IOWA | DOT

2024
CARBON REDUCTION STRATEGY

Certified by FHWA on
February 20, 2024

CONTENTS

1. Introduction

1.1 Carbon Reduction Program (CRP) Overview

On November 15, 2021, President Biden signed the Infrastructure Investment and Jobs Act (IIJA). This law authorized the new CRP with the purpose of reducing transportation emissions through the development of state Carbon Reduction Strategies (CRS) and by funding projects designed to reduce transportation emissions. States are required to develop their initial CRS by November 15, 2023. CRP funding is encouraged to be obligated for projects that support the implementation of the state's CRS.

A Carbon Reduction Strategy (CRS) supports efforts to reduce transportation emissions, including by identifying strategies and projects. A state's CRS should be tailored based on its context and population density.

1.2 Carbon Reduction Strategy (CRS) Content

Federal Requirements (23 U.S.C. 175(d))

Requirement	Location in Iowa CRS
Develop CRS in consultation with Metropolitan Planning Organizations (MPOs)	3.1 MPO Consultation Process 3.2 CRS Strategy Development Process
Support efforts to reduce transportation emissions	4.3 Strategies to Reduce Transportation Emissions 5. CRS Implementation
Identify projects and strategies to reduce transportation emissions, which may include projects and strategies for safe, reliable, and cost-effective options: • To reduce traffic congestion by facilitating the use of alternatives to single-occupant vehicle trips, including public transportation facilities, pedestrian facilities, bicycle facilities, and shared or pooled vehicle trips within the state or an area served by the applicable MPO, if any • To facilitate the use of vehicles or modes of travel that result in lower transportation emissions per person-mile traveled as compared to existing vehicles and modes • To facilitate approaches to the construction of transportation assets that result in lower transportation emissions as compared to existing approaches	4.3 Strategies to Reduce Transportation Emissions 5.4 Projects to Reduce Transportation Emissions
Support the reduction of transportation emissions of the state	5. CRS Implementation
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	[Optional]
Be appropriate to the population density and context of the state, including any metropolitan planning organization designated within the state	2. Iowa Context

Approach to Iowa's CRS

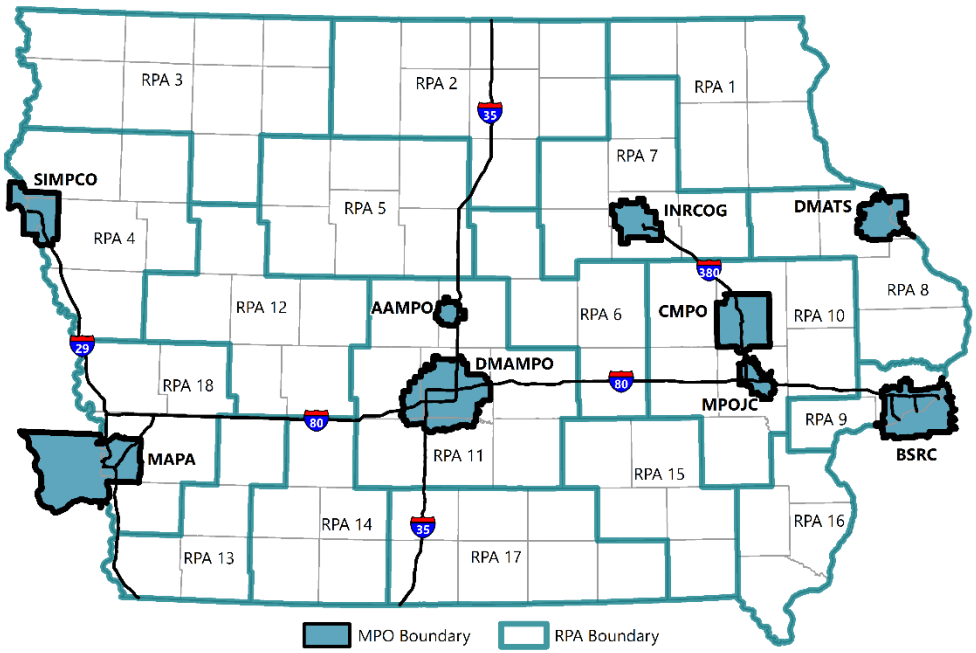
The requirement for states to develop a CRS is new. However, the Iowa Department of Transportation (DOT) has an extensive history of transportation planning and coordination. This includes a continuing, cooperative, and comprehensive statewide transportation planning process that includes the Iowa DOT and nine partner MPOs. The Iowa DOT also has 18 partner Regional Planning Affiliations (RPAs), which serve the non-metropolitan areas of the state. CRS coordination efforts focused on the MPOs due to CRS requirements and because the largest potential for reducing transportation-related carbon emissions typically occurs where there are the most people and trips.

Transportation planning at the state and MPO levels has involved the regular development and updating of numerous planning documents, many of which include strategies and initiatives that relate directly or indirectly to reducing transportation emissions. The requirement to develop a CRS provided an opportunity for the Iowa DOT and its partner MPOs to build on these existing planning efforts by compiling relevant strategies and initiatives and synthesizing them into a cohesive statewide strategy. This was achieved through a statewide consultation process that identified many shared priorities and opportunities for future coordination.

State DOTs and MPOs are encouraged to incorporate the CRS into their transportation planning processes and long-range transportation plans. The Iowa DOT plans to incorporate the CRS into its long-range transportation plan, Iowa in Motion 2050.

While the CRS is a new requirement, transportation planning by the Iowa DOT and its planning partners has been extensive and ongoing, and has already included strategies to reduce transportation emissions.

Iowa's MPOs and RPAs



Metropolitan Planning Organizations

AAMPO - Ames Area Metropolitan Planning Organization
BSRC - Bi-State Regional Commission
CMPO - Corridor Metropolitan Planning Organization
DMAMPO - Des Moines Area Metropolitan Planning Organization
DMATS - Dubuque Metropolitan Area Transportation Study
INRCOG - Iowa Northland Regional Council of Governments
MAPA - Metropolitan Area Planning Agency
MPOJC - Metropolitan Planning Organization of Johnson County
SIMPCO - Siouxland Interstate Metropolitan Planning Council

2. Iowa Context

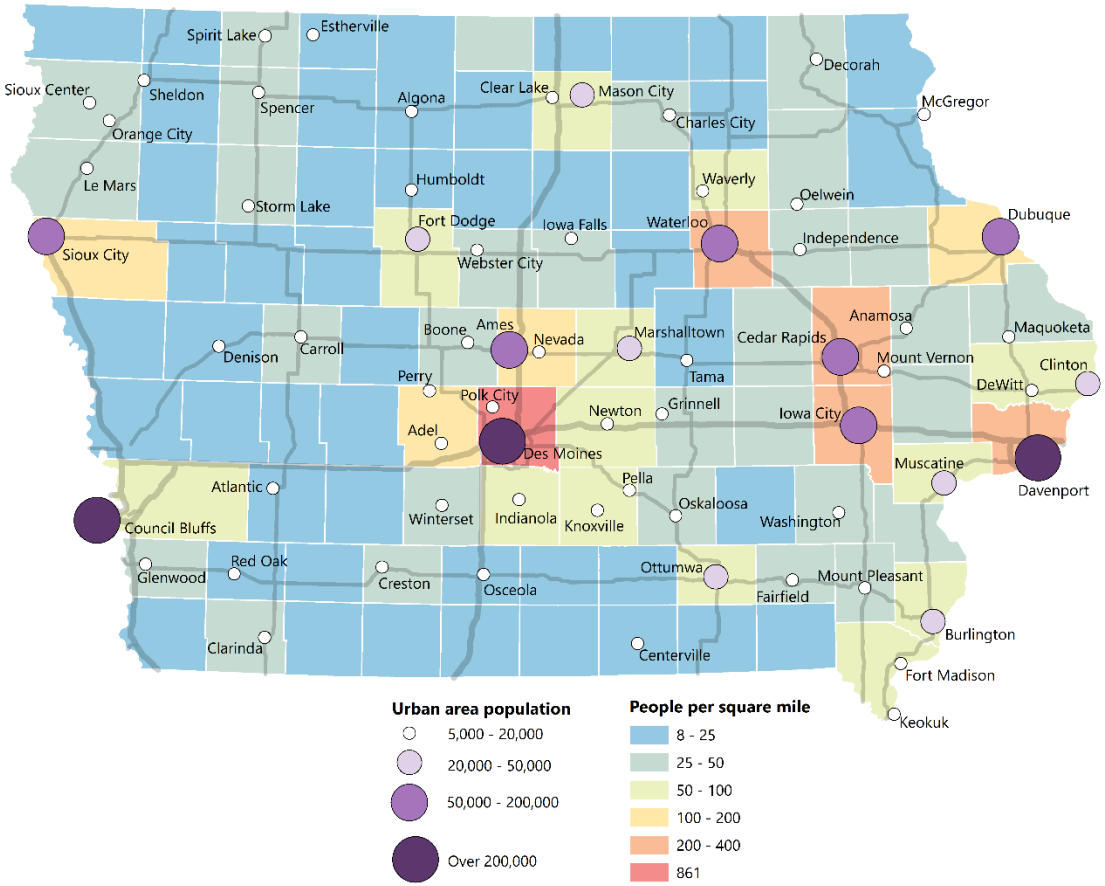
2.1 Population and Economy

Iowa is a largely **rural** state, interspersed with nine metropolitan areas that are served by MPOs, along with numerous smaller urban areas. Over time the state has grown more **urbanized** as its population has continued to concentrate in the metropolitan areas. Iowa's overall population density is relatively low – while it is the 23rd largest state by land area, it is the 36th largest by population density.

Over 60% of Iowa's gross domestic product is generated by **service industries** such as finance, insurance, education, health care, and retail trade. However, transportation-intensive sectors have a significant impact on the state. **Agriculture** plays a key role in the state's land use and economy. Iowa is second only behind California in terms of overall agricultural cash receipts. Iowa routinely leads the nation in the production of corn, hogs, and eggs, and is one of the top producers for soybeans, oil crops, oats, turkeys, and cattle and calves. Iowa also has a significant **manufacturing** presence. This includes the production of **renewable fuels** – Iowa leads the nation in ethanol and biodiesel production – along with agricultural equipment and other manufacturing enterprises. Iowa is a producer state, shipping more products from the state than it receives. Nearly 70% of Iowa's freight is carried by truck and freight movements are expected to grow significantly into the future.

Over half of the state's 3.2 million people live in just 10 of its 99 counties.

Iowa's urban areas* and population density by county



**Urban areas based on 2020 Decennial Census and FHWA's urban area population requirement of 5,000*

Source: U.S. Census Bureau

2.2 Transportation System

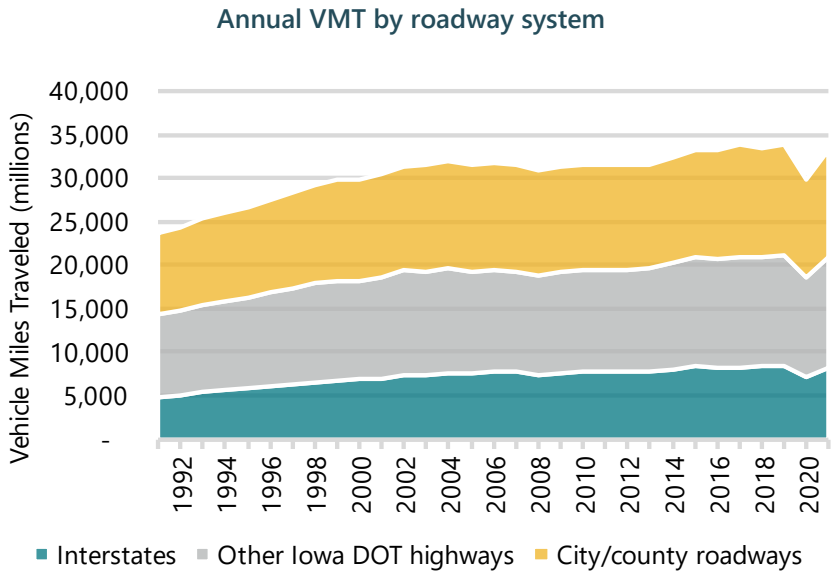
Iowa has an extensive **highway system** complemented by a vast secondary (county) and municipal (city) roadway network. Among the 50 states, Iowa ranks fifth in rural roadway miles. In addition to this expansive roadway system, other transportation options include the following.

- A variety of **bicycle and pedestrian** accommodations such as multiuse trails, side paths, sidewalks, and on-road bicycle accommodations
- **Public transit** service availability in all 99 counties
- **Passenger transportation options** such as intercity bus service, paid rideshare, and other shared transportation options
- Freight and passenger **rail** service
- Commercial, general, and freight **air** service
- Mississippi and Missouri **waterway** systems

The state's roadway system is the predominant mode of transportation for both passenger and freight traffic. Vehicle miles traveled (VMT) have been increasing over time, though the growth rate has slowed. A little over 60% of total miles, and over 90% of large truck miles, occur on the Primary Highway System, owned by the Iowa DOT.

Most people travel to work by vehicle. Eight out of ten drive themselves to work while one out of ten carpools. Other transportation modes and working from home account for the remainder. Iowa's average commute time is lower than the national average; while 80% of Iowans have a commute time of 30 minutes or less, only 60% of the population across the country does.

The state's highway system provides the backbone for the overall transportation system. It is a mature and extremely accessible network that provides a high level of mobility throughout the state. Almost the entirety of the state's land area is within ten miles of the Primary Highway System. While there are locations that can experience bottlenecks or congestion, the vast majority of the highway system operates smoothly. The Iowa DOT's primary focus is stewardship of the existing system, as pavement and bridge maintenance and rehabilitation needs continue to outpace funding availability.



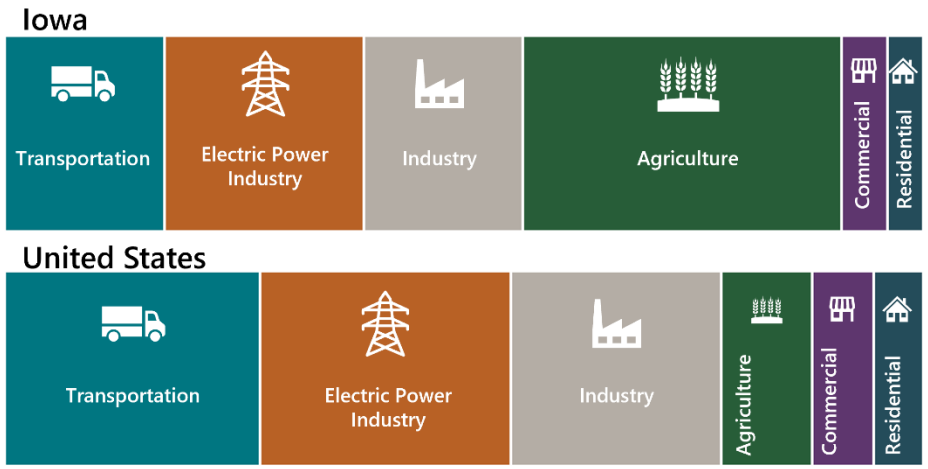
Source: Iowa DOT

In recent years, Iowa has averaged around 33.5 billion vehicle miles traveled (VMT) annually. That's enough miles for five round trips from Earth to Pluto.

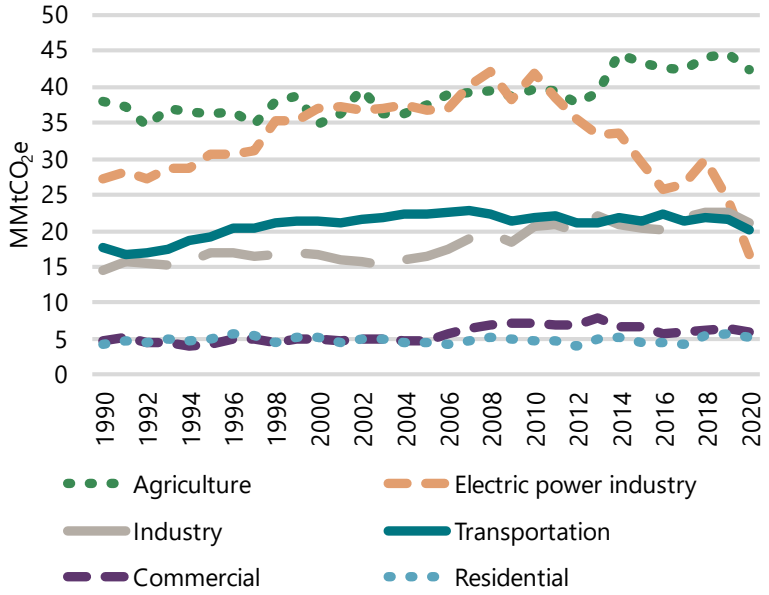
2.3 Greenhouse Gas (GHG) Emissions

Common GHGs include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and fluorinated gases. According to the Environmental Protection Agency (EPA), transportation accounted for 28% of GHG emissions nationally from 2015-2019. In Iowa, the transportation sector accounts for a significant portion of emissions, but it is a smaller percentage than nationally, averaging 17% from 2015-2019. Total emissions from most sectors in Iowa, including transportation, have been relatively stable over time. The main exception to this is that GHG emissions from electricity production have decreased steadily in recent years as use of coal has decreased and use of wind and other alternative energy sources has increased.

Average 2015-2019 GHG emissions by economic sector, Iowa vs. U.S.



Iowa gross GHG emissions 1990-2020 by sector

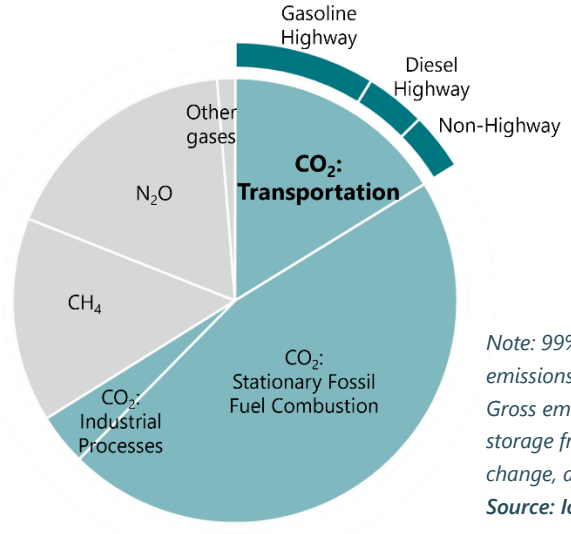


Note: $MMtCO_2e$: Million metric tons carbon dioxide equivalent. Excludes emissions and removals from Land Use, Land Use Change, and Forestry (LULUCF). 2020 is the most recent year that EPA provides state-level data for; due to the influence of the COVID-19 pandemic in 2020, the prior five years were used for the U.S.-Iowa comparison. EPA publishes state-level GHG data consistent with the national inventory, and this data is used here to provide an even comparison. This is an important consideration for multistate MPOs as many states publish their own GHG inventories that may be calculated differently. The Iowa Department of Natural Resources (DNR) provides annual GHG inventories for the state as required by Iowa Code 455B.104; data from Iowa DNR is used for the chart on page 9.

Source: U.S. EPA

The 2021 GHG Inventory from the Iowa Department of Natural Resources (DNR) provides additional insights into GHG emissions from transportation in Iowa. CO_2 is the dominant GHG emitted in the state, accounting for two thirds of the total GHG emissions. The transportation sector accounts for one quarter of the CO_2 emissions, and most transportation emissions are from highway vehicles. While transportation emissions only account for about one sixth of Iowa's overall GHG emissions, transportation projects can have a significant impact on CO_2 emissions in the state. Also, transportation is a more significant GHG contributor in metropolitan areas due to land use and population density.

Iowa 2021 GHG gross emissions by gas, with CO_2 broken out by sector



Note: 99% of transportation GHG emissions are CO_2; 1% are CH_4 or N_2O. Gross emissions do not include carbon storage from land use, land use change, and forestry (LULUCF).
Source: Iowa DNR

While reducing carbon emissions in the transportation sector is an important aspect of overall GHG reduction, economy wide GHG emission reductions will be needed to significantly lower the state's overall emissions. Also, it is important to consider the links between transportation emissions and other sectors. For example, a zero-emission vehicle may still be associated with emissions in other sectors for its manufacturing and disposal.

There have been several statewide planning efforts related to reducing emissions across the economy over the past couple decades.

The legislatively required 2008 **Iowa Climate Change Advisory Council Final Report** resulted in strategies for reducing GHG emissions. Potential policy areas were considered related to energy efficiency and conservation; clean and renewable energy; transportation and land use; and agriculture, forestry, and waste management. Four of the transportation and land use strategies were among the top five strategies by benefit/cost – smart growth with transit; fuel efficient operations for light duty vehicles; low carbon fuel standards; and new vehicle standards for GHG emissions and fuel economy.

There have been prior planning efforts by the Iowa Economic Development Authority (EDA) and the Iowa DOT related to alternative fuel vehicles, including the 2016 **Iowa Energy Plan**. It focused on four foundational pillars for strategy development: economic development and energy careers; energy efficiency and conservation; Iowa's energy resources; and transportation and infrastructure. The plan included several strategies for expanding the use of alternative fuel vehicles.

A recent undertaking was the 2022 **Governor's Carbon Sequestration Task Force Report**. This effort included strategies focused on agriculture stewardship and the production of renewable fuels to enhance carbon capture in Iowa. There are strong relationships between these strategies and transportation, particularly those focused on increasing investment in biofuel infrastructure.

The context of GHG emissions in Iowa and these past planning efforts provide lessons for developing effective CRS strategies. They show the importance of coordination across public and private entities to achieve GHG emission reductions. Transportation is interlinked with many other sectors, and it will require cooperation across stakeholders to fully implement transportation-related strategies and to ultimately have an economy-wide impact on GHG emissions.

3. CRS Development

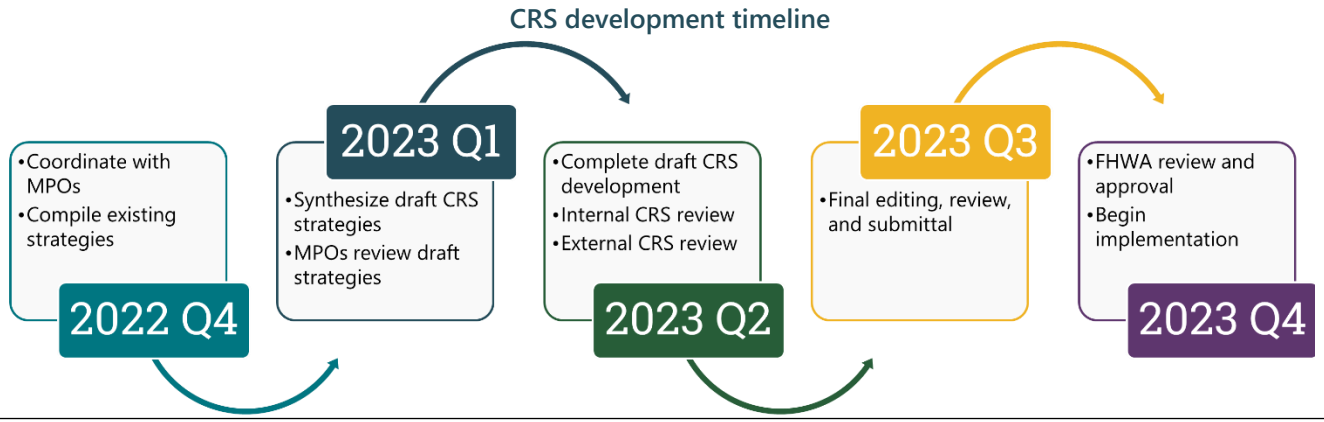
Developing the CRS provided an opportunity for the Iowa DOT and its partner MPOs to gather existing strategies and initiatives from their transportation planning processes and synthesize them into a set of cohesive statewide carbon reduction strategies. A statewide consultation process using Iowa's established transportation planning relationships provided opportunities for coordination and resulted in the identification of many shared priorities.

3.1 MPO Consultation Process

Iowa has a well-established cooperative transportation planning process that dates to the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA). At the time, the Iowa Transportation Commission saw a unique opportunity to foster partnerships and develop a cooperative planning process that was flexible, participatory, inclusive of non-traditional partners, proactive, and would provide better information to decision makers. Over the years, the Iowa DOT has implemented this by consulting with representatives of MPOs, RPAs, local county and municipal governments, tribes, and the public on an ongoing basis and through various means.

Coordination between the Iowa DOT and the state's nine MPOs occurred throughout the CRS development process, with a focus on development of the CRS strategies.

- Each MPO was asked to identify a point of contact with whom the Iowa DOT coordinated directly. MPO contacts coordinated with other MPO staff and regional stakeholders as appropriate.
- MPOs were asked to review their current plans and studies for strategies and initiatives that would support the reduction of transportation emissions.
- After input was received from all MPOs, the Iowa DOT consolidated this information with similar information gathered from Iowa DOT plans and national resources.
- The strategies were then combined, synthesized, and refined into a succinct but comprehensive list. This process is discussed further in Section 3.2. Draft strategies were provided to the MPOs for review and their feedback was incorporated as overall CRS document development continued.
- The CRS was reviewed internally by key bureaus and groups, and externally by stakeholders including MPOs before it was submitted to the Federal Highway Administration (FHWA).



3.2 CRS Strategy Development Process

The development of this CRS involved extensive coordination with Iowa's MPO partners and other stakeholders. Concurrently, the Iowa DOT reviewed the department's plans and studies for strategies that would support the reduction of transportation emissions. The following list provides the general types of statewide and MPO plans considered.

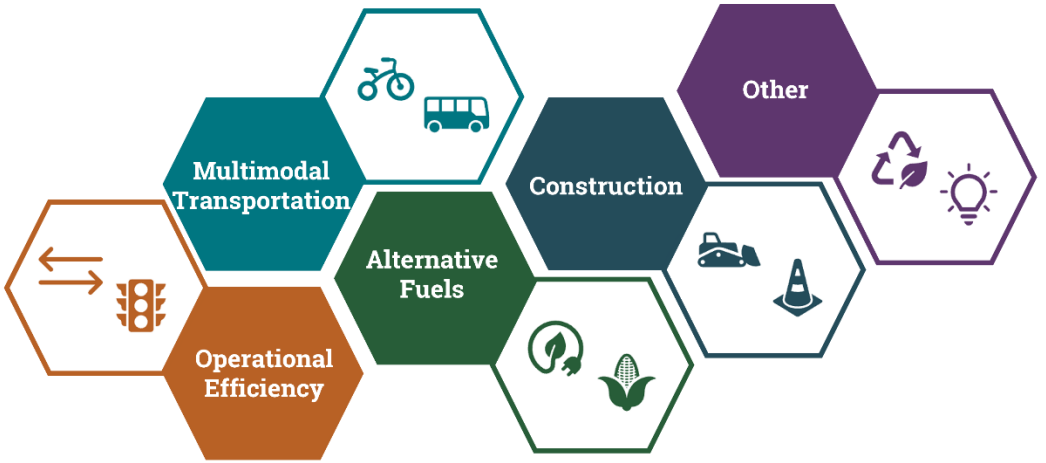
- Long-Range Transportation Plans
- Modal Plans
  - Aviation
  - Bicycle and Pedestrian
  - Passenger Transportation
  - Public Transit
  - Rail
- Specialized plans
  - Air Quality
  - Congestion Management
  - Electric Vehicles and Infrastructure
  - Freight
  - Integrated Corridor Management
  - Transportation Systems Management and Operations

Additionally, the Iowa DOT reviewed strategies from the department's Sustainability Working Group and recent efforts related to carbon sequestration. In total, an initial list of over 350 possible strategies was compiled from over 60 plans, studies, and sources.

After these initial strategies were compiled, there was additional screening conducted to eliminate strategies that 1) did not lend themselves to actionable project types or 2) did not clearly align with one of the three categories of projects and strategies identified in 23 U.S.C. 175(d)(2)(B). Approximately 70% of strategies moved forward.

Strategy groupings were developed to categorize the remaining strategies. Five general categories were used: multimodal transportation, operational efficiency, alternative fuels, construction, and other. Strategies within each overall category were then grouped into similar topics and themes, then CRS strategy statements were crafted. The goal for the assimilated CRS strategies was to capture the main components of the various individual strategies that were being synthesized, and to be actionable without being overly prescriptive.

CRS strategy categories



4. Strategies

4.1 General Objectives

The strategy synthesizing process resulted in a number of common themes that related to shared priorities for transportation outcomes. These aligned well with the goals and objectives from Iowa DOT and MPO plans, and helped form the overall objectives that carbon reduction strategies and projects should help support, in addition to reduced emissions. These objectives are not necessarily explicitly addressed in individual strategies due to their applicability across most or even all strategies. Ideally, implementation of the strategies in Section 4.3 will not only reduce transportation emissions, but will also help make progress towards the following objectives.

General objectives in addition to emission reduction

Safety is paramount in transportation planning. A safe transportation system minimizes incidents, crashes, injuries, and fatalities. While all strategies should aim to improve, or at least not worsen, safety of the transportation system, some strategies may need enhanced safety considerations, such as the best way to accommodate non-motorists.

A **sustainable** transportation system is available and in good condition, meeting the needs of today and preparing for the future. Sustainability means maintaining assets and making stewardship of the system a priority, and maximizing the existing transportation infrastructure and right-of-way (ROW) before adding to it. It also means making choices that consider economic, environmental, and societal factors. Sustainability can be integrated throughout the transportation system life cycle, from using more sustainable materials in construction to managing the right-of-way in a more environmentally friendly manner. As demonstrated by the CRS, reducing GHG emissions is a key component of creating and maintaining a sustainable transportation system.

Accessibility means users can readily access the transportation system and services without unnecessary barriers. Accessibility is more than just the physical availability of the transportation system or service – true accessibility provides access to desired destinations or outcomes across ability levels in a manner that is easy to use, safe, comfortable, affordable, and timely. Given that many of the strategies to reduce emissions relate to multimodal transportation, there is a strong link between accessibility and emission reduction planning.

Equity means that the benefits and burdens of transportation are distributed fairly, and individuals have access to affordable and reliable transportation options that help them meet their needs. Fairly does not necessarily mean equally, as there may need to be additional consideration for underserved groups to be able to achieve the same level of access to and benefit from the transportation system as other groups. This can be particularly true when implementing technology-focused strategies that may require additional resources.

Connectivity is key for many carbon reduction strategies. For example, when people are encouraged to use other modes rather than driving, those modes need to fully connect to destinations or other transportation options to complete the trip in order to be effective. As technology evolves, the infrastructure to support alternative fuel vehicles needs to be readily available throughout the transportation network to enable people to fully transition to new fuel sources.

Flow means the transportation system reliably and efficiently moves people and goods while minimizing user delay and cost. Some carbon reduction strategies relate directly to this objective, such as those to reduce congestion and bottlenecks. But similar to connectivity, flow is also about a smooth transportation journey from beginning to end, and is an important consideration for multimodal and technology-focused strategies as well.

When implementing projects to reduce emissions, it is important to consider possible co-benefits (improvements) in other performance areas, as well as trade-offs where emission reduction projects may decrease performance in other areas.

4.2 Implementation Considerations

The purpose of the CRS is to support the reduction of transportation emissions, and the CRP has provided a specific funding source for projects that reduce transportation emissions. However, it is important to note that reducing carbon emissions will typically be one of multiple goals or needs that a project is designed to meet, whether it is being funded through the CRP or other sources. As such, emission reductions will often have to be weighed against other objectives, such as safety and infrastructure condition. Sometimes the reduction of emissions can have co-benefits with other objectives, such as reducing traffic bottlenecks or increasing the use of public transit. However, sometimes there are trade-offs to evaluate when considering emission reduction strategies. For example, using alternative fuel sources may lower transportation emissions but may not decrease congestion or help an area shift its land use patterns from being auto-centric.

The issue of trade-offs among project goals and needs, as well as varying goals and needs across the state, is why the Iowa DOT's CRS is a comprehensive strategy that is meant to be applied strategically based on the specific area. As discussed in Section 5, MPOs will be programming CRP funding towards projects in their areas. Thus, while the strategies listed on the following pages are statewide strategies, they are not prioritized at the statewide level. Each MPO will be able to focus on the strategies that are priorities in their areas for their planning and programming efforts. Strategies also range from planning level to project level, may involve or require other stakeholders than transportation agencies, and may align better with other funding opportunities than CRP. The aim is to implement a broad array of strategies to decrease GHG emissions across transportation, and not to only focus on those specifically within the purview of the Iowa DOT or MPOs, or those most likely to receive CRP funding.

4.3 Strategies to Reduce Transportation Emissions

Multimodal Transportation

Objective: Support multimodal travel options that enable people to travel by less carbon-intensive modes than single-occupant vehicles.

- Invest in projects related to **public transit** fleets, facilities, infrastructure, services, and communications to reduce emissions directly through more efficient vehicles and facilities and indirectly through expanding service, access, intermodal connections, and education to increase the utilization of public transit.
- Invest in projects related to **bicyclists and pedestrians**, including constructing on- and off-road facilities, enhancing bicycle and pedestrian networks, creating intermodal connections, and facilitating education and encouragement activities to reduce emissions through increased utilization of bicycling and walking.
- Adopt and implement **Complete Streets** policies to ensure roadways serve all users, not just motorists.
- Support alternatives that **reduce the number of single-occupant vehicles** on the road, such as carpooling and vanpooling, as well as shared mobility and micromobility options such as mobility hubs and shared fleets of cars, bikes, and scooters.
- Support **passenger and commuter rail** planning and development efforts, including intermodal connections for existing and potential service.

Operational Efficiency

Objective: Reduce emissions by improving the efficiency of transportation system operations through strategies that improve flow and reliability by reducing congestion and managing demand rather than the construction of new capacity.

- Use **Transportation Systems Management and Operations (TSMO)** strategies to monitor and manage the transportation system by utilizing equipment, technology, and infrastructure improvements to improve traffic flow and reduce delays from recurring and non-recurring congestion.
- Maintain the transportation system in a **state of good repair** to prevent or mitigate congestion and bottlenecks through infrastructure improvements.
- Utilize and promote **Travel Demand Management (TDM) strategies** that shift trips to less carbon intensive modes, increase vehicle occupancy rates, or reduce demand, especially during peak hours.

Alternative Fuels

Objective: Reduce emissions by utilizing and supporting alternative and renewable fuel vehicles across modes, particularly cars, commercial vehicles, and transit vehicles.

- Invest in **alternative and renewable fuel infrastructure** that supports low or no emission vehicles.
- Transition to low or no emission vehicles, such as hybrid or electric vehicles or **vehicles that utilize alternative and renewable fuels.**
- **Coordinate** with governmental agencies, utilities, industry partners, and other stakeholders to advance efforts such as reducing the carbon intensity of fuels, increasing the fuel efficiency of vehicles, encouraging the use of lower emission fuels and vehicles, encouraging the use of alternative and renewable fuel vehicles, and ensuring the necessary utility and fueling infrastructure is in place.

Construction

Objective: Reduce emissions during the design, construction, operation, and maintenance of the transportation system.

- Incorporate **sustainable elements or construction practices** that utilize lower carbon materials or support carbon reduction into infrastructure design.
- Utilize transportation right-of-way for **cross-sector purposes**, such as renewable energy infrastructure or generation.
- **Reduce carbon impacts during construction projects** by utilizing alternative modes, implementing operational strategies, and staging projects to minimize emissions from traffic delays and vehicle miles traveled.

Other

Objective: Consider other methods to reduce transportation emissions, either directly or through coordination with other entities.

- **Integrate transportation and land use planning** across jurisdictions to ensure that multimodal options are accessible, safe, and efficient modes to utilize for transportation.
- **Improve freight efficiency** through infrastructure improvements that facilitate the use of less carbon intensive modes, such as developing intermodal connections and upgrading rail and water infrastructure.
- Explore **other projects or programs** that could help reduce carbon emissions, potentially including carbon sequestration, carbon trading programs, or offsetting carbon emissions.

5. CRS Implementation

5.1 Planning

Implementing the CRS on a planning level will involve incorporating the document into the statewide and metropolitan transportation planning processes. Since the CRS is a planning document rather than a programming document, Iowa DOT and MPOs could integrate it into their long-range transportation plans by incorporating it directly or by reference, or by integrating its strategies. The CRS can also be used to help prioritize projects or initiatives in long-range plans.

The CRS will help provide a foundation for the topic of emission reductions for those agencies that have not yet fully integrated it into their planning processes, while serving as a resource or enhancement for those that already had emission reduction planning underway.

5.2 Funding

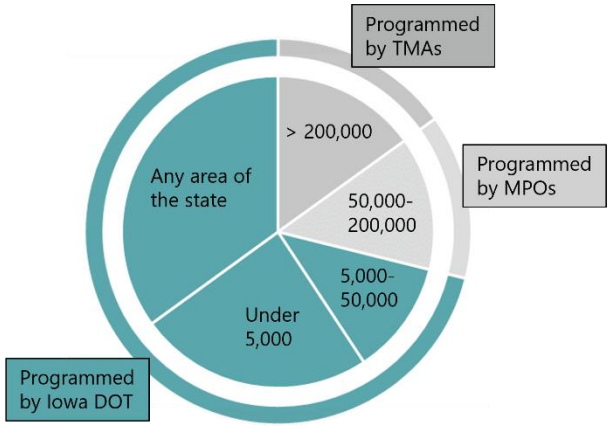
Carbon Reduction Program (CRP)

Each state receives an apportionment of CRP funding that is calculated based on a percentage specified in law. Iowa's apportionment will average about $16.5 million annually from federal fiscal years 2022-2026. The funding is required to be spent in different areas based on population.

- 65% is divided among:
  - Over 200,000 (MPOs that are Transportation Management Areas (TMAs))
  - 50,000 – 200,000 (non-TMA MPOs)
  - 5,000 – 50,000
  - Under 5,000
- 35% can be spent anywhere in the state

MPOs will receive annual targets for CRP funding to program towards the projects that are priorities in their areas. The Iowa DOT will program the remaining funding.

CRP funding distribution by relative proportion of Iowa's population



CRP funding may be used on a wide range of projects that support the reduction of transportation emissions. Projects must be identified in the Statewide Transportation Improvement Program (STIP) / Metropolitan Transportation Improvement Program (TIP) and be consistent with the Long-Range Statewide Transportation Plan and the Metropolitan Transportation Plans. CRP projects are encouraged, but not required, to support implementation of the CRS.

Other Funding Programs

While CRP funding is explicitly for reducing transportation emissions, there are numerous other funding sources that could also support CRS strategies. For the programs noted on this page, the administering agency (Iowa DOT or MPO) has some ability to shape their selection criteria and prioritization process based on their priorities. For example, this could include adding criteria related to reducing carbon emissions or prioritizing certain project types.

CRP funding and the programs discussed on this page are not the only sources that fund projects that may help implement the CRS. There are many other state and federal funding sources project sponsors can apply for. For example, the National Electric Vehicle Infrastructure (NEVI) Program, also created under IIJA, will help fund electric vehicle charging infrastructure. Iowa DOT has developed a separate plan to guide those investments. Other programs can also fund some of the strategies discussed in this CRS, such as operations improvements and bicycle/pedestrian accommodations. It will be important to consider the various funding programs and discretionary grants available in addition to CRP funding as potential mechanisms for CRS implementation.

Congestion Mitigation and Air Quality (CMAQ) and Iowa Clean Air Attainment Program (ICAAP)

The CMAQ program provides a federal funding source for state and local governments to fund transportation projects and programs to help meet the requirements of the Clean Air Act. Funding is available to reduce congestion and improve air quality for areas that do not meet the National Ambient Air Quality Standards (NAAQS) for ozone, carbon monoxide, or particulate matter (nonattainment areas), and for former nonattainment areas that are now in compliance (maintenance areas).

Iowa has enhanced flexibility for its CMAQ funding since it has no nonattainment or maintenance areas. The Iowa DOT uses part of its CMAQ funding to fund the ICAAP, which uses a statewide competitive application process to award funds to projects with the highest potential for reducing transportation-related congestion and air pollution. Many of these projects would be the same types of projects likely to be funded with CRP funding.

Transportation Alternatives Program (TAP)

TAP provides funding to expand travel choices and improve the transportation experience. This can include a variety of projects such as pedestrian and bicycle facilities, recreational trails, safe routes to school projects, community improvements like historic preservation and vegetation management, and environmental mitigation related to stormwater and habitat connectivity. In addition to managing a statewide program, the Iowa DOT targets TAP funding to each of its nine MPOs and 18 RPAs on an annual basis to program towards regional priorities.

Surface Transportation Block Grant Program (STBG)

STBG provides flexible funding for projects to preserve or improve the condition and performance of transportation facilities. STBG funding may be utilized on roadway projects on federal-aid routes; bridge projects on any public road; transit capital improvements; TAP eligible activities; and planning activities. The Iowa DOT targets STBG funding to each of its nine MPOs and 18 RPAs on an annual basis to program towards regional priorities.

Federal Transit Administration (FTA) and Iowa DOT Transit Programs

Various federal and state funding programs support public transit operations, capital equipment, and facilities. Some are directly allocated to transit agencies while others involve grant processes administered through the Iowa DOT. Public transit is a key component of reducing emissions through mode shift.

5.3 Project Selection and Programming

States and MPOs are encouraged to obligate CRP funding for projects that support the implementation of the state's CRS. The Iowa DOT will determine how to program CRP funding for areas of the state under 50,000 population. Since the Iowa Transportation Commission delegated the programming authority for areas over 50,000 to MPOs, each MPO will be responsible for its own CRP project selection. MPOs are well-equipped for this responsibility as they lead their regional planning processes and are also responsible for programming STBG and TAP funding.

The Iowa DOT will provide MPOs with an annual target of CRP funding based on their population. Similar to STBG and TAP funding, MPOs will develop their own project criteria, selection, and prioritization process. This will enable MPOs to focus on the strategies and projects that are regional priorities, which vary across the state. Individual MPOs have expressed interest in prioritizing different project types, such as transit, TAP, or traffic operations. Similarly, the Iowa DOT will program the other CRP funds based on statewide needs and priorities.

MPOs conduct project selection processes by advertising their funding programs, requirements, and timelines to their members and other potential project sponsors. Most MPOs conduct this process during the winter or spring on an annual or biennial basis. Technical Committees (engineers, planners, and other transportation stakeholders) typically review the submitted projects and provide recommendations on funding decisions to the MPO Policy Board (elected officials).

For federal fiscal year 2023, Iowa's MPOs and RPAs are responsible for programming almost $35 per Iowan between the STBG, TAP, and CRP funding programs. That totals over $111 million in federal funds.

All MPOs are required to develop a 4-year TIP that is finalized by July each year. Each MPO will outline its project selection processes in its TIP and include all projects programmed for federal transportation funding. The MPO TIPs are incorporated directly into the STIP which is finalized by October 1 each year. The STIP also includes the Iowa DOT's Five-Year Program, which includes Iowa DOT projects determined to be priorities for CRP funding.

An important part of the project selection process and TIP and STIP development is coordination between MPOs/RPAs and the Iowa DOT. 23 U.S.C. 175(e)(4-5) notes that before CRP funds are obligated the state needs to coordinate with MPOs for metropolitan areas and consult with regional transportation planning organizations for rural areas. This will be a part of the CRP programming process that is undertaken for the Iowa DOT's Five-Year Program, MPO TIPs, and STIP development. The Iowa DOT serves on MPO committees and can provide input to the MPO's CRP selection processes. The Iowa DOT will coordinate with MPOs and RPAs to include all state CRP projects in their areas within their TIPs.

In addition to agency-to-agency coordination, the development of these programming documents provides numerous opportunities for public input. The Iowa DOT and all MPOs and RPAs have public participation plans that outline ways that the public is engaged during the planning process and the development of critical documents such as the TIPs and STIP. This routinely includes public meetings and public comments periods; in some cases, the public is specifically invited to provide feedback on proposed projects. These regional public involvement processes help ensure that the needs of a specific area's population are considered in the planning process.

5.4 Projects to Reduce Transportation Emissions

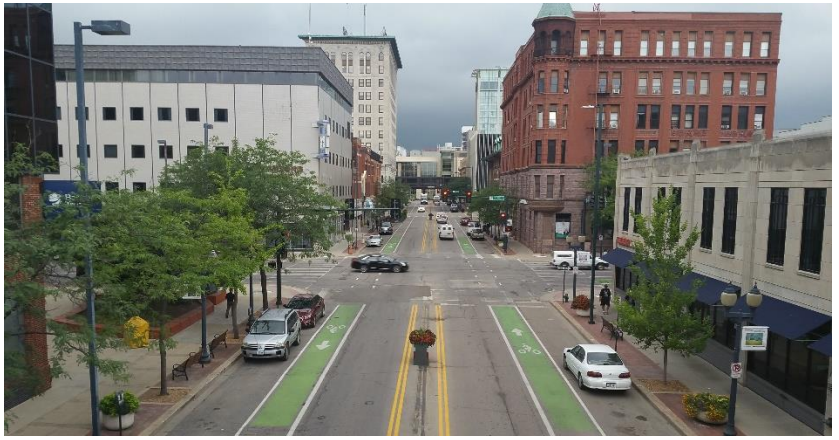
Carbon reduction projects are intended to reduce transportation emissions and implement the previously identified strategies. 23 U.S.C. 101(a)(20) defines project as "any undertaking eligible for assistance under this title." Since the CRS is a planning, not programming, document, the Iowa DOT and its partner MPOs are focusing on identifying the types of undertakings, or projects, that will utilize CRP and other funding sources to help reduce transportation emissions.

23 U.S.C. 175(d)(2)(B) states that the CRS must identify projects and strategies to reduce transportation emissions. These may include projects and strategies for safe, reliable, and cost-effective options for the following.

- To reduce traffic congestion by facilitating the use of alternatives to single-occupant vehicle trips, including public transportation facilities, pedestrian facilities, bicycle facilities, and shared or pooled vehicle trips within the state or an area served by the applicable MPO, if any.
- To facilitate the use of vehicles or modes of travel that result in lower transportation emissions per person-mile traveled as compared to existing vehicles and modes.
- To facilitate approaches to the construction of transportation assets that result in lower transportation emissions as compared to existing approaches.

The table on the following pages connects the previously identified strategies to two items: which of the three areas of the CRP guidance each strategy relates to, and projects that will help implement the strategies. As noted earlier, the CRS is viewed as a more comprehensive effort than just implementing the CRP funding program, so some projects may be planning level, more in alignment with other funding sources than CRP funding, or contain elements that may not be eligible for CRP funding. Project sponsors will need to verify eligibility with FHWA for any projects that are programmed for CRP, or any other federal funding source, and follow federal requirements to develop and implement the projects.

While not necessarily falling under the umbrella of projects, it is worth noting that the Iowa DOT and MPOs have been and will continue taking actions within their agency operations that improve sustainability and reduce emissions. Some examples of this include making energy efficient building investments, encouraging staff to use transportation options like carpooling and public transit, reducing energy use and transportation emissions through teleworking, and using alternative and renewable fuel vehicles in staff fleets.



Projects to reduce transportation emissions

Strategies (See Section 4.3 for full descriptions)	Alignment with CRP Guidance: Facilitate non-SOV trips	Alignment with CRP Guidance: Vehicles/ modes with lower emissions	Alignment with CRP Guidance: Lower emission construction approaches	Projects include but are not limited to
Multimodal Transportation				
Public transit	✓	✓	✓	Bus replacement Transit facility construction or replacement Expanded transit service area and/or hours New intermodal connections
Bicyclists and pedestrians	✓	✓		Construct on- or off-road facilities for bicyclists/pedestrians Safe routes to school programs or infrastructure Complete Streets implementation
Complete Streets	✓	✓		
Reduce single occupant vehicles	✓	✓		Carpool/vanpool programs Expanded micromobility options Electric bicycle incentives Advanced mobility, access, and on-demand transportation service technologies
Passenger and commuter rail	✓	✓		Planning efforts for passenger or commuter rail Passenger or commuter rail infrastructure, capital, or service
Operational Efficiency				Procure and utilize TSMO-related equipment or technology to improve flow
Transportation Systems Management and Operations	✓	✓		Cross-jurisdictional TSMO coordination Enhanced traffic signal responsiveness or coordination Enhanced traffic monitoring Advanced traveler information systems Advanced traffic management technologies
State of good repair			✓	Address bottleneck locations Projects that help avoid detours or delays Integrated corridor management systems
Travel Demand Management	✓	✓		Encourage shifting commute times Increase vehicle occupancy rate Enhanced ability to conduct business remotely

Strategies (See Section 4.3 for full descriptions)	Alignment with CRP Guidance: Facilitate non-SOV trips	Alignment with CRP Guidance: Vehicles/ modes with lower emissions	Alignment with CRP Guidance: Lower emission construction approaches	Projects include but are not limited to
Alternative Fuels				
Alternative and renewable fuel infrastructure	✓	✓	✓	• Acquire, install, or operate alternative and renewable fuel infrastructure to support charging or fueling • Purchase low/no emission transit vehicles • Enhance coordination with other sectors to advance policies, equipment, and infrastructure associated with alternative and renewable fuels
Vehicles that utilize alternative and renewable fuels		✓		
Enhanced coordination		✓	✓	
Construction				
Sustainable elements or construction practices		✓	✓	• Use lower carbon materials • Design infrastructure to have lower carbon emissions across its life cycle • Purchase or lease zero-emission construction equipment and vehicles • Use transportation right-of-way for energy infrastructure or generation • Stage construction projects to minimize congestion, detours, and delay • Utilize other modes to reduce demand in construction zones
Cross-sector use of right-of-way			✓	
Reduce carbon impacts during construction projects	✓		✓	
Other				
Integrate transportation and land use planning	✓		✓	• Enhance integration of transportation needs into development and redevelopment efforts • Develop carbon reduction strategy • Enhance freight intermodal connections • Reduce emissions at port facilities • Replace street lighting and traffic control devices with energy-efficient alternatives
Improve freight efficiency		✓	✓	
Other projects or programs			✓	

6. Conclusion

Efforts to reduce transportation emissions will continue to evolve and mature in Iowa. Some parts of the state have had planning efforts in this area underway for some time, like special task forces or roundtables focused on air quality, projects to develop local inventories of GHG emissions, or significant planning efforts related to less carbon intensive transportation modes. For others, integrating the CRS into their overall planning process may be one of their first significant actions on this topic. This first iteration of Iowa's CRS helps provide a foundation for the topic for the Iowa DOT, MPOs, and other stakeholders

Integrating the CRS strategies and projects into the overall planning and programming process will be one of the first implementation steps for the CRS. There are also important areas to continue to develop that will enhance implementation over time. The CRS will be updated in four years and will address progress made in these types of areas.

Potential process improvements for emission reduction planning

- Developing more localized GHG inventories, such as MPO or municipal level
- Quantifying the carbon emissions from the production, transport, and use of materials in the construction of transportation facilities
- Developing benefit/cost analysis for emission reduction projects
- Integrating emission reduction considerations into project prioritization processes
- Developing performance evaluation frameworks to gauge the impact of emission reduction efforts

To achieve substantial GHG emission reductions, there will need to be significant coordination among governments, private entities, utilities, and other stakeholders. Transportation emissions are only one part of GHG emissions across economic sectors. Some of the transportation strategies that could have the most significant impact on emission reductions will require action by entities other than governments. Transportation agencies cannot successfully implement these strategies on their own. The CRS provides a valuable strategy framework for transportation planning, but it is only one component of the much larger policy and coordination framework necessary for reducing GHG emissions.

IOWA | DOT

www.iowadot.gov