message signs. To reduce the impacts of adverse weather conditions, weather-responsive management strategies such as traffic control and road treatment strategies are deployed by agencies, thereby improving the transportation system's safety and resiliency.[66]

This strategy could be considered eligible for CRP funding under Section (G)(3)(L) of FHWA's CRP guidance memorandum. Similar to other road weather strategies, advisory strategies can help make roadways safer and limit weather related incidents. By improving roadway efficiency, this strategy helps limit vehicle emissions and contribute to carbon reductions.

Learn more: FHWA's Road Weather Management page provides further information on road weather strategies, as well as this FHWA page.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃🍃🍃	—	🍃	🍃🍃🍃	🍃	🍃🍃🍃	🍃	🍃🍃	—	🍃🍃	All

Strategy 23. Road Weather Control Strategies

Road weather control strategies help regulate traffic flow according to current weather conditions by altering the state or use of the roadway. These strategies can help regulate roadway capacity due to hazardous conditions through methods like reducing speed limits with variable speed limit signs, opening shoulder lanes for additional capacity as an evacuation procedure, and modifying traffic signal timing based on pavement conditions, which may be impacted by current weather conditions including snow, rain, or ice. Communication mechanisms, sensor configurations, and software tools are deployed by over twenty (20) states around the country to generate and optimize the use of road weather data and information.[67]

This strategy could be considered eligible for CRP funding under Section (G)(3)(L) of FHWA's CRP guidance memorandum. Similar to other road weather strategies, advisory strategies can help make roadways safer and limit weather related incidents. By improving roadway efficiency, this strategy helps limit vehicle emissions and contribute to carbon reductions.

[66] FHWA Road Weather Management Performance Measures: Road Weather Management Performance Measures 2021 Update (dot.gov)
[67] FHWA WRMS Fact Sheet: (https://ops.fhwa.dot.gov/publications/fhwahop20015/fhwahop20015.pdf)

Learn more: FHWA's Road Weather Management page provides further information on road weather strategies, as well as this FHWA page.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃🍃🍃	—	🍃	🍃🍃🍃	🍃	🍃🍃🍃	🍃	🍃	—	🍃🍃	All

C. *Public Transportation Operational Improvements (improvements to the speed and efficiency of bus operations)*

Strategy 24. Transit Signal Priority

Transit signal priority uses technology (e.g., V2X, Global Positioning System, radios) to enable communication between transit vehicles and traffic signals. This communication reduces the amount of time transit vehicles (typically buses) wait at red lights by keeping lights green a little longer if a transit vehicle is detected, allowing transit to pass through the light without having to stop.

This strategy is eligible for CRP funding under Section (G)(3)(D) of FHWA's CRP guidance memorandum. This strategy helps improve the efficiency and reliability of transit in urban areas and limits transit vehicle idle times. For these reasons, transit signal priority contributes to carbon reduction efforts. Such strategies can magnify their air quality and carbon emission benefits by making transit more efficient and thus more desirable.

Learn more: The ITS Joint Office Program's webpage on TSP provides further information on this strategy.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃	🍃	🍃🍃	🍃	🍃🍃	🍃🍃🍃	🍃🍃	🍃	🍃	🍃🍃🍃	Urban

Strategy 25. Bus Only Lanes

Bus only lanes involve a portion of a street being designated for preferential or exclusive use by transit vehicles. These lanes are often separated by signs and markings. Bus only lanes can either always only be for transit, or they may permit limited use by other vehicles.

This strategy is considered eligible for CRP funding under Section (G)(3)(B) of FHWA's CRP guidance memorandum. Similar to other transit strategies in this section, bus only lanes help improve the efficiency and reliability of transit in urban areas and limits transit vehicle idle times. For these reasons, this strategy contributes to carbon reduction efforts.

Learn more: NACTO's Transit Street Guide Design provides further information on this strategy.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	1	1	2	1	2	3	2	2	1	3	Urban

Strategy 26. Transit Queue Jump Lanes at Signalized Intersections

Transit queue jump lanes involve the use of separate lanes and signals to allow only a bus to proceed through an intersection. This can be done through a leading bus interval or active signal priority to help a bus get into a priority position in the traffic flow. Through this process, the bus "jumps" past other vehicles.

This strategy is eligible for CRP funding under Section (G)(3)(D) or (L) of FHWA's CRP guidance memorandum. Similar to other transit strategies in this section, transit queue jump lanes help improve the efficiency and reliability of transit in urban areas and limits transit vehicle idle times. For these reasons, this strategy contributes to carbon reduction efforts.

Learn more: NACTO's Transit Street Guide Design provides further information on this strategy.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	1	1	2	1	2	2	2	2	1	2	Urban

Strategy 27. First-mile/Last-mile Connectivity Strategies

First-mile/last-mile connectivity strategies help bridge the gap between transit and a rider's origin or final destination, such as home or work. There are a variety of methods that can be used to make this connection between origin and destination. Strategies include bicycle on transit accommodations, wayfinding and information, bicycle network improvements, access connections, pedestrian network improvements, crossing treatments, micromobility (e.g., bike and scooter sharing), car sharing, and rail/bus stop enhancements.

First-mile/last-mile strategies can help expand access to jobs and other essential destinations in Georgia, thus contributing to equity, mobility, and economic development efforts. These strategies can also have multiplicative effects as they can enhance the desirability of transit over driving, when drivers know they can connect easily to their final destination.

This strategy could be considered eligible for CRP funding under Section (G)(3)(H) of FHWA's CRP guidance memorandum. By bridging the gap between transit and rider origins, first-mile/last-mile strategies help make transit more accessible and reduce the need for driving. More people utilizing transit means fewer SOVs on the road that are increasing vehicle emissions. For these reasons, this strategy contributes to carbon reduction efforts.

Learn more: The Utah Transit Authority's First/Last Mile Strategies Study provides further information on this strategy.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃	🍃🍃	🍃🍃🍃	🍃	🍃🍃	🍃🍃🍃	🍃🍃	🍃🍃	🍃🍃	🍃🍃	Urban

5.3.3 Multimodal Support and Demand Management

A. Active Transportation and Demand Management (ATDM)[68]

Strategy 28. Bicycle/Pedestrian Traffic Signals and Signal Timing

The following three strategies help provide better service and safety for pedestrians and cyclists to encourage these nonpolluting modes of travel. All are eligible for CRP funding under Section (G)(3)(C) of FHWA's CRP guidance memorandum.

This strategy provides dedicated traffic signals to provide service traffic coordination for pedestrians and bicyclists. Strategies include signal coordination, concurrent phasing, exclusive pedestrian phasing, split phasing, leading pedestrian interval, guidance for bicyclists at signalized intersections and left turn phasing. Pedestrian signal timing strategies can help provide better service and safety for pedestrians. Strategies include signal coordination, concurrent phasing, exclusive pedestrian phasing, split phasing, leading pedestrian interval, hot response, and left turn phasing.[69]

Bicycle signals are a traffic control device that can be used along with a conventional traffic signal. They can "be installed at signalized intersections to indicate bicycle signal phases and other bicycle-specific timing strategies." Bicycle signals can be "used to improve identified safety or operational problems involving bicycle facilities or to provide guidance for bicyclists at intersections where they may have different needs from other road users."[70] See the Signal Improvements strategies (Category 2, Strategy 7) for more general information.

Learn more: NACTO and FHWA have provided information, see footnotes 69 and 70, respectively.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃🍃🍃	🍃	🍃🍃🍃	—	🍃🍃	🍃🍃🍃	🍃🍃	🍃🍃	🍃	🍃🍃🍃	Urban

[68] Note the similarity of strategies in this section to those of Category 1, Subset 2 (Multimodal Travel Choices and Travel Behavior).
[69] NACTO (https://nacto.org/publication/urban-bikeway-design-guide/bicycle-signals/bicycle-signal-heads/)
[70] FHWA (http://pedbikesafe.org/PEDSAFE/countermeasures_detail.cfm?CM_NUM=47)

Strategy 29. Traffic Calming/Operations to Support Bicycle/Pedestrian Activity

As with Strategy (2)(28), this strategy is intended to provide better service and safety for pedestrians and cyclists to encourage these nonpolluting modes of travel and are eligible under Section (G)(3)(C) of FHWA's CRP guidance memorandum.

Traffic calming is an approach to making streets safer and more conducive for bicycles and pedestrians by slowing down cars. Traffic calming strategies include speed bumps and humps that enables driver to slow down to cross over them, traffic diversion through designs like traffic circles and chicanes, and surface texture and visual devices like pavement markings. On-road and separated bicycle facilities, lane markings, wider sidewalks, median crossing islands, and other uses of the street corridor space also support bicycle/pedestrian safety and use.

Learn more: FHWA's traffic calming course on bicycle and pedestrian transportation: https://safety.fhwa.dot.gov/ped_bike/univcourse/pdf/swless11.pdf

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	3	1	3	—	2	3	2	2	1	3	Urban

Strategy 30. Micromobility

As with Strategy (2)(28), this strategy is intended to provide better service and safety for low-speed transportation, such as bikes and scooters. Encouraging these nonpolluting modes of travel are eligible under Section (G)(3)(C) of FHWA's CRP guidance memorandum.

Micromobility options include bicycles, scooters, and other low-speed devices that users can access on an as-needed basis. Micromobility options can be made available through a variety of service models, including station-based bike-sharing and dockless bike and scooter sharing. Micromobility devices are typically small (weighing less than 100 pounds), low speed (designed to travel at or below 20 mph), and may be motorized.

Learn more: See University of California, Berkeley's Shared Micromobility Policy Toolkit on Docked and Dockless Bike and Scooter Sharing at: https://escholarship.org/uc/item/9678b4xs and the Pedestrian and Bicycle Information Center's Info Brief on micromobility at: https://www.pedbikeinfo.org/cms/downloads/PBIC_Brief_MicromobilityTypology.pdf

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	3	1	3	—	2	3	2	2	1	3	Urban

B. *Parking Management*

Strategy 31. Dynamic Wayfinding

This and the following three strategies are demand management strategies intended to use parking management to moderate travel demand. All would be eligible under Section (G)(3)(H) of FHWA's CRP guidance memorandum.

Dynamic wayfinding "is the practice of providing real-time parking-related information to travelers associated with space availability and location to optimize the use of parking facilities and minimize the time spent searching for available parking. In an ATDM approach, the parking availability is continuously monitored and routing information to the parking space is provided to the user."

Learn more: See FHWA's Active Parking Management page at https://ops.fhwa.dot.gov/atdm/aoupproaches/apm.htm.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃	🍃	🍃	—	🍃🍃	🍃🍃🍃	🍃	—	—	🍃🍃🍃	Rural

Strategy 32: Dynamic Parking Reservation

This strategy is intended to use parking demand management to moderate travel demand and is eligible under Section (G)(3)(H) of FHWA's CRP guidance memorandum.

Dynamic parking reservation "provides travelers the ability to utilize technology to reserve a parking space at a destination facility on demand to ensure availability. In an ATDM approach, the parking availability is continuously monitored, and system users can reserve the parking space ahead of arriving at the parking location." Parking reservations can be applied at destination locations and for park and ride lots. This strategy has the potential to influence travel demand and mode choice via pricing and potentially to reduce the number of parking spaces needed by encouraging more efficient use of available parking.

Learn more: See FHWA's Active Parking Management page at https://ops.fhwa.dot.gov/atdm/approaches/apm.htm

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃	🍃	🍃	—	🍃🍃	🍃🍃🍃	🍃	—	—	🍃🍃🍃	Urban

Strategy 33. Dynamic Overflow Transit Parking

This strategy is intended to use parking demand management to moderate travel demand and would be eligible under Section (G)(3)(H) of FHWA's CRP guidance memorandum.

Dynamic overflow transit parking "utilizes overflow parking facilities in the vicinity of transit stations and/or park-and-ride facilities when the existing parking facilities are at or near capacity. The overflow parking [is] typically [parking constructed for another purpose but commonly] underutilized, such as large retail parking lots, and transit agencies could have agreements with these entities for occasional use of pre-designated, underutilized areas of the parking lots. In an ATDM approach, the parking demand and availability are continuously monitored, and real-time determinations are made if overflow parking is needed, and accompanying dynamic routing information would be provided to travelers."

Learn more: See FHWA's Active Parking Management page at https://ops.fhwa.dot.gov/atdm/approaches/apm.htm

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃	🍃	🍃	—	🍃🍃	🍃🍃🍃	🍃	—	—	🍃🍃🍃	Urban

Strategy 34. Preferential Parking for Carpools/Vanpools

This strategy is intended to use parking demand management to moderate travel demand and is eligible under Section (G)(3)(H) of FHWA's CRP guidance memorandum.

This strategy involves prioritizing and reserving parking spaces for carpool or vanpool riders and typically includes reserving parking spots with the easiest access to a building entrance. This strategy may be applied at work sites, and also may be used in transit parking facilities, at major destinations, and on city streets.

Learn more: See the Washington State Department of Transportation's Transportation Systems Management and Operations page on Parking designated for carpool or vanpool at: https://tsmowa.org/category/transportation-demand-management/parking-designated-carpool-or-vanpool

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃	🍃	🍃🍃	—	🍃	🍃🍃🍃	🍃	—	—	🍃🍃🍃	Urban

C. Real-time Traveler Information Improvements (travel information and advisories)

Strategy 35. Real-Time System Monitoring/Management Information

This traveler information strategy allows for the monitoring of real-time traffic and travel conditions of the major highways and corridors and may establish a stream of communication to share information and data collected with state and local governments as well as the traveling public. This strategy goes beyond real-time system information by ensuring information is shared between different jurisdictions. Real-time communication can contribute to safety benefits and improve mobility during unforeseen traffic events. This strategy can lead to an increased demand for traffic control technicians. The uncertainty of this strategy to reduce

carbon emissions and create air quality co-benefits is due to the possibility that there may not be adequate alternatives for detouring during peak hours or heavy traffic.

Such a project could be eligible under Sections (G)(3)(A), (G)(3)(D) or (G)(3)(E) of FHWA's CRP guidance memorandum.

Learn more: FHWA provides an overview of Real-Time System Management Information systems: https://ops.fhwa.dot.gov/1201/index.htm

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	●●	—	●●	●	●	●●	●	●	●●	●●	All

Strategy 36. Real-Time Traveler Information

This strategy involves traveler information systems that update drivers on current roadway conditions and other information important to their trips so they can make better travel choices either before making a trip or en route. This strategy is like the real-time monitoring and management information strategy except it does not necessarily ensure that monitoring and information is occurring between different agencies and jurisdictions. Most smartphones and other mobile devices have the capacity to receive real-time traffic alerts to help drivers be aware of traffic and possible travel alternatives.

Such a project could be eligible under Sections (G)(3)(A), (G)(3)(D) or (G)(3)(E) of FHWA's CRP guidance memorandum.

Learn more: FHWA provides examples of what types of projects can leverage real-time traveler information systems: https://ops.fhwa.dot.gov/travelinfo/about/aboutus.htm

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	●●	—	●●	●	●	●●	●	●	●●	●●	All

Strategy 37. Variable Message Signs

Variable message signs, also referred to as Portable Changeable Message Signs (PCMS), may provide drivers with traveler information, detours, or directions, and help control the flow of traffic. LED message boards can be used to display variable message signs along highways and roadway corridors. The strategy difference between this strategy and real-time traveler information systems is that these signs can either be used in conjunction with or are not providing real-time traffic information as they may have to be manually updated on-site rather than remotely. Additionally, this strategy can also be implemented as part of installing vehicular-to-infrastructure communications equipment.

Such a project could be eligible under Sections (G)(3)(A), (G)(3)(D) or (G)(3)(E) of FHWA's CRP guidance memorandum.

Learn more: FHWA developed a PCMS handbook for designing and implementing variable message signs: https://www.fhwa.dot.gov/publications/research/infrastructure/pavements/ltpp/reports/03066/

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃🍃	—	🍃🍃	🍃	🍃	🍃🍃🍃	🍃	🍃	🍃	🍃🍃	All

Strategy 38. Transportation Management Centers

The transportation management center (TMC) is the hub of most freeway management systems. This strategy revolves around the data about the freeway system that is collected and processed, combined with other operational and control data, and synthesized to produce information with the capacity to be distributed to stakeholders such as the media, other agencies, and the traveling public.

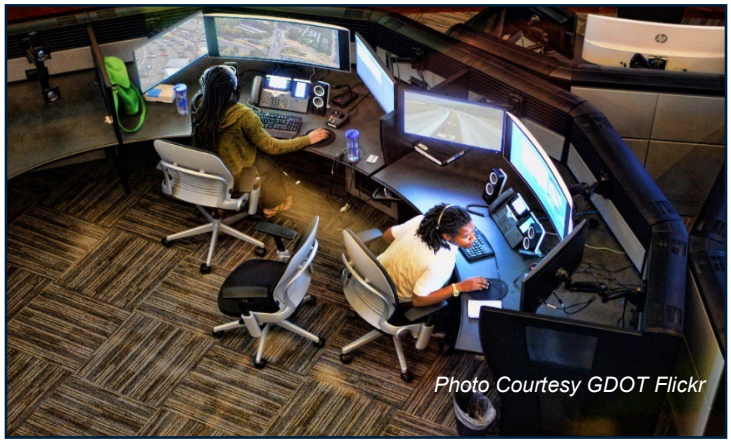


Photo Courtesy GDOT Flickr

Like the other real-time strategies, TMCs may be implemented in both urban and rural areas to ensure that the transportation system is efficient statewide to support both personal travel and freight transportation. The implementation of the travel information systems is magnified in the existence of TMCs, but the deployment of these centers often requires institutional changes in decision-making and management across multiple traffic agencies statewide.

Such a project could be eligible under Sections (G)(3)(A) or (G)(3)(D) of FHWA's CRP guidance memorandum.

Learn more: See FHWA's TMC webpage: https://ops.fhwa.dot.gov/freewaymgmt/trans_mgmnt.htm

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃🍃	—	🍃🍃	🍃	🍃🍃	🍃🍃	🍃🍃	🍃	🍃🍃	🍃🍃	All

Strategy 39. Freight Advanced Traveler Information System

Freight Advanced Traveler Information Systems (FRATIS) is a bundle of technological applications that provide real-time information to freight drivers such as speeds, traffic volumes, incident reports, and route restrictions. This strategy is parallel to real-time travel information systems except that it focuses on enhancing freight travel throughout the state.

Such a project could be eligible under Sections (G)(3)(I) of FHWA's CRP guidance memorandum.

Learn more: The USDOT Intelligent Transportation Systems Joint Program Office has an informative webpage discussing FRATIS
https://www.its.dot.gov/research_archives/dma/bundle/fratis_plan.htm

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃🍃	—	🍃🍃	🍃	🍃🍃	🍃🍃	🍃🍃	🍃	🍃🍃	🍃🍃	All

D. Transportation Demand Management[71]

Strategy 40. Rideshare Support / Commuter Programs Support

Rideshare or commuter program support promotes carpooling and vanpooling by matching drivers and riders and helping them make connections. One way that public agencies can help with this support is by allowing commuters to create an account that the agency can use to match them. This helps make the formation of carpools and vanpools easier and more efficient, which can encourage participation.

This strategy could be eligible for CRP funding under Section (G)(3)(D) or (H) of FHWA's CRP guidance memorandum. By supporting the formation of carpools and vanpools, this strategy can help decrease SOV usage and vehicle emissions, thus contributing to carbon reduction efforts.

Learn more: More information on ridesharing can be found on FHWA's congestion pricing website.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃	🍃	🍃🍃	🍃	🍃🍃	🍃🍃🍃	🍃🍃	🍃🍃	🍃🍃	🍃🍃	All

Strategy 41. Car Sharing

Car sharing involves individuals sharing one or more vehicles for traveling. Instead of investing and utilizing an SOV, individuals can share or rent a vehicle for a short period of time (e.g., hourly basis). The vehicles often have dedicated parking near destinations to encourage shared vehicle use. Air quality and carbon reduction benefits may be enhanced if the vehicle used for car sharing is an EV or ZEV.

This strategy might be eligible for CRP funding under the general priorities (G)(1) section if it were designed in a way to reduce overall emissions, for example by decreasing SOV usage by encouraging individuals to only use a car when necessary for short periods of time, by reducing demand by simplifying parking, by encouraging overall mode shift, etc. in a way that contributes to carbon reduction efforts.

[71] A.K.A. Advanced transportation and congestion management technologies

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃	🍃🍃	🍃🍃🍃	🍃	🍃	🍃🍃🍃	🍃	🍃🍃	🍃🍃	🍃	All

Strategy 42. Priced Vehicle Sharing and Dynamic Ridesharing

Priced vehicle sharing is similar to standard ridesharing and enjoys the same benefits. Dynamic ridesharing involves advanced technology that assists travelers with arranging shared rides in real-time on short notice. Users typically pay on an hourly or daily charge and the process is typically completed through a smartphone or social network. The vehicle is available as needed but customers may avoid needing to own or reducing the number of cars owned. This strategy can be encouraged through apps, as well as signage and markings for pre-designated pickup locations near HOV facilities.

This strategy could be eligible for CRP funding under Section (G)(3)(D) or (G)(3)(H) of FHWA's CRP guidance memorandum. The real-time and dynamic aspect of this strategy helps reduce the number of vehicles/ vehicle trips occurring on often congested roadways. This reduction in vehicles and trips reduces vehicle emissions and contributes to carbon reduction efforts.

Learn more: FHWA's webpage on Active Demand Management provides further information on this strategy, as well as FHWA's webinar on dynamic ridesharing.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃	🍃🍃	🍃🍃🍃	—	🍃🍃	🍃🍃🍃	🍃🍃	🍃🍃	🍃	🍃🍃	All

Strategy 43. Dynamic Rerouting

Dynamic rerouting provides real-time alternate driver directions/routes based on nearby traffic conditions. This allows drivers to take alternate routes when their typical route is blocked or congested. This strategy can be implemented through hybrid guide signs, dynamic message signs, broadcast media, and mobile communication.

This strategy could be eligible for CRP funding under Section (G)(3)(D) or (H) of FHWA's CRP guidance memorandum. This strategy helps reduce congestion, maximize capacity, and increase safety by providing alternate routes to roadway users. Reduced congestion and maximized capacity can contribute to carbon reduction efforts.

Learn more: Texas A&M Transportation Institute's fact sheet on dynamic rerouting provides further information on this strategy.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃🍃	—	🍃🍃	🍃	🍃🍃	🍃🍃🍃	🍃	🍃🍃	🍃	🍃🍃	All

Strategy 44. Employer Incentives and Support

Employer incentives can be used by employers to encourage their employees to make travel changes, such as mode change, route alternatives, time of travel, and trip elimination. Common incentives to promote these changes include transit benefits, parking cash out programs, preferential parking for carpoolers/vanpoolers, organizing on-site ride matching, and awarding points and prizes. State or local agencies may also enact policies to provide employer incentives such as tax credits or matching funds.

This strategy could be eligible for CRP funding under Section (G)(3)(H) of FHWA's CRP guidance memorandum. Employer incentives motivate employees to take modes of transportation that differ from typical SOV commutes. By getting more people to shift their commute mode, this strategy helps decrease vehicle emissions and contribute to carbon reduction.

Learn more: Georgia Commute Options webpage for employer services resources is an example.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃	🍃	🍃🍃	🍃	🍃🍃	🍃🍃🍃	🍃🍃	🍃🍃	🍃🍃🍃	🍃🍃	All

Strategy 45. Telecommuting and Flexible Work Arrangements

Telecommuting and flexible work arrangements involve having employees use technology solutions to work from home or another location, rather than commute by traditional means to a central place of work. Telecommuting can be implemented full-time or part-time (hybrid schedule) and can be set up formally or informally. An example of a flexible work arrangement can be a compressed work week (e.g., work four days per week for 10 hours per day) or customized work hours.

Allowing flexibility in employees' work schedules promotes a more equitable and enticing place to work for many individuals who have to manage work-life balance, thus making this strategy score higher on economic development and equity.

This strategy could be eligible for CRP funding under Section (G)(3)(H) of FHWA's CRP guidance memorandum. Telecommuting and flexible work arrangements promote reduced SOV commutes by employees. By getting more people to commute fewer days of the week, this strategy may help decrease vehicle emissions and contribute to carbon reduction from commute trips. However, recent evidence indicates this reduction in commute trips may be offset by other trips. A full consideration of the impacts should be considered.

Learn more: Georgia Commute Options webpage for telework & flexwork provides representative resources on this topic. The WSDOT TSMO page on telecommuting provides additional information on the strategy.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	1	3	2	1	2	3	2	2	3	2	All

Strategy 46. Public Outreach and Marketing

Public outreach and marketing are designed to support ridesharing, transit, bicycling, and walking. Marketing and outreach methods may include a wide array of activities, including promotions, marketing campaigns, information sharing and assistance activities, and incentives. Outreach and marketing can also focus on specific events, such as "Try Transit Week." TDM-related outreach and marketing activities may be designed to meet the community's character . To increase the number of people utilizing nonmotorized transportation options, public outreach and marketing strategies are often deployed to bring awareness on available services, safety, and related issues. In tandem with related infrastructure investments, this strategy can generate consumer savings for travelers using transportation alternatives by saving on fuel costs and earning incentives. Combined with transit investments and service expansions, increasing transit ridership can be influenced by bringing awareness to these transit investments and alternatives through public outreach and marketing.

Public outreach and marketing can have a strong equity component when staff target outreach to disadvantaged populations and ensure the opinions of underrepresented populations are captured during these activities. Transportation equity and mobility is further advanced by this strategy by informing drivers and travelers on the wide array of transportation alternatives available in their area. Air quality co-benefits and emission reduction strategies can be realized by maximizing various outreach and marketing approaches to influence individual travel behaviors. By promoting public transportation and educating the public on alternative transit options, this strategy can help achieve higher transit ridership and lower SOV usage—thus, decreasing vehicle emissions.

Like the other public outreach and marketing strategies presented in this document, outreach and marketing are not listed as eligible projects under section (G)(3), but such activities, when consistent with administration priorities and the goals of the CRP as outlined in (G)(1), have been confirmed by the FHWA Georgia office as eligible activities under the CRP depending on the subject.[72]

Learn more: Georgia Commute Options serves as the state's TDM program, and their services can be leveraged for outreach & marketing services.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	1	3	2	1	2	3	2	1	2	2	All

[72] Confirmed by Habte Kassa, Asst. State Transportation Planning Administrator, 7/20/2023.

E. Congestion Pricing

Strategy 47. Express Lane Tolling

All congestion pricing strategies use a fee system to shift traffic to off-peak periods or other transportation modes to reduce traffic congestion. As such, these projects may be eligible for CRP funding under Section (G)(3)(H) of FHWA's CRP guidance memorandum so long as they are implemented in a way that does not add new capacity and show emissions reductions over the project lifetime. For example, construction of a new toll lane is likely not eligible although the toll collection technology for conversion of existing lanes may be.

FHWA claims that congestion pricing "represents the single most viable and sustainable approach to reducing traffic congestion."[73] This and the next two strategies rely on tolls applied to different locations.

Express lane tolling provides a choice for users to bypass congestion when desired. Express Lanes are intended to provide a mobility choice and more reliable travel times in peak periods for motorists and bus patrons. The result is a network of lanes that provide more reliable and predictable trip times. Drivers pay a fee to access the facility that has relatively lower congestion and proportionally higher speeds. This can be used to redistribute travel times, relieve congestion, and thus lower emissions. However, toll projects that rely on the construction of a new lane are not eligible under this strategy. This strategy is only intended for projects implementing toll technology.

This strategy can be considered a special pricing case of the Managed Lanes strategy (Strategy (2)(21)).

Learn more: See FHWA's Operations – Congestion Pricing Strategies webpage at https://ops.fhwa.dot.gov/congestionpricing/strategies/index.htm.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃	—	—	—	🍃🍃	🍃🍃	🍃	🍃	—	🍃🍃🍃	All

Strategy 48. Pay as You Drive

This is also not a toll strategy but, as with the previous strategies, can be used to reduce vehicle travel or change periods of driving, thus affecting congestion. This suite of strategies making vehicle use costs, such as insurance, variable to provide drivers direct financial savings for reducing their driving. Some projects may use real-time data to price based on time and location of travel. The magnitude of air quality or carbon emission benefits would depend on the amount of vehicle miles traveled reduced.

For related projects, toll collection technology may be eligible under Section (G)(3)(H) of FHWA's CRP guidance memorandum.

[73] As defined by FHWA.

Learn more: See FHWA's Congestion Pricing page on this topic: https://ops.fhwa.dot.gov/congestionpricing/strategies/not_involving_tolls/pay_drive.htm.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃	🍃	—	—	🍃	🍃🍃	🍃	🍃	🍃	🍃🍃🍃	All

F. Freight Management

Strategy 49. Real-Time Truck Routing/Parking Information (Freight-Specific Dynamic Travel Planning)

Truck routing and parking information (freight-specific dynamic travel planning) supports both pre-trip and en-route travel planning, routing, and commercial vehicle travel information, including information on truck parking locations and parking space availability.[74] This strategy is important given limited truck parking availability and Hours of Service regulations that require rest breaks. Information management systems can be used to facilitate finding freight parking locations.

Such a project may be eligible under Section (G)(3)(I) of FHWA's CRP guidance memorandum. However, good practice would be to show that environmental and community impacts of freight will be improved through the plan, and specifically that emissions will be reduced due to implementation of the strategy. See Strategy 54 in this section for parking-specific projects.

Learn more: See Florida Department of Transportation's Transportation Systems Management & Operations Strategy Guide—User's Manual, available at: https://cflsmartroads.com/projects/PDE/TSMO%20Strategy%20Guide%20-%20User's%20Manual.pdf

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃	🍃	—	—	🍃	🍃🍃	🍃	—	🍃🍃	🍃🍃	Urban

Strategy 50. Freight Signal Priority

Freight signal priority, also called truck signal priority, involves modifying traffic signals to extend the timing of a green light "to allow an approaching truck to make it through an intersection without stopping." This strategy increases "safety by reducing the potential for the truck to run a red light and cause a collision." It also helps reduce delays and congestion caused by trucks taking a longer time to accelerate to the speed limit. Priority is given to heavy trucks that would have difficulty stopping at a yellow light. To implement this strategy, traffic signal controller software and detection equipment are needed. This strategy is a specific application of Traffic Signal Improvements in Category 2. Similarly, V2X technology can be implemented to advance this strategy.

[74] U.S. DOT(https://local.iteris.com/arc-it/html/servicepackages/sp32.html#tab-3)

Such a project may be eligible under Section (G)(3)(I) of FHWA's CRP guidance memorandum. However, a good practice would be to show that environmental and community impacts of freight will be improved through the plan, and specifically that emissions will be reduced due to implementation of the strategy.

This strategy is likely to be most applicable in urban areas where signals impede freight flow and provide safety improvements. Depending on the specifics of the project, it is unlikely to have significant carbon emissions benefits but may have air quality co-benefits when freight congestion is improved.

Learn more: An example is GDOT's Office of Traffic Operations September 2021 presentation, , available at https://www.itsga.org/wp-content/uploads/2021/09/3-gdot-itsga-freight-v2x-John-Hlbbard.pdf.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃🍃	🍃	—	—	🍃🍃	🍃🍃🍃	🍃	—	🍃🍃	🍃🍃	Urban

Strategy 51. Truck Lane Management/Restrictions

This strategy is one of a series of managed lane strategies to reduce congestion. In this strategy, special use lanes are created with lane restrictions that allow trucks to exclusive or privileged use of certain lanes. Truck-only managed lanes separate heavy freight-carrying trucks from passenger vehicles on level-graded facilities, improving safety and congestion by eliminating mixing of the different vehicles. In one case, two or more designated lanes of a highway may be set aside to ensure at least one of the highway lanes is used only by passenger vehicles.

FHWA has noted that GDOT is planning a truck-only facility, the "I-75 Commercial Lanes" project which will provide a 38-mile facility parallel to the existing I-75 near southeastern Atlanta region to separate heavy vehicle freight traffic.

These restrictions can be implemented 24 hours a day or just during peak periods. Implementing these restrictions can "improve highway operations, reduce crashes, account for pavement and structural concerns, and complement construction work zone restrictions."[75]

Such a project is likely to be eligible under Section (G)(3)(I) of FHWA's CRP guidance memorandum, however good practice would be to show that environmental and community impacts of freight will be improved through the plan, and specifically that emissions will be reduced due to implementation of the strategy.

Learn more: See FHWA's Managed Lanes page: https://ops.fhwa.dot.gov/freewaymgmt/managed_lanes.htm, and National Inventory of Specialty Lanes

[75] Texas A&M Transportation Institute (https://static.tti.tamu.edu/tti.tamu.edu/documents/policy/congestion-mitigation/truck-lane-restrictions.pdf)

and Highways: Technical Report, FHWA-HOP-20-043, February 2021 (https://ops.fhwa.dot.gov/publications/fhwahop20043/fhwahop20043.pdf}) for more information.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃🍃	—	—	—	🍃	🍃🍃	🍃	🍃	🍃🍃🍃	🍃🍃	Urban

Strategy 52. Truck Parking

Truck Parking is a specific category of strategies in FHWA guidance (Section (G)(3)(I)) given high priority. Shortage of truck parking affects the efficiency of U.S. supply chains and safety for truck drivers and other roadway users. Thus, CRP specifically includes truck parking projects as eligible for funding, "on an eligible facility that reduces transportation emissions," because they may support, "improving infrastructure condition, safety, congestion reduction, system reliability, or freight movement on the [National Highway System]."[76] As discussed in FHWA guidance, these projects may be combined with advanced truck stop electrification and projects that reduce transportation emissions at port facilities, both of which are also specifically eligible under federal statute.

Learn more: FHWA guidance memo and 23 U.S.C. 175(c)(1) provide further discussion.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃🍃	—	—	🍃	🍃🍃	🍃🍃🍃	🍃	🍃	🍃🍃🍃	🍃🍃🍃	All

5.4 Category 3: Sustainable Infrastructure

This set of strategies addresses infrastructure-side reductions, such as sustainable pavements, alternative construction, and maintenance practices.

5.4.1 Sustainable Infrastructure

A. Environmentally Sustainable Construction Practices

Strategy 1. Green Construction Materials

This strategy is the practice of using more sustainable buildings materials in construction and maintenance projects. Examples include using recycled and reclaimed materials, such as in-place roadway recycling, fly ash in cement ground granulated blast furnace slag, and other industrial waste products as substitutes for GHG- and energy-intensive portland cement in concrete mixes. At a plan level, the strategy could include use of Environmental Product

[76] Information Memorandum: Carbon Reduction Program (CRP) Implementation Guidance based on 23 U.S.C. 175, from Gloria M. Shepherd, Associate Administrator Office of Planning, Environment, and Realty to Division Administrators Directors of Field Services, April 21, 2022.

Declarations in bid decisions to ensure the most sustainable materials are procured. This strategy is listed as a potentially eligible strategy in FHWA's guidance memorandum.[77]

This strategy is based on a lifecycle approach for materials. It does not affect most categories in most applications, although project specific details may vary. It does not affect emissions from users of the system (tailpipe emissions).

Learn more: FHWA's Infrastructure Carbon Estimator tool has good information on lifecycle impacts and use of green construction materials for mitigation.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃	🍃	🍃	🍃🍃	🍃	🍃🍃	🍃🍃	🍃	🍃🍃	🍃🍃	All

Strategy 2. Sustainable Pavements

Sustainable pavement strategies are a subset of green construction materials (3.1) using lower impact materials specifically for roadway surfaces while maintaining a pavement's ability to serve its engineering goals. A variation of this strategy could be to employ additional pavement preservation techniques beyond standard practice that may extend the pavement's lifetime and reduce the need for energy-intensive maintenance. It is listed as a potentially eligible strategy in FHWA's guidance.

This strategy is based on a lifecycle approach for materials and does not affect most categories in most applications, although project specific details may vary. It does not affect emissions from users of the system (tailpipe emissions).

Learn more: See FHWA's Sustainable Pavements Program, https://www.fhwa.dot.gov/pavement/sustainability/, and FHWA's Life-Cycle Assessment Pave tool.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	🍃	🍃	🍃	🍃🍃	🍃	🍃🍃	🍃🍃	🍃	🍃🍃	🍃🍃	All

B. Renewable Energy Development

Strategy 3. Use of Highway Right-of-Way for Renewable Energy

This strategy emphasizes renewable energy development on lands already owned and operated by the State to benefit the public through mature use of the land such as electricity generation. For example, this could include solar photovoltaic fields in interchange cloverleafs or along an Interstate. Putting this land to use in generating renewable energy provides grid power

[77] Information Memorandum: Carbon Reduction Program (CRP) Implementation Guidance based on 23 U.S.C. 175, from Gloria M. Shepherd, Associate Administrator Office of Planning, Environment, and Realty to Division Administrators Directors of Field Services, April 21, 2022.

without claiming other lands (a.k.a., greenfield) that could be put to other productive uses, such as forests or agriculture. It is listed as a potentially eligible strategy type in FHWA's guidance.

This strategy does not directly affect emissions from users of the system (tailpipe emissions). Instead, it provides clean energy that can be used supporting or displacing other power sources, supporting expansion of zero-emission (electric) transit, and reducing the full lifecycle of these vehicles. By placing such infrastructure in public right-of-way, it may create construction and maintenance jobs and avoid power production in other, more vulnerable or valuable locations. It also encourages resilience of the electric grid by providing additional resources in addition to the air quality and other co-benefits of renewable energy. It is most likely to be applicable in rural or suburban areas with more open space devoted to highway right-of-way.

Learn more: E.g., see FHWA's briefing: Renewable Energy Generation in the Highway Right-of-Way, Briefing. FHWA-HEP-16-052, May 2016, Updated January 2019: https://rosap.ntl.bts.gov/view/dot/49020

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	—	🍃	—	🍃🍃🍃	🍃🍃🍃	🍃🍃	🍃🍃🍃	—	🍃🍃	🍃🍃	Rural

Strategy 4. Installation of Solar Power on Transit Stations, Parking, Buildings

This strategy is intended to use existing infrastructure for renewable energy development. In this case, rooftops, parking lots, and other areas that receive direct sunlight and are suitable for the production for solar electricity are retrofitted with solar photovoltaic. The business case and benefits are similar to those of Strategy (3)(3) but in a different setting, likely on buildings already owned and operated by the State to benefit the public through additional uses of the buildings or land for electricity generation.

This strategy does not directly affect emissions from users of the system (tailpipe emissions). Instead, it provides clean energy that can be put to use supporting or displacing other power sources, supporting expansion of zero-emission (electric) transit, and reducing the full lifecycle of these vehicles. By placing such infrastructure on existing facilities, it may create construction and maintenance jobs and avoid power production in other, more vulnerable or valuable locations. It is applicable anywhere there are publicly owned facilities.

This strategy is likely to be eligible for funding. similar to strategy (3)(3) including repurposing existing development, although it is not explicitly listed by FHWA.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	—	🍃🍃	—	🍃🍃🍃	🍃🍃🍃	🍃🍃	🍃🍃🍃	—	🍃🍃🍃	🍃🍃🍃	All

C. Reduction in Operation and Maintenance Energy Consumption

Strategy 5. Retrofit Street Lighting with LED

This strategy is intended to replace HPS or other lighting systems with highly efficient LED systems. This strategy is called out as an eligible activity in Section (G)(3)(F) of FHWA's Carbon Reduction Program guidance memo.

New lighting projects—that is, projects in locations without lighting or where lighting is added—may not qualify because additional infrastructure is unlikely to reduce energy consumption.

The benefits of such a strategy are enhanced lighting and less energy used to achieve the same amount of lighting. This can have safety, equity, and air pollution co-benefits depending on the specifics of the project.

Learn more: FHWA's lighting resource page has design guidelines and further information. https://highways.dot.gov/safety/other/visibility/roadway-lighting-resources.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	3	2	1	2	2	3	2	—	3	3	All

Strategy 6. Replace Street Lighting and Traffic Control Devices with Energy-Efficient Alternatives

Like in strategy (3)(5), other lighting devices, such as traffic signals, can be replaced with highly efficient LED alternatives. LED traffic signal lamps typically use 80 to 90 percent less energy than the incandescent lamps that they replace and offer longer life. The Energy Policy Act of 2005 requires all traffic signal fixtures to meet ENERGY STAR standards, effectively requiring the use of LED lamps in traffic signal heads if this is not already complete.[78] This strategy is also called out as an eligible activity in Section (G)(3)(F) of FHWA's Carbon Reduction Program guidance.

Safety, reduced energy use, and cost savings (to the agency) are the primary benefits of this strategy. This strategy can be combined with other projects, such as those increasing resiliency, to compound benefits.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	3	1	1	2	2	3	2	—	3	3	All

[78] For example, see the Delaware Valley Regional Planning Commission's study, Energy Efficient Traffic Signals and Streetlights, 2010, at https://www.dvrpc.org/reports/mit020.pdf.

Strategy 7. Low-Carbon Construction Equipment and Fuels

This strategy uses alternative fuels, potentially coupled with alternative engine technology, such as hybrid technology, to replace traditional internal combustion engines in construction and maintenance equipment. The range of possible projects under this strategy is very large. For example, replacing gasoline-powered hand-held landscaping equipment with electric alternatives to the purchase and use of bio- or renewable diesel instead of petroleum diesel in construction and maintenance equipment, to purchase of advanced technology equipment using hybrid, electric, or other alternative fuels and the required fueling infrastructure. Depending on the scope of the project, it may be specifically eligible under Section (G)(3)(J)(ii) of FHWA's guidance. Other types of similar projects are likely to be eligible on the grounds of reducing lifecycle emissions.

As with the other strategies in this category, it does not directly affect emissions from users of the system, but reduces the overall energy required to build and maintain the transportation system. This strategy may have other co-benefits including supporting expansion of low emission fuels and engine technologies by incentivizing their purchase and lowering operating costs by increasing use of more efficient alternatives.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	—	—	—	🍃	🍃🍃	🍃🍃🍃	🍃🍃🍃	—	🍃🍃🍃	🍃🍃	All

Strategy 8. Alternative Vegetation Management

This set of strategies conserve energy by reducing the amount of fuel consumed for maintenance and thus reducing GHG emissions proportional to fuel reductions. Strategies can include use of native plants or other landscaping requiring less maintenance. Other strategies could include use of alternative herbicides to reduce energy-intensive maintenance activities. Furthermore, use of shade trees and other greenscaping could reduce urban heat island effects and have beneficial effects on energy used for cooling, for example. These are not addressed in FHWA's guidance and would need to demonstrate lifecycle emission reductions of the specific project to qualify. More information on qualifications could be obtained from the Georgia FHWA liaison.

Criterion	Safety	Equity	Mobility	Resilience	Air Quality	Readiness	C. Emissions	Savings	Jobs	Eligibility	Context
Rating	—	—	—	🍃	—	🍃🍃🍃	🍃	—	🍃	🍃	All

Chapter 6 Implementation and Next Steps for this Carbon Reduction Strategy

6.1 Implement the Carbon Reduction Strategy

This document is Georgia's first Carbon Reduction Strategy (CRS). As described in Chapter 1, this document is designed to support GDOT and the 16 MPOs across the state as they scope their projects and plans to enable carbon emission reductions, lower other negative impacts of transportation, and maximize the benefits to all Georgians. Under the Bipartisan Infrastructure Law (BIL), the federal government has allocated $211 million to Georgia between 2022 and 2026 to support projects meeting the objectives of the Carbon Reduction Program (CRP), of which GDOT is responsible for 57% of the available funds and has been allocated 43% directly to Georgia's MPOs. Appendix D outlines projects utilizing carbon reduction funds in fiscal years 2022 and 2023.

This document identifies 87 potential strategies and eleven metrics to be considered by GDOT and Georgia's MPOs to support planning and design of projects to maximize benefits. This document does not prioritize or promote any individual strategy. Instead, it is designed to provide GDOT and MPOs guidance to enable them to choose how to best utilize CRP funding for their projects.

GDOT will continue to support stakeholders as they implement strategies outlined in this document in their planning efforts with the goals of reducing carbon emissions and the other beneficial impacts described in Chapter 4.

GDOT, MPOs, and any other users should use this as reference material to ensure their project is designed consistently with the priorities of Georgia and with the federal CRP. Users are encouraged to review the projects that have received funding in 2022-2023 in Section 2.4 and the representative strategies in Chapter 5 to identify models and elements they may incorporate into their plans. GDOT will support users in the selection of strategies to implement in their projects and facilitate the allocation of federal funds to support their projects.

GDOT will engage with impacted areas to consider the needs of underserved communities before obligating CRP funds.

6.2 Update the Carbon Reduction Strategy

The Federal Highway Administration (FHWA) requires states to update their CRS every four years. GDOT will collect feedback from its planning partners and stakeholders as they implement this CRS, and receive CRP funding for their projects, to identify elements that should be improved in the second CRS.

6.3 Collaborate

Chapter 3 of this document explains how Georgia's approach to scope and develop this CRS relied on collaboration with MPOs and experts across the state. GDOT is not proscribing an approach or strategies, but rather enabling our planning partners to leverage existing funding to

meet their localized priorities consistent with the carbon reduction program guidance and State's vision. This document provides examples of projects already meeting the State's objectives and those implementing CRP funding. It was established with the ongoing collaboration of Georgia's MPOs and other agencies across the State.

GDOT will continue to collect feedback from our contributors and partners as they implement this CRS. This will place Georgia in a position to update the CRS to best meet the needs of its implementing partners for the second round.

6.4 Consider the Priorities Identified in this CRS in Planning

This CRS was built based on input from MPOs and agencies across the state. By consolidating this information into this single, "go-to" resource for planners, GDOT is providing planners in GDOT, MPOs, RCs, and others across the State with information to inform decisions across all aspects of project delivery, including planning, project selection, and the design process.

The eight goals identified by stakeholders in developing this document are the basis of the strategy scoring. Chapter 4 defines these:

- Safety,
- Equity,
- Mobility,
- Resilience,
- Improving air quality,
- Reducing carbon emissions,
- Providing consumer savings, and
- Promoting economic and workforce development

As this CRS is implemented, additional priorities may be identified.

6.5 Implement and Expand Existing Policies and Programs Consistent with this CRS

This CRS does not promote any specific strategy but will act as a tool for MPOs, RCs, and GDOT to identify strategies that address local needs and priorities that can be implemented with CRP funding. This document provides information GDOT, MPOs, and others can use to review individual strategies before they are implemented or incorporated into a project.

Chapter 2 documented existing policies and programs across the State consistent with the goals of the federal CRP program. GDOT will continue to advance these successful programs, including the expansion of the Georgia Commute Options to promote travel alternatives, implementation of the PROTECT Act to promote sustainability of Georgia's transportation system, expansion of the state's Transportation Demand Management strategies to improve congestion, and NEVI formula funding to promote electric vehicle charging and alternative fuel infrastructure development. CRP funding provides another mechanism for the state to improve our already successful policies in these areas. It also complements other GDOT programs and aligns with the Statewide Strategic Transportation Plan.

6.6 Identify Opportunities for Innovation

This CRS is “technology neutral”. It was written to allow GDOT and its planning partners to identify and implement strategies that fit their geographic context. It does not promote any specific technological innovations.

However, technology is rapidly advancing. Appendix B highlights one new technology—Hydrogen vehicle fueling—that is gaining traction and could contribute to decarbonizing transit in the State. Similarly, the Governor’s goal of making Georgia the “e-mobility capital” of the nation has the potential to both change the types of vehicles and fuels used in the state and to supply the rest of the nation with this technology. Additionally, advances in construction materials will continue to help address embodied carbon emissions.

Georgia will monitor progress in these innovative areas, track opportunities for catalytic and innovative investments, and enhance GDOT’s planning process consistent with the objectives of this CRS. With Georgia’s ambitious goal to become the e-mobility capital of the nation, supportive initiatives by other state departments such as the Department of Labor (GDOL) and Department of Economic Development will be critical for achieving this objective. The Georgia Electric Mobility and Innovation Alliance (EMIA), for example, is leading policies and initiatives that will support the growth of Georgia’s electric mobility sector, which supports reducing transportation-source emissions.

Appendix A. Outreach and Coordination Details

Chapter 3 provided an overview of GDOT's approach and outcomes of stakeholder engagement. This appendix summarizes the details of the outreach process. FHWA requires state DOTs to coordinate with their MPOs and other key stakeholders to develop its carbon reduction strategy plan. Furthermore, FHWA's CRP guidance encourages states and MPOs to integrate carbon reduction strategies into their planning efforts, such as Georgia's Statewide Strategic Transportation Plan, the MPO's Metropolitan Transportation Plan (MTP), or by developing a separate document which is incorporated by reference into the SWTP and MTP.

Outreach was a critical piece of the development of this CRS. This appendix summarizes the details of the outreach conducted by GDOT and consultants during this project.

A.1 MPO Meeting Summaries

To help disseminate information about the CRS to MPOs and maintain communication between GDOT and the MPOs throughout the process, including on available funding, GDOT conducted two sets of individual meetings with each of the State's 16 MPOs.

A.1.1 Spring 2023 MPO Meetings

To collaborate with MPOs, in-person and virtual presentations were conducted at MPO Technical Coordinating Committee (TCC) meetings during Spring 2023. The consultant team provided a brief 15-minute presentation at these meetings for each of Georgia's 16 MPOs.

Exhibit 15 outlines the MPO meeting schedule during Spring 2023.

EXHIBIT 15. SCHEDULE OF MPO MEETINGS SPRING 2023

MPO	Date	Location
Chattanooga/Hamilton County	3/14/23	1250 Market Street, Conference Room 1A Chattanooga, TN 37402/ Virtual
Brunswick Area Transportation Study	3/13/23	1725 Reynolds Street, Second Floor, Brunswick, GA 31520/ Virtual
Atlanta Regional Commission	2/17/23	229 Peachtree St NE. Ste 100, Atlanta, GA 30303/ Virtual
Augusta	3/1/23	535 Telfair Street, Room 291, Augusta, GA 30901/Virtual
Cartersville-Bartow	2/15/23	Commissioner Meeting Room, Bartow County Administrative Building, 135 W. Cherokee Avenue, Cartersville, Ga 30120/ Virtual
Coastal Region	2/16/23	MPC Jerry Surrency Conference Room, 112 E. State St., Savannah, GA 31401/Virtual
Columbus-Phenix City	3/16/23	Columbus Government Center, 420 10th Street Annex, Columbus, GA 31901/Virtual
Dalton	2/28/23	114 Edwards Park, Dalton, GA 30721

MPO	Date	Location
Doughtery Area Regional Transportation Study	4/20/23	240 Pine Ave. Suite 380, Albany, GA 31701/Virtual
Gainesville-Hall	2/15/23	Banquet Hall, 4th Floor, Hall County Government Center, 2875 Browns Bridge Road, Gainesville, GA 30504
Hinesville	3/9/23	100 Main Street, Suite 7520 Hinesville, GA 31313/Virtual
Macon-Bibb	4/19/23	200 Cherry Street, Suite 300, Macon, GA 31201/ Virtual
Madison Athens-Clarke Oconee	2/22/23	Virtual
Rome-Floyd	4/19/23	607 Broad Street, Rome, GA 30161, Carnegie Training Room/ Virtual
Valdosta-Lowndes	3/8/23	SGRC Office 1937 Carlton Adams Drive Valdosta, GA 31601/ Virtual
Warner Robins	2/22/23	Warner Robins City Hall, 700 Watson Boulevard Warner Robins, GA, 31093 / Virtual

This first set of MPO meetings focused on providing each MPO's TCC with background information on the CRS. This included information on the project team, how CRP funds are being allocated in Georgia, examples of the types of projects eligible for funding, the purpose of the CRS, how GDOT is planning to organize the strategies, and the project schedule.

These presentations were mainly informational, but MPOs had the opportunity to ask questions. Some of the questions and comments from MPOs included those in Exhibit 16. These were answered by consultants and/or GDOT at the meeting, or by follow up via email.

EXHIBIT 16. MPO QUESTIONS AND DISCUSSION SPRING 2023

MPO Name	Questions/Comments
Atlanta Regional Commission	• How is the Carbon Reduction Program different from the Congestion Mitigation & Air Quality Program? • Will there be estimates related to CO_2 emissions reductions? • As part of the stakeholder engagement, is GDOT planning to do any engagement with the public? • Is there more information on the ideas around sustainable pavements and how GDOT could promote those statewide?
Warner Robbins	• Interested in coordination of carbon reduction and clean cities initiatives. • Looking forward to further coordination with GDOT on eligible projects and project funding
Cartersville	• Are bicycle or pedestrian projects eligible for CRS funding? • How much in CRS funding does Cartersville-Bartow have?
Brunswick	• Can you re-explain the types of projects that are eligible for CRS funding? • How will MPOs receive CRS funding? Will there be a call for projects?
Augusta	• Is there anyone from the Augusta MPO area on the CRS Advisory Committee? They would like to be represented. • What types of alternative fuels are eligible for CRP funds?

MPO Name	Questions/Comments
	• Will the MPO issue a call for projects for CRP funds? • Augusta has a Climate Action Plan, which may be applicable to the CRS. • Are alternative fuel vehicles eligible for CRP funds? • Can CRP funds be used for training? And can the funds go to another entity (besides the MPO) to provide the training?
Chattanooga	• Does Chattanooga have CRS funding from both Tennessee and Georgia? • Can you say Chattanooga's funding amount again?
Hinesville	• Are roadway projects eligible? For example, a roundabout would reduce idling time, therefore reducing carbon. • Would equipment used to measure carbon outputs be eligible for CRS funds?

A.1.2 Fall 2023 MPO Meetings

Additional virtual presentations were conducted at MPO TCC meetings during Fall 2023. The consultant team provided a new presentation at these meetings focused on summarizing outreach methods, providing an overview of the CRS content and strategies, and asking for each MPOs review and feedback.

Exhibit 17 outlines the MPO meeting schedule during Fall 2023. Please note that the Chattanooga MPO did not participate in a second presentation due to their Fall TCC meeting falling too close to the CRS submittal date. However, Chattanooga MPO, along with every other MPO, received a copy of the CRS and the presentation slides to review and submit feedback on.

EXHIBIT 17. SCHEDULE OF MPO MEETINGS FALL 2023

MPO	Date	Location
Brunswick Area Transportation Study	10/19/23	1725 Reynolds Street, Second Floor, Brunswick, GA 31520/ Virtual
Atlanta Regional Commission	10/6/23	229 Peachtree St NE. Ste 100, Atlanta, GA 30303/ Virtual
Augusta	9/6/23	535 Telfair Street, Room 291, Augusta, GA 30901/ Virtual
Cartersville-Bartow	9/20/23	Commissioner Meeting Room, Bartow County Administrative Building, 135 W. Cherokee Avenue, Cartersville, Ga 30120/ Virtual
Coastal Region	10/19/23	MPC Jerry Surrency Conference Room, 112 E. State St., Savannah, GA 31401/ Virtual
Columbus-Phenix City	9/14/23	Columbus Government Center, 420 10th Street Annex, Columbus, GA 31901/ Virtual
Dalton	9/26/23	114 Edwards Park, Dalton, GA 30721/ Virtual
Doughtery Area Regional Transportation Study	9/21/23	240 Pine Ave. Suite 380, Albany, GA 31701/ Virtual
Gainesville-Hall	10/18/23	Banquet Hall, 4th Floor, Hall County Government Center, 2875 Browns Bridge Road, Gainesville, GA 30504/ Virtual
Hinesville	10/26/23	100 Main Street, Suite 7520 Hinesville, GA 31313/ Virtual
Macon-Bibb	10/18/23	200 Cherry Street, Suite 300, Macon, GA 31201/ Virtual

MPO	Date	Location
Madison Athens-Clarke Oconee	10/25/23	Virtual
Rome-Floyd	10/18/23	607 Broad Street, Rome, GA 30161, Carnegie Training Room/ Virtual
Valdosta-Lowndes	10/11/23	SGRC Office 1937 Carlton Adams Drive Valdosta, GA 31601/ Virtual
Warner Robins	10/25/23	Warner Robins City Hall, 700 Watson Boulevard Warner Robins, GA, 31093 / Virtual

After these presentations, each MPO has the opportunity to ask questions during the meeting or submit feedback via email. Some of the questions and comments from MPOs included those in Exhibit 18, which were answered by consultants and/or GDOT at the meeting, or by follow up via email.

EXHIBIT 18. MPO QUESTIONS AND DISCUSSION FALL 2023

MPO Name	Questions/Comments
Atlanta Regional Commission	• Of the 88 strategies, were there one or two that jumped out as those that would be best to focus on? • Do other MPOs assign funding for CRS in the same way as ARC? • Are there any strategies that GDOT will lead or fund? • Are there any tracking mechanisms to track how many strategies have been implemented? • IIJA gives states the ability to flex up to 50% of CRP funds to other apportionments. Similarly, there is ability to flex certain apportionments into CRP. Is there expectation that GDOT with flex into or out of CRP funds? If there is flexing of funds out of CRP, is there commitment the dollars will still fund projects that reduce carbon emissions through more flexible apportionments? • Is there an opportunity to use CRP funds as local matches for other federal programs such as FTA grants, RAISE grants, or any other discretionary or formula programs? This braiding of federal funds can reduce local or state costs while supporting larger-dollar projects with high impact. • The identified strategies include appropriate mention of making truck freight cleaner and more efficient, but there is no discussion of how the state can make rail freight cleaner and more efficient. Use of CRP funds to improve the speeds, efficiencies, or capacities of rail freight could significantly aid carbon reduction, economic development, and mitigate the growth of trucks on roadways. Additionally, there may be opportunities to address dangerous at-grade crossings that impact residents – especially when freight trains block those crossings for hours at a time. • This document broadly scores each strategy, but does not provide a prioritization or guidance on what GDOT will/should actually spend CRP funds on. Additional clarity on how funds are expected to be utilized would be helpful in ensuring that MPO funds can complement them or avoid unnecessary redundancy.
Augusta	• Given the desire for GDOT to embark on a carbon reduction strategy will there be funds available to assist transit agencies reach the goals outlined in the strategy document? There are examples from other states such as California which has been proactive in funding transit agencies such that by 2040 transit fleets must be 100% clean energy
Coastal Region	• Has GDOT received any comments from the public yet and are they available for review on the website?

MPO Name	Questions/Comments
	• The resiliency section focuses on "infrastructure resilience" and does not incorporate other triple bottom line pieces of resilience. I think there needs to be a social component to complement this section to better highlight the connection. • EV Charging stations are only useful in low-income communities if people have EVs to drive, otherwise it will bring additional outside traffic to these neighborhoods. Is there a way to provide funding to help those communities afford EVs?
Dalton	• What is the role of the CRS?
Gainesville-Hall	• How soon will the state administrative process develop a list of acceptable electrified public transit agency fleets?
Hinesville	• What is GDOT going to use this CRS for? Will it be required for the MTP? • What is the total CRP funds GDOT received? • Do we have a timeline on when funds will be available for procurement? • There has been some interest among city council members to roll out a charging network. Would this initiative be possibly eligible for CRP funding? • Is fleet electrification as a demonstration project an eligible use of CRP funding? • When CRP funds are available, would small MPOs be required to be subrecipients to GDOT? What level of oversight will be required for this funding?
Rome	• If there is money for MPOs and projects, when will funding be available? • Is a match required for CRP funds? And if so, is it state/local (10/10) to match with the federal (80%)?

A.2 GAMPO Meeting Summaries

A second set of coordination with Georgia's MPOs was conducted through presentations at two GAMPO meetings—one in the spring of 2023 and one in the fall of 2023.

A.2.1 Spring 2023 GAMPO Meeting

On March 27, 2023, GDOT presented at a GAMPO meeting, which was held at the One Georgia Center and offered virtually, to provide additional information on the CRS, including a draft outline of the document, potential performance metrics, and a draft list of strategies. Questions posed for discussion at the March GAMPO meeting included:

- Are there additional qualitative metrics that would improve the evaluation?
- Do the strategies and metrics—when combined—provide stakeholders what is needed for evaluation?
- Are there additional strategies/documents/plan at the local level that should be considered?

Regarding the evaluation performance metrics, GAMPO attendees had the following questions/comments:

- Are we looking at metric tons or scale of efficiency? Rural areas do not have a lot of metric tons but would have efficiencies, so how do you measure success?
- Are the environmental justice or Justice40 initiatives playing a role in these activities?

In each case presenters explained the content and purpose of the CRS and held discussions on how these may be discussed within the specified scope of this document.

Regarding the carbon reduction strategies, GAMPO attendees had the following questions/comments:

- It could be useful to have an urban and rural component in the matrix to help identify which strategies are more useful for urban versus rural. Measures of success will likely vary between urban and rural areas.
- A matrix would be very helpful. Many MPOs have been in non-attainment and try to identify cost-effective projects to reduce emissions. Will there be a lot of similarities between CMAQ projects and projects for reducing carbon emissions?
- The administration wants net zero greenhouse gas (GHG) emissions by 2050. How might this help us support meeting this goal? Between all the executive orders and other programs, it seems like net zero GHG emissions is in the background.
- There are several programs out there MPOs are trying to wrap their heads around. To the extent MPOs can utilize a project that addresses various programs, that would be helpful to make things more efficient. Seeing how it all works together is most helpful.

This feedback was considered in scoping of the document.

A.2.2 Fall 2023 GAMPO Meeting

GDOT planned to collect additional feedback from MPOs during the Fall 2023 GAMPO meeting. However, due to the meeting being rescheduled close to the CRS submittal deadline in November 2023, GDOT focused its presentation on describing the final content of the CRS document.

A.3 Advisory Committee Meeting Summaries

GDOT selected a group of staff from various GDOT offices, as well as other important federal, state, and local agencies to form the Advisory Committee for the development of the CRS. Three virtual meetings were held for the Advisory Committee; Exhibit 19summarizes the dates.

EXHIBIT 19. ADVISORY COMMITTEE MEETING DATES

Meeting	Date
First Meeting	January 12, 2023
Second Meeting	April 3, 2023
Third Meeting	August 3, 2023

A.3.1 First Advisory Committee Meeting

The first Advisory Committee meeting focused on participant introductions and providing an overview of the CRS process, timeline, expectations, and deliverables. The meeting ended with discussion questions asking about any information/ resources members may have that can help with this effort, information that would be helpful to have in the CRS, and state-level strategies to prioritize in the plan.

Questions posed at the first Advisory Committee meeting included:

- What information is helpful to know from the CRS document?
- What information do you have available and that you can share to inform this process?
- What state-level strategies should be prioritized for this plan?

In the first Advisory Committee meeting, participants highlighted priorities and several areas of interest to inform the strategies included in Chapter 5. It was determined in this meeting that the carbon reduction strategy be used as a framework to prioritize projects based statewide or individual MPO needs. Areas of interest underscored at this initial meeting included data collection related to carbon reduction, eligibility for transit/vanpooling investments, green buildings, and rural/urban project implementation.

A.3.2 Second Advisory Committee Meeting

The second Advisory Committee meeting introduced an outline of the CRS to Advisory Committee members, including some of the strategies and evaluation methods being considered for the document. After this overview of draft strategies and metrics, the project team led an interactive discussion using Mentimeter polling. Questions focused on what metrics may be missing, how metrics can be improved, what measurement scale to use, and what additional information about the strategies would be helpful.

Questions posed at the second Advisory Committee meeting included:

- What considerations are missing from the list of metrics?
- Are there other qualitative metrics that can improve the evaluation?
- Do the strategies and metrics-when combined- provide stakeholders what is needed for evaluation?
- What measurement scale is most helpful?
- What additional information about the strategies would be helpful?

At the second Advisory Committee meeting, stakeholders had the opportunity to ask questions about the CRS and provide feedback on the draft metrics, strategies, and other ideas for the CRS document.

Using Mentimeter, facilitators asked the Advisory Committee members what considerations may be missing from the list of metrics. Responses varied widely, with suggestions to consider things like congestion reduction, public health, cost, design standards, implementability/ deliverability, potential to reduce carbon emissions, and more. One participant noted equity, although currently its own metric in the CRS, is relevant to consider for all other metrics as well (e.g., are safety, mobility, or consumer savings being impacted equitably across groups?). Another participant brought up the question of how GDOT is defining “population served” for mobility (e.g., Georgia residents only).

When asked about other qualitative metrics that can improve the evaluation, Advisory Committee members noted ideas like traveler sentiment, resident sentiment, air quality co-

benefits, public health, readiness, implementability, timeframe for seeing the outcome/impact of a strategy, and more.

Also using Mentimeter, facilitators asked the Advisory Committee members what additional information about the strategies would be informative. Responses included:

- Providing input on how to evaluate each strategy/how each strategy is scored.
- Needing objectives to define what is meant to be achieved.
- Including examples and more detail behind the chapter points.
- Addressing questions around qualitative considerations, impact timeframe, equity cross-impacts, and unintended consequences.
- Overarching approaches to prioritizing projects.
- Defining terms and providing example projects under each strategy.
- Providing details on implementation timeline, funding sources, and evaluation and optimization opportunities.

Advisory Committee members were asked some more high-level questions as well, such as what type of measurement scale would be most helpful to use for the metrics. Out of the choices provided, participants ranked the “high, medium, low” scale as the top choice. Based on this feedback, the project team worked to incorporate this type of scale into the CRS document. Additionally, participants requested that both equity and the implementation timeframe to realize impacts (e.g., short-, medium-, long-term) be included in the evaluation of strategies. Additionally, a three-tiered scale (e.g., high, medium, and low) was voted as the preferred evaluation measurement scale.

Feedback was mixed when Advisory Committee members were asked if the draft strategies and metrics provide stakeholders with what is needed for evaluation—with six participants voting yes and four voting no.

Below are the specific responses from Advisory Committee members for each question:

What considerations are missing from the list of metrics?
Add to "potential to reduce carbon emissions" that you all make sure it does not increase criteria or HAP emissions. Ideally decreases them too.
Design standards for new developments
Question: how are we defining "population served" for mobility? Georgia residents only? Is it assumed the population served is limited to the MPO implementing the project? If so, those are understated
Equity is a relevant cross-tab for all other metrics. For example: are safety, mobility, or consumer savings being impacted equitably across groups? How can the strategy evaluation account for this?
How far upstream will the reduction of carbon be evaluated?
Safety seemed odd as the first option (not that it should be removed). But this funding seems separate from safety to me
Congestion reduction
Implementability / deliverability?
Response to the other safety comment: maybe safety can be addressed in combination with public health.

What considerations are missing from the list of metrics?
Like the multiple criteria approach. Can be used to explore carbon reduction in the most cost-efficient manner and with the highest co-benefits (or least reduction in benefits).
Cost
People served
Public health

Are there other qualitative metrics that can improve the evaluation?
Percentage Volume
Replacing Fuel
Implementability, Readiness, Speed to impact
Resident sentiment, Traveler sentiment
Clean air and low carbon
Supply chain
Low-hanging fruit
public health

What additional information about the strategies would be informative?
Goals need objectives to define what is meant to be achieved
How each strategy is scored/evaluated. insight on how to evaluate each strategy when submitting for a project.
Examples, more detail behind the chapter points
Address the questions raised earlier in the call, especially qualitative considerations like ability to implement, impact timeframe, equity cross-impacts, and possible unintended consequences.
Overarching approaches to prioritizing projects - e.g., carbon reduction with most cost-effective choices
Definition of terms. Example projects under each strategy (possible clean air co-benefit)
Estimated implementation time (near vs. long); funding sources required (federal, state, additional external); evaluation and optimization opportunities and procedures (can it be "tweaked");

Feedback from this meeting defined the evaluation metrics and rating scales presented in Chapter 4.

A.3.3 Third Advisory Committee Meeting

The third meeting was held in August 2023 to discuss the full list of strategies and scoring. The project team provided a high-level overview of the CRS outline, updated performance metrics, the evaluation scale, and what information is provided for each strategy. After this overview, the project team led a discussion using Mentimeter to collect open-ended responses. Questions and responses from this activity are as follows:

What about the layout or content in the evaluations was/not useful? Are there areas that need improvement?
The graphic's ability to summarize information.

What about the layout or content in the evaluations was/not useful? Are there areas that need improvement?
The layout is clear and useful
I think the criteria names in the evaluation matrix need to appear on each page at least once. Just the icons are not enough.
The "leaf" scoring works for some variables, but for things like emissions, needs to be connected with some kind of at least semi-quantitative evaluations ideally.
Was hoping in the future we can include metrics that include a bit more quantitative analysis
The impact scoring was great but I would be sure to label the metric criteria throughout the document
Is this strictly an EV strategy? No other alternative fuels will be considered?
The charts with scoring with all the variables (like air quality, resilience, etc.) are labelled the first time then nothing. Maybe instead of nothing use acronym like AQ (air quality)
I don't like the leaf scoring scale. A descriptive might work better.
Can you direct us to where other fuels adption are mentioned?
A quantitative analysis may be more relevant at the level of individual projects (rather than strategies)
I would suggest a short figure description below each chart as well
Can GDOT produce a follow-on work that is quantitative? Sort of like they did for CMAQ?
The eval criteria in Table 1 are described clearly, in most cases. However, it may be helpful to add more references to studies and data that support the rating given to each strategy.
To substantiate the scoring system, perhaps citations to external sources in the absence of true quantitative baselines would help. something to moor them beyond purely subjective rankings that vary
I will send specific comments in track changes mode of word.
Pretty comprehensive. Have an idea or two to expand what is there like shared vehicle where vehicles are also EVs. or ZEVs
Haven't finished reading it yet. Can't really say.

Considering the preceding examples, were there areas where you dis/agreed? Did you note any flaws or shortcomings in the scoring?
I will send more specific feedback later :)
I will send specific comments in track changes mode of Word.

Are there any strategies we missed? Are there major shortcomings in the document?
The strategies are real broad section and believe capture everything relevant to carbon reduction.
Adding a lens to public health I think would be valuable as this relates to emissions and active modes.
Pretty comprehensive. Just have a thought or two to expand like shared car where car is electric or ZEV
Impacts heavy EVs may have on safety should probably be addressed.
I would recommend adding a heat island effect section and methods to increase tree coverage and general shading near transit and other public amenities.
Documenting the verbal comment: public health could be addressed in combination with the safety evaluation and/or the air quality co-benefits evaluation.

Appendix B. Clean Vehicle Technology Example in Georgia—Hydrogen Fueling

Chapter 5 provided a list of strategies GDOT is considering as appropriate for implementation under the Carbon Reduction Program in the state. This appendix includes information on a specific opportunity under consideration in Georgia.

On August 7, 2023, the Georgia Governor's office announced in a press release a request for information (RFI) for hydrogen fueling stations in Georgia. A project developed in response to this RFI is likely to be an eligible project under the CRP. It could also match Strategy 2 or Strategy 10 under Clean Vehicles Technology, as discussed In Chapter 5, depending on whom the facility serves.

The current vision for the RFI is to fund fueling stations, but there is also the possibility of supporting on-site production, with a goal of 4 kg CO_2 per kg H2 to meet the production tax credit threshold for production and to understand the feasibility of low carbon–intensity hydrogen in the state.

The press release is presented in Exhibit 20. It can be found at https://gov.georgia.gov/press-releases/2023-08-07/georgia-takes-lead-preparations-hydrogen-fueling-stations.

EXHIBIT 20. PRESS RELEASE ANNOUNCING REQUEST FOR INFORMATION ON HYDROGEN FUELING STATIONS

Georgia Takes Lead in Preparations for Hydrogen Fueling Stations

Atlanta, GA – Governor Brian P. Kemp today announced that he has instructed the Georgia Department of Transportation (GDOT) to begin the process of working with private sector partners on how best to approach deployment of hydrogen fueling stations for commercial vehicles in the state. As a first step to this multi-stage process, GDOT has issued a Request for Information (RFI) to seek feedback from businesses operating in this space on how to progress in the development and construction of hydrogen fuel stations. GDOT will use the feedback collected from this RFI in conjunction with other research to better understand opportunities to accelerate the adoption of hydrogen-powered trucks.

"As the No. 1 state for business with world-class institutions of higher learning, Georgia is on the cutting-edge of innovation and the jobs of the future," said Governor Brian Kemp. "But as I always say, we can't rest on our laurels. I want to thank GDOT and our partners in the private sector who will ensure that when it comes to hydrogen energy, we will do as we have in so many other areas - lead."

Hydrogen-powered electric fuel cells are a promising technology for commercial vehicles like large trucks. Applications include enabling long travel distances with a fast-refueling process for heavy vehicles, which deliver goods throughout the state. These and other efforts are in line with Governor Kemp's goal of making Georgia the e-mobility capital.

"We at GDOT are always seeking opportunities to advance our state through innovation, and with the feedback gathered by this RFI we will have an opportunity to plan for the future," said GDOT Commissioner Russell McMurry.

The market for hydrogen as a transportation fuel is in the early stages of development in a few regions of the U.S. It has already deployed successfully in several other economically advanced countries. Currently, hydrogen's predominant commercial use is in the industrial sector and for fertilizer and methanol production, with the U.S. market consuming approximately 10 million metric tons of hydrogen annually. Abundant in the environment, it is stored in water, hydrocarbons, and other organic matter. The total current value of the hydrogen market in the U.S. is estimated to be approximately $17 billion. By 2050, the total estimated revenue is projected to be more than $130 billion per year, meeting 14 percent of U.S. energy demand.

During the RFI process and ensuing planning discussions, GDOT will consider the full range of potential demand for hydrogen for transportation uses. This will include the option to bring down the cost of hydrogen refueling station development in Georgia. Other aspects to be considered include possible locations for hydrogen refueling station deployment, with initial primary consideration given to areas adjacent to Georgia's ports.

This RFI is not a competitive solicitation. Rather the information gathered will help GDOT determine the viability of implementing hydrogen refueling stations, including the best methods to consider for procurement. The RFI will be open for submissions for 30 days, beginning today.

Interested parties are encouraged to respond to the RFI. To learn more about and respond to the RFI, click here.

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Appendix C. Current Projects Implementing Carbon Reduction Program Funds

Chapter 6 outlines the next steps in advancing the use of carbon reduction funds throughout the state. Key actions include supporting collaborative approaches, considering Georgia's carbon reduction priorities, implementing and expanding related policies and program, and tracking innovative advancements that promote carbon reduction.

On July 24, 2023, GDOT authorized 13 projects to be funded by the Carbon Reduction Program. The projects vary in scope. Enhancements include those that focus on public transportation, ITS, transportation alternatives, and traffic flow. These projects, which are also discussed in Section 2.4, are listed in Exhibit 21.

EXHIBIT 21. SUMMARY LIST OF PROJECTS RECEIVING CARBON REDUCTION PROGRAM FUNDING AUTHORIZATION FOR FISCAL 2022/2023

PI #	Description	MPO Area	Program Year	Federal	State	Other	Total	23 U.S.C. 175 (c) Eligibility Criteria
0015629	SR 236 FROM LEAFMO`RE PLACE TO PANGBORN ROAD	Atlanta TMA	2022	$3,068,957	$767,239	$0	$3,836,196	Transportation alternatives
0017980	PATH 400 TRAIL FROM LORIDANS DR TO SANDY SPRINGS CITY LIMITS	Atlanta TMA	2023	$4,405,220	$0	$1,101,305	$5,506,525	Transportation alternatives
0018282	SR 101 @ City Street (CS) 1053/12TH STREET	Rome	2023	$520,000	$130,000	$0	$650,000	Traffic flow improvements that do not involve construction of new capacity
0018283	SR 3/US 41 @ SR 5	Atlanta TMA	2023	$280,000	$70,000	$0	$350,000	Traffic flow improvements that do not involve construction of new capacity
0018284	SR 8/US 29 @ County Road (CR) 5160/NORTH DRUID HILLS ROAD	Atlanta TMA	2023	$300,000	$75,000	$0	$375,000	Traffic flow improvements that do not involve construction of new capacity
0019162	V2X ROADMAP IMPLEMENTATION - FY 2022	Not Urban	2022	$6,700,000	$0	$0	$6,700,000	Intelligent transportation systems
0019163	V2X ROADMAP IMPLEMENTATION - FY 2023	Not Urban	2023	$7,120,000	$0	$0	$7,120,000	Intelligent transportation systems
0019201	PILOT REGIONAL BUS & BUS FACILITIES ELECTRIFICATION PROGRAM	Atlanta TMA	2022	$11,879,823	$0	$2,969,956	$14,849,779	Deployment of alternative fuel vehicles

PI #	Description	MPO Area	Program Year	Federal	State	Other	Total	23 U.S.C. 175 (c) Eligibility Criteria
0019218	VIDALIA RAIL TRAIL FROM VIDALIA TO CEDAR CROSSING RD-PHASE I	Not Urban	2023	$1,350,963	$337,741	$0	$1,688,704	Transportation alternatives
0019550	I-16 & I-75 - C-V2X INSTALLATION - PHASE I	Not Urban	2023	$12,450,188	$3,112,547	$0	$15,562,735	Intelligent transportation systems
0019551	I-20; I-75; I-85; I-285 & SR 400 - C-V2X INSTALLATION-PH II	Not Urban	2023	$11,202,530	$2,800,632	$0	$14,003,162	Intelligent transportation systems
0019782	COBB COUNTY FIXED ROUTE BUS REPLACEMENT	Atlanta TMA	2023	$3,331,862	$0	$832,966	$4,164,828	Public transportation
0019892	HALL COUNTY TRANSIT VEHICLE PURCHASE	Gainesville	2023	$391,424	$0	$97,856	$489,280	Public transportation