

Recommendation 6: The federal government should promote the development and adoption of policies, procedures and funding methods that can accelerate the adoption of smart, connected, and electrified transportation technologies. Many of these technologies incorporate the use of IoT.

Description:

The federal government should promote the development and adoption of policies, procedures and funding methods that can accelerate the adoption of connected and electrified transportation technologies. Many of these transportation technologies incorporate the use of IoT. It is particularly challenging for small businesses and startup companies in this sector that have to provide upfront capital before hopefully being selected as a result of an RFP. The process for these projects can also take many years to bring them from proposal to commercial operation.

In addition, local governments and jurisdictions are often cash strapped, and underfunded, making it hard to determine where the budgets are coming from to pay for these projects. Federal funding mechanisms can serve to spur additional private sector investment.

Justification:

Greater adoption of smart, connected, and electrified transportation technologies could help in the following examples:

- Incorporation of technologies enabled by IoT: Opportunities for IoT technologies in smart, connected transportation include sensors, cameras, and edge computing devices that can improve safety in things such as vulnerable road users (i.e., pedestrians at crosswalks), traffic intersections, school and work zones. Opportunities for IoT technologies in electrified transportation include in car systems or mobile apps that can locate charging stations, as well sensors that manage charging stations to gather data about usage and performance, to anticipate maintenance needs, and troubleshoot problems.
- Improving overall traffic safety: Vehicles that have technologies such as Cellular Vehicle to Everything (C-V2X) can communicate basic safety messages and information to corresponding infrastructure and other road users thereby reducing traffic and pedestrian fatalities.
- Reduction in greenhouse gas emissions: The transportation sector generates the largest share of greenhouse gas emissions a big contributor to climate change. Electrification of transportation away from traditional fossil fuels are a viable option for transportation. Also smart, connected transportation can improve traffic flow and reduce congestion which is also better for the environment.

Implementation considerations:

- With the Bipartisan Infrastructure Law (BIL) and the Inflation Reduction Act (IRA) the Federal Government is already taking steps to electrify the transportation sector. Funds are being directed to the states to deploy electric vehicle charging stations via the NEVI Formula Program (<https://afdc.energy.gov/laws/12744>). Under the IRA tax credits are available for EVs that are primarily assembled in North America. Its important that this legislation stays in effect throughout its designated time period.
- The Federal Government could set aside easily and readily tappable funding pools year-round for innovation and next-generation technologies. Grants could be set aside for categories that the government deems high importance.
- The Federal Government should set aside fast-track programs for startups and small companies to deploy this technology in pilots.
- The Federal Government should set up a system to make it easier for startups and small companies to find relevant funding sources like grants and SBIR awards.
- The Federal Government should encourage local governments to leverage its local startup accelerator network to develop technology and fast-track it to local adoption on successes.

Potential implementation barriers:

- Time and Cost: The time and cost for this transformation could be considerable and small companies or startups may lose interest and cancel a project.
- Education: There is an overarching need to educate local governments and consumers on these new types of technologies which could be hard and time consuming.
- Supply Chain: The manufacturing industry recognizes the goal from the Administration of Buy America, Build America (BABA) however, there are current constraints meeting domestic content requirements and there needs to be an appropriate ramp-up, phase in period to get to full production.

Possible participating agencies

- DOE/DOT Joint Office, DOT, DOE,