**Alliance for Automotive Innovation Responses to QFRs for the Communications and Technology Subcommittee Hearing: "Listen Here: Why Americans Value AM Radio"**

**The Honorable Russ Fulcher**

**Thank you for your testimony. You mentioned that the amount of interference with AM may be partly based on the architecture of the vehicle. And thus, why some vehicle manufacturers might have different challenges or abilities than others when it comes to having their vehicles equipped with AM radio.**

1. **What are the downsides for including shielding and insulation in new EVs?**

In general, the movement of electrons creates a magnetic field that has the capability of disrupting radio signals, and in this context, AM radio frequencies. The higher the flow of electricity, the greater the magnetic field and therefore the greater the potential level of disruption, known as Electromagnetic Interference (EMI). In conventional Internal Combustion Engine (ICE) vehicles, the electrical flow from any given device on the vehicle is relatively low; however, due to the high voltage componentry of EVs, there is a greater chance of interference.

To help mitigate this interference, cables that conduct high voltages are shielded, and any high-voltage components, such as electric motors, batteries, and inverters are appropriately insulated. While having a positive effect on AM radio reception, there are significant downsides to shielding and insulating these components.

EVs seek to maximize driving range and power delivery and are extremely sensitive to weight but have heavy batteries to power them. Generally, manufacturers strive to reduce all unnecessary weight from the vehicle. The addition of shielding and insulation to these already heavy vehicles degrades their efficiency and driving range.

When manufacturers are making business decisions related to the incorporation of AM radio, they must balance the total cost that gets passed on to the customer versus the benefit that the customer receives. This includes R&D costs associated with avoiding interference, additional costs for mitigation, and warranty repairs on any failures that occur during the warranty period. If only a small portion of customers utilize the AM radio, then the majority of customers may not want to shoulder the extra cost of incorporating a system they will never use. Manufacturers carefully consider these tradeoffs when making the determination of which equipment to include in the vehicle.

2. **We've heard both weight and cost are central to this conversation, is driver safety also a central tenant?**

Auto Innovators members remain committed to ensuring that their customers can receive IPAWS alerts across the numerous channels available in modern vehicles. Outside of analog AM radio, these channels include digital radio, FM radio, satellite radio, internet radio, and mobile device interfaces, such as Apple CarPlay and Android Auto. It goes without saying that driver safety is top of mind for our members, but it is important to recognize that AM radio is not the only means of delivering important safety messages to vehicles.

3. **Does the Alliance for Automotive Innovation have an average cost or a ballpark for how much it would cost to conduct this shielding or insulation?**

The U.S. Antitrust laws prevent Auto Innovators from having cost information regarding vehicle production of any of our members. If detailed cost information is needed, please reach out to the individual OEMs.

Auto Innovators can confirm that any cost is not limited to additional shielding and insulation. Rather, it includes additional grounding measures, research and development costs, and warranty and repair considerations. Thus, when considering “total” cost, it is a mistake to only consider the cost to shield and insulate.

4. **Can you provide me with more information as to how you are "looking at all elements of the IPAWS to provide alerts ... " and using other avenues to get information out through the vehicles as you mentioned in your testimony?**

As mentioned, our members remain committed to providing free alerts through systems included in the IPAWS communication pathways. The pathways currently include AM (analog/digital), FM (analog/digital), and satellite radio through EAS, mobile devices through WEA, and through emerging technologies like car infotainment systems. Our members currently offer several of these communication pathways as options in vehicles.

5. **What are some of the options being considered?**

The options being considered are those currently included in the communication pathways. Auto Innovators cannot comment on what specific option any one company is considering, as this is not information the association is permitted to have under U.S. Antitrust laws.

6. **Are there cost or performance implications that would be prohibitive or limited in their effectiveness?**

As referenced in response to Question 1, the performance implications include added weight, reduced driving range, and increased complexity and failure modes. Each of these independently increases material, research and development, and warranty and repair costs. The holistic cost and reliability of these countermeasures must be balanced against the needs and desires of the customer. In some cases, manufacturers may determine that these concerns outweigh the demand for AM radio by the customer.