AV Task Force Road and Infrastructure Design Subcommittee
Draft Infrastructure Assessment: Scoping and Urgency

Sound near-term AV infrastructure investments have:

- High certainty and minimal barriers
- Co-benefits for all travelers
- Strong State role in implementation

Example evaluation of selected investments
Communications infrastructure
What: Infrastructure that enables communication between vehicles and the roadside to provide vehicles with information about road conditions, crossings/intersections, traffic and incidents, etc., and potentially also facilitates short-range communication between vehicles.

Why: To maximize the safety and congestion benefits of AVs by providing additional information that is not available via sensors and visual recognition.

Uncertainty/barriers:

- Communication protocols: The industry has yet to settle on a standard vehicle communication protocol.
- Need for connectivity: Most of the major AV operators are focusing on vehicles that can operate using sensors rather than relying on communicating with vehicles and the roadside.
- Funding: There are few transportation funding sources that can support communications infrastructure, and building a large enough network of communications infrastructure is a costly undertaking.
- Policy: State policy requires making ADA upgrades as part of most transportation projects, even communications projects that have a limited impact on the physical environment

Co-benefits:

- There are many other reasons why we need to invest in connectivity to and from the roadside – traffic management, signal timing, etc. – apart from supporting CVs, but these investments are expensive.

Key decision-makers:

- FCC sets communications protocols
- The federal government would need to play a role in funding communications infrastructure to bring it to scale
- State, regional and local agencies coordinate investments in roadside technology

Potential next steps:

- Research development of AV technology and need for roadside communications
- Identify and invest in multi-purpose communications infrastructure (e.g., fiber optic at the roadside) that also could support AVs
Striping
What: Wider, more consistent striping expands the operational domain of AVs that use sensors to navigate the environment.
Why: To maximize the safety and congestion benefits of AVs by providing additional information that is not available via sensors and visual recognition.

Uncertainty/barriers:
- Need for striping: Most of the major AV operators are focusing on vehicles that can operate using sensors rather than relying on communicating with vehicles and the roadside, but it remains to be seen whether AVs will need thicker striping to navigate.
- Traffic engineers have not issued guidance on how wider striping fits into the many other elements of safe roadway design.

Co-benefits:
- Striping could make roadways safer to navigate for all.

Key decision-makers:
- AASHTO sets road design guidelines.
- ODOT and local governments are responsible for roadway design and striping.

Potential next steps:
- Increase investments in maintaining striping according to existing standards
- Research development of AV technology and need for striping
- Participate in AASHTO and other organizations that adopt design standards

Narrower travel lanes
What: AVs could navigate more accurately than human drivers, which would mean that they could potentially travel in narrower lanes
Why: To free up space for other travelers (transit riders, cyclists, pedestrians) and potentially for development or public space.

Uncertainty/barriers:
- Accuracy of AV technology: It remains to be seen how accurately AVs will be able to navigate
- Fleet mix: Until the majority of vehicles on the road are AVs, it will not be possible to narrow lanes at scale without potentially creating unsafe conditions for human drivers. In the meantime, opportunities to narrow lanes will be limited.

Co-benefits:
- Narrowing lanes could free up travel space for transit, active transportation, and other shared modes that move people more efficiently than single-occupant vehicles.
- Narrowing lanes could free up more space to create an extra lane and increase roadway capacity within the existing right of way.
Many have argued that existing lane widths are too generous and induce speeding, creating unsafe conditions.

Key decision-makers:

- AASHTO sets road design guidelines.
- ODOT and local governments are responsible for roadway design.

Potential next steps:

- Seek opportunities to narrow excessively wide travel lanes to widths that are safe for human drivers.
- Create policies that prioritize creating space for shared and active transportation when redesigning roads around AVs.

**EV charging**

What: Charging infrastructure for electric vehicles.

Why: Most AVs currently being developed are AVs, and many anticipate that deployment of AVs will increase the demand for EV charging.

Uncertainty/barriers:

- EV charging protocols: New types of charging infrastructure continue to develop that are capable of delivering electricity more rapidly, making it hard to ensure that the EV infrastructure we install today will stay up to date.
- EV range and demand for opportunity charging: The public sector is often best positioned to support opportunity charging in the right of way and other public locations. Opportunity charging is only 5-10% of charging demand, and it is not clear how this demand will change in the future. As EVs are capable of driving farther on a single charge, they may be less likely to need opportunity charging. On the other hand, if chargers develop that are capable of completing a charge in minutes it could increase demand for opportunity charging.
- AV deployment model: If AVs are deployed in fleets rather than being individually owned it may be more appropriate for fleet operators to invest in charging infrastructure rather than public agencies.

Co-benefits:

- Oregon policies call for the State to take action to increase the number of electric vehicles on the road, which supports our environmental and pollution reduction goals. Deploying more chargers could support these policy goals. There has not been any research linking increased public or workplace charger availability to increased EV charging, but the availability of charging at home is a critical factor in whether to purchase an EV.

Key decision-makers:

- State and local governments provide charger opportunities through building codes, development codes, and right of way design.
- Land owners have authority over charger installations on private property.
• A variety of companies install and operate charging infrastructure.
• Advocacy groups like Forth have played a role in coordinating charger installations.

Potential next steps:

• Amending building codes to require pre-wiring for electric vehicle charging can decrease the cost of new charger installations.
• Testing high-speed DC Fast charging at selected high-demand locations could give the State insight into how