Louisiana Carbon Reduction Strategy

November 13, 2023

FINAL

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1.0 Introduction

The Louisiana Department of Transportation and Development (DOTD) developed this Carbon Reduction Strategy (CRS) to support the reduction of transportation related carbon emissions throughout the state. The CRS identifies transportation projects and strategies that will reduce carbon emissions within Louisiana. This report was developed following federal requirements under § 11403;23 U.S.C. 175(d). Additional information regarding how this CRS complies with the United States Department of Transportation (USDOT) Carbon Reduction Program (CRP) requirements can be found in **Appendix A.**

1.1 Carbon Reduction Program Overview

The CRP was established by the 2021 Infrastructure Investment and Jobs Act (IIJA). The CRP provides funds to projects designed to reduce transportation emissions, defined as carbon dioxide (CO2) emissions from on-road highway sources. Louisiana will receive an estimated $118.3 million in Fiscal Years (FY) 2022 to 2026 as shown in **Table 1**.

Table 1: Louisiana Carbon Reduction Program Funding

Year	Dollars (in millions)
FY 2022	22.7*
FY 2023	23.2*
FY 2024	23.7
FY 2025	24.1
FY 2026	24.6
Total	118.3

*Actual funding, all other years are estimated.
Source: Federal Highway Administration (FHWA), FY 2022-2026 Estimated Highway Appointments under the Bipartisan Infrastructure Law (assessed July 2023)

Under the requirements of the CRP, every state, in consultation with its Metropolitan Planning Organizations (MPOs), must develop and submit a CRS by November 15, 2023. Sixty-five percent (65%) of the State's CRP apportionment must be obligated in the following areas in proportion to the relative share of the State's population. Those apportionments are broken down into the urbanized areas below:

- Urbanized areas with a population greater than 200,000
- Urbanized areas with a population of at least 50,000 but no more than 200,000
- Urban areas with a population of at least 5,000 and no more than 49,999
- Areas with a population of less than 5,000

The remaining 35% of the State's CRP apportionment can be obligated in any area of the state.

The CRP also requires that each state's CRS:

- Is updated at least once every four years.
- Identifies projects and strategies that support the reduction of transportation related carbon emissions.
- Is appropriate to the population density and context of the state as well as MPOs in the state.

DOTD has developed the Louisiana CRS to meet the federal requirements and guidelines while reflecting an approach to reducing transportation carbon emissions that aligns with Louisiana's socioeconomic and regulatory contexts. The State of Louisiana has not implemented specific legislation that regulates the emissions from the transportation sector but planning efforts are underway to address carbon reduction comprehensively. Approved in 2022, the state's Climate Action Plan provides recommendations to mitigate impacts from climate change while positioning the state to maintain its economic competitiveness in a low-carbon future[1]. The stated goal of the 2022 Climate Action Plan is to reach net zero greenhouse gas (GHG) emissions by 2050.

1.1.1 Purpose of Louisiana's CRS

This CRS aims to identify projects and strategies DOTD and the MPOs can implement to support carbon reduction efforts across the state. The CRS is organized to provide background on the CRP, detail MPO engagement, and discuss projects and strategies that can be implemented to reduce carbon emissions.

1.1.2 DOTD's Roles and Responsibilities in Transportation Carbon Reduction

Reducing carbon emissions will require collaboration between the public and private sectors as one actor alone cannot create widespread emissions reduction. DOTD's roles and responsibilities range from "direct impact" to "actions beyond the DOTD's influence" as described below.

- **DOTD can *directly* support emissions reductions** by maintaining, operating, and enhancing infrastructure and transportation services. For example, DOTD can reduce agency emissions by switching to low or zero-emission fleet vehicles.

- **DOTD can *influence actions* by partnering with other agencies and stakeholders** on projects and strategies to reduce carbon emissions. For example, DOTD can support active or alternative modes of transportation by working with local agencies to create a safe pedestrian and bicycle network.

[1] https://gov.louisiana.gov/assets/docs/CCI-Task-force/CAP/Climate_Action_Plan_FINAL_3.pdf

- There are also **actions *outside of DOTD's influence* that affect carbon emissions**. For example, DOTD cannot determine an individual's choice to purchase a more fuel-efficient vehicle or utilize public transit to reduce one's carbon footprint. However, resources can be utilized to encourage behaviors conducive to carbon reduction.

The path to reducing carbon emissions from the transportation sector in Louisiana demands a coordinated effort, and DOTD, through its various roles and spheres of influence, can play a crucial role in driving positive change. Public and private industry collaboration, innovation, and a shared commitment to sustainability, are essential for a cleaner transportation future.

DOTD's key partners in the transportation planning process and carbon reduction efforts are the 11 Louisiana MPOs: transportation policymaking organizations made up of representatives from local government and transportation authorities within their corresponding regions designated to carry out the transportation planning process of urbanized areas above 50,000 in population. These organizations have evolved since their inception in the 1960s to ensure that local elected officials, regional stakeholders, and the public are involved in adopting integrated, modally mixed strategies for greater system efficiency, mobility, and access. The Louisiana MPO structure also includes, in most instances, a regional council of governments or planning commission that coordinates and collaborates to address regional issues related not only to transportation, but also to land use, economic development, and the environment.

DOTD supports this collaborative structure by providing local public agencies (LPAs) with federal and state funds for locally owned projects. DOTD also supports educational resources through the Louisiana Transportation Research Center (LTRC), Louisiana State University (LSU), and the University of New Orleans Transportation Institute (UNOTI). Its LPA program, which administers pass-through funding from FHWA, encourages and facilitates implementation of projects at the local level that will reduce carbon emissions through programs such as the Transportation Alternatives Program, Safe Routes to Public Places, and the Local Road Safety Program.

2.0 Developing the Louisiana CRS

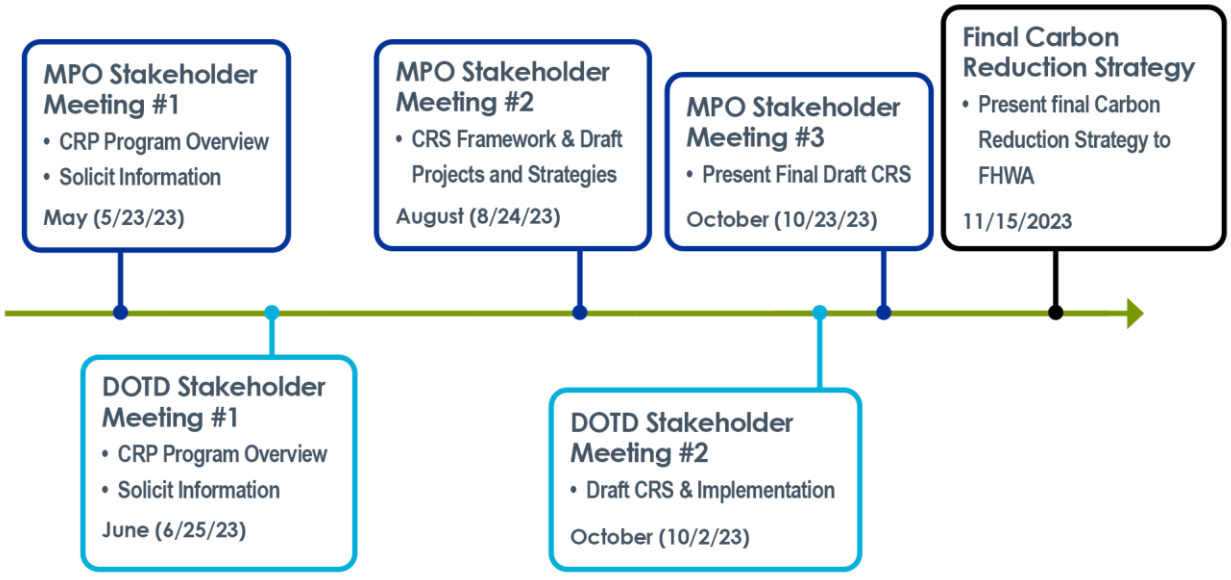
DOTD developed this CRS by reviewing the goals and objectives in Louisiana's Statewide Transportation Plan (STP) and engaging with DOTD staff to identify current projects and strategies that support the reduction of carbon emissions. DOTD consulted with the state MPOs throughout the development of the CRS.

Federal law requires that each state maintain a regularly updated, 20-year-plus transportation plan. Louisiana's STP, last updated in 2015, identified a vision with goals and objectives to address the state's long-term transportation needs for thirty years. DOTD is currently updating the STP and anticipates having a draft plan available at the end of 2024. Details documenting how the CRS aligns with DOTD's current STP vision, goals, and objectives can be found in **Appendix C**.

2.1 DOTD and MPO Engagement

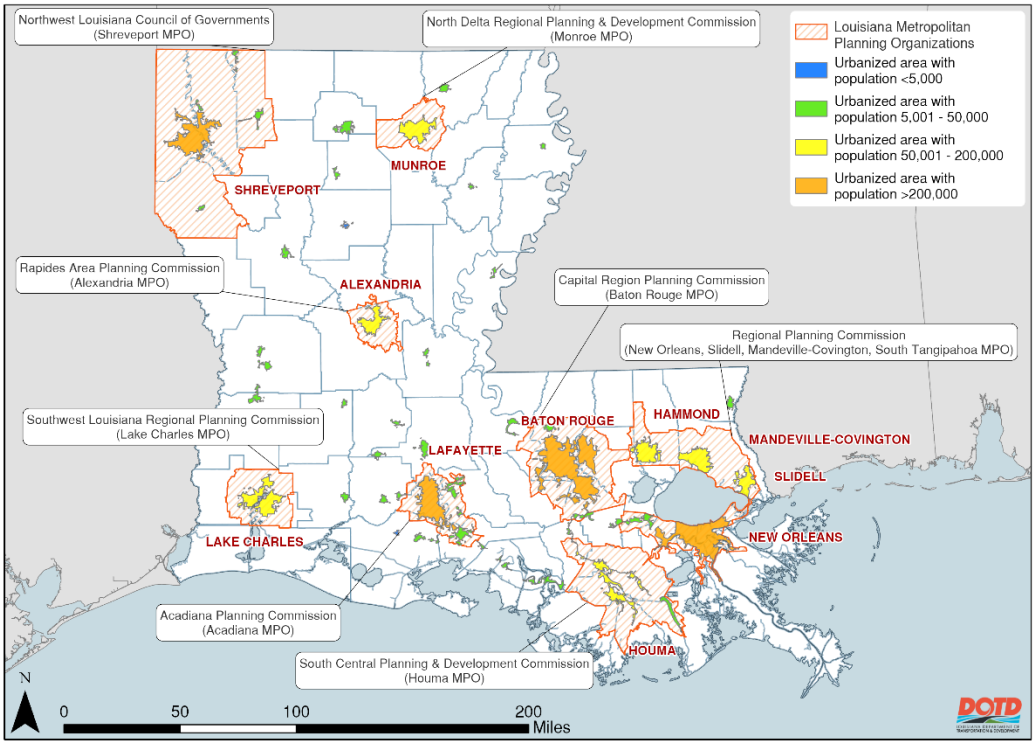
As part of the CRS development process, internal stakeholder meetings were held with DOTD staff including Planning, Engineering, Bridge Design, Road Design, Project Development, District Operations, and Multimodal Commerce Divisions. Two internal stakeholder meetings were held during the CRS process; the first was held on June 26, 2023, and the second was held on October 2, 2023. The first internal stakeholder meeting provided an overview of the CRP and solicited information about existing projects and strategies that support carbon emissions reduction. The second internal stakeholder meeting offered a look at the draft CRS and its proposed implementation. **Figure 1** shows the stakeholder engagement timeline.

Figure 1: Stakeholder Engagement Timeline



In addition to internal stakeholder meetings, three stakeholder meetings were held with the MPOs between May and October of 2023. Louisiana has 11 MPOs located in Alexandria, Baton Rouge, Hammond, Houma, Lafayette, Lake Charles, Mandeville-Covington, Monroe, New Orleans, Shreveport, and Slidell as shown in **Figure 2**. The first MPO meeting was conducted virtually on May 5, 2023. An overview of the CRP was presented, and input was solicited about projects and strategies implemented by MPOs that support emissions reduction. The second meeting occurred on August 24, 2023, and DOTD requested input on goals and objectives as well as future projects and strategies for the CRS. The third MPO stakeholder meeting occurred on October 23, 2023, and input was gathered on the final draft. Prior to the meeting, the final draft of the CRS was shared with the MPOs. MPO meeting summaries can be found in **Appendix B.**

Figure 2: Urbanized Areas & Metropolitan Planning Organizations in Louisiana



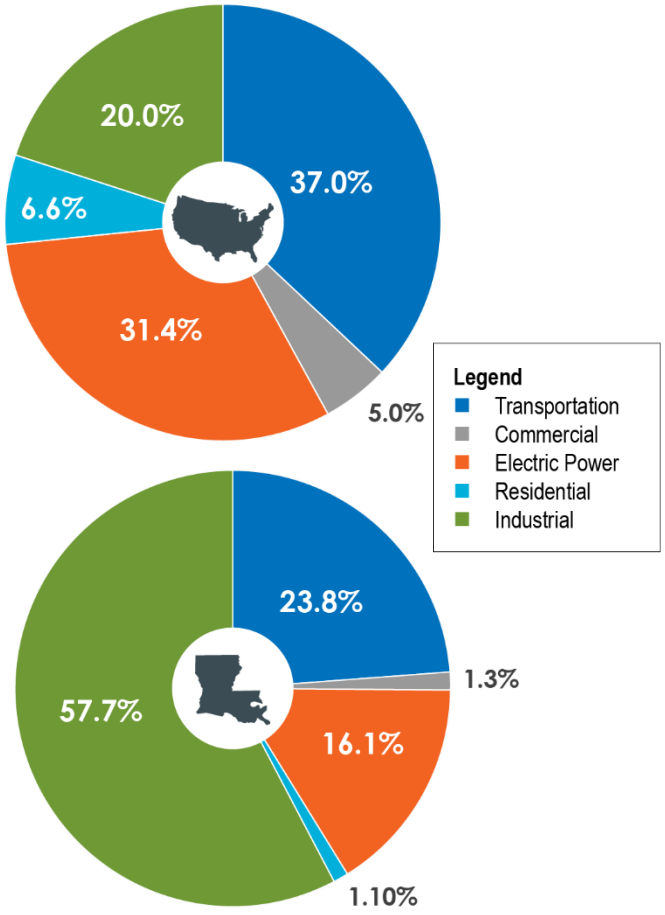
Source: U.S. Census 2010 & 2020

3.0 Carbon Reduction in Louisiana

To determine effective projects and strategies that will reduce transportation emissions, data was compiled that describes the existing context in Louisiana related to transportation infrastructure, travel trends, and existing carbon emissions.

3.1 Carbon Emissions in the U.S. and Louisiana

Figure 3: U.S. and Louisiana Transportation Carbon Emissions by Sector



Source: U.S. Energy Information Administration (EIA), Energy-Related CO2 Emissions Data Table 3

In order to effectively reduce carbon emissions, it is crucial to understand the source of carbon emissions and how they vary by industry sector. **Figure 3** shows the carbon emissions by sector in the U.S. and Louisiana, respectively. Although the primary source of the emissions for the U.S. comes from the transportation sector (37%), most of Louisiana's carbon emissions originate from the industrial sector, contributing an overwhelming 57.7% of overall state emissions. Within the industrial sector, the top three industries accountable for carbon emissions are chemical manufacturing, petroleum, and coal products (refining), and natural gas processing; these industries comprise 94% of the industrial carbon emissions[2]. In addition, the transportation sector is Louisiana's second-largest source of carbon emissions, accounting for 23.8% of carbon emissions. Analyzing vehicle miles traveled (VMT) per capita and freight movement in Louisiana offers insights into factors influencing transportation related emissions reduction.

[2]Louisiana industrial GHG emission shares by sector for 2019. Data source: U.S. EPA flight.

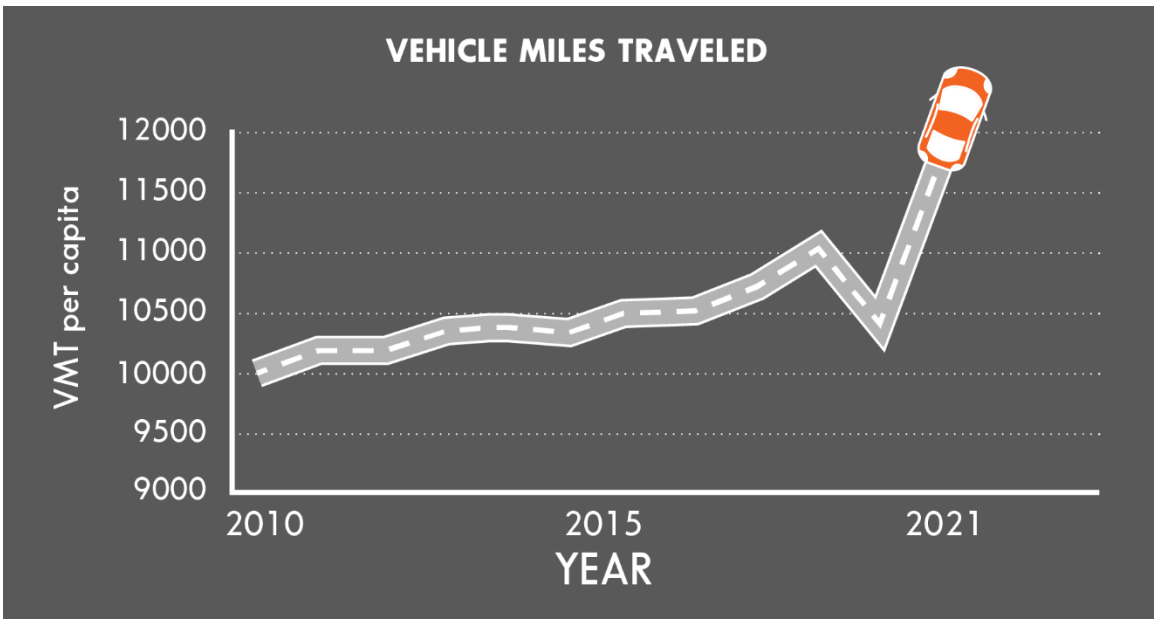
3.2 Travel Demand: VMT Per Capita

The State of Louisiana is the 25th most populated state in the U.S., with a total population of 4,657,757 in 2020, a marginal 2.7% increase from 2010[3]. Population trends in Louisiana have been shifting over the last decade as the northern and rural parishes saw declining population rates as people moved to suburbs across the state.

In this same period, total VMT increased from 45.4 million VMT in 2010 to 54.7million VMT in 2021[4], a 6.5% increase, as shown in **Figure 4**. Due to the Covid-19 Pandemic, VMTs dropped to an almost 10-year low in 2020, as most of the population was not traveling due to stay-at-home orders, but the resurgence of demand in 2021 restored the prior trendline. VMT and carbon emissions are directly related as the distance vehicles are traveling increases so do carbon emissions.

VMT per capita increases can be attributed to population growth and the number of people taking trips as well as the distance each trip demands. Suburbanization trends increase VMTs and the corresponding rise in carbon emissions due to the increased distance between residential areas and central business districts and/or other major centers. For example, in Baton Rouge, this trend is evident as approximately 41% of workers in neighboring Livingston Parish and 33% of workers in Ascension Parish commute to the city for work[5].

Figure 4: VMT Per Capita in Louisiana



Source: U.S. Census Bureau, Population Division & U.S. Department of Transportation (USDOT), Bureau of Transportation Statistics (BTS), State Highway Travel

3 https://data.census.gov/

4 https://www.fhwa.dot.gov/policyinformation/statistics/2020/vm2.cfm. Functional System Travel: Annual Vehicle Miles.

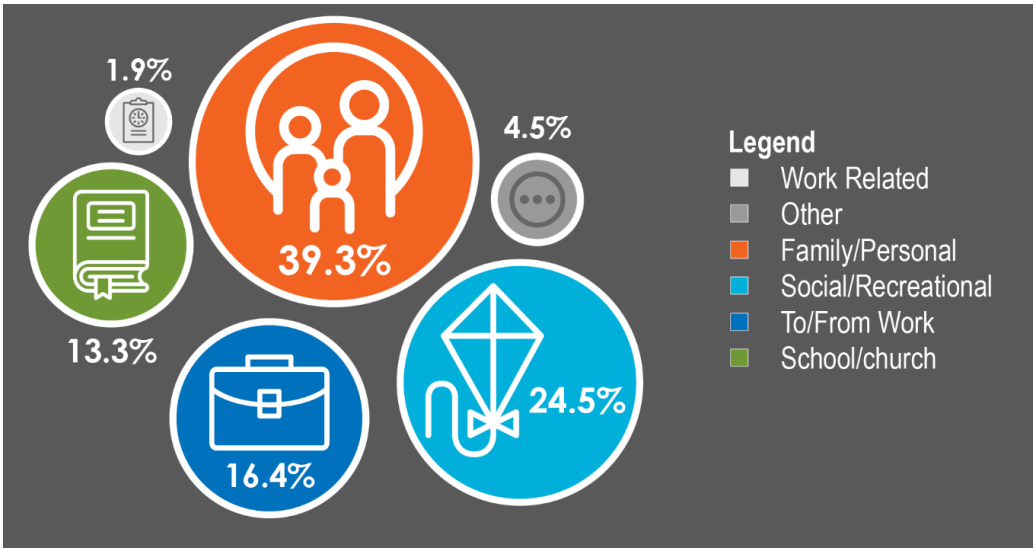
5 2016-2020 5-Year ACS Commuting Flows, Table 1

3.3 Optimizing Highway Capacity

Although the demand for highway travel continues to grow in the U.S. and Louisiana, highway capacity in Louisiana only grew by 1% in the last decade as limited highway funding has been focused on the operation and maintenance (O&M) of existing infrastructure and providing state match funds. Few dollars have been left over for expansion. Expanding highway capacity is not a long-term solution to reducing congestion as increased capacity often leads to increased demand and in turn higher congestion. If demand continues to exceed capacity, it is possible that the resulting highway congestion will increase a shift to alternative modes of travel such as carpooling, walking, biking, and use of public transportation, particularly in urban areas.

As shown in **Figure 5**, the journey to and from work represents only one-sixth of Louisiana's trips. Social and recreational trips represent almost one-quarter; personal trips represent another third. It should be noted that social and recreational trips are driven in part by the significant tourism industry in the state, which limits DOTDs ability to influence these trips. By 2022, over two million residents were employed in the state and that number is expected to increase by 3.5% by the end of 2023[6]. Some of the passenger travel trips could be satisfied by transit, biking, or walking. To facilitate this kind of mode shift for some trips, DOTD initiated its Complete Streets policy in 2012, updated it in 2016, and continues to incorporate it into its policies and work processes[7].

Figure 5: Passenger Travel Trip Purpose in Louisiana, 2017



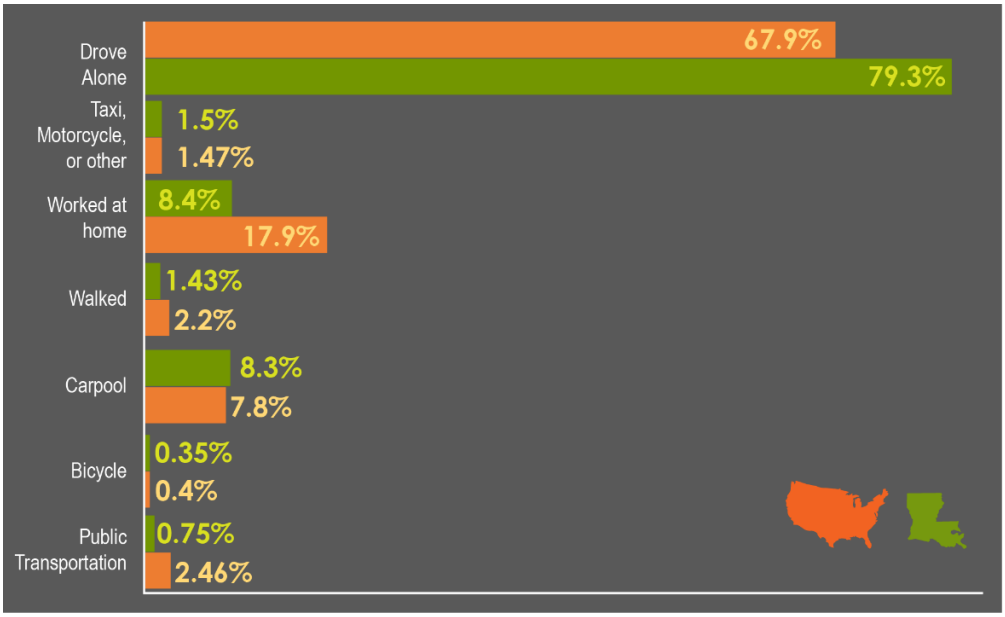
Source: USDOT, BTS, State Transportation Statistics, Passenger Travel: Personal Travel 2017

6 Louisiana Workforce Information Review, Statewide Report, 2022

7 Evaluating the Implementation of the Complete Streets Policy in Louisiana: A Review of Practices and Projects in the Last 10 Years. Bian, Ruije, Tara Tolford. Transportation Research Board. 2022.

Another factor that affects VMT and carbon emissions per capita is driving in single occupancy vehicles. As shown below in **Figure 6,** driving alone to work is the most common commute type in Louisiana and the U.S. However, the percentage of those going alone to work is slightly higher in Louisiana (79.3%) than in the U.S. (67.8%).

Figure 6: The U.S. and Louisiana Commute Modes to Work



Source: USDOT, BTS, State Transportation Statistics, Passenger Travel: Commute Mode 2021

One mode-shift strategy to address driving in single occupancy vehicles is increasing the use carpooling or rideshare. Considering that the average passenger car produces almost one pound of carbon dioxide per mile traveled the carbon footprint of a commuter can be reduced by utilizing carpooling or public transportation. DOTD and its MPO partners are supporting transit and other modes through Bus Rapid Transit projects, micro-transit programs, van pools, and carpooling initiatives. The Baton Rouge MPO has started an online and in-person campaign to facilitate and encourage people to commute together. Mode shifts also benefit the state economy by optimizing highway capacity, reducing the need for more infrastructure and bigger O&M budgets, and mitigating carbon-emitting congestion.

To reduce single-occupancy trips and promote less carbon intensive modes of travel, strategies such as carpooling, promoting transit use, promoting active transportation (such as biking or walking), and other congestion mitigation measures that reduce congestion without increasing capacity should be prioritized.

3.4 Multimodal Infrastructure

Louisiana has a robust multimodal transportation system which utilizes roadways, waterways, rail, and air to transport people and goods. Maximizing and efficiently utilizing the various modes, especially rail and water, is essential to reduce emissions and promote sustainability in the state's transportation landscape. This section provides background on Louisiana's freight transportation system, discusses the impact of various modes on emissions, and identifies opportunities to reduce transportation emissions from freight transport.

DOTD is responsible for maintaining over 16,000 centerline miles of roadway and approximately 7,800 bridges[8,9]. Outside of DOTD's control is a navigable waterway network of over 2,820 miles, 32 active ports, and 3,001 miles of freight railroad. Additionally, there are three long-distance passenger rail lines that operate out of New Orleans (The Sunset Limited to California, the City of New Orleans to Chicago, and the Southern Crescent to Washington DC).

Figure 7: Average Carbon Dioxide Emissions per Ton-Mile of Freight by Mode of Transportation in the U.S., 2019

Source: Emissions of Carbon Dioxide in the Transportation Sector, Congressional Budget Office, December 2022

[8]DOTD. (2022). 2022 Federal NHS Transportation Asset Management Plan. Retrieved from http://www.dotd.la.gov/Inside_LaDOTD/Divisions/Multimodal/Data_Collection/Pages/Asset-Management.aspx

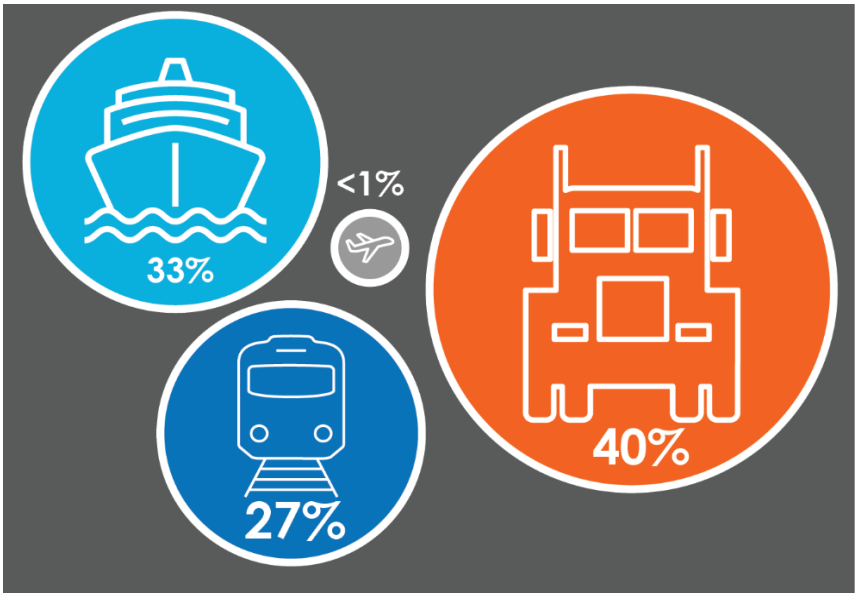
[9] Federal Highway Administration. (2021). Download NBI ASCII files 2021. Retrieved April 13, 2023, from National Bridge Inventory: https://www.fhwa.dot.gov/bridge/nbi/ascii2021.cfm

3.4.1 Louisiana's Freight Transportation

The transportation of freight plays a key role in statewide emissions. Carbon emissions associated with moving one ton of cargo over a mile vary widely depending on the chosen mode of transportation. **Figure 7** illustrates the carbon emissions per ton-mile for different transportation methods, highlighting the differences in their environmental footprints.

Carbon emissions per ton-mile for trucking freight are eight times higher when compared to rail transport. Moreover, trucking freight is less carbon efficient when contrasted with pipeline and water transport options. As shown in **Figure 8**, currently, 40% of Louisiana's freight tonnage relies on trucks for transportation, and truck-borne freight tonnage is expected to increase by 40% by 2050[10]. Leveraging the state's extensive network of navigable waterways and over 2,000 miles of freight railroad can contribute to reducing carbon emissions from the transportation sector.

Figure 8: Louisiana Freight Tonnage by Mode, 2021



Source: S&P Global Transearch, 2021; analysis by Cambridge Systematics, Inc.

[10] S&P Global Transearch, 2021; analysis by Cambridge Systematics, Inc

4.0 Louisiana's Transportation Carbon Reduction Projects and Strategies

DOTD is well positioned to support reductions in transportation emissions with a variety of projects and strategies. Although this CRS represents DOTD's first documented strategy for reducing carbon emissions from the transportation sector, DOTD's STP aligns with carbon reduction as shown in **Appendix C**.

Section 4.1 discusses the five categories of transportation projects and strategies that are eligible for CRP funds. Section 4.2 identifies projects and strategies currently in progress within the DOTD and MPOs that support the reduction of carbon emissions. Section 4.3 identifies prospective and emerging projects and strategies the DOTD could implement using CRP funds.

4.1 CRS Categories

In consultation with the MPOs, DOTD identified five categories of transportation projects and strategies eligible for CRP funds. The following section breaks down and provides context for how specific categories and their associated projects and strategies reduce carbon emissions from the transportation sector.

1. Traffic/Congestion Management

Projects and strategies under the traffic/congestion management category reduce carbon emissions from transportation by reducing vehicle idling. Travel Demand Management (**TDM)** programs help reduce carbon emissions while creating safer, less congested roadway facilities. **Managed lanes**, such as High-Occupancy Vehicles (HOV) lanes, encourage travelers to carpool and reduce the number of single-occupancy vehicles on the road. **Electronic tolling** is a wireless toll collection system that collects a user fee from vehicles using a transportation segment. This is a more efficient alternative to toll booths which requires drivers to stop and manually pay the toll. Electronically tolling reduce emissions by creating less congested toll facilities and can encourage carpooling and the use of alternative modes of transportation. **Transportation Incident Management (TIM)** provides planning and coordination between multiple jurisdictions and agencies during incidents to determine the fastest way to clear the incident and maintain a normal flow of traffic, which reduce vehicle idle times.

2. Alternative (or Active) Modes

The alternative or active mode category includes projects and strategies that promote good and improved physical health and emit little to no carbon emissions. **Bicycle and pedestrian (walking, running, and rolling)** modes encourage active movement, and facilities can be improved and made safer for users by applying for State Transportation Alternatives Program (TAP) funds. Construction and expansion of **trails** increase accessibility and promote active transportation by offering well-developed and connected trails to urban and rural areas. **Public transit services** and **Intercity passenger rail** transport multiple people at once, thus reducing the number of single-occupancy vehicles used while providing better connections to users throughout the metro area. Implementing a **Complete Streets Policy** consists of designing streets to promote active transportation and increase safety and physical activity for all users.

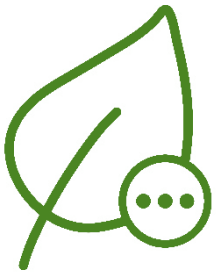
3. Alternative Fuels/Energy Efficiency

Projects in the alternative fuels and energy efficiency category reduce carbon emissions by using fuel or vehicle types that emit little or no carbon emissions. **Electric vehicles and alternative fuel vehicles** (biodiesel, ethanol, hydrogen, natural gas, etc.) run on fuels or energy different than traditional gasoline and diesel fuel. **Diesel retrofits,** such as engine exhaust-after treatment technologies can be added to reduce carbon emissions. **Freight and port emissions** can be reduced through port electrification and implementation of freight that uses alternative fuels or technology to support the decrease in idling times. Incorporating **energy efficient lighting** along interstate and state highways or within DOTD maintenance facilities supports the reduction of emissions from the transportation sector.

4. Technology Solutions

Technology can be used to keep travelers informed and encourage travelers to make more carbon efficient choices as well as helping traffic operations teams keep the transportation system carbon efficient. Technology solutions reduce carbon emissions by decreasing congestion and vehicle idle times. **Traffic management facilities** monitor highway operations. These facilities use traffic detectors, cameras, ramp meters, and other measures to assess traffic and increase the safety and reliability of roadway facilities. **Adaptive signals** involve changing the traffic signals based on traffic conditions and help maintain a steady traffic flow in areas with increased traffic during various times of the day. Intelligent Transportation System (**ITS**) provide real-time updates to DOTD and vehicle users on roadway facilities and warns drivers about upcoming traffic, accidents, weather, emergencies, road, and ramp closures, and more.

5. Other



The final category is other, which encompasses projects and strategies supporting carbon reduction from on-road sources. Any **projects or strategies that improve traffic flow without adding capacity such as roundabouts,** can be considered for CRP funds as they limit the time and the frequency of vehicle idling. **Supporting land use policies** influences changes that promote increased development of trails, green space, biking and walking-friendly areas, and public transportation infrastructure. Other projects and strategies that **demonstrate a reduction in on-road carbon emissions** are applicable for CRP funds.

4.2 Identified Projects and Strategies in Progress

DOTD and the MPOs have implemented several projects and strategies throughout the state that support the reduction of carbon emissions. The ongoing projects being implemented are separated into their most applicable category and are presented below.

1.Traffic/Congestion Management:

- **Travel Demand Management (TDM) program:** DOTD provides up to $100,000 per year to MPOs as a part of the Statewide TDM program. Five MPOs implement a local TDM program. Of these, four participate in funding from the statewide program, and one uses a portion of Surface Transportation Block Grant Program (STBG) funding. With the funding provided from DOTD, MPOs manage public education efforts, including creating and disseminating materials and information to encourage the use of carpooling and vanpooling through a publicly accessible online rideshare matching system.
    - The Acadiana MPO, Alexandria-Pineville MPO, Houma-Thibodeaux MPO, New Orleans MPO, and the Baton Rouge MPO all have TDM programs.
    - The Capital Region Planning Commission (CRPC), which includes the Baton Rouge MPO, uses STBG funding to offer a more robust TDM program and is exploring dedicating a portion of their CRP funds for TDM projects and strategies.
    - The Acadiana MPO, Alexandria-Pineville MPO, Houma-Thibodeaux MPO, and the Baton Rouge MPO promote the benefits of active transportation and public transit as part of their TDM programs.
- **Roundabout** projects throughout the state support the reduction of idling. There are currently over 35 scheduled roundabout projects throughout the state identified in the 2023-2026 STIP. The Lake Charles MPO and Acadiana MPO have a comprehensive Roundabout Plans.
- DOTD's first transportation, Public-Private Partnership (P3) is ongoing with the Belle Chasse Bridge and Tunnel Replacement Project. The bridge replacement will include the use of **electronic tolling.**

- An **Intersection project** on Highway 1 in Shreveport is adding offset left turn lanes which improves traffic and reduces idle times while vehicles are waiting to turn left.
- **Ramp metering** is a proactive approach to traffic management designed to space out traffic entering the interstate. This helps reduce congestion on the interstate and improves safety by lowering the number of crashes at the ramp gores with the interstate. Ramp meters are implemented along the I-12 corridor between Baton Rouge and Livingston Parish and DOTD is currently installing ramp meters along the U.S. 90 corridor in New Orleans.
- DOTD supports the **Ouachita River LA HWY 165 Multimodal Connectivity and Safety Project** in Caldwell Parish. The Project received approximately $10 million in Rebuilding American Infrastructure and Sustainability Equity (RAISE) grant funding to construct a truck parking facility near the Port of Columbia. The truck parking facility will increase multimodal freight movement and improve energy efficiency by providing EV charging to power commercial truck cab heating and cooling systems, provide 12 EV charging stations. It will utilize ITS to show truck parking availability.
- **Traffic Signal Controller Upgrades** are being implemented in the Alexandria-Pineville MPO to improve signal synchronization.
- The Baton Rouge MPO is working to identify **operational improvements** in high traffic, problematic areas impacting traffic signal performance.
- DOTD has an **Access Connection Policy** that limits the number of access points on highly traveled state highways, which reduces traffic congestion and idle times. Access connections and permits are determined based on four categories: single-family residential access connections, non-commercial agricultural operations, traffic generator access connections, and temporary permits. This allows for DOTD to balance the needs and rights of property owners and roadway users.

2. Alternative (or Active) Modes

- I-10 greenway (a multimodal path) will be constructed in Baton Rouge. The I-10 greenway will be a **pedestrian and bicycle path** linking the existing downtown greenway network to the bicycle and pedestrian pathways around the University Lakes.
- The **Baton Rouge-New Orleans Intercity Passenger Rail Project** recently received a $20 Million Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant to design and construct two train stations along the planned Baton Rouge-New Orleans Inter-City Rail Service. The Downtown Baton Rouge station will be a multimodal hub for easy connections to the city's Bus Rapid Transit (BRT) service. DOTD is working closely with the cities involved to support this project and has contracted to provide environmental review to meet NEPA requirements for the stations as well as the full passenger rail service.

- In Bossier and Caddo Parishes, the Jimmie Davis Bridge will be rehabilitated to create **Louisiana's first linear bridge park**. The historic, original bridge will provide vital bike and pedestrian infrastructure over the Red River.
- **Intersection improvements** on Highway 1 in Shreveport allow for increased use of alternative modes by creating more pedestrian friendly environments.
- The Northwest Louisiana Council of Governments (NLCOG) is undergoing the development of a **regional active transportation plan** in Caddo, DeSoto, and Webster Parishes. This plan will outline actionable steps for these parishes to execute, improve, and enhance their active transportation facilities and infrastructure, including bike lanes, trails, and sidewalks. This will subsequently increase the accessibility and effectiveness of active transportation in these areas.
- Shreveport, located within the NLCOG's jurisdiction, received a $22 million RAISE grant along the **Shreveport Healthcare Development Corridor** to provide roadway and intersection improvements. The project includes reconstructed roadways and transit bus pull-outs, BRT with electric bus technology, Americans with Disabilities Act (ADA) improvements, traffic signal and emergency vehicle preemption improvements, pedestrian facilities including a pedestrian bridge, protected bicycle lanes, and street lighting.
- The CRPC is undergoing the **Ferry Feasibility Study** to examine the feasibility of ferry service between the east and west banks of the Mississippi River in Baton Rouge to offer residents an alternative mode of transportation.
- The **Commuter Krewe** program is a joint venture between the CRPC and DOTD which provides Baton Rouge businesses and commuters with an electronic rideshare matching system, information, options, and incentives to help reduce congestion on our roads by reducing the number of vehicles with only one occupant. In addition to carpooling and vanpooling, several programs are offered including biking, transit, walking, and telecommuting services. Employers looking to provide travel alternatives to employees can also utilize Commuter Krewe services**.**
- CRPC and DOTD support LYNX, the City of Baker's **on-demand micro transit service**. LNYX by Capital Area Transit System (CATS) has a fleet of minivans that provide on-demand services to Baker residents for $1.75 or less. The City of Baker's micro transit service has been successful and the CRPC is trying replicate and utilize micro transit in other suburbs surrounding Baton Rouge. The CRPC is currently undergoing a regional micro transit study which should be available in 2024.
- DOTD's **Safe Routes to Public Places** program focuses on reducing all fatalities and injuries, especially those involving pedestrians and bicyclists, along public roads. DOTD grants funding to local municipalities to improve sidewalks, public roads, and streets that link people to public facilities. By providing a safe and reliable transportation network for pedestrians and cyclists, DOTD helps remove any barriers to safe and efficient travel and encourages active transportation.

- DOTD received a 2022 RAISE grant to design and construct two ferry boats to provide **additional ferry service** to Plaquemines and Cameron Parishes. These projects assist Louisiana in supplying continued and accessible transportation access while providing viable alternative transportation options.
- DOTD administers the **Rural Transit 5311 Program**, created to provide public transportation in nonurbanized areas.
- DOTD administers the **Transportation Alternative Program**, which provides competitive funding to eligible entities, including MPOs, to implement smaller-scale transportation projects such as pedestrian and bicycle facilities, recreational trails, and creating safe routes to school.
- The New Orleans Regional Planning Commission supports the New Orleans Regional Transit Authority (RTA) on the **New Orleans Downtown Transit Center and Connecting Corridors Project.** This project received nearly $25 million in RAISE grant funding to construct a downtown transit center for the RTA's bus and streetcar network. It will include multimodal improvements such as protected bike lanes, high-visibility sidewalks, based on the Complete Streets policy.
- Multi-phased **bike and pedestrian improvement Program** projects are under construction in the Alexandria-Pineville MPO.
- The Southwest Louisiana Regional Planning commission has a five parish **Regional Bicycle and Pedestrian Safety Plan** underway**.**
- The Rapides Area Planning Commission (RAPC) operates a **Rural Public Transportation Pilot Program** throughout the Gant and Natchitoches Parishes. The Pilot provides on demand public transportation services to improve efficiency and fulfill unmet rural public transportation demand through central Louisiana.
- Multiple cities are introducing **Bus Rapid Transit (BRT)** to their public transportation networks. New Orleans is in the initial planning stages for the East and West Bank BRT. Baton Rouge is in the final design stages for its Plank-Nicholson BRT route.
- DOTD adopted its **Complete Streets Policy** in 2009 and revised the policy in 2016. DOTD will continue to implement and encourage the use of Complete Streets in all applicable projects.

3. Alternative Fuels/Energy Efficiency

- Several **energy efficient lighting projects** have been completed or are ongoing throughout the state. Since 2018, light-emitting diodes **(LEDs)** have been used on all new interstate projects, and LED projects are planned for interstate lighting conversion/retrofits statewide for the 2023 and 2024 fiscal years. Additionally, LEDs are being implemented during infrastructure upgrades for sidewalk projects.
- DOTD used the approximately $7 million from the Louisiana Volkswagen Environmental Mitigation Trust to **replace outdated diesel equipment and vehicles** with newer, more efficient options.

- DOTD is currently **upgrading** aging, less fuel-efficient **equipment** and participating in **alternative fuels pilot programs** to better understand how to incorporate alternative fuels into DOTD fleets.
- DOTD will receive roughly $73 million in funding to develop a reliable and well-connected electric vehicle charging network throughout the state, including rural and urban areas, under the **National Electric Vehicle Infrastructure (NEVI) program**.
- The **HALO Hub** is a three-state partnership (Arkansas, Louisiana, and Oklahoma) to establish a regional hub for developing, producing, and using clean hydrogen as fuel and manufacturing feedstock. DOTD is working closely with the HALO Hub to ensure the maintenance of transportation networks between significant facilities.
- The Baton Rouge MPO is working with **Louisiana Clean Fuels** to develop an **alternative fuel corridor** for the state.

4. Technology Solutions

- **Adaptive signals** are being used during the construction of the LA 378 corridors in Calcasieu and Sulphur on the LA 108 corridor.
- There are regional **Traffic management centers** (TMC) in New Orleans, Shreveport, Lafayette, and Lake Charles and a statewide Advanced Traffic Management and Emergency Operations Center (ATM/EOC) in Baton Rouge for regional and statewide traffic/emergency operations. The Lake Charles MPO is interested in opening an additional TMC.
- **Intelligent Transportation System** (ITS) initiatives are deployed across the state to alleviate day-to-day congestion. The cities of Baton Rouge, Houma, Monroe, Lafayette, Northshore, Lake Charles, Shreveport, and Alexandria have regional ITS plans. The Lake Charles MPO is working on an ITS feasibility study.
- **Dynamic Message Signs** alert the public of bad air quality days and encourage carpooling to reduce emissions. These signs can promote the use of alternative modes like biking or walking to help avoid future bad air quality days.
- Louisiana Tech University and the City of Ruston, with support from the DOTD, are implementing the **"Monroe Street Corridor Project"** to connect the university to downtown Ruston. The project features a Complete Streets design which will serve as the foundation for the Smart Cities Innovation Testbed. The testbed will consist of embedded sensors which will provide real-time data for traffic, parking, and environmental conditions, while simultaneously creating a network needed to research and develop autonomous vehicles.

5. Other

- DOTD assists motorists and improves traffic flow through its contracted **Motorist Assistance Patrol** (MAP) service. It provides free assistance to stranded motorists in Baton Rouge, New Orleans, Lake Charles, Shreveport-Bossier City, Alexandria, and

Northshore. The MAP reduces traffic congestion caused by stalled vehicles and provides safety and comfort to those stranded.

- The Baton Rouge MPO is developing a **project selection and prioritization criteria to be used for CRP** funding apportionment.
- The City of Baton Rouge and the RPC received U.S. Environmental Protection Agency (EPA) Climate Pollution Reduction Phase 1 Planning Grant.

4.3 Prospective and Emerging Projects and Strategies

This section identifies prospective and emerging projects and strategies for implementation that fit the state's future transportation needs and reduce carbon emissions. Prospective and emerging projects were identified during DOTD and MPO engagement sessions.

1. Traffic/Congestion Management

- **HOV lanes** can be utilized in larger urban areas such as Baton Rouge, New Orleans, or Shreveport.
- DOTD is exploring **interstate modifications** that would reduce idling times to be implemented in future projects.

2. Alternative (or Active) Modes

- DOTD will continue to support existing MPO TDM programs which educate and encourage **carpooling and vanpooling**, as well work with non-participating MPO's on initiating TDM programs in their Metropolitan Planning Areas (MPA's) in the future.
- DOTD and the CRPC's TDM Program are independently exploring the use of **micro transit** and/or **park and rides** to connect the CATS BRT network in Baton Rouge.
- DOTD could explore the creation of a program or policy to help **incentivize drivers** to make less carbon intensive choices for personal travel such as e-bikes or EVs.
- Seek opportunities for **urban transit** to improve ridership. This will be accomplished by leveraging several funding resources to increase urban transit opportunities in areas with limited access and within local jurisdictions. This will help to reduce VMT within urban areas.
- Increase financial support for the **rural transit networks** linking to urban transit systems. DOTD can utilize federal dollars, grants, and other funding sources to enhance or establish rural ridership systems, including bus services, micro-transit vehicles for shorter trips, on-demand services, and scheduled travel to urban city centers with support from the local community.
- Invest in regional transit opportunities to connect communities to jobs and services statewide. This includes implementing projects such as dedicated bus lanes, high-occupancy vehicle lanes, and **BRT** options along state transportation infrastructure, including interstates, highways, and major arterials. These transportation options

promote and encourage transit use and carpooling while simultaneously reducing VMT and Single-Occupancy Vehicle (SOV) usage.

3. **Alternative Fuels/Energy Efficiency**

- DOTD is interested in exploring how the use of **autonomous vehicles (AV)** and the integration of AV can support overall reduction in emissions. Additionally, DOTD can explore how the freight industry can utilize connected and autonomous vehicles (CAV) to support emissions reductions as well as improve highway efficiencies.
- DOTD will explore systematically **upgrading older fleet and maintenance equipment** to more fuel-efficient equipment to help reduce emissions.
- DOTD currently has an interstate lighting program that allows communities to request replacements of older light systems. DOTD is interested in exploring the creation of a **new program** to ensure permit lighting on state highways utilize **energy-efficient LED lights**.
- DOTD wants to explore options for putting **EV chargers** for employees and the public at **DOTD offices**, showing a commitment from the department to alternative fuels.
- DOTD is interested in exploring the creation of **public education campaigns** to educate DOTD employees and the public about how to cut down on fuel consumption and highlight the benefits of emissions reductions and **electric/alternative fuel vehicles**. This includes building out the state's electric vehicle charging station network and increasing access by reducing socio-economic and geographic barriers to low or zero-emission vehicles and their supporting facilities.
- Support and promote opportunities and strategies that minimize VMT. This includes enforcing the **Complete Streets policy,** redesigning local and regional transit, and revamping land use strategies to maximize the usefulness of alternate transportation modes.
- Investigate and consider feasible opportunities and incentives to improve the efficiency of **freight transportation.** Private freight companies can prioritize and fund specific project proposals that support and increase freight transport efficiency by developing public/private partnerships and seeking out discretionary funding from programs that support these types of projects.
- Research the effectiveness of alternative fuels and implementation strategies to **decarbonize heavy transit**, including waterborne transit, medium and heavy-duty vehicles, and aviation. The DOTD Transportation Research Center can identify and invest in innovative and effective ways to facilitate a seamless transition into using alternative, low, and no-carbon fuels during long-haul transportation. This includes pursuing and supporting pilot projects to accelerate the decarbonization of heavy transit.

4. **Technology Solutions**
   - DOTD is interested in exploring and better understanding how to use and integrate **Artificial Intelligence (AI)** at DOTD to help support the reduction of carbon emissions.
   - In East Baton Rouge, **SMART grant** applications could be utilized to improve and monitor traffic signal performance analytics.

5. **Other**
   - DOTD is open to exploring the use of **solar power** for DOTD facilities.
   - DOTD can support the development of tools that can be utilized as evaluative criteria to analyze **the environmental impacts** of major state-funded transportation projects including carbon emissions whenever applicable. DOTD can promote the use of tools and strategies to support carbon emissions reduction and encourage MPOs and local governments to apply those tools when considering the funding of local or regional projects.

5.0 Conclusions and Next Steps

The State of Louisiana has a well-developed transportation system, including roads, waterways, rail, air, and major water ports. DOTD is directly responsible for highways and is a key partner with the other transportation modes. DOTD is well-positioned to support the state's carbon reduction goals by incorporating project elements that mitigate transportation-related emissions and support other initiatives to reduce carbon emissions.

DOTD will continue to implement strategies that have proven effective, namely:

- **Traffic and Congestion Management**, including TDM programs, roundabout and other intersection improvement projects, all-electronic tolling, interstate ramp metering, traffic management centers, motorist assist programs, and traffic signal timing and synchronization.
- **Alternative (or Active) Modes** include integration of Complete Streets into the LADOTD project delivery process; outreach to local communities through the Local Technical Assistance Program (LTAP), Transportation Alternatives Program (TAP), and Safe Routes to Public Places (SRPP) grant program; and support for pedestrian, bicycle, transit, passenger rail, and active transportation projects.
- **Alternative Fuels/Energy Efficiency**, including converting street and highway lighting to LEDs, building out the electric alternative fuel corridors through its NEVI grant program, and upgrading its fleet to replace outdated equipment.
- Roll out of **Technology Solutions** that focus on supporting the other three strategies.

Through the ongoing implementation of these strategies, DOTD has and will continue to improve its coordination and outreach to other agencies and governments with resources that can be utilized to help reduce carbon emissions.

In addition, DOTD will continue to leverage its limited resources through partnerships with the UNOTI and LSU's LTRC. Research projects such as the Statewide Non-Motorized Traffic Monitoring Study and Rails to Resilience: Evaluating New Orleans and Baton Rouge Rail Terminals and Transit Links are examples of how DOTD has and will continue to facilitate the development and adoption of alternative modes. Outside of the DOTD, the CRS can be integrated into or considered during regional planning efforts and through locally owned projects.

The CRS outlined in this document identifies a path for DOTD to contribute to the reduction of carbon emissions for the State of Louisiana through education, coordination, and deployment of proven technologies.

Appendix A: Carbon Reduction Program Compliance

U.S.C. Statute Reference: § 175 (d)(1)	
USC Statute	IN GENERAL. -Not later than 2 years after the date of enactment of the Surface Transportation Reauthorization Act of 2021, a State, in consultation with any metropolitan planning organization designated within the State, shall develop a carbon reduction strategy in accordance with this subsection.
Compliance Notes	This CRS was developed in consultation with the State's eleven MPOs,' as shown in Section 2.3: MPO Consultation. This CRS is scheduled to be completed and submitted to the FHWA for certification by the USDOT Secretary prior to the November 15, 2023, deadline.
U.S.C. Statute Reference: § 175 (d)(2) The carbon reduction strategy of a State developed under paragraph (1) shall-	
U.S.C. Statute Reference: § 175 (d)(2)(A)	
USC Statute	Support efforts to reduce transportation emissions;
Compliance Notes	Section 3.0 Carbon Reduction in Louisiana of this CRS provides the background for understanding the context for transportation carbon emissions in Louisiana. The planning framework, including projects and strategies that can be implemented by DOTD and the MPOs in support of carbon reduction are identified in Section 4.0 Louisiana's Transportation Carbon Reduction Projects and Strategies.
U.S.C. Statute Reference: § 175 (d)(2)(B)	
USC Statute	Identify projects and strategies to reduce transportation emissions;
Compliance Notes	DOTD and the MPOs can implement projects and strategies that can reduce transportation emissions, as stated in this CRS in Section 4.0 Louisiana's Transportation Carbon Reduction Projects and Strategies.
U.S.C. Statute Reference: § 175 (d)(2)(C)	
USC Statute	Support the reduction of transportation emissions of the State;
Compliance Notes	This CRS discusses in detail how DOTD can support the reduction of the carbon emissions from transportation within in the state (e.g., implementation of energy efficiency retrofits in DOTD equipment or facilities) and identifies additional opportunities to support the reduction of the state's transportation emissions, as stated in Section 4.0 Louisiana's Transportation Carbon Reduction Projects and Strategies.
U.S.C. Statute Reference: § 175 (d)(2)(D)	
USC Statute	At the discretion of the State, quantify the total carbon emissions from the production, transport, and use of materials used in the construction of transportation facilities within the State; and
Compliance Notes	DOTD will not be quantifying the total carbon emissions from the production, transport, and use of materials in the construction of transportation at this time.
U.S.C. Statute Reference: § 175 (d)(2)(E)	
USC Statute	Be appropriate to the population density and context of the State, including any metropolitan planning organization designated within the State
Compliance Notes	In consultation with Louisiana's eleven MPOs, this CRS was developed and examined the general transportation context of the state, including travel behaviors, freight system trends, planning roles and responsibilities, and other factors, such as the generally rural character of the state, as stated in Section 3.0 Carbon Reduction in Louisiana

Appendix B: Stakeholder Meetings

Louisiana DOTD Carbon Reduction Strategy
MPO Meeting #1
1:00 p.m. to 2:30 p.m. on May 25, 2023
Location – Microsoft Teams

Attendees:

Acadiana Planning Commission

- *Ashley Moran*
- *Keefe Carney*
- *Sara Fawcett-Gary*

North Delta Regional Planning

- *Doug Mitchell*
- *Jeffrey Tyler*

New Orleans Regional Planning Commission

- *Jason Sappington*
- *Jeff Roesel*
- *Tom Haysley*
- *Aspen Nero*

Monroe Metro Planning Organization

- *Tyler Burdeaux*

Rapides Area Planning Commission

- *Jonathan Bolen*
- *Matt Johns*

South Central Planning and Development Commission

- *Joshua Manning*

Capital Region Planning Commission

- *Sooraz Patro*

Other

- *Sara Gary*

DOTD

- *Agnes Fung*
- *Chris Cole*
- *Jason Duet*
- *Amanda DeBlac*
- *Brian Nunes*
- *Connie Porter Betts*
- *Chris FaKouri*
- *Dawn Sholmire*
- *Jeff Brown*
- *Mary Elliott*
- *Kent Rogers*

HNTB

- *Laura Davis*
- *Laura Wagner*
- *Loreana Marciante*
- *Moriana Jaco*
- *Robyn Arthur*
- *Saba Nikkhah Manesh*
- *Paula Dowell*
- *Lynn Maloney-Mujica*

Federal Highway Administration

- *Laura Phillips*

Key Questions and Discussion Topics

- Laura Davis from DOTD's consultant team (HNTB) welcomed all attendees after a brief round of introductions.

Agenda

- Laura Davis explained the purpose of the meeting and outlined the meeting agenda.

Carbon Reduction Plan

- Laura Davis provided a brief overview of the IIJA Carbon Reduction Program and specified types of projects or strategies that would fall under the program and also provided information on funding allocation.

Carbon Reduction in Transportation

- Laura Davis provided information on current carbon emissions in the U.S. by sector and presented information showing emissions in just the state of Louisiana.

Carbon Reduction Strategy Discussion

- All Louisiana plans will be created in alignment with each other. Laura Davis provided several examples of projects and strategies that help carbon reduction.

Question 1: Do you have a carbon reduction strategy or plan?

- *Responses captured in Menti and none of the identified stakeholders have a carbon reduction strategy or plan.*

Question 2: Select the project categories that coincide with current or planned projects.

- *Responses captured in Menti.*
- *The Houma-Thibodaux MPO uses ITS to help alleviate day-to-day congestion.*
- *The Alexandria-Pineville MPO is using technology advanced travel demand management options.*

Question 3: Please name the specific projects that fall under the project categories previously selected.

- *Other responses captured in Menti.*
- *Houma-Thibodaux MPO has made downtown Houma and downtown Thibodaux sidewalk improvements.*
- *The City of Baker in the Baton Rouge MPO has received a RAISE grant to expand rail line services which is in the design phase. The plan is to create a park and ride on the Baton Rouge side.*
- *DOTD stated that there is an interstate lighting program, cities on a first come first serve basis.*
- *DOTD is developing regional active transportation plan Caddo, DeSoto, and Webster. Medical corridor improvements including pedestrian, transit, parking, etc. (along Kings Highway to U.S. 29 interchange.*
- *DOTD has new automated vehicle lanes along the college in Ruston to help people travel to nearby parking lots. Largely will be a school program and funded by the college.*

Question 4: What challenges do you anticipate with implementing carbon reduction projects/strategies?

- *Responses captured in Menti.*
- *DOTD stated that if they use language like "green" or "carbon reduction" many people don't want to hear that, or we get pushback.*
- *The Alexandria-Pineville MPO stated that as long as they frame it the right way and take baby steps locally, they are able to make progress. They can only push folks a little at a time to get their buy-in.*
- *Lafayette's MPO has a lot of problems with ROW and accommodating drainage anytime they try and do a pedestrian project. It greatly increases the cost.*
- *DOTD identified the fact that the cost to replace LED lights is very expensive and more funding to improve lighting statewide is needed.*
- *DOTD claimed that more local support is needed from a funding standpoint.*

Question 5: Where do you see opportunities for carbon reduction in areas that we haven't identified?

- *Responses captured in Menti.*
- *The Alexandria-Pineville MPO stated that they could encourage more smart growth development and walkable communities.*
- *The New Orleans MPO has looked at shore power for boats so they aren't using diesel fuel while at shore. Alternative fuels.*
- *The Baton Rouge MPO claimed that people used to use the Bayous as a form of travel and that use could be promoted as a form of travel.*
- *DOTD said that too many of the bayous and rivers are classified as scenic. They are also hard to clean after storms or pollution.*
- *DOTD is working on a truck parking assessment as a part of freight mobility plan.*
- *Alexandria-Pineville MPO might consider if better technology solutions can assist with truck parking.*
- *DOTD and MPOs can provide EV stations at its offices for employees.*

Closing Discussion

- *Alexandria-Pineville MPO wonders if they can use the funding to create a public outreach plan and HNTB stated that they can add that to the list they are gathering today and discuss with DOTD.*
- *DOTD said that in the distribution to the MPO, they understand that allocation received can be similar to other funds. When allocating funds and using them for projects, is it going to be similar to enhancement funds where the state does it or will the MPOs be able to do that and HNTB claimed that they are going to keep a similar system as with other funds.*
- *The New Orleans MPO will be getting climate pollution reduction grants soon.*

Agenda

Welcome & Introductions
- Welcome
- Review meeting objectives and agenda

Carbon Reduction Program (CRP)
- CRP Overview
- CRP Eligible Projects
- CRP Funding Allocation
- Carbon Reduction Strategy (CRS)

Carbon Reduction in Transportation
- Carbon Reduction Factors
- Relevant US & Louisiana data
- Pathways to achieve carbon reduction

Discussion Topics
- CRS Goal Development
- Potential projects and strategies

Timeline & Next steps

Meeting Objective: Consult with MPOs for the development of Carbon Reduction Strategy.

Carbon Reduction Program (CRP)

CRP Overview

Carbon Reduction Program	
What is it? New formula program established by the Infrastructure Investment Jobs Act (IIJA)	**Purpose** Provide funding for projects designed to reduce transportation emissions, defined as carbon dioxide (CO_2) emissions from on-road highway sources.

- Requires development of Carbon Reduction Strategy
- Funding suballocation according to population

For more information : https://www.fhwa.dot.gov/bipartisan -infrastructure-law/crp_fact_sheet.cfm

CRP Eligible Projects

Traffic/Congestion Management

Travel Demand Management*

Managed Lanes

Electronic Tolling

Transportation Incident Management

Alternative (or Active) Modes

Bicycle*

Pedestrian*

Trails

Public Transit Services

Intercity Passenger Rail

Support Land Use Policies

Alternative Fuels/ Energy Efficiency

Electric Vehicles (EV)/ Alternative Fuel Vehicles (AFV)

Diesel Engine Retrofits

Freight/Port Emissions

Energy Efficient Lighting

Technology Solutions

Traffic Management Facilities

Adaptive signals

Intelligent Transportation Systems

Other Advanced Tech

Other

Complete Streets Policy Implementation*

Projects that improve traffic flow, without adding capacity

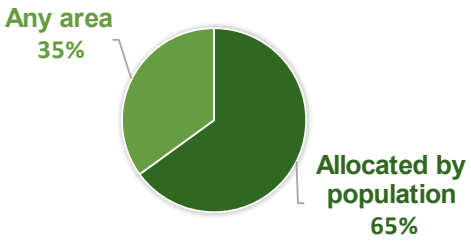
Other projects that demonstrate a reduction in onroad carbon emissions

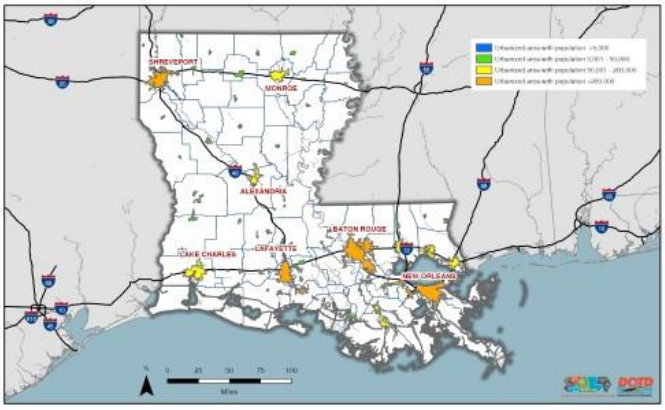
*includes MPO and other plans

CRP- Funding Allocation

Total	2022*	2023*	2024	2025	2026
$118M	$22.7	$23.2	$ 23	$24	$24

*Actual, all other years are estimates





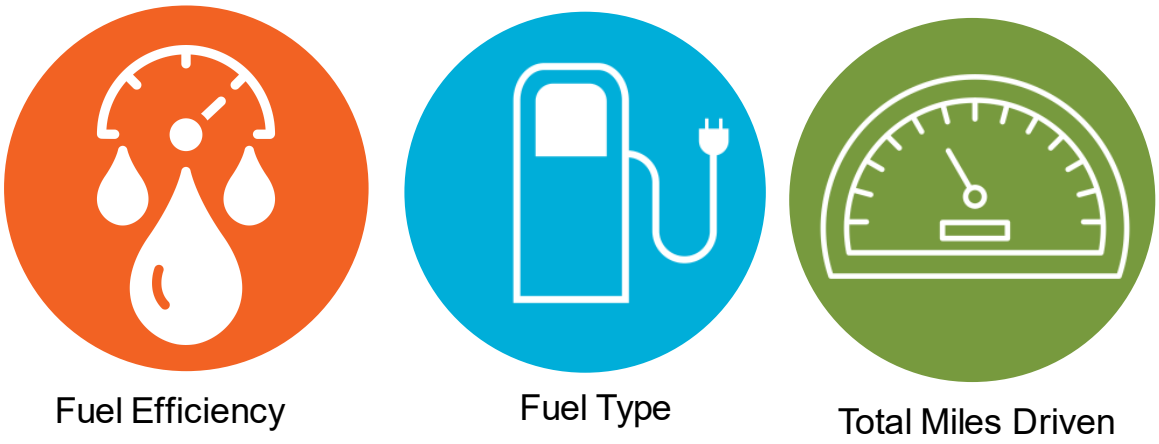
Carbon Reduction Strategy

- Carbon Reduction Strategy must:
  - Support efforts to reduce transportation emissions
  - Be appropriate to the population and context of the state
  - Identify projects and strategies that will reduce emissions

- Must be:
  - Developed in consultation with MPOs
  - Updated at least every 4 years

Carbon Reduction in Transportation

Factors Influencing Transportation Emissions

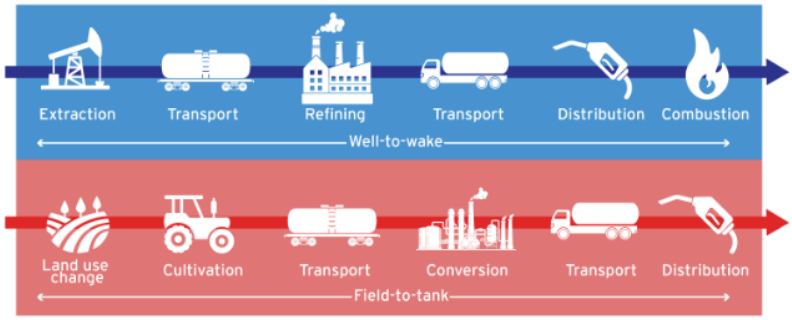


Fuel Efficiency | Fuel Type | Total Miles Driven

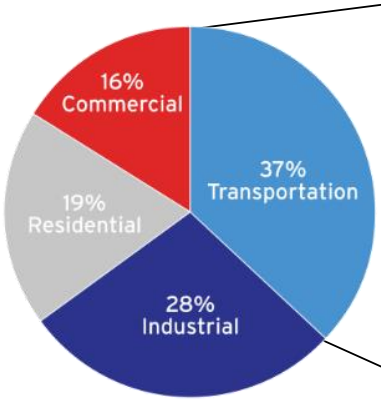
Tailpipe vs Lifecycle Transportation Emissions

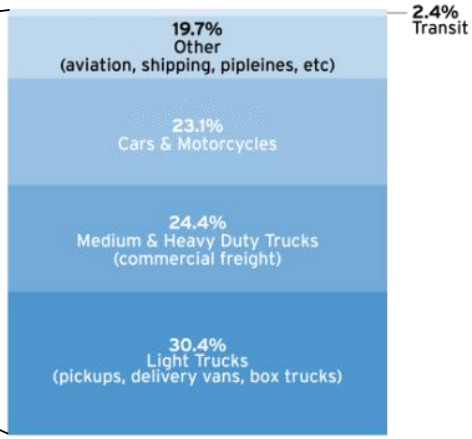
Tailpipe Emissions
(Direct Emissions from Vehicle)

Lifecyle Transportation Emissions
(Well-to-Wheels)



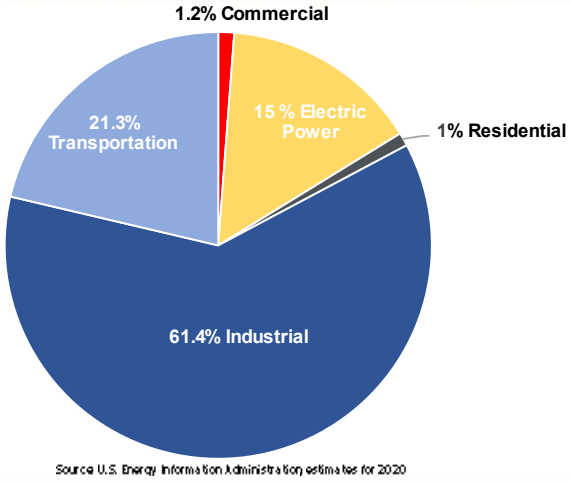
US Carbon Emissions by Sector



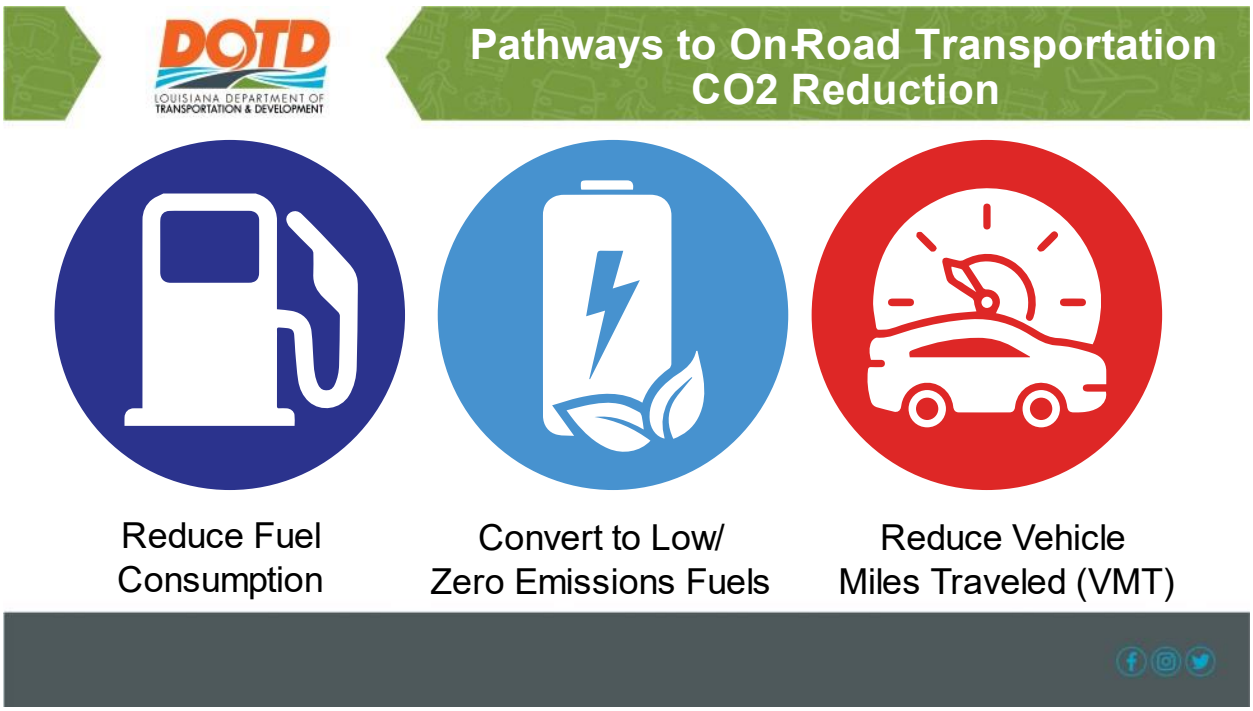


Source U.S. Energy Information Administration, estimates for 2021

Louisiana Carbon Emissions by Sector



Source U.S. Energy Information Administration, estimates for 2020



Carbon Reduction Strategy Discussion

CRS Development

The vision, goals and objectives are being developed in alignment with the STP and Mobility Plans

Strategy Examples

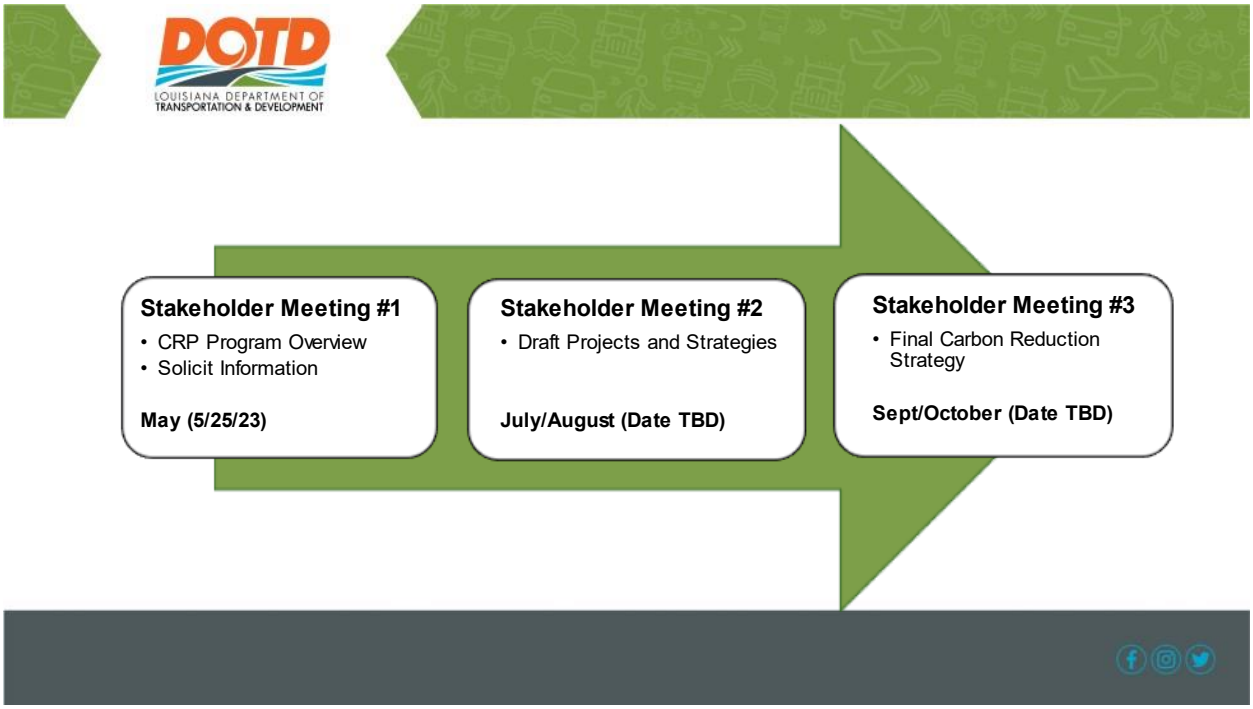
1. Implement Complete Streets projects to support alternative modes of transportation (Reduce fuel consumption, reduce emissions per VMT)

2. Manage traffic and congestion (Reduce fuel consumption, reduce emissions per VMT)

3. Build out the EV charging network (convert to low/zero emission fuels)

Projects and Strategies

- Do you have a carbon reduction strategy or plan?
  - Yes/no/other
- Select the project categories that coincide with current or planned project?
  - Traffic congestion management, alternative or active modes, alternative fuels/energy efficiency, technology solutions, others, select all that apply
- Please list the specific projects that fall under the project categories previously selected.
- What challenges do you anticipate with implementing these types of projects/strategies?
- Where do you see opportunities for carbon reduction in areas that we haven't identified?



Louisiana DOTD Carbon Reduction Strategy
MPO Meeting #2
2:00 p.m. to 3:00 p.m. on August 24, 2023
Location – Microsoft Teams

Attendees:

Acadiana Planning Commission

- *Ashley Moran*
- *Sara Fawcett-Gary*

North Delta Regional Planning

- *Jeffrey Tyler*

New Orleans Regional Planning Commission

- *Jason Sappington*
- *Jeff Roesel*

Monroe Metro Planning Organization

- *Tyler Burdeaux*

Rapides Area Planning Commission

- *Jonathan Bolen*

South Central Planning and Development Commission

- *Joshua Manning*

Capital Region Planning Commission

- *Sooraz Patro*

Imperial Calcasieu Regional Planning & Development Commission

- *Mike Hollier*

DOTD

- *Chris Cole*
- *Connie Porter Betts*
- *Dawn Sholmire*
- *Mary Elliott*

HNTB:

- *Laura Davis*
- *Lynn Maloney-Mujica*
- *Loreana Marciante*
- *Moriana Jaco*
- *Zachary Harland*
- *KP Peytavin*

Federal Highway Administration

- *Mary Stringfellow*
- *Laura Phillips*

Key Questions and Discussion Topics

- Laura Davis from DOTD's consultant team (HNTB) welcomed all attendees after a brief round of introductions and new introductions were made if necessary.

Agenda

- Laura D. explained the purpose of the meeting and outlined the meeting agenda.

Carbon Reduction Strategy

- Laura D. provided a brief overview of the development of the CRS and the stakeholder engagement.

Reducing Transportation Carbon Emissions

- Laura D. provided information on carbon emissions in transportation and carbon reduction in the context of carbon emissions reduction within Louisiana.

Carbon Reduction Projects and Strategies

- Laura D. discussed the alignment of the CRS with the LRTP Goals and Objectives and the identified projects and strategies.

Carbon Reduction Strategy Discussion

- Laura D. provided several examples of projects and strategies that help carbon reduction that had previously been identified and asked if there were additional projects and strategies that could apply to the CRS.

Question 1: Are there other elements not already included in the LRTP goals and objectives that your organization believes should be considered when thinking about carbon reduction goals for Louisiana?

- *Responses captured in Menti.*
- *No edits.*
- *reduce transportation emissions.*
- *No edits, everything is covered.*
- *Transportation Resiliency; Pro TOD or MUD land use policies.*
- *Goal 1 could specifically mention maintenance of bike/ped infrastructure.*
- *Add Justice 40 under Goal 4, Objective 6?*
- *Use of AV or CAV tech to transportation mobility.*
- *Include transit improvements at some point. I apologize if I overlooked.*
- *no edits; interested in explanation of objective 7 under goal 4, preserving open spaces.*
- *Employing TSMO.*
- *No MPOs are currently doing their own carbon reduction strategy plans.*

Question 2: What additional projects and strategies (from the five categories or others) does your organization consider important to support carbon reduction goals in Louisiana?

- *Possible SMART grant application for traffic signal performance analytics for EBR City/Parish.*
- *Traffic Signal Controller Upgrades to improve signal synchronization in Alexandria-Pineville MPO.*
- *Multi-phased bike/ped improvement program in Alexandria-Pineville MPO.*
- *Roundabout at US 165-X at LA 3144 in the Alexandria-Pineville MPO.*
- *Houma-Thibodaux MPO is working on a Regional Bicycle and Pedestrian Safety Plan.*
- *Lake Charles MPO is working on a five parish Regional Bike/Ped Study and Plan.*
- *Rural Public Transportation System Development in Alexandria-Pineville MPO, working to expand to a total of seven parishes and provide increased connectivity across the region, providing a demand response service.*
- *The East-West Bank BRT in the New Orleans MPO.*
- *Baton Rouge MPO is working on developing a project selection and prioritization criterion for CRP funding apportionment.*
- *Baton Rouge MPO is working with Louisiana Clean Fuels and helping develop an AV fuel corridor for the state.*
- *Baton Rouge MPO is working on a micro transit and vanpool study across the region with park and rides.*
- *Baton Rouge MPO is working on operational improvements in areas where there are hotspots that impact the traffic signal performance.*
- *Baton Rouge MPO is doing a BRT corridor along the university.*
- *Lake Charles MPO is working on an ITS feasibility study.*
- *Baton Rouge MPO has conducted multiple roundabout improvements as part of the TIP and is looking into dedicating CRP funds towards TDM management projects/strategies.*
- *Baton Rouge MPO looking into implementing Smart Buses.*
- *Baton Rouge MPO is working on a climate pollution reduction grant and the City of Gonzales has a climate action plan already.*
- *Baton Rouge is working with the state, the governor's task force, and New Orleans to have sister city kind of climate pollution reduction strategies.*
- *Lake Charles MPO has a comprehensive Roundabout Plan specifying over 30 intersections.*
- *LA 648 intersection improvements in Houma-Thibodaux MPO.*

Agenda

Welcome & Introductions
- Welcome
- Review meeting objectives and agenda

Carbon Reduction in Transportation
- Carbon Reduction Factors
- Relevant US & Louisiana data
- Pathways to achieve carbon reduction

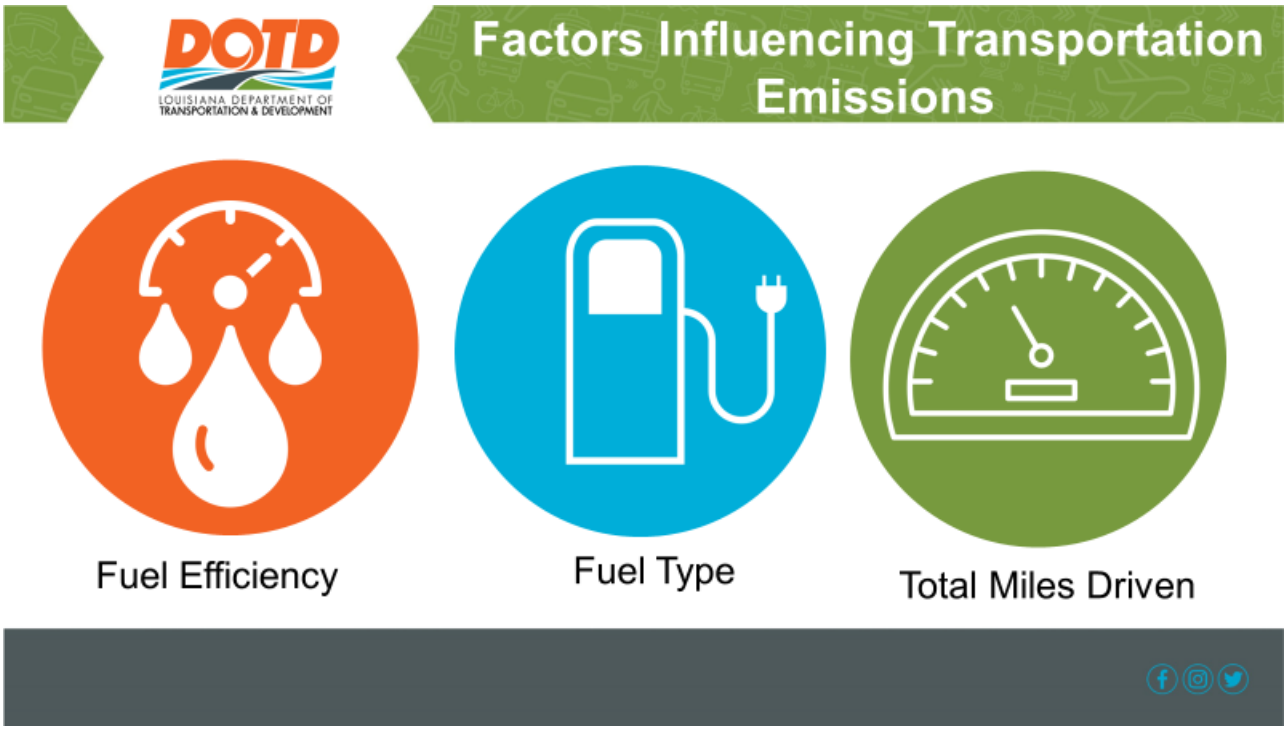
Louisiana's Carbon Reduction Strategy
- CRS Overview Recap
- CRS Outline
- CRS Goal and Objective Development
- Projects and strategies

Discussion
- Additions to the Goals/Objectives
- Additions to the projects and strategies

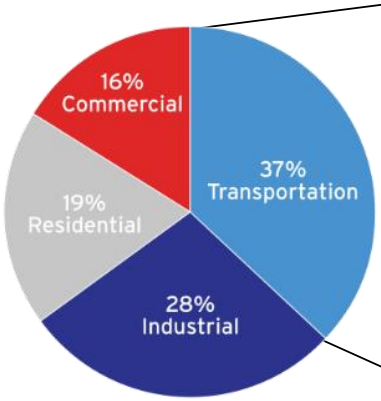
Timeline & Next steps

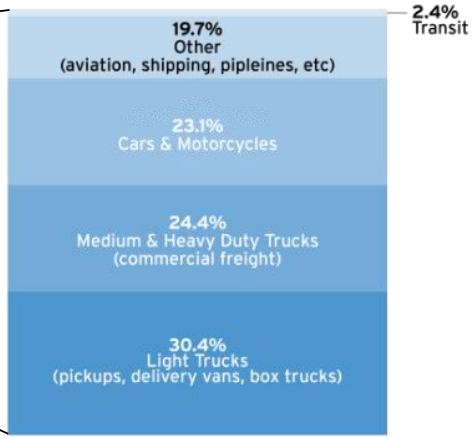
Meeting Objective: Discuss Louisiana's carbon reduction priorities and goals for development of the CRS.

Carbon Reduction in Transportation



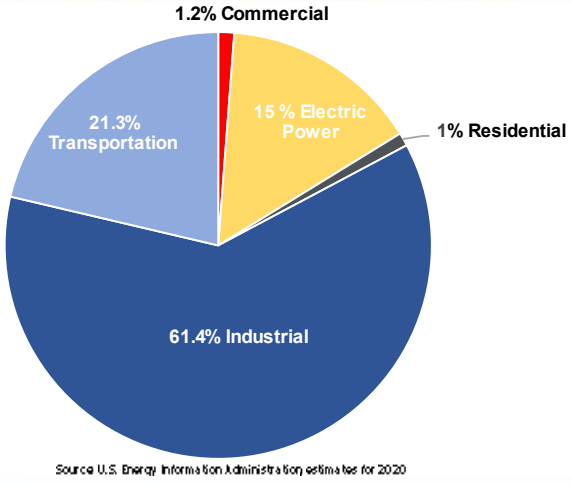
US Carbon Emissions by Sector



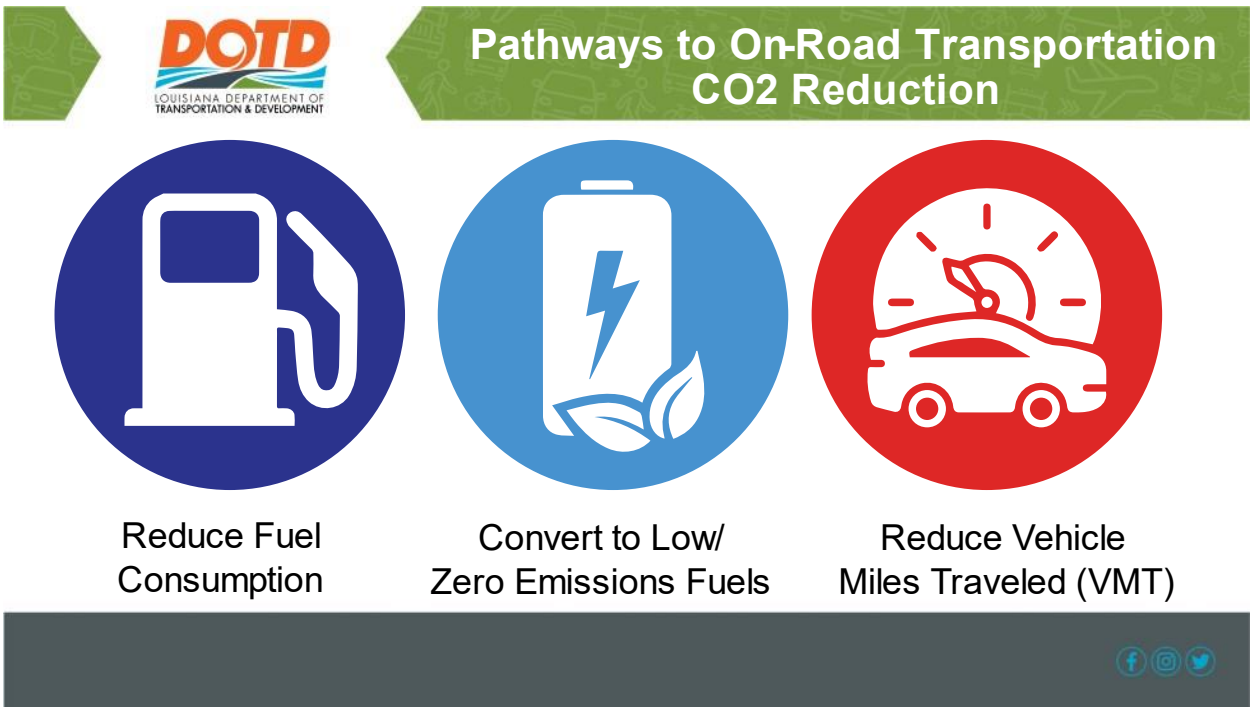


Source U.S. Energy Information Administration, estimates for 2021

Louisiana Carbon Emissions by Sector



Source U.S. Energy Information Administration, estimates for 2020



Carbon Reduction Program (CRP)

CRP Overview

Carbon Reduction Program

What is it?	Purpose
New formula program established by the Infrastructure Investment Jobs Act (IIJA)	Provide funding for projects designed to reduce transportation emissions, defined as carbon dioxide (CO_2) emissions from on-road highway sources.

- Requires development of Carbon Reduction Strategy
- Funding suballocation according to population

For more information : https://www.fhwa.dot.gov/bipartisan -infrastructure-law/crp_fact_sheet.cfm

Carbon Reduction Strategy

- Carbon Reduction Strategy must:
  - Support efforts to reduce transportation emissions
  - Be appropriate to the population and context of the state
  - Identify projects and strategies that will reduce emissions

- Must be:
  - Developed in consultation with MPOs
  - Updated at least every 4 years

Carbon Reduction Strategy Draft Outline

Outline

1. Introduction
    - 1.1 CRP and CRS Requirements
2. Developing the CRS
    - 2.1 Stakeholder engagement
3. Reducing Transportation Carbon Emissions
    - 3.1 Carbon Emissions in Transportation
    - 3.1 Carbon Reduction – Louisiana Context
4. Carbon Reduction Projects and Strategies
    - 4.1 Alignment with LRTP Goals and Objectives
    - 4.2 Projects and Strategies
5. Conclusion and Next Steps

Carbon Reduction Alignment with STP Goals and Objectives

Goal 1: Infrastructure Preservation and Maintenance

Preserve Louisiana's multimodal infrastructure in a state-of-good-repair through timely maintenance of existing infrastructure.

Objective #1	Objective #2	Objective #3
Keep Louisiana's state highway pavement bridges and highway related assets in good condition.	Assist modal partners in achieving state-of-good-repair for aviation, port, rail, transit, and navigable waterway infrastructure.	Assist local roadway departments in achieving state-of-good-repair for locally owned roads and streets

Highlighted objectives support carbon reduction

Carbon Reduction Alignment with STP Goals and Objectives

Goal 2: Safety

Provide safe and secure travel conditions across all transportation through physical infrastructure improvements, operational controls, programs, and public education and awareness.

Objective #1	Objective #2	Objective #3
Reduce the number and rate of highway-related crashes, fatalities, and serious injuries	Reduce the number of pedestrian and bicycle crashes	Assist modal partners in achieving safe and secure aviation, port, rail, transit, and waterway performance.

Highlighted objectives support carbon reduction

Carbon Reduction Alignment with STP Goals and Objectives

Goal 3: Economic Competitiveness

Provide a transportation system that fosters diverse economic and job growth, international and domestic commerce, and tourism.

Objective #1	Objective #2	Objective #3	Objective #3
Improve the efficiency of freight transportation and the capacity of freight related infrastructure throughout Louisiana.	Improve access to intermodal facilities and the efficiency of intermodal transfers.	Provide predictable, reliable travel times throughout Louisiana	Ensure small urban areas (5,000+ population) are well connected with one another and with large urban employment centers.

Highlighted objectives support carbon reduction

Carbon Reduction Alignment with STP Goals and Objectives

Goal 4: Community Development and Enhancement

Provide support for community transportation planning, infrastructure, and services.

Objective #1	Objective #2	Objective #3	Objective #4	Objective #5	Objective #6	Objective #7
Cooperate with and support MPOs, state planning and development districts, and local governments with the establishment and refinement of land use, transportation, and community development plans.	Increase options available to local governments to seek sustainable revenue for local transportation needs.	Continue the Road Transfer Program as a voluntary program to assist local governments in addressing local transportation needs.	Reduce barriers to state and local collaboration.	Enhance access to jobs for both urban and rural populations.	Improve modal options associated with supporting the economy and quality of life regardless of age, disability, or income.	Identify methods to preserve the integrity and character of "town centers" and preserve open space, or the appearance of open space, between them.

Highlighted objectives support carbon reduction

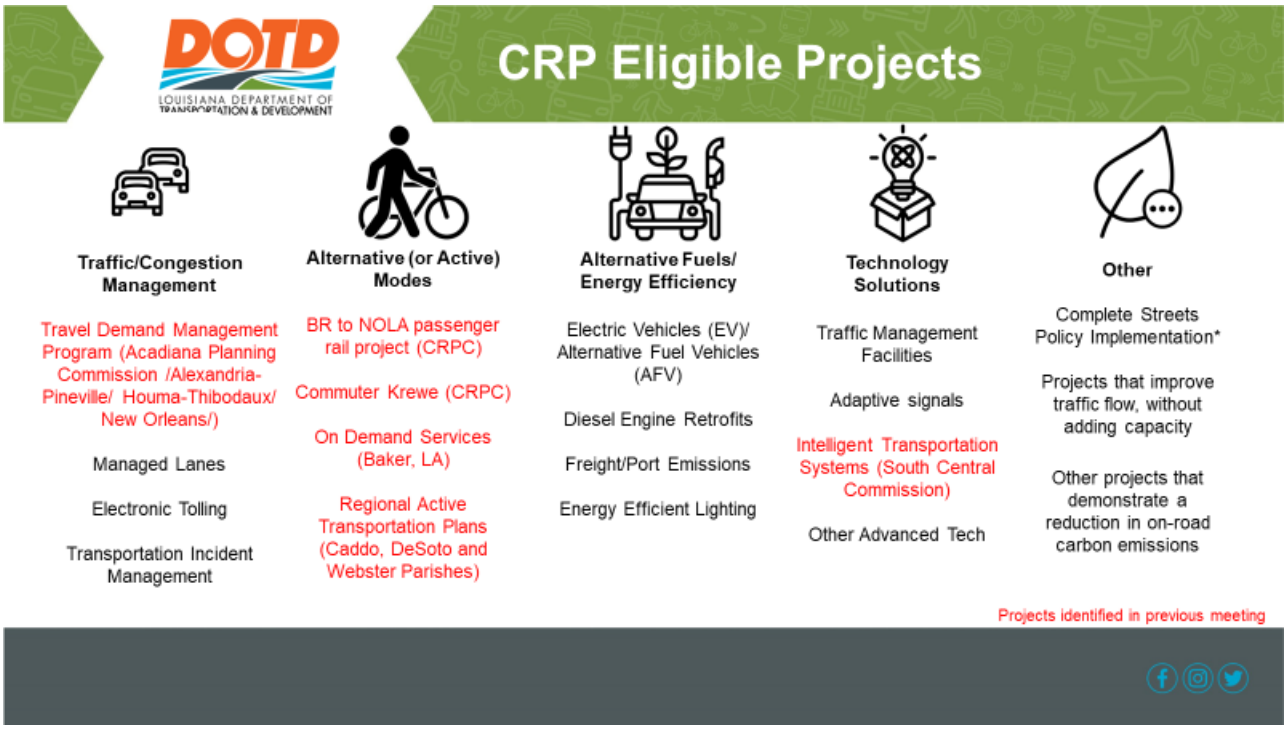
Carbon Reduction Alignment with STP Goals and Objectives

Goal 5: Environmental Stewardship

Ensure transportation policies and investments are sensitive to Louisiana's environment, history, and culture.

Objective #1	Objective #2
Minimize the environmental impacts of building, maintaining, and operating Louisiana's transportation system.	Comply with all federal and state environmental regulations.

Highlighted objectives support carbon reduction



Carbon Reduction Strategy Discussion

Discussion Topics

- Are there other elements not already included in the LRTP goals and objectives that your organization believes should be considered when thinking about carbon reduction goals for Louisiana?
- What additional projects and strategies (from the five categories or others) does your organization consider important to support carbon reduction goals in Louisiana?

Louisiana DOTD Carbon Reduction Strategy
MPO Meeting #3
11:00 a.m. to 12:00 p.m. on October 23, 2023
Location – Microsoft Teams

Attendees:

Acadiana Planning Commission

- *Sara Fawcett-Gary*

North Delta Regional Planning

- *Jeffrey Tyler*

New Orleans Regional Planning Commission

- *Jeff Roesel*

Monroe Metro Planning Organization

- *Tyler Burdeaux*

Northwest Louisiana Council of Governments

- *Kent Rogers*
- *Chris Petro*
- *Heidi Stewart*

Rapides Area Planning Commission

- *Jonathan Bolen*

South Central Planning and Development Commission

- *Joshua Manning*

Southwest Louisiana Regional Planning Commission

- *Jamie Gaines*

Capital Region Planning Commission

- *Sooraz Patro*

DOTD

- *Chris Cole*
- *Connie Porter Betts*
- *Dawn Sholmire*
- *Mary Elliott*

HNTB:

- *Laura Davis*
- *Lynn Maloney-Mujica*
- *Loreana Marciante*
- *Zachary Harland*

Key Questions and Discussion Topics

- Laura Davis from DOTD's consultant team (HNTB) welcomed all attendees and provided a brief overview of what has occurred to date.

Agenda

- Laura D. explained the purpose of the meeting and outlined the meeting agenda.

Carbon Reduction Strategy

- Laura D. provided a brief overview of the development of the CRS and the stakeholder engagement.

Carbon Reduction Strategy Discussion

- Laura D. went through the draft of the Carbon Reduction Strategy document and discussed what was included in the document and asked for attendees to offer any comments along the way.
- Shreveport-Bossier City's MPO discussed performance-based planning and the state/federal requirements to provide connectivity/linkage between goals and projects. The MPO asked if any reference to performance-based planning would be included in the Carbon Reduction Strategy. HNTB stated that there is no requirement for performance-based measures to be included in the CRS and thus will not be included at this time. Performance-based measures can be included in future updates if necessary.
- New Orleans MPO asked if CRP funds could be used for operating transit. HNTB stated that CRP funds can be transferred to funding for FTA uses but was unsure of if CRP funds could be used for operations.
- Baton Rouge's MPO stated that they have implemented a microtransit program in the City of Baker (a suburb of Baton Rouge) that has been operational for 15 months. Additionally, the MPO is working to replicate the microtransit program across other suburbs and add park and rides to encourage more people to use the program. The MPO also mentioned that they are currently working on a regional microtransit study at the moment, which should be completed by February.
- Baton Rouge's MPO discussed two recent grant applications, two smart grants: traffic signal performance metrics and for intercity rail. The MPO is attempting to work with the Health District to provide ADA compliance along future intercity rail stations.

Appendix C – Louisiana's STP Vision, Goals, and Objectives

Introduction

Louisiana's Statewide Transportation Plan, updated in 2015, provides vision, goals, and objectives that support the reduction of carbon emissions. This appendix identifies how the CRS aligns and helps further the STP's existing goals and objects while also supporting the reduction of carbon emissions.

LOUISIANA'S VISION

Louisianians enjoy the quality of life offered by both the urban and rural areas of the state. Louisiana will nurture and support a continuation of small- and medium-sized towns and cities with open space between them. The State's economy will prosper, due in large part to an integrated, connected, safe and secure, well-maintained, and balanced transportation system that moves people and freight effectively from, within, and between Louisiana's urban and rural areas via land, water, and air.

Louisiana recognizes that while a majority of the State's residents prefer to live and work in small- and medium-sized communities, some of the State's citizens also desire to live and work in more dense or compact urban environments. Both futures require more local decision-making and responsibility regarding transportation investments and local land use planning, along with an increased emphasis on quality of life and passenger travel choices, in partnership with DOTD.

Louisiana will continue to support its extractive and other key industries (agribusiness, mining, heavy manufacturing, transshipment, and other port related activities, etc.) as the major economic drivers in the State. However, the potential for increased economic activity associated with arts and entertainment, retirement, tourism, and research and technology in select areas also will be reflected in freight and passenger transportation services and infrastructures.

Vision and Goals CRS Alignment

Louisiana's STP visions shows the States' focus over the next 20-plus years. The CRS aligns with the STP vision as it places emphasis on urban and rural residents. The CRP funds will be appropriately spread throughout the state based on population, ensuring all sized communities benefit from the funding. Additionally, having a balanced transportation system that is well connected and safe allows for alternative modes to flourish while furthering the goals of the STP and the CRS. Encouragement of local decision-making and land use planning as well as a push for open space, improved quality of life, and passenger travel choices supports emissions reduction.

Goal 1: Infrastructure Preservation and Maintenance

Preserve Louisiana's multimodal infrastructure in a state-of-good-repair through timely maintenance of existing infrastructure.

Objective #1

Keep Louisiana's state highway pavement bridges and highway related assets in good condition.

Objective #2

Assist modal partners in achieving state-of-good-repair for aviation, port, rail, transit, and navigable waterway infrastructure.

Objective #3

Assist local roadway departments in achieving state-of-good-repair for locally owned roads and streets.

Keeping Louisiana's state highways, bridges, and highway assets in a state-of-good-repair can reduce carbon emissions in a multitude of ways. Improving the life cycle of the highway system, bridges, and highway-related assets and keeping them in good condition can reduce the frequency of construction and maintenance and minimize work delays and road closures that can cause traffic congestion and increased idle times. Additionally, DOTD can explore the use of sustainable materials while maintaining a state-of-good-repair, which will further reducing emissions.

By maintaining a state-of-good-repair and promoting the use of alternative modes (port, rail, transit etc.), objective two reduces carbon emissions as alternative modes carry multiple passengers and output less emissions than other modes, such as single occupancy vehicles or transportation freight by truck.

Achieving a state-of-good-repair for locally owned roads and streets, including bike and pedestrian infrastructure, reduces traffic congestion and idle times as well as promotes the use of alternative transportation modes like walking and biking.

Goal 2: Safety

Provide safe and secure travel conditions across all transportation through physical infrastructure improvements, operational controls, programs, and public education and awareness.

Objective #1	Objective #2	Objective #3
Reduce the number and rate of highway-related crashes, fatalities, and serious injuries.	Reduce the number of pedestrian and bicycle crashes.	Assist modal partners in achieving safe and secure aviation, port, rail, transit, and waterway performance.

Reducing fatalities, serious injuries and highway-related, pedestrian, and bicycle crashes makes these travel options safer, which makes utilizing alternative (or "active") modes of transportation more viable and can help replace single-occupancy vehicle trips. Implementing the Complete Streets policies and encouraging the development of trails, land use policies that support alternative modes, including transit-oriented development, and managed lanes that accommodate alternative modes can lead to a safer transportation system. Additionally, utilizing ITS, TSMO or other traffic control measures can help reduce traffic conditions that increase idle times while also reducing crashes by having a more efficient, interconnected system.

Carbon emissions can be reduced by assisting modal partners in achieving safe and secure aviation, port, rail, transit, and waterway performance. Providing safe and reliable alternative modes of transportation can encourage use of those modes and reduce carbon emissions.

Goal 3: Economic Competitiveness

Provide a transportation system that fosters diverse economic and job growth, international and domestic commerce, and tourism.

Objective #1	Objective #2	Objective #3	Objective #3
Improve the efficiency of freight transportation and the capacity of freight related infrastructure throughout Louisiana.	Improve access to intermodal facilities and the efficiency of intermodal transfers.	Provide predictable, reliable travel times throughout Louisiana.	Ensure small urban areas (5,000+ population) are well connected with one another and with large urban employment centers.

Improving the efficiency and capacity of freight transportation and infrastructure reduces carbon emissions by limiting freight idling times and encourages the use alternative fuels and modes for freight. Improving access to intermodal facilities and the efficiency of intermodal transfers supports the reduction carbon emissions as it encourages the use of less caron intense modes such as waterway or rail.

Utilizing ITS, travel demand, transportation incident management, and traffic management facilities can limit the amount of time that vehicles spend idling, thus resulting in the reduction of carbon emissions while also providing travel times that are predictable and reliable. Additionally, as Connected and Autonomous Vehicle (CAV) technology grows and becomes more utilized in the freight industry, there is an opportunity for increased efficiency of freight vehicles helping to increase safety on the roadways while reducing emissions. Louisiana has enacted several laws related to CAVs, including Act 232 which established operational parameters and reporting requirements for autonomous trucks and their drivers, which will support the CAV industry as it grows in the State.

To ensure that small urban areas are well connected with one another and with large urban employment centers, alternative modes of transportation should be incorporated throughout the state. This will help to connect small areas to one another and with large urban employment centers, while also reducing carbon emissions.

Goal 4: Community Development and Enhancement

Provide support for community transportation planning, infrastructure, and services.

Objective #1

Cooperate with and support MPOs, state planning and development districts, and local governments with the establishment and refinement of land use, transportation, and community development plans.

Objective #2

Increase options available to local governments to seek sustainable revenue for local transportation needs.

Objective #3

Continue the Road Transfer Program as a voluntary program to assist local governments in addressing local transportation needs.

Objective #4

Reduce barriers to state and local collaboration.

Objective #5

Enhance access to jobs for both urban and rural populations.

Objective #6

Improve modal options associated with supporting the economy and quality of life regardless of age, disability, or income.

Objective #7

Identify methods to preserve the integrity and character of "town centers" and preserve open space, or the appearance of open space, between them.

Carbon emissions reduction can be achieved through cooperation with and consistent support of MPOs. For example, transportation-related emissions can be addressed through the encouragement of projects and strategies that establish alternative transportation modes as viable options for commuting, as well as the incorporation of alternative fuel vehicles and energy efficiency. Additionally, carbon emissions can be further diminished through the incorporation of increased traffic/congestion management measures and technology solutions. Crucially, sustainable funding will need to be allocated to these projects and strategies to achieve the state's carbon emissions reduction goals.

Working with local governments to increase options available to seek sustainable revenue for local transportation modes and securing funding sources directly supports carbon reduction. For example, having sustainable revenue to support transportation needs can help local

governments transition to zero emissions or alternative fuel fleets. This allows Louisiana to reduce carbon emissions across the state, while laying out the steps to have zero emission fleets and increase frequency and speed of transit service for residents.

Continuing the Road Transfer Program and allowing local governments to address their transportation needs would provide increased opportunities to implement carbon emission reduction projects and strategies. Local governments that volunteer for the Road Transfer Program can receive money for control of those roads and perform maintenance that includes traffic congestion management measures and technology solutions that support the reduction of carbon emissions. Local governments that participate in the Road Transfer Program can determine which projects they prioritize and how funding should be allocated, meaning that any funding available can be dedicated to carbon emissions reduction projects.

Additionally, improving modal options and alternative modes can reduce carbon emissions, encourage economic growth, and improve the quality of life for all people, regardless of age, disability, or income. For example, investing in the creation or expansion of transit networks supports the reduction of carbon emissions and enhances access to jobs for urban and rural populations by providing options to those without transportation. To ensure carbon reduction projects do not negatively impact disadvantaged communities, DOTD could utilize the Justice40 goal to ensure that CRP funds are invested in communities that are marginalized, underserved, and overburdened by transportation emissions.

Goal 5: Environmental Stewardship

Ensure transportation policies and investments are sensitive to Louisiana's environment, history, and culture.

Objective #1

Minimize the environmental impacts of building, maintaining, and operating Louisiana's transportation system.

Objective #2

Comply with all federal and state environmental regulations.

Environmental impacts that result from the building, maintaining, and operating of Louisiana's transportation system can be reduced by incorporating projects that support carbon reduction. By improving the life cycle of the transportation network, construction and maintenance can occur less frequently, minimizing road work delays and road closures that cause traffic congestion and vehicle idling. Additionally, using alternative materials for construction and maintenance can also reduce environmental impacts and carbon emissions. Complying with federal and state environmental regulations and meeting all the standards required allows for local governments to take advantage of government funding and programs that support the reduction of carbon emissions.

Conclusion

Overall, the vision, goals, and objectives in the STP align with the purpose of the CRS. Continued implementation of the STP supports and will help further emissions reduction in Louisiana.