



Messages & Talking Points Toolkit

How to Use This Document

This document is for project managers and practitioners looking to incorporate CAV-specific messaging into their communications and engagement in projects and programs.

MnDOT developed this step-by-step guide and example messages and talking points to help project managers and practitioners answer the question—what should we say about CAV on this project? This document will help provide consistency in how Minnesota CAV partners talk about connected and automated vehicle technology across projects, programs and partners.

Other reference documents are noted throughout this document for additional guidance and support, including:

- **Minnesota CAV Messaging and Engagement Guidance:** A high-level guidance document to help shape CAV messaging and engagement in Minnesota.
- **Med City Mover Case Study:** A real-world example of this guidance in action and lessons learned from a messaging and engagement on the Med City Mover CAV demonstration project in Rochester, MN.

CAV Messaging Step-by-Step Guide

Identifying relevant messaging considerations

Step 1: Identify your audience and relevant messaging considerations

Identify who the primary audience is for your CAV-specific messaging. This will help you make sure you are crafting messages that will resonate with the people you are trying to reach. Read the descriptions of the Minnesota CAV public perspectives and the partner and industry audience groups (part of the Minnesota

CAV Messaging and Engagement Guidance) to identify which are most applicable to your project and/or the specific messaging you are crafting. Note: audiences are not mutually exclusive so more than one may apply. *Tailor messaging to this audience or audiences.*

Minnesota CAV public perspectives:

- CAV Cautious: The Information Seekers
- CAV Confident: The Spirit Squad
- CAV Caregiver: The Community Allies
- CAV Critical: The Historically Underprioritized

Partner and industry audience groups:

- Champions and Decision Makers
- Influences and Advisors
- Participants and Observers

Review the audience(s) you selected to identify relevant messaging considerations. ***Build in these elements as you craft messaging.*** For example, if your audience primarily holds the CAV Cautious perspective, your messaging should emphasize sharing information with a call to action focused on learning more. Messaging should highlight how the technology works, especially related to safety, and how CAV relates to people's everyday lives.

Step 2: Identify which project type is applicable and relevant messaging considerations

Identify which project type best describes your project from those identified in the Minnesota CAV Messaging and Engagement Guidance, including:

- CAV demonstration project
- Construction project
- Planning project (CAV-specific or general)

Review the messaging considerations by project type. ***Build in these elements as you craft messaging.***

Step 3: Identify relevant general messaging considerations

Review the general messaging considerations in the Minnesota CAV Messaging and Engagement Guidance and identify which are relevant to your project. ***Be sure to build in these elements as you craft messaging.*** For example, a general messaging consideration is to build knowledge about the connected aspect of CAV technology. If your project includes connected technology, you should make sure to emphasize that in your messaging and talking points.

Crafting your project messaging

Step 4: Craft your 5Ws

Begin writing the basic project information you are looking to communicate. Be sure to build in the relevant messaging considerations you identified in Steps 1, 2 and 3. ***For your specific project, answer:***

- What is it?
- Who is doing it?
- When is it happening?
- Where is it happening?
- Why is it happening?

The answers to these questions will vary project to project. However, this document includes example messages and talking points that answer these five questions about CAV from a statewide programmatic standpoint.

Step 5: Incorporate Minnesota’s core CAV messaging themes

Review Minnesota’s four core CAV messaging themes (part of the Minnesota CAV Messaging and Engagement Guidance) and incorporate messaging on these topics into your project communication and engagement. Your messaging should touch on all four of these themes, but some may be emphasized more than others depending on the specific project and/or audience.

The four core messaging themes are:

- **Innovation**—Connected and automated vehicle technology is in use today and will be the future of transportation so Minnesota is proactively planning and preparing.
- **Safety**—Safety is and will continue to be our top priority and CAV has the potential to improve safety for roadway users.
- **Equity, Access and Mobility**—CAV technology can support Minnesota to create a transportation system that works for all.
- **Economic and Workforce Development**—CAV will drive opportunity for Minnesota.

This document includes example messages and talking points related to these themes along which guidance on which messages are most relevant to each audience and project type. *Use the example messages as a starting point when crafting your project-specific messaging*

Example CAV Messaging

The following sections include example messages, talking points and proof points related to general statewide programmatic CAV information and for each of the four core messaging themes. *Individual messages, talking points and proof points should be reviewed, revised and modified as needed to fit your audience, specific project and as new data become available.*

Messages and talking points are not the same. Messages are succinct, easy to remember and easy to understand ideas. Talking points (statements) or proof points (data) are the specific statements or data that support the message.

General CAV Messaging—The 5 Ws

These 5 Ws are example general, informational messages about the basics of connected and automated vehicles in Minnesota. They are directed to the CAV Cautious perspective as it is the most common public perspective across Minnesota.

What is CAV?

CAV stands for connected and automated vehicles. Connected vehicles use technology to communicate with other vehicles, connect with traffic signals, signs, and other road items, or obtain data from a cloud. Automated vehicles use technology to steer, accelerate, and brake with little to no human input. Some vehicles still require a human to monitor the roadway, while other vehicles require no human intervention. You may have heard these called “self-driving” vehicles.

What is Destination CAV?

Minnesota’s CAV program is known as Destination CAV. It is an umbrella program that includes work happening throughout the state by many partners to plan and prepare for connected and automated vehicles in Minnesota. Work includes technology development, testing, planning, engagement, policy, and partnerships.

Who is involved in Destination CAV?

MnDOT’s Connected and Automated Vehicle Office (CAV-X) is the convening office for Destination CAV. However, Minnesota’s CAV program involves partners across government, private industry, advocacy groups and academia collaborating to plan and prepare for connected and automated vehicles in Minnesota. People in Minnesota also play an important role in shaping how partners implement this technology in the state through program and project level input and decision-making opportunities.

When will CAV rollout?

Basic levels of connected and automated vehicle technology is already on Minnesota roadways. However, vehicles that are fully automated in all settings are still many years away.

Where will this take place?

Minnesota is planning and preparing for connected and automated vehicles throughout the state. MnDOT and partners are currently testing real-world use cases in some areas of Minnesota such as the Med City Mover shuttle case study in Rochester, MN.

Why is Minnesota planning and preparing for CAV?

Connected and automated vehicles have the potential to provide many benefits to Minnesota residents, businesses and visitors, including:

- Increased safety
- Greater equity, access and mobility
- Economic and workforce development
- Improved environment
- More efficient movement of people and goods

The extent to which these benefits will be realized is yet to be determined. Minnesota is planning and preparing for CAV with a focus on maximizing these potential benefits and making sure CAV works for everyone.

Talking Points by Core Messaging Themes

The Minnesota CAV Messaging and Engagement Guidance identified four core messaging themes that should be incorporated in all CAV communications and engagement. The four core messaging themes are:

- **Innovation**—Connected and automated vehicle technology is in use today and will be the future of transportation so Minnesota is proactively planning and preparing.
- **Safety**—Safety is and will continue to be our top priority and CAV has the potential to improve safety for roadway users.
- **Equity, Access and Mobility**—CAV technology can support Minnesota to create a transportation system that works for all.
- **Economic and Workforce Development**—CAV will drive opportunity for Minnesota.

The following sections include specific messages and talking and proof points by theme, and guidance for which messages are more relevant for which audiences and project phases.

Innovation

Innovation—Connected and automated vehicle technology is already in use today and is the future of transportation, so Minnesota is proactively planning and preparing.

Table 1. Considerations for the Innovation messaging theme by audience

Audience	Considerations for the Innovation messaging themes	Talking points to emphasize
Information Seekers	People with this perspective want to know more about what CAV is, what this technology means for the future of transportation (particularly how they use transportation) and how Minnesota is planning for this technology. Invite them to experience CAV so they have opportunities to see how it works.	1 3 5 5C 8
Spirit Squad	Provide people with this perspective the information they need to discuss the CAV in everyday conversations. They are already supportive of the technology and can be strong advocates for this message.	4 5 6 7 7a 8
Community Allies	People with this perspective want to know more about how Minnesota is planning for CAV technology and how they will ensure that everyone is accounted for and included in planning for the future of transportation.	6 6a 7 (all) 8 (all)
Historically Underprioritized	People with this perspective don't believe CAV will apply to them. Show them how Minnesota is including everyone in planning for the future of transportation. Invite them to experience CAV so they have opportunities to see how it can fit into their lives.	7 (all) 8 (all)
Champions and Decision Makers	People that fall within this category will want to know more about what CAV is, what this will mean for Minnesota, and importantly, what their role is in the future of CAV. As champions and decision makers can influence the future of CAV, it is important that there is a clear message about what we want to ask of them (i.e., investment) and/or a call to action.	1 3 4 5 6 6a 8
Influencers and Advisors	People in this category will want to understand how CAV may influence or affect the organization or interests of the group(s) they represent. While influencers and advisors are not direct decision makers, they can influence the climate surrounding CAV. Messages for this group should focus on how Minnesota is actively working to take a well-researched and inclusive approach to any future CAV policies.	4 5 6 7 8
Participants and Observers	Participants and observers will likely fall into one of the public perspectives listed above. Identify which audience group best suits the stakeholder and use the recommended considerations and talking points.	*identify perspective above and use recommended message points

Table 2. Considerations for the Innovation messaging theme by project type

Project type	Considerations for the Innovation messaging themes	Talking points to emphasize
CAV demonstration project	For these types of projects, it is most important to emphasize the development and testing of technology that has made it ready for public pilot projects. After people are made aware of CAV technology, offer more information about levels of development and the next phase of innovation in CAV technology—as appropriate.	2 3 4 6 7 8
Construction project	For these types of projects, emphasize messages about what is possible today and about developing the future of transportation here in Minnesota.	1 3 4 6
Planning project (CAV or general)	For these types of projects, emphasize messages about how future CAV planning and policy will involve the latest research and input from people in Minnesota.	1 4 5 6 7 8

Example Innovation messages, talking points and proof points

1. CAV is the future of transportation:

Connected and automated vehicle technology is the future of the transportation industry. Automobile manufacturers are investing heavily in these technologies and Departments of Transportation are increasingly testing and planning for CAV on U.S. roadways.

- a. As of February 2020, thirty of the largest autonomous vehicle companies had invested \$16 billion in refining and further developing CAV technology. (Center for Strategic and International Studies)
- b. Since 2012, at least 41 states and D.C. have considered legislation related to autonomous vehicles. (National Conference of State Legislatures)

2. There are different levels of automated technology—some are available today and others are coming in the future:

Fully automated vehicles will eventually integrate onto U.S. roadways by progressing through six levels of driver assistance technology advancements in the coming years. This includes everything from no automation (where a fully engaged driver is required at all times), to full autonomy (where an automated vehicle operates independently in all settings without a human driver).

- a. Level 0: The human driver does all the driving.
- b. Level 1: An advanced driver assistance system (ADAS) on the vehicle can sometimes assist the human driver with either steering or braking/accelerating, but not both simultaneously.

- c. Level 2: An advanced driver assistance system (ADAS) on the vehicle can itself actually control both steering and braking/accelerating simultaneously under some circumstances. The human driver must continue to pay full attention (“monitor the driving environment”) at all times and perform the rest of the driving task.
 - d. Level 3: An automated driving system (ADS) on the vehicle can itself perform all aspects of the driving task under some circumstances. In those circumstances, the human driver must be ready to take back control at any time when the ADS requests the human driver to do so. In all other circumstances, the human driver performs the driving task.
 - e. Level 4: An automated driving system (ADS) on the vehicle can itself perform all driving tasks and monitor the driving environment – essentially, do all the driving – in certain circumstances. The human need not pay attention in those circumstances.
 - f. Level 5: An automated driving system (ADS) on the vehicle can do all the driving in all circumstances. The human occupants are just passengers and need never be involved in driving.
- 3. CAV is here today:** While the technology is evolving, it is worth noting that connected and automated vehicle technology has been in use on Minnesota’s roads for some time.
- a. Most new vehicles sold today have some level of automation such as lane keeping assist, adaptive cruise control, traffic jam assist, self-park, highway autopilot and more.
 - b. In fact, according to Consumer Reports, 92 percent of all new cars currently available have the ability to automate speed through adaptive cruise control, and 50 percent can control both steering and speed through automated technology.
 - c. Vehicles available today are considered level 1 and 2 on the SAE scale. Level 3, 4 and 5 are not yet commercially available.
 - d. Tesla vehicles are currently at Level 2 automation on the SAE scale. This means that they have automation but are not considered automated. Tesla vehicles come standard with a driver assistance system branded as Autopilot. For an additional fee, owners can buy “full self-driving,” or FSD; however, Tesla vehicles are not self-driving. FSD includes the parking feature Summon as well as Navigate on Autopilot, an active guidance system that navigates a car from a highway on-ramp to off-ramp, including interchanges and making lane changes.

- e. MnDOT regularly invests in Intelligent Transportation Systems (ITS), which encompasses a broad range of wireless communications-based information and electronics technology. Some ITS projects are considered connected vehicle technology or serve as the backbone for future connected vehicle applications.

4. CAV impacts all modes of transportation:

Connected and automated vehicle technology will impact all types of transportation, not just personal vehicles.

- a. Auto manufactures are investing in connected and automated vehicle technology, such as blind spot detection, that benefits drivers and other roadway users, such as people walking or riding bicycles.
- b. Many new and existing companies are focused on developing automated shuttles for use in large- and small-scale transit systems.
- c. Roadway authorities are already implementing connected vehicle technology, such as signal pre-emption, to improve operations and safety of for divers and transit riders.

5. Minnesota is a leader in planning and preparing for CAV: Minnesota is at the forefront of testing and understanding connected and automated vehicle technology, specifically focused on safety and winter weather.

- a. MnDOT leads national and regional committees related to CAV and participates in peer exchanges and other information sharing opportunities with practitioners across the country.
- b. MnDOT created the CAV Challenge, an open-call funding program focused on spurring innovation and creativity from proposers to advance planning and preparing for CAV in Minnesota.
- c. Minnesota is leading the push for CAV demonstration projects in real-world setting, such as the Med City Mover in Rochester, MN. Minnesota CAV partners are advocating for testing not just the technology but making sure it works in the environments people live, work and play.

6. Minnesota is investing in infrastructure with the future in mind:

Preparing for connected and automated vehicle technology is necessary as Minnesota replaces aging transportation infrastructure. MnDOT prioritizes projects that provide value to today's transportation system and that are expected to continue to be valuable in the future.

- a. MnDOT is taking a conservative approach to investing in CAV-related infrastructure in order to spend money wisely. Active planning and preparing for CAV will help MnDOT be smart about when to make which types of infrastructure investments for CAV.

- b. Since CAV will likely roll out gradually, it is important for roadway authorities to build and maintain infrastructure that benefits human drivers and connected and automated vehicles. Improving pavement markings is an example of an infrastructure investment that provides value to both human drivers and CAVs.

7. We're involving all of Minnesota:

Minnesota CAV partners want to make sure people in Minnesota understand the benefits, challenges and risks of connected and automated vehicle technology and have a say in how the state plans and prepares for the future of transportation.

- a. Minnesota CAV partners are focusing on bringing CAV demonstration projects to communities throughout the state, such as Minneapolis, Rochester, and Grand Rapids, to allow people the opportunity to see, hear and touch new technology, and provide feedback to shape how CAV is implemented in Minnesota.
- b. Minnesota CAV partners participate in community events and conversations across the state to share information and provide people the opportunity to have their perspectives heard as partners plan and prepare for CAV in Minnesota.
- c. In 2020, MnDOT conducted a statewide survey to better

understand what people in Minnesota know about CAV and how they feel about CAV as part of the state's transportation future. MnDOT plans to regularly conduct a similar survey to understand how people's perspective changes over time to inform future planning for CAV in Minnesota.

- d. Minnesota CAV partners host CAV Camp for high school aged students to learn about CAV technology, potential CAV-related careers and help shape the future of transportation.

8. Minnesota is testing and demonstrating CAV technology:

Minnesota is partnering with private industry, communities, researchers and many others to safely demonstrate technologies.

- a. MnDOT has partnered with Minnesota companies like 3M, Polaris and VSI Labs, and other industry leaders to test and demonstrate CAV technology on Minnesota roadways.
- b. MnDOT has partnered with cities such as Minneapolis, Rochester, Grand Rapids and White Bear Lake to test and demonstrate CAV technology within their communities.
- c. MnDOT has partnered with organizations such as the Center for Transportation Studies at the University of Minnesota and the Minnesota State Fair to bring CAV demonstration to people in Minnesota.

Safety

Safety—Safety is and will continue to be our top priority and connected and automated vehicle technology has the potential to improve safety for roadway users.

Table 3. Considerations for the Safety messaging theme by audience

Minnesota CAV perspective	Considerations for the Safety messaging theme	Talking points to emphasize
Information Seekers	People with this perspective want to know how the safety features of CAV technology work and how it will personally impact them and their preferred means of transportation.	1 2 3 4 7
Spirit Squad	Provide people with this perspective the information they need to discuss the CAV in everyday conversations. They are already supportive of the technology and can be strong advocates for this message. However, make sure to expectation manage about what safety features and benefits exist today versus could be in the future.	3 4 5a 7
Community Allies	Messages to people with this perspective should focus on how CAV technology will improve safety for all people in Minnesota—whether they are driving, riding transit, bicycling, walking or rolling. This group wants to ensure the technology is safe and everyone is included in the safety measures, regardless of how they get around.	1 3 4 5a
Historically Underprioritized	People with this perspective don't believe CAV will ever apply to them. Show the how CAV will make transportation experiences safer for everyone. Invite them to experience CAV themselves so they have opportunities to see how it fits into their lives.	1 2 5
Champions and Decision Makers	People that fall within this category will want to know more about what CAV is, what this will mean for Minnesota, and importantly, what their role is in the future of CAV. As champions and decision makers can influence the future of CAV, it is important that there is a clear message about what we want to ask of them (i.e., investment) and/or a call to action.	1 2 3 4 7 8
Influencers and Advisors	People in this category will want to understand how CAV may influence or affect the organization or interests of the group(s) they represent. While influencers and advisors are not direct decision makers, they can influence the climate surrounding CAV. Messages for this group should focus on how Minnesota is actively working to take a well-researched and inclusive approach to any future CAV policies.	1 2 4 8
Participants and Observers	Participants and observers will likely fall into one of the public perspectives listed above. Identify which audience group best suits the stakeholder and use the recommended considerations and talking points.	*identify perspective above and use recommended message points

Table 4. Considerations for the Safety messaging theme by project type

Project type	Considerations for the Safety messaging theme	Talking points to emphasize
CAV demonstration project	For these types of projects, it is most important to emphasize safety messages related to the safety of testing. After people are comfortable with the safety of the demonstration project, layer on messages about broader safety benefits of CAV.	1 4 5 6 7 8
Construction project	For these types of projects, emphasize messages about safety as an overall priority and the need to continue to invest in existing safety programs, even though CAV has the potential to improve safety in the long run.	1 2 4 5
Planning project (CAV or general)	For these types of projects, emphasize messages about the potential future safety benefits.	2 4 5 8

Example Safety messages, talking points and proof points

1. **Safety is a top priority:** Safety is a guiding principle for transportation in Minnesota. It is and will continue to be a top priority for Minnesota CAV partners when planning and preparing for a transportation future with connected and automated vehicle technology.
 - a. All connected and automated vehicle technology deployed in in the state as part of demonstration projects must withstand many levels of review, testing and analysis prior to entering Minnesota roads.
 - b. In the 2020 statewide CAV survey, people in Minnesota indicated that they saw the State playing an important role in ensuring connected and automated vehicle technology is safely implemented in the state.

2. **Traditional traffic safety measures are still needed and will continue to be needed as long as there are human drivers on Minnesota roadways:** While connected and automated vehicle technology has the potential to increase safety on Minnesota roadways, those benefits are likely still years away and may never be fully realized. That’s why Minnesota will continue to invest in existing safety strategies and programs focused on making transportation safer for human drivers today and into the future.
 - a. The Minnesota Strategic Highway Safety Plan identifies the following as core focus areas for traffic safety in the near term based on data and trends: inattentive drivers, impaired roadway users, intersections, speed, lane departure, and unbelted vehicle occupants. CAV can be part of the solution for to

- addressing crashes in these areas.
- b. The Minnesota Toward Zero Deaths is the state’s cornerstone traffic safety program, employing an interdisciplinary approach to reducing traffic crashes, injuries and deaths on Minnesota roadways. TZD is a partnership of people and organizations throughout Minnesota working to improve traffic safety through engineering, enforcement, education, emergency medical system strategies, of which CAV can be a part.
 - c. Creating a culture of traffic safety in Minnesota is a top priority for MnDOT and TZD. Minnesota CAV partners are prioritizing creating a culture of safety around the development, testing and deployment of connected and automated vehicle technology.
- 3. CAV is already improving safety on Minnesota roadways:** Connected and automated vehicle technology is already helping to make Minnesota roadways safer today through driver assist technology.
- a. In the near term, driver assist technology, such as blind spot detection and lane keeping assistance, can help drivers avoid or quickly react to driving errors.
 - b. Proper use of driver assist technology by vehicle operators is essential to realize the benefits the technology can offer.
- 4. CAV has the potential to dramatically improve safety on Minnesota roadways in the future:** Connected and automated vehicle technology has the potential to reduce deaths and serious injuries on Minnesota roadways dramatically by removing human error, which will have safety benefits for drivers, people walking and bicycling and our broader communities.
- a. Ninety-four percent of all serious motor vehicle crashes are due to human error or choices. With technologies already on the market – like blind spot assist and lane keeping assist – and the potential of fully automated fleets in the future, we may be able to cut those deaths significantly. The sensors that allow connected and automated vehicles to operate don’t get distracted or impaired like human drivers do.
 - b. When you consider more than 35,000 people die in motor vehicle-related crashes in the U.S. each year (400 in Minnesota) you begin to grasp the lifesaving benefits of driver assistance technologies and future fully automated vehicles.

5. **CAV technology looks to be better “eyes” on the road than human drivers:**

The sensors and systems on connected and automated vehicles can analyze road conditions and scan for other driving hazards resulting in the safer movement of goods, people and services.

- a. Connected and automated vehicles use a variety of sensors including optical, ultrasonic, radar and lidar. These sensors function like “eyes” that can see in all directions and track objects over multiple fields of view, allowing the vehicles to “see” more than a human driver can.

6. **CAVs being tested on Minnesota roadways today are equipped with safety features:**

The connected and automated vehicles being tested and operating on Minnesota roadways today have multiple layers of safety features—from sensors and braking systems to emergency stop buttons and other redundancies—that help them detect and avoid obstacles, keeping those in and around the vehicles safe.

- a. Vehicles use a variety of technologies to perform the same function to build in redundancy to safeguard against potential technology failure. Some vehicles have sensors, cameras, GPS and cellular technology all helping the vehicle “see” the roadway and surroundings.

7. **Testing in Minnesota will help improve CAV safety moving forward:**

Minnesota is proactively preparing for the future by safely researching and testing many connected and automated vehicle technologies in different settings, especially in Minnesota winter.

- a. In 2018 Minnesota was the first state in the country to test these technologies in cold weather and this helped inform the industry to make sure connected and automated vehicle technology can operate safely in snow. Industry partners incorporated lessons learned from this test in Minnesota to change how vehicles respond to winter weather conditions.
- b. Minnesota CAV partners conduct safe, off-road testing with partners at MnDOT ‘s MnROAD testing facility. This facility allows newer CAV technology to be tested in a controlled environment.
- c. Demonstration projects like the Med City Mover in Rochester, MN help assess the safety of new technologies. This project will improve how automated vehicles drive in urban settings and winter weather conditions and identify changes to infrastructure needed to safely operate automated vehicles on Minnesota roadways.

8. **Government agencies have safety measures in place for testing and deploying CAV on Minnesota roadways today:** Any connected and automated vehicles running on Minnesota roadways must first withstand many levels of review, testing and analysis.
- a. Minnesota CAV partners collaborate to ensure all national and state guidance for general vehicle safety, such as seatbelt use and emergency response planning, is met on CAV demonstrations in the state.
 - b. Minnesota State agencies are working together to identify the

laws and policies that exist today that govern traffic safety and which might need to adapt in the future as CAV technology continues to advance.

- c. The National Highway Traffic Safety Administration (NHTSA) requires crash reporting for level 2-5 automated vehicles. By monitoring this information, the administration will identify if additional safety measures need to be implemented federally to ensure safety on U.S. roadways as CAV technology continues to be developed and deployed.

Equity, Access and Mobility

Equity, Access and Mobility—Connected and automated vehicle technology can support Minnesota to create a transportation system that works for all.

Table 5. Considerations for the Equity, Access and Mobility messaging theme by audience

Minnesota CAV perspective	Considerations for the Equity, Access and Mobility messaging theme	Talking points to emphasize
Information Seekers	Discuss how everyone is considered in CAV planning. They want to know how equity was a part of it from the very beginning/planning stages. Educate them specifically on the safety of this technology and how it is being well-tested before entering our roads.	2 3 4 5
Spirit Squad	Arm this audience with educational content that helps them discuss equity, access and mobility easily in everyday conversations. They are already fans of CAV and can advocate for this message to others who may be more apprehensive to it.	1 2 3 5 6 7
Community Allies	This group is the most concerned about equity and access to CAV, because of their concern for marginalized groups. They should be more heavily targeted with this messaging than any other audience.	All are important for this group— emphasis on 2 and 6
Historically Underprioritized	This group doesn't believe CAV will ever apply to them. Show how it involves <i>everyone</i> and how it eases transportation experiences. Invite them to experience CAV themselves so they have opportunities to see how it fits into their lives.	3 5 7
Champions and Decision Makers	People that fall within this category will want to know more about what CAV is, what this will mean for Minnesota, and importantly, what their role is in the future of CAV. As champions and decision makers can influence the future of CAV, it is important that there is a clear message about what we want to ask of them (i.e., investment) and/or a call to action.	1 4 5 6 7
Influencers and Advisors	People in this category will want to understand how CAV may influence or affect the organization or interests of the group(s) they represent. While influencers and advisors are not direct decision makers, they can influence the climate surrounding CAV. Messages for this group should focus on how Minnesota is actively working to take a well-researched and inclusive approach to any future CAV policies.	1 2 3 5 6
Participants and Observers	Participants and observers will likely fall into one of the public perspectives listed above. Identify which audience group best suits the stakeholder and use the recommended considerations and talking points.	*identify perspective above and use recommended message points

Table 6. Considerations for the Equity, Access and Mobility messaging theme by project type

Project type	Considerations for the Equity, Access and Mobility messaging theme	Talking points to emphasize
CAV demonstration project	For these types of projects, it is most important to emphasize equity messages related the need to hear from all people in Minnesota about CAV. Emphasize messages about how future CAV planning and policy will be directly impacted by feedback from people in Minnesota during demonstration projects and other engagement opportunities.	2 3 6 7
Construction project	For these types of projects, emphasize messages about equity as an overall priority and the need to continue to prioritize traditionally underprioritized communities. Emphasize messages about the potential of CAV to improve equity, access and mobility in the long run.	1 4 5 6
Planning project (CAV or general)	For these types of projects, emphasize messages about how CAV partners follow MnDOT’s working definition of transportation equity and how partners will actively engage populations that have been historically underprioritized in transportation decision-making to ensure that the benefits of CAV are enjoyed by all.	1 2 4 6 7

Example Equity, Access and Mobility messages, talking points and proof points

1. Equity is a top priority for Minnesota:
Minnesota is working to be a leader in planning for the future of transportation to ensure connected and automated vehicle technology is equitable, multimodal and provides solutions to increase access and mobility for all.

- a. Minnesota CAV partners follow MnDOT’s definition of transportation equity in planning and preparing for connected and automated vehicle technology, which includes ensuring the benefits and burdens of transportation spending, services, and systems are fair, which historically have not been fair, and people—especially Black, Indigenous and People of Color—are empowered in transportation decision making.

- b. Minnesota CAV partners are prioritizing engaging populations that have been historically underprioritized in transportation decision-making, such as [add list from guidance].
- c. The Minnesota CAV Strategic Plan identified Equity and Accessibility as a primary goal for Minnesota’s CAV program.

2. Meaningful engagement is critical as we plan for the future of transportation:
Connected and automated vehicle technology has the potential to improve equity, access and mobility of Minnesota’s transportation system, but these benefits will only be realized if the people and communities historically underprioritized in transportation decision-making are engaged with meaningful opportunities to shape how connected and automated vehicle technology develops in Minnesota.

- a. Minnesota CAV partners are prioritizing engaging with traditionally underprioritized communities for demonstrations and other planning activities for connected and automated vehicles.

3. The success and impact of CAV depends on all of us:

Development of connected and automated vehicle technology is already happening, led by private industry. To make sure the future of this technology meets the needs of all people in Minnesota, especially those who will be most impacted or with the potential to benefit most, it is important that government entities, advocacy organizations, research and individual people and communities join private industry in planning and preparing for CAV in Minnesota.

- a. As part of developing and testing connected and automated vehicle technology, Minnesota CAV partners include opportunities for people in Minnesota to learn about CAV and share their input.

4. CAV can help Minnesota achieve its transportation vision:

Minnesota’s vision for transportation in the state is a multimodal system maximizes the health of people, the environment and our economy. Connected and automated vehicle technology can help Minnesota realize this vision.

- a. Most connected and automated vehicles being developed today are also electric. The combination of these

technologies has the potential to promote economic, environmental and human health through increased mobility, safety, and reduced emissions.

- b. According to the Center for Automotive Research, CAV technology can help mitigate the environmental impacts of our transportation systems through smart routing, self-parking, and eco driving—all of which have the potential to reduce tailpipe emissions (NOx, SOx, and CO2) and lower fuel consumption.
- c. The Center for Automotive Research also notes that CAV technology could have positive energy and environmental benefits due to the decreased life-cycle energy consumption and reduced greenhouse gas emissions.

5. CAV will likely change how people and goods move around:

Connected and automated vehicle technology has the potential to fundamentally change transportation for drivers and passengers, and for the freight industry. Exactly how transportation will change is unknown and why Minnesota CAV partners are at the forefront of planning.

- a. For safety-specific potential impacts—see Safety talking points.
- b. For economic-specific potential impacts—see Economic and Workforce Development talking points.
- c. According to the National Highway Traffic Safety Administration, Americans spent

- 6.9 billion hours in traffic delays in 2014—time which they could have spent with family or friends and adding to increased emissions and cost. With the improved traffic flow and innovation from CAV technology, it is estimated that drivers could save up to 50 minutes each day that had previously been dedicated to driving.
- d. According to the Highway Traffic Safety Administration, employment and independent living often rests on the ability to drive. Automated vehicles could extend that kind of freedom to millions more. One study suggests that automated vehicles could create new employment opportunities for approximately 2 million people with disabilities.
 - e. Some predictions of how connected and automated vehicles will roll out include shifting from personal vehicle ownership to more shared services, especially in urban areas.
 - f. Connected and automated vehicles may lower transportation costs for people by decreasing the cost of insurance and liability, due to the increased safety of vehicles.
 - g. Connected and automated vehicle technology may increase the transportation options available to people and freight businesses by making existing types of transportation more appealing and creating new forms of transportation. This would likely result in a change of the mix of vehicles and services using Minnesota roadways.
 - h. Connected and automated vehicles will provide people in Minnesota with an electric transportation option that allows them to travel without leaving behind a carbon footprint.
- 6. CAV has the potential to benefit Minnesota communities:** Minnesota is planning and preparing for connected and automated vehicle technology to maximize the social, economic and environmental benefits it is projected to have and make sure that CAV works for everyone.
- a. For safety-specific potential impacts---see Safety talking points.
 - b. For economic-specific potential impacts—see Economic and Workforce Development talking points.
 - c. The changes connected and automated vehicle technology will bring to transportation may lead to broader changes to the look and feel of Minnesota communities. For example, a shared-use CAV future may lead people to live more densely in urban areas. Conversely, people are able to do other things while “driving” because of CAV technology, they may choose to live further out.
 - d. Most connected and automated vehicles being developed today are also electric. If this continues, advancing CAV in Minnesota will also benefit our environment and

help meet the State's goals for reducing greenhouse gas emissions from 2005 levels by 30% by 2025, and 80% by 2050.

- e. In a shared-vehicle future, CAVs have the potential to also help take cars off the road, reducing overall traffic and greenhouse gas emissions.

7. Minnesota is testing CAV today to make sure the potential benefits of CAV are realized: Minnesota CAV partners are currently testing automated connected and automated vehicle technology through pilot programs across Minnesota to make sure CAV technology works for people and communities in Minnesota.

- a. Minnesota CAV partners are prioritizing demonstrations of connected and automated vehicle technology in real-world settings and use cases because it's important to understand not

just how the technology work but how it can impact people in Minnesota.

- b. The Med City Mover demonstration in Rochester, MN is testing CAV technology to see how it operates in a downtown setting with mixed traffic and in all weather conditions. Insights from the demonstration will help Minnesota CAV partners identify technology, infrastructure and policy changes that are needed to implement CAV in similar settings in the future and maximize potential benefits.
- c. Minnesota CAV partners will engage the community to plan for and participate in CAV demonstration projects. This will help build knowledge of connected and automated vehicle technology in Minnesota and allow people to have a say in how CAV is implemented in the state.

Economic and Workforce Development

Economic and Workforce Development—Connected and automated vehicles will drive opportunity for Minnesota.

Table 7. Considerations for the Economic and Workforce Development messaging theme by audience

Minnesota CAV perspective	Considerations for the Economic and Workforce Development messaging theme	Talking points to emphasize
Information Seekers	This group wants to know what kind of tangible economic benefits CAV technology could provide. Showcase how enhanced mobility will improve everyone’s ability to access goods, services and employment.	3 4 5 6 7
Spirit Squad	Arm this audience with educational content that helps them discuss the economic benefits of CAV easily in everyday conversations. They are already fans of CAV and can advocate for this message to others who may be more apprehensive to it.	1 2 3 4 5 6 7 8
Community Allies	Emphasize with this group how CAV will improve mobility access and thus economic opportunity for those that have been historically underprioritized or underserved. This group wants to know that the State is actively planning for a transportation system that will provide access to opportunity all people in Minnesota.	2 3 5 6 7
Historically Underprioritized	This group doesn’t believe CAV will ever apply to them. Show how it involves <i>everyone</i> and how the intent of CAV is to improve access and economic opportunity for all. It is important to build relationships with this group, so it is important to leave ample time for questions/feedback.	6 7 8
Champions and Decision Makers	People that fall within this category will want to know more about what CAV is, what this will mean for Minnesota, and importantly, what their role is in the future of CAV. As champions and decision makers can influence the future of CAV, it is important that there is a clear message about what we want to ask of them (i.e., investment) and/or a call to action.	1 2 3 4 5 6 7 8
Influencers and Advisors	People in this category will want to understand how CAV may influence or affect the organization or interests of the group(s) they represent. While influencers and advisors are not direct decision makers, they can influence the climate surrounding CAV. Messages for this group should focus on how Minnesota is actively working to take a well-researched and inclusive approach to any future CAV policies.	1 2 5 6 7 8
Participants and Observers	Participants and observers will likely fall into one of the public perspectives listed above. Identify which audience group best suits the stakeholder and use the recommended considerations and talking points.	*identify perspective above and use recommended message points

Table 8. Considerations for the Economic and Workforce Development messaging theme by project type

Project type	Considerations for the Economic and Workforce Development messaging theme	Talking points to emphasize
CAV demonstration project	For these types of projects, it is most important to emphasize how demonstration projects can help the state properly understand how to maximize the economic benefit potential of CAV technology. Once people understand that importance, provide more information about the broad economic benefits of CAV.	1 5 6 7
Construction project	For these types of projects, emphasize messages about the need to invest in CAV infrastructure in order to help build the economy of the future.	1 3 4 5 6 7
Planning project (CAV or general)	For these types of projects, emphasize messages about the potential future economic and workforce benefits of CAV.	1 2 3 5 6 7

Example Economic and Workforce Development messages, talking points and proof points

1. **CAV has the potential to advance economic opportunity for people in Minnesota:** Connected and automated vehicle technology can lead to higher-paid, higher skilled jobs. Advancing CAV is an investment in improving economic opportunity for people in Minnesota.
 - a. The Minnesota CAV Innovation Alliance is developing new opportunities to teach and train future workers and the workers of today on connected and automated vehicle technology.
 - b. Minnesota CAV partners host CAV Camp for high school aged students to learn about potential CAV-related careers for their futures.
2. **CAV will change Minnesota’s workforce:** Connected and automated vehicles will bring new and different types of jobs to Minnesota and may lead to reduction or elimination of some jobs that exist today. Part of how Minnesota is planning and preparing for CAV includes monitoring workforce trends so the State can help workers and industries prepare for future transitions.
 - a. In 2017, the Center for Global Policy Solutions estimated that 4 million U.S. jobs would be lost with a rapid transition to automated vehicles, especially jobs related to heavy freight transportation and taxi services. However, in 2021, Bloomberg reported that advancing automated vehicle technology has led to job creation, though

specifics about the numbers and types of jobs are not tracked.

- b. The Minnesota CAV Innovation Alliance is currently exploring micro-credential programs for automotive technicians to help workers in this industry adapt to new technologies.

3. CAV can help bring people and business to Minnesota communities: Being a leader in advancing connected and automated vehicle technology will help build on Minnesota's reputation as an innovative and forward-thinking state, helping to attract business, residents and visitors.

- a. In 2019, the Minnesota Chamber of Commerce wrote a letter of support for legislation to allow testing and development of automated vehicle technology in Minnesota.

4. CAV is already bringing economic investment and jobs to Minnesota: Advancing in connected and automated vehicle technology in Minnesota attracts investment from industries involved in developing and testing CAV technology and will create jobs for all people in Minnesota.

- a. Minnesota companies like 3M, Polaris and VSI labs are currently investing in programs/initiatives to develop and test CAV-related technology and products.
- b. The CAV Innovation Alliance is working with the Minnesota Department of Employment and Economic Development (DEED)

to start to identify and track CAV-related jobs in the state.

5. Planning for CAV today is essential to help build the economy of the future: Planning for connected and automated vehicles today will help Minnesota's workforce and economy anticipate and adapt to changes that CAV is likely to bring in the future.

- a. The changes CAV may bring to Minnesota's workforce and economy are still unknown. However, Minnesota CAV partners are conducting scenario planning to better understand the range of potential futures and take steps to set Minnesota business and workers up for success even with the uncertainty.

6. CAV has the potential to improve mobility: Safe and efficient movement of goods, people and services is the backbone of Minnesota's economy. Connected and automated vehicle technology has the potential to improve mobility for all types of transportation.

- a. Connected and automated vehicles analyze road conditions, ease traffic flow, increase transit reliability and scan for other driving hazards, which results in the safer and more efficient movement of goods, people and services.
- b. According to the National Highway and Traffic Safety Administration, motor vehicle crashes in 2010 cost \$242 billion in economic activity, including

\$57.6 billion in lost workplace productivity and \$594 billion due to loss of life or decreased quality of life. Connected and automated vehicle's ability to significantly reduce motor vehicle crashes could help not only save lives but save our economy billions of dollars a year.

7. **CAV has the potential to increase access to jobs for more people:** In many places in Minnesota, employment and independent living rests upon the ability to drive. Connected and automated vehicle technology has the potential to provide enhanced and new mobility options for many people in Minnesota.
 - a. According to the Highway Traffic Safety Administration, employment and independent living often rests on the ability to drive. Automated vehicles could extend that kind of freedom to millions more. One study suggests that automated vehicles could create new employment opportunities for approximately 2 million people with disabilities.

8. **CAV has the potential to improve connections to key businesses and services:** Connected and automated vehicle technologies will connect communities to jobs, healthcare, public safety, education, essential services and families.
 - a. See Equity, Access and Mobility talking points.