

Jessica Nigro
Head of Global Public Policy
Lucid Group
200 Massachusetts Ave, NW, 7th Floor
Washington, DC 20001

January 6, 2023

The Honorable Ed Markey
United States Senate
255 Dirksen Senate Office Building
Washington, DC 20510

Dear Senator Markey,

Thank you for your December 1 letter to Lucid's CEO and CTO Peter Rawlinson regarding the inclusion of AM radio in electric vehicles (EVs). Mr. Rawlinson enthusiastically supports technological progress and vehicle safety and has asked me to respond directly on his behalf.

Lucid's mission is to inspire the adoption of zero-emission sustainable energy by creating advanced technologies. The company's first car, the Lucid Air, is a state-of-the-art luxury sedan with a California design underpinned by race-proven technology and doubles as MotorTrend's 2022 Car of the Year.

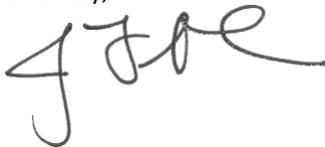
At Lucid, we aim to ensure that the most innovative automobiles in the world are produced here in the United States. As an American company that employs over 7,000 people, we are creating good-paying, high-skilled jobs fighting climate change, and helping the United States regain its competitive edge in the automotive industry.

We aim to create sustainable mobility without compromise in cars that are intuitive, liberating, safe, and designed for all the ways people get around. Our proprietary electric powertrain technology allows Lucid to deliver EV range that is far ahead of all its competitors on the market today. The EPA has confirmed the Lucid Air (Dream R edition) has a range of 520 miles on a single charge, exceeding that of any EV in the world. It is the fastest-charging, most efficient vehicle on the market today; traveling over four miles per kWh.

Alongside our state-of-the-art powertrain technology, the Lucid Air sedan offers consumer-friendly features, including free, digital AM/FM/HD/DAB+ radio and is designed to minimize electromagnetic interference. The Lucid Air also features third party internet radio apps, including iHeartRadio, Sirius XM Beta, Spotify and TuneIn. Our future models, including the Lucid Gravity SUV, are still in the design phase.

Our team looks forward to working with you to advance policies tacking our mutual climate change goals. Please let me know if you have additional questions.

Sincerely,



Jessica Nigro
Head of Global Public Policy
Lucid Group



December 19, 2022

The Honorable Edward J. Markey
United States Senate
255 Dirksen Office Building
Washington, DC 20510

Dear Senator Markey:

Thank you for your letter to Mazda North American Operations President and Chief Executive Officer Jeffrey Guyton, dated December 1, 2022, regarding AM radio interference in electric vehicles. Mr. Guyton has forwarded your letter to me and asked that I respond for Mazda.

The answers to your questions are below in order. Thank you again for the opportunity to discuss this matter.

Sincerely,

A handwritten signature in black ink, appearing to read "D. Ryan".

Daniel V. Ryan
Vice President – Government and Public Affairs
Dryan2@mazdausa.com

1. Has your company decided to discontinue access to free AM and/or FM broadcast radio in any of its vehicles?

Yes.

a. If so, please provide the make, model, and manufacturing year of each vehicle that no longer will have AM and/or FM radio and explain why your company decided to omit AM and/or FM radio from those vehicles.

The 2022 Mazda MX-30 is the only Mazda vehicle without an AM Radio tuner. The 2022 Mazda MX-30 has an FM Radio tuner. All other Mazda vehicles have AM and FM Radio tuners. As Mazda's first electric vehicle, this product was developed for three key markets- Japan, Europe, and North America. Support for AM Radio in the MX-30 for all markets was dropped due to poor reception quality caused by electromagnetic interference from the MX-30's battery-powered motor and electronics. In Europe, analog AM Radio broadcasts have been replaced with Digital Audio Broadcasts (DAB). In Japan, all AM Radio stations are also simulcast in FM. In North America, many AM broadcasters have made their content available via compatible smartphone apps, which can be used via Apple CarPlay and Android Auto in the MX-30.

b. If not, please explain the type of technology, if any, that addresses electromagnetic interference with AM radio signals from EVs.

See response above.

2. Does your company have any plans to omit AM and/or FM broadcast radio from future vehicle models? If so, please explain why your company is planning to remove AM and/or FM broadcast radio from them.

Mazda has no plans to remove support for receiving FM Radio signals with future vehicle models. A decision has not yet been made regarding the ability to receive AM broadcasts for future vehicles.

3. Does your company include free, digital broadcast radio in its vehicles? If so, please provide the make, model, and manufacturing year of each vehicle equipped with digital broadcast radio.

All Mazda vehicles since 2018 come equipped with support for receiving HD Radio signals for free, which allow users to tune into better sounding AM and FM content and access additional digital content that isn't available with an analog signal.

Mazda North American Operations

1025 Connecticut Ave., NW Suite 910
Washington, DC 20036
TEL: 202.467.5097



MITSUBISHI MOTORS NORTH AMERICA, INC.
4031 Aspen Grove Drive, Suite 650
Franklin, TN 37067

December 22, 2022

The Honorable Edward J. Markey
United States Senate
255 Dirksen Senate Office Building
Washington, DC 20510

Dear Senator Markey:

Thank you for your letter dated December 1, 2022, directed to Mark Chaffin, President and Chief Executive Officer of Mitsubishi Motors North America, Inc. ("MMNA"), distributor of Mitsubishi-branded vehicles in the United States. I have been asked to respond to your letter requesting information regarding broadcast AM radio, on behalf of MMNA.

Our parent company, Tokyo, Japan-based Mitsubishi Motors Corporation ("MMC") (collectively with MMNA, "Mitsubishi Motors"), is continuously focused on research and development for innovation across all aspects of Mitsubishi vehicles, including in-vehicle radio.

Mitsubishi Motors strives to mitigate risks through innovations such as radio noise-reduction measures, when necessary, to allow for broadcast radio in our vehicles. We intend to continue to be proactive in addressing concerns, while maintaining our unwavering commitment to the satisfaction, safety, and security of customers.

MMNA has enclosed responses to your questions as requested.

Sincerely,

A handwritten signature in black ink, appearing to read "K. Toh".

Kenji Toh
EVP, Business Development
Mitsubishi Motors North America, Inc.



1. Has your company decided to discontinue access to free AM and/or FM broadcast radio in any of its vehicles?

No, we have not.

a. If so, please provide the make, model, and manufacturing year of each vehicle that no longer will have AM and/or FM radio and explain why your company decided to omit AM and/or FM radio from those vehicles.

Not applicable.

b. If not, please explain the type of technology, if any, that addresses electromagnetic interference with AM radio signals from EVs.

Mitsubishi Motors uses radio noise reduction measures when necessary.

2. Does your company have any plans to omit AM and/or FM broadcast radio from future vehicle models? If so, please explain why your company is planning to remove AM and/or FM broadcast radio from them.

No, we do not have plans to omit AM and/or FM broadcast radio.

3. Does your company include free, digital broadcast radio in its vehicles? If so, please provide the make, model, and manufacturing year of each vehicle equipped with digital broadcast radio.

Currently, all vehicles in the U.S. market have free digital (HD radio) available.

NISSAN
GROUP OF NORTH AMERICA

December 22, 2022
Our Ref: W-2307-B

The Honorable Edward J. Markey
255 Dirksen Senate Office Building
Washington, DC 20510

Dear Senator Markey,

Nissan North America, Inc. ("Nissan" or "the Company," "we," or "us") welcomes the opportunity to respond to the questions posed in your letter of December 1, 2022. Your letter urges Nissan "to maintain broadcast AM radio in its vehicles to ensure that consumers have access to critical emergency response information," and requests information regarding current and future related feature application plans.

In response to your inquiry, currently, all Nissan and Infiniti branded vehicles sold in the US are equipped with AM/FM radio. At present, there is no plan to remove this feature or discontinue access regardless of powertrain type. Additionally, all Infiniti vehicles currently sold in the US are equipped with digital broadcast radio (HD Radio).

Nissan is committed to providing safe, secure and reliable technologies that enhance the driving experience for our customers. Nissan takes great care that its products meet relevant and required standards for safety, security and reliability, and we are dedicated to maintaining our strong track record as vehicle technologies evolve.

Sincerely,

Tracy L Woodard

Tracy Woodard
Director, Government Affairs
Nissan North America, Inc.

Polestar

—

The Honorable Edward J. Markey
United States Senate
255 Dirksen Senate Office Building
Washington, DC 20510

Dear Senator Markey:

Thank you for your recent letter and I apologize for the slightly late response. I thought it helpful in the first place to provide some background on Polestar as it is a relatively new brand.

Polestar was originally founded in 1996 as a racing team and developed and sold performance software for Volvo Cars. It was the official performance partner to Volvo Cars from 2009 and was acquired by Volvo in 2015. In 2017, Polestar was relaunched as a premium luxury performance brand, and it listed on NASDAQ in June this year under the stock ticker PSNY. Volvo Cars remains its largest shareholder. It has quickly established a global footprint and is present in 27 markets including the USA.

To date, Polestar has unveiled three cars. Polestar 1 in 2017 and Polestar 2 in 2019, the latter of which was the first ever car to come with Google's Android Automotive OS built in. Polestar 3 was shown earlier this year, which is an SUV reimagined for the electric age. Start of production for Polestar 3 will begin in the second half of 2023 and manufacturing will expand to the USA in 2024 in Ridgeville, South Carolina.

Polestar and Volvo Cars share engineering expertise, so its cars are built on almost 100 years of ground-breaking safety development such as the 1959 invention of the three-point safety belt that is standard in all cars today and which have saved millions of lives around the world. Earlier this month Polestar 2 was awarded an overall safety rating of 5 stars by the National Highway Traffic Safety Administration (NHTSA) for Frontal Crash protection, Side Crash protection and Rollover protection making it one of the safest vehicles on sale today. Polestar 3 is designed with the latest structural innovations to protect its occupants, while advanced sensor technology helps to prevent collisions and safeguards vulnerable road users like pedestrians and cyclists.

With regards to your specific questions, please find answers below:

Polestar

—

1. Has your company decided to discontinue access to free AM and/or FM broadcast radio in any of your vehicles?

AM radio was available for Polestar 1. Polestar 2 and Polestar 3 do not offer AM radio, and have been this way since launch. FM radio is available on all cars.

a. If so, please provide the make, model, and manufacturing year of each vehicle that no longer will have AM and/or FM radio and explain why your company decided to omit AM and/or FM radio from those vehicles.

Polestar 1, a PHEV based on Volvo's SPA 1, which had a limited run of 1,500 cars in Model Years 2020 and 2021, offered AM and FM radio. The vehicle is no longer in production.

2. Does your company have any plans to omit AM and/or FM broadcast radio from future vehicle models? If so, please explain why your company is planning to remove AM and/or FM broadcast radio from them.

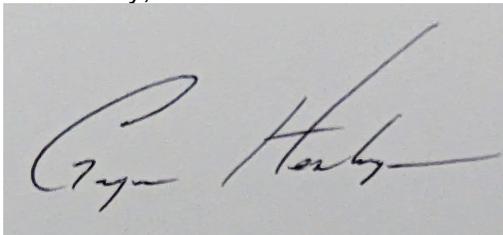
At this point, there are no plans to introduce AM radio in the future. There are no plans to delete FM radio in future Polestar cars.

3. Does your company include free, digital broadcast radio in its vehicles? If so, please provide the make, model, and manufacturing year of each vehicle equipped with digital broadcast radio.

HD Radio was available in Polestar 1. Polestar is continuing to investigate HD radio options.

Please don't hesitate to contact me if you need further clarification on any of our response.

Sincerely,

A handwritten signature in black ink on a light gray background. The signature is cursive and appears to read "Gregor Hembrough".

Gregor Hembrough
Head of Polestar Automotive USA



December 22, 2022

The Honorable Edward J. Markey
United States Senate
255 Dirksen Senate Office Building
Washington, DC 20510

Dear Senator Markey,

Thank you for your December 1, 2022, letter on the availability of AM radio in electric vehicles (EVs). On behalf of Rivian Automotive, LLC (“Rivian”), this letter responds to your request for additional information regarding our vehicles.

Founded in 2009, Rivian is an independent US company dedicated to the mission of “Keeping the World Adventurous Forever” through the design, development, manufacturing, and distribution of all-electric pickups and SUVs, and commercial vans. Our EVs help to decarbonize the transportation sector by displacing some of the most popular and heaviest polluting vehicles on America’s roads today.

Rivian began production in 2021 and currently produces two consumer vehicles, the R1T pickup and the R1S SUV—vehicle offerings that were designed from the ground up around the unique attributes and capabilities of electric drivetrains. Publicly available research has well-established that the electromagnetism of EVs intersects the same spectrum as AM radio waves, interfering with the AM signal and diminishing audio quality. As your letter indicates, digital radio offers a simple alternative to deliver high-quality AM content to EV drivers. Consistent with that recognition, Rivian provides digital radio – including AM channels – as a free and standard feature in every R1T and R1S sold today. As further follow up, please see our answers to your questions below.

- 1. Has your company decided to discontinue access to free AM and/or FM broadcast radio in any of its vehicles?*

Rivian offers free access to AM and FM radio services in all Rivian consumer vehicles that come standard in each vehicle. AM radio service from local and national stations is provided via digital radio platforms (thus ensuring enhanced audio quality). FM content may be accessed either digitally or via built-in receiver. Rivian has no plans to discontinue either of these features in its consumer vehicles.

2. *Does your company have any plans to omit AM and/or FM broadcast radio from future vehicle models? If so, please explain why your company is planning to remove AM and/or FM broadcast radio from them?*

All of Rivian's vehicles were developed from the ground up as electric vehicles utilizing an advanced digital architecture. As referenced in our response to the prior question, AM and FM stations are available in every R1T and R1S on the road today, with no plans to omit this capability from future models.

3. *Does your company include free, digital broadcast radio in its vehicles? If so, please provide the make, model, and manufacturing year of each vehicle equipped with digital broadcast radio.*

Yes. The 2022 and 2023 Rivian R1T and R1S come equipped with free, digital broadcast radio.

Thank you for the opportunity to respond to these questions. We look forward to working together to expand adoption of EVs nationwide.

Sincerely,

A handwritten signature in blue ink that reads "James C Chen". The signature is fluid and cursive, with the first name "James" being the most prominent.

James Chen, Vice President, Public Policy
Rivian Automotive, LLC



December 20, 2022

The Honorable Edward J. Markey
255 Dirksen Senate Office Building
Washington, DC 20510

Dear Senator Markey,

Thank you for your letter dated December 1, 2022, regarding AM radio and passenger vehicles. As Senior Vice President of Public Affairs at Stellantis North America, I am responding on behalf of Mark Stewart, Chief Operating Officer for Stellantis North America.

Through our Dare Forward 2030 plan, Stellantis is committed to an electric future. By the end of 2030, we are setting the course for 50 percent of our passenger car and light-duty truck sales in the United States to be battery electric vehicles (BEVs). As referenced in your letter, achieving an electrification goal of this magnitude while offering the features our customers want represents a significant undertaking. But we are meeting this challenge with an investment exceeding \$30 billion through 2025 in electrification and software development.

Our product plans and details about future developments involve confidential business information that we do not make public. However, we have not announced the elimination of AM or FM radio from our vehicles sold in the United States. And Stellantis continues to offer AM and FM radio as a standard feature in all vehicles sold in the United States, including the plug-in hybrid models of the Jeep Grand Cherokee and Chrysler Pacifica. Furthermore, for several years, some vehicles have come standard with HD radio, a form of digital radio.

To help protect the AM radio band from noise and interference, our company has, for example, used shielded high voltage cables and connectors; we have also established various requirements that all electrical components in the vehicle must meet. Additionally, Stellantis is implementing preventive design measures for future vehicles. For instance, next-generation infotainment systems will locate AM and FM receiver components farther from EV components, which may help improve AM reception, including in BEVs.

Nevertheless, all automotive manufacturers face questions about how to address the impact of electromagnetic interference from EVs on AM radio, though the precise technical and economic challenges may vary with vehicle-specific factors. To assist with your review of these issues, the Alliance for Automotive Innovation—which represents the manufacturers producing nearly 98% of cars and light trucks sold in the United States—is gathering additional information that will be transmitted to your office as a resource on this topic.

Thank you again for contacting us about your concerns. Please do not hesitate to let us know if you or your staff would like to discuss this issue further.

Sincerely,

A handwritten signature in blue ink, appearing to read "Shane Karr".

Shane Karr
Sr. Vice President



North American Subaru, Inc.
c/o Subaru of America
One Subaru Drive
Camden, NJ 08103-9800
856-488-8500

December 22, 2022

The Honorable Ed Markey
255 Dirksen Senate Office Building
Washington, D.C. 20510

Dear Senator Markey,

Thank you for your letter regarding broadcast AM radio in current and future vehicles, including electric vehicles (EVs). I appreciate the opportunity to respond.

Subaru of America, Inc. ("Subaru") has not discontinued access to free AM/FM broadcast radio in any of its vehicles. Subaru does not have any current plans to omit AM/FM broadcast radio from future vehicles. Moreover, HD Radio allows conventional AM and FM stations to broadcast their content over digital signals. Free HD radio is included in most MY23 Subaru vehicles.

As a member of the Alliance for Automotive Innovation ("Auto Innovators"), Subaru supports the association's comments in its letter to you on this topic.

Again, thank you for the opportunity to share information about AM radio and Subaru vehicles.

Sincerely,

A handwritten signature in black ink that reads "Joanna Foust". The signature is written in a cursive, flowing style.

Joanna Foust
Vice President, Government Affairs
North American Subaru, Inc.
Washington, D.C.



01/04/2023

The Honorable Edward J. Markey
255 Dirksen Senate Office Building
Washington, DC 20510

Dear Senator Markey:

Thank you for your letter dated December 1, 2022 regarding access to broadcast radio in Tesla vehicles. This letter supplements the virtual briefings Tesla provided to your staff on September 9 and October 3 of last year. We understand that similar requests were sent to 19 other car manufacturers and appreciate the opportunity to provide additional information regarding the availability of media in Tesla vehicles.

Tesla's mission is to accelerate the world's transition to sustainable energy. To accomplish our mission, Tesla produces and sells four fully electric, zero emission vehicles (ZEVs): the Model 3 midsize sedan, the Model Y compact sport utility vehicle (SUV), the Model S full-size sedan, and the Model X mid-size SUV. To achieve the unparalleled performance of our vehicles—acknowledged by the Environmental Protection Agency (EPA) in its 2021 Automotive Trends Report for having the lowest carbon dioxide emissions (0 g/mi) and highest fuel economy (119 miles per gallon equivalent) of all large vehicle manufacturers in Model Year (MY) 2020—Tesla designs, develops, and manufactures all four ZEVs with advanced drivetrain electronics that make Tesla vehicles capable of our best in industry efficiency.

As you are aware, the electric drivetrain design that is necessary for the performance of electric vehicles is also the direct source of significant interference to AM radio transmissions. Specifically, electric vehicle drivetrains produce electromagnetic waves that interfere with the frequency of AM radio signals, which operate at a similar wavelength to the electric drivetrain. The resulting electromagnetic interference impacts the strength of the AM broadcast signal, causing severe disruption to AM radio transmission that makes the signal reception unstable and unusable. Despite these challenges, Tesla understands how important it is for Tesla owners to have access to preferred media, including AM radio, during daily commutes.

Over the years, Tesla has developed a comprehensive suite of in-vehicle media capabilities to ensure that every Tesla owner can personalize their drive to their preferences. All Tesla vehicles are manufactured with FM HD broadcast radio capability and a wide range of pre-programmed media applications, including Spotify, Apple Music, Tidal, Streaming, as well as TuneIn, an audio streaming service. Tesla identified TuneIn as an alternative streaming application to provide Tesla owners with access to their preferred local AM radio stations and thousands of additional global stations. Through TuneIn, Tesla owners are able to stay current on their preferred local AM radio shows and broadcasts, ensuring access to the full range of radio programming. Furthermore, Tesla also equips all vehicles with Bluetooth capability to provide Tesla owners the ability to playback audio files from a Bluetooth-connected device, such as a phone or USB-connected flash drive.

Thank you for your concerns regarding access to radio stations in Tesla vehicles. If you have further questions, please feel free to contact Jonathan Carter at jonacarter@tesla.com.

Sincerely,

A handwritten signature in black ink, appearing to read "Rohan Patel". The signature is fluid and cursive, with the first name "Rohan" and the last name "Patel" clearly distinguishable.

Rohan Patel
Senior Director, Public Policy & Business Development
Tesla, Inc.



TOYOTA MOTOR NORTH AMERICA, INC.

WASHINGTON OFFICE

TEL: (202) 775-1700

325 7th STREET, NW, SUITE 1000, WASHINGTON, DC 20004

December 20, 2022

Dear Senator Markey,

Thank you for your inquiry regarding Toyota Motor North America's (Toyota) inclusion of AM radio in our battery electric vehicles in the U.S. market. Toyota is proud to have more electrified vehicles on U.S. roads than all other automakers combined – 5.1 million sold across the country since 2000. We believe in an all-electric future, and we are committed to aggressively reducing carbon emissions. Toyota pioneered electrified vehicles and we sell the most alternative powertrain vehicles in the United States. We are determined to continue our leadership in driving a fully electrified future.

We appreciate your comments on AM radio. All Toyota and Lexus vehicles currently on sale include AM/FM and HD radio, including Toyota's fully battery electric vehicle in the U.S. market, the Toyota BZ4X.

As you acknowledged in your letter, electromagnetic interference with AM radio signals from the battery electric platform is a challenge. While Toyota has addressed this problem in our current vehicles, we would like to refrain from commenting on potential future business plans.

Thank you for your inquiry, and if we can be of further assistance, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Stephen Ciccone".

Stephen Ciccone
Group Vice President, Government Affairs

December 22, 2022

The Honorable Edward J. Markey
United States Senate
255 Dirksen Senate Office Building
Washington, DC 20510

Dear Senator Markey:

Thank you for your letter regarding AM Radio. Volvo Cars is a premium global mobility provider from Sweden best known for being one of the world's leaders in automotive safety and quality Scandinavian design. Over the past decade Volvo Cars has undergone a global transformation, with a completely renewed product portfolio, repositioned brand, and truly global footprint – including a U.S. manufacturing facility in Ridgeville, South Carolina. In that time, Volvo Cars has nearly doubled its sales volume and today competes with global premium rivals.

Volvo Cars has been an automotive safety leader since its founding in 1927. Its ground-breaking technologies – such as the 1959 invention of the three-point safety belt that is standard in all cars today – have saved millions of lives around the world. As Volvo Cars moves into the next phase of its transformation, the company has laid out an ambitious sustainability vision, with a bold ambition to become climate-neutral by 2040.

With regard to your specific questions, please see below.

- 1. Has your company decided to discontinue access to free AM and/or FM broadcast radio in any of its vehicles?** Yes on AM. No on FM
- a. If so, please provide the make, model, and manufacturing year of each vehicle that no longer will have AM and/or FM radio and explain why your company decided to omit AM and/or FM**
AM: Deleted from MY16 and later T8/Recharge (SPA) and BEV (CMA)
FM: available at no additional cost on all models.
Our decision to not support AM radio was primarily linked to our electrification strategy. If Volvo Cars had continued to provide AM radio, our BEVs and PHEVs likely would have experienced EMC disturbances and this could result in

poor performance.

2. **Does your company have any plans to omit AM and/or FM broadcast radio from future vehicle models? If so, please explain why your company is planning to remove AM and/or FM broadcast radio from them.** AM: See answer to question 1. No plans for AM antennae in the future.
FM: No plans to delete FM radio in the future Volvos.
3. **Does your company include free, digital broadcast radio in its vehicles? If so, please provide the make, model, and manufacturing year of each vehicle equipped with digital broadcast radio.**
Volvo Cars does not provide HD Radio as part of standard equipment at this time.

If you have any additional questions or need further clarification on any of our responses, please do not hesitate to contact my Vice President of Government Affairs, Katherine Yehl at 202-412-5935 or via email at Katherine.Yehl@volvocars.com.

Sincerely,



Anders Gustafsson
Senior VP Americas and President and CEO, Volvo Cars USA

VOLKSWAGEN

GROUP OF AMERICA

Anna Schneider
SVP, Industry & Government Affairs

VOLKSWAGEN GROUP OF AMERICA
601 Pennsylvania Ave, NW,
Suite 740, Washington, DC 20004

December 21, 2022

The Honorable Edward J. Markey
United States Senate
Washington, DC 20510

Dear Senator Markey,

Thank you for your letter dated Dec. 1 to our President and CEO, Pablo Di Si, regarding the availability of AM/FM radio in Volkswagen Group of America ("VW Group") vehicles. We fully support the submission being made by our trade association, the Alliance for Automotive Innovation, and we welcome the opportunity to respond as the Volkswagen Group.

We support and appreciate your focus on ensuring that consumers have access to critical emergency response information via AM radio. As you know the Federal Emergency Management Agency's (FEMA) emergency alert system provides redundant alert mechanisms to ensure the public has access to multiple outlets to receive these critical alerts. This ensures the public does not rely on one sole source to receive these alerts but rather creates multiple redundant sources for the public to receive this information.

In alignment with FEMA, Volkswagen Group, which includes VW, Audi, Bentley, and Lamborghini vehicles in the U.S., offers a variety of terrestrial radio broadcasting and streaming services ensuring our customers have access to alerts. As a starting point, all Internal Combustion Engine (ICE) vehicles within the VW Group offer both AM and FM radio as well as HD Radio while most ICEs also offer SiriusXM satellite radio. This radio strategy is evaluated on a yearly basis and currently we have no plans to deviate from this strategy. VW Group ICE and Electric Vehicles (EVs) also offer the ability to stream AM and FM radio over the internet if customers subscribe to a data package. In addition our drivers have the ability to listen to AM and FM radio using their smartphones and the Android Auto and Apple CarPlay integrations within the VW Group vehicles.

Since their introductions, the current EVs within the VW Group have offered all of the radio features described above except for AM radio. The EVs within our group are the ID.4 in the VW brand and the e-tron, e-tron GT and Q4 e-tron in the Audi brand. AM radio is not offered in these vehicles due to the poor audio quality our drivers would experience.

VOLKSWAGEN

GROUP OF AMERICA

Anna Schneider
SVP, Industry & Government Affairs

VOLKSWAGEN GROUP OF AMERICA
601 Pennsylvania Ave, NW,
Suite 740, Washington, DC 20004

Due to the inherent nature of AM technology, AM signals are highly susceptible to interference from all types of electrical sources, not only from components inside of vehicles. The challenge of AM radio interference and static already exists in ICE vehicles, but the problem is significantly exacerbated in EVs. Our engineers have investigated hardware and software methods to reduce the interference, but the performance did not meet our requirements. Additional countermeasures (e.g., via metallic cages/shielding, additional filter) of the motor, battery and other electromagnetic producing equipment could further reduce the interference, but has a substantial impact on EVs' range and performance due to the added weight.

Volkswagen is committed to maintaining consumer access to vital safety information. We are active participants in Auto Innovators' meetings with the National Association of Broadcasters (NAB) and together we are in the preliminary stages of outreach efforts to FEMA to understand better how consumers can continue to access emergency broadcast information both inside and outside the vehicle. We are continuously looking for ways to improve our drivers' experience, and when a practical and feasible solution to the issues stated above is developed, we will implement them in our vehicles.

Should you have additional questions I would be happy to arrange a meeting in your Capitol Hill office with our experts at your convenience.

Sincerely,



Anna Schneider
SVP, Industry & Government Relations



December 22, 2022

The Honorable Senator Ed Markey
Office of Senator Ed Markey
255 Dirksen Senate Office Building
Washington DC 20510

Dear Senator Markey,

I write today on behalf of the Alliance for Automotive Innovation (“Auto Innovators”)¹ in response to letters sent to vehicle manufacturers dated December 1, 2022. These letters urged automakers to maintain broadcast AM radio in current and future vehicles, including electric vehicles (EVs). As the leading voice of the auto industry, Auto Innovators takes this opportunity to provide an overall industry perspective on this important issue.

We appreciate your focus on ensuring that consumers have access to critical emergency response information via AM radio. The Federal Emergency Management Agency’s (FEMA) integrated public alert and warning system (IPAWS),² created in 2006 per Executive Order 13407,³ is the national public warning system that provides authenticated emergency and life-saving information to the public through mobile phones using Wireless Emergency Alerts, to radio and television via the Emergency Alert System, and on the National Oceanic and Atmospheric Administration’s Weather Radio.⁴ Executive Order 13407 also established roles for other federal agencies in the public alert system: the Federal Communications Commission oversees the emergency capabilities of communication systems; the Department of Commerce provides expertise regarding standards, technology, dissemination systems, and weather; and the Department of Defense ensures its functions are properly coordinated with the alert system.⁵ The system provides redundant alert mechanisms to ensure the public has access to multiple outlets to receive these critical alerts. The intent is not for the public to rely on one sole source to receive the alerts but to create a “net” of sources in which the public can receive them.

With the innovation of technology and methods of reaching the public, Congress and federal agencies have taken actions to modernize the national alert system and ensure the system can adapt and include emerging technologies. In 2015, Congress passed S. 1180, the “Integrated Public Alert and Warning System Modernization Act,” which established FEMA as the federal agency responsible for the public alert system.

¹ Auto Innovators is the singular, authoritative, and respected voice of the automotive industry, representing motor vehicle manufacturers responsible for nearly 98 percent of cars and light trucks sold in the U.S., original equipment suppliers, technology companies, and others within the automotive ecosystem.

² Integrated Public Alert & Warning System, FEMA.gov, 1 Jan. 2000, www.fema.gov/emergency-managers/practitioners/integrated-public-alert-warning-system.

³ Exec. Order No. 13407, June 2006, <https://www.govinfo.gov/content/pkg/WCPD-2006-07-03/pdf/WCPD-2006-07-03-Pg1226.pdf>.

⁴ Integrated Public Alert & Warning System (n. 2)

⁵ Department of Homeland Security – Office of Inspector General, OIG-19-08 – FEMA’s Oversight of the Integrated Public Alert & Warning System (IPAWS), (Nov. 19, 2018), <https://www.oig.dhs.gov/sites/default/files/assets/2018-11/OIG-19-08-Nov18.pdf>, pg. 2
Footnote 3.



The law also directed FEMA to: 1) establish common alerting and warning protocols, standards, terminology, and operating procedures; and conduct training, tests, and exercises for the system; and 2) to the extent determined appropriate by the Administrator, incorporate multiple communications technologies. Moreover, the law required FEMA to design the system to adapt with and incorporate future technologies for communicating directly with the public, provide alerts to the largest portion of the affected population feasible, and improve the ability of remote areas to receive alerts.⁶

The legislation recognized technological innovations and the need for the national alert system to be able to incorporate them. The IPAWS Program Management Office also emphasized this in their Strategic Plan for FY 2022-2026, as it points out that one of the challenges for the system is that “the public is moving away from radio and broadcast/cable television as the primary channels for news and information.”⁷ FEMA has also highlighted this within its “IPAWS Process Map Playbook” released in February 2021, where “emerging technologies” are one of the alert sources listed.⁸ Technology advancements and the way the public consumes information constantly evolves, and IPAWS has made it a goal to find ways to communicate with the public however they receive information.

As innovation in the automotive industry continues and new technologies are developed, the federal government and industry must work together to modernize the IPAWS and continue to incorporate new technologies. Both the federal government and the automotive industry recognize that the ways in which consumers receive information will change with innovation. This is not only true in the United States but globally. There are also various approaches to AM radio that currently exist. In North America, many AM broadcasters have made their content available via digital formats and compatible smartphone applications. In Europe, analog AM radio broadcasts have been replaced with Digital Audio Broadcasts (DAB). In Japan, all AM radio stations are also simulcast on FM. As new technologies enter the marketplace, our industry will continue to seek innovative, enhanced methods that drive the deployment of advanced technologies and promote safety.

Auto Innovators and our members are committed to maintaining consumer access to vital safety information. As part of this effort, we have been meeting with the National Association of Broadcasters (NAB) and are in the preliminary stages of engaging FEMA to understand better how consumers can continue to access emergency broadcast information both inside and outside the vehicle. We look forward to working with you and other stakeholders to discuss both the policy and technical challenges that may be relevant to this issue.

Please contact me if you have any questions.

⁶ S. 1180, “Integrated Public Alert and Warning System Modernization Act of 2015,” 114th Cong., 2015

⁷ Strategic Plan Fiscal Year 2022-2026, (Aug. 23, 2022), https://www.fema.gov/sites/default/files/documents/fema_ipaws-strategic-plan-fy-2022-2026.pdf, pg. 4

⁸ Connor Barrett, IPAWS Process Playbook, (Feb. 12, 2021), https://www.fema.gov/sites/default/files/documents/fema_ipaws-process-playbook-version-1.0_20210120.pdf, pg. 5



Sincerely,

Garrick C. Francis

Garrick Francis
Vice President, Federal Affairs
Alliance for Automotive Innovation

BMW Group

December 20, 2022

The Honorable Edward J. Markey
United States Senator
255 Dirksen Senate Office Building
Washington, DC 20510

Dear Senator Markey:

Thank you for your letter dated December 1st, 2022, regarding broadcasting of AM Radios in Electric Vehicles (EV). BMW of North America, LLC (BMW) welcomes the opportunity to give our perspective on this topic. BMW believes consumers should have easily accessible options to receive clear emergency response information. Since the advent of AM radio broadcasts, technological advances have provided many avenues for consumers to receive critical emergency information when necessary.

Adam McNeill
Vice President of
Engineering, US

Company
BMW of North America, LLC
BMW Group Company

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Critical emergency response information has been made widely available through various medium including the internet, Wi-Fi, apps, streaming services, digital radio, mobile devices, text messaging, and television in addition to analog AM radio broadcasts. Several government agencies also provide critical infrastructure to facilitate access to critical emergency response information. The Federal Emergency Management Agency's (FEMA) integrated public alert and warning system (IPAWS) also provides detailed critical emergency response information to consumers through a variety of media.

BMW recognizes the importance of consumers receiving clear and easily accessible information in emergency situations. In our EV and PHEV (Plug-in Hybrid Electric Vehicles) fleets, BMW offers multiple options to receive the same critical emergency information that is broadcasted on analog AM radio. BMW offers free digital FM broadcasting through which many radio stations simulcast their AM radio programming. BMW also offers Android Auto and Apple Car play which allows consumers to connect their mobile devices to their vehicles and listen to apps that broadcast AM programming.

BMW made the decision to not include analog AM radio broadcasting in its EV and PHEV models beginning with the BMW I3 in 2014 primarily for two reasons: 1) electromagnetic interference creates poor analog AM radio reception quality and 2) technological innovation has afforded consumers many additional options to receive the same or similar information.

BMW is a member of the Alliance for Automotive Innovation (Auto Innovators). The Auto Innovators has met with the National Association of Broadcasters (NAB) and are in the preliminary stages of outreach efforts to FEMA to understand better how consumers can continue to access emergency broadcast information. For additional information regarding this topic please reference the Auto Innovators response letter to your office that will be sent in the coming days.

Sincerely,

Adam McNeill
Vice President of Engineering, US



Via E-Mail

December 22, 2022

Re: Response to Letter of December 1, 2022

Dear Sen. Markey:

I am writing on behalf of Ford Motor Company (“Ford”) in response to your December 1, 2022, letter to James Farley, Jr., President and Chief Executive Officer, regarding the use of broadcast AM radios in current and future vehicles, including electric vehicles (EVs). Ford appreciates your interest in the safety of our consumers and their continued access to critical emergency response information and welcomes the opportunity to share our perspective.

Ford is committed to leading the electrification revolution. Over the next few years, from 2022 through 2026, we will invest \$50 billion in electric vehicles and the batteries that power them. We are targeting a global annual production rate of 600,000 electric vehicles by late 2023 and more than 2 million by the end of 2026. We believe electrification amplifies the attributes our customers love, such as performance, capability, and convenience. Further, we believe disruptive technology allows us to enrich the customer experience. In all aspects of the vehicle, we continually look for cost-effective, innovative solutions to unlock new capabilities.

We acknowledge that broadcast AM radio has long been an important source of information for consumers. This information is now available through several alternate means. Many systems without AM receivers can use internet streaming, HD radio delivered on FM bands, or some apps to provide an AM station’s content.

Critical emergency alerts are also available through several means. The Federal Emergency Management Agency’s (FEMA) Emergency Alert System (EAS) is designed to reach as many broadcast listeners as possible with one alert. All broadcasters subject to Federal Communication Commission (FCC) regulations are required to transmit EAS notifications and tests on several media, including AM, FM, television, select cable channels, and satellite radio. In 2006, EAS was modernized with the Integrated Public Alert and Warning System (IPAWS), which made the EAS only one facet of the alerting process, alongside NOAA Weather Radio, Wireless Emergency Alerts, and other internet-enabled device alerts to include notification of natural and human-made disasters and emergency/public safety information. With FM, satellite radio, mobile data, and others, vehicles and their drivers have numerous alternative sources to receive these alerts.

We thank you for your interest in the safety of our consumers which is a critical concern for us. As we transition to the most technology-rich vehicles in our history, we continually look for innovative, cost-effective solutions to unlock new capabilities for the convenience and safety of our customers. The alternate technologies we've mentioned enable a transition from broadcast AM radio without sacrificing the safety of our consumers. Should your office have any additional questions please feel free to contact André Welch, director of Federal Affairs, at awelch4@ford.com. We look forward to continuing the discussion with you.

Very truly yours,

A handwritten signature in black ink, appearing to read "Chris Smith". The signature is fluid and cursive, with a long horizontal stroke at the end.

Christopher A. Smith
Chief Government Affairs Officer
Ford Motor Company



American Honda Motor Co., Inc.
1001 G Street, N.W. Suite 950
Washington, D.C. 20001
Phone (202) 661-4400
Fax (202) 661-4459

December 20, 2022

The Honorable Edward Markey
United States Senate
225 Dirksen Senate Office Building
Washington, D.C. 20510

Senator Markey:

Thank you for your December 1st letter to American Honda Motor Co., Inc. (“Honda”) related to AM radio and Electric Vehicles (“EVs”). Here at Honda, we look forward to our electrified future and all the benefits that it will bring.

As you may be aware, Honda has recently announced two major investments in our EV future here in the United States. First, Honda has committed \$700 million to re-tool our Marysville Auto Plant, East Liberty Auto Plant, and Anna Engine Plant – all located in Ohio – in order to ensure both the company and our associates are ready for the transition to EVs. At the same time, Honda also announced a joint venture with LG Energy Solution to produce vehicle batteries in Fayette County, Ohio, that will see an additional \$3.5 billion dollars in total investment. These facilities will serve as our “EV hub,” and will play a key role in developing Honda’s expertise in EV production.

On behalf of our President and CEO, Mr. Kaihara, please find the answers to your questions below.

Has your company decided to discontinue access to free AM and/or FM broadcast radio in any of its vehicles?

- a. If so, please provide the make, model, and manufacturing year of each vehicle that no longer will have AM and/or FM radio and explain why your company decided to omit AM and/or FM radio from those vehicles.*
- b. If not, please explain the type of technology, if any, that addresses electromagnetic interference with AM radio signals from EVs.*

For both of Honda’s officially announced EVs, the Honda Prologue and the Acura ZDX, AM and FM broadcast radio will be featured on the vehicle. Both of these products were co-developed with General Motors utilizing their pre-existing Ultium platform.

2. Does your company have any plans to omit AM and/or FM broadcast radio from future vehicle models? If so, please explain why your company is planning to remove AM and/or FM broadcast radio from them.

Honda has announced that we are targeting 100% zero emission electrified vehicles in North America by 2040, and complete carbon neutrality as a company by 2050. In order to ensure we achieve this ambitious target, Honda will need to build vehicles designed to meet consumer demands. More specifically, our future vehicles will include advanced driving assistance technologies as standard features, battery range that provides needed reassurance as our customers switch from internal combustion engine-powered vehicles, and a price that fits within consumer requirements.

While no announcements on future models beyond the Honda Prologue and Acura ZDX have been made, we will continue to strive to offer vehicles that best fit the needs of our customers.

3. Does your company include free, digital broadcast radio in its vehicles? If so, please provide the make, model, and manufacturing year of each vehicle equipped with digital broadcast radio.

Digital broadcast radio, often referred to as “HD Radio” within the United States, is currently available on all Honda and Acura products. HD Radio has been available on Honda and Acura products for nearly a decade, with certain trim levels of the Honda Accord featuring this system as far back as model year 2013. Once equipped, HD Radio remains cost-free for the life of the vehicle.

Thank you again for providing Honda the opportunity to further explain our electrified future. Should you or your staff have additional questions or would like to further discuss any information provided in this letter, please do not hesitate to contact Jeff Beck (jeff_beck@na.honda.com) on my staff.

Sincerely,

A handwritten signature in black ink, appearing to read "Jennifer Thomas". The signature is fluid and cursive, with the first name being more prominent.

Jennifer Thomas
Vice President of Corporate Affairs
American Honda Motor Co., Inc.

December 22, 2022

The Honorable Edward Markey
United States Senate
255 Dirksen Senate Office Building
Washington, DC 20510

Dear Senator Markey,

On behalf of Hyundai Motor (“Hyundai”) thank you for the opportunity to respond to your inquiry regarding the availability of broadcast radio in our vehicles. Hyundai appreciates and shares your interest in ensuring that our customers continue to have access to important safety information.¹

AM and FM radio are available in all Hyundai vehicles distributed in the United States. We have no plans to discontinue either of these in future vehicles. With regard to digital broadcast radio, we understand you to be referring to HD radio. Our entire lineup is equipped with HD radio as a standard feature, with the exception of one individual model trim.

Hyundai is committed to pursuing innovative technologies that promote customer safety. We look forward to collaborating with you and other stakeholders on how we can best continue to provide access to information regarding natural disasters and other critical safety information.

Thank you for your attention to this important topic.

Sincerely,



Robert R. Hood
Vice President of Government Affairs
Hyundai Motor

¹ Hyundai is a member of the Alliance for Automotive Innovation which has submitted a separate response to your letter on behalf of its members. Please refer to that letter for additional responsive information.



December 22, 2022

Honorable Edward J. Markey
225 Dirksen Senate Office Building
Washington, DC 20510

Re: AM Radio on Electric Vehicles

Dear Senator Markey,

This is in response to your letter of December 1, 2022 to Joachim (Joe) Eberhardt, President and CEO of Jaguar Land Rover North America, LLC concerning the inclusion of AM radio on electric vehicles.

Jaguar Land Rover (“JLR”) strongly supports the transition to electric vehicles (EV). Despite being a niche manufacturer of specialist vehicles JLR has and will continue to invest in the electrification of our products. We started this journey in 2018 with the Jaguar I-PACE, the first all-electric SUV by a luxury manufacturer and the 2019 World Car of the Year. By the middle of this decade, the entire Jaguar brand will be all-electric, and by the end of it, every Land Rover product will be available in pure-electric form.

With regards to the specific questions in your letter on AM radio and digital broadcast radio on Jaguar and Land Rover vehicles please find our responses immediately below:

1. Has your company decided to discontinue access to free AM and/or FM broadcast radio in any of its vehicles?
 - a. If so, please provide the make, model, and manufacturing year of each vehicle that no longer will have AM and/or FM radio and explain why your company decided to omit AM and/or FM radio from those vehicles.
 - b. If not, please explain the type of technology, if any, that addresses electromagnetic interference with AM radio signals from EVs.

We have not decided to discontinue access to free AM or FM broadcast radio in any Jaguar or Land Rover vehicles.

To date, we have not used any special technology to address electromagnetic interference. However, it does cause substantial challenges in terms of packaging and antenna location.



2. Does your company have any plans to omit AM and/or FM broadcast radio from future vehicle models? If so, please explain why your company is planning to remove AM and/or FM broadcast radio from them.

We currently do not have any plans to omit AM and/or FM from future vehicle models.

3. Does your company include free, digital broadcast radio in its vehicles? If so, please provide the make, model, and manufacturing year of each vehicle equipped with digital broadcast radio.

All current Jaguar and Land Rover vehicles come standard with digital broadcast/High Definition (HD) radio. HD radio has been standard on all vehicles since the 2010 model year.

Thank you for the opportunity to provide our input on this matter.

Sincerely,

Chris Marchand
Vice President
Government and Industry Relations

cc: Joe Eberhardt



Kia Corporation Washington DC Office

601 New Jersey Avenue, NW, Suite 800

Washington, DC 20001

T (202) 503-1515

December 22, 2022

Sen. Edward J. Markey
255 Dirksen Senate Office Building
Washington, D.C. 20510

Re: Broadcast AM Radio in Kia Vehicles

Dear Senator Markey:

Thank you for your letter to Kia America's Chief Executive Officer, SeungKyu Yoon, inquiring about Kia's plans regarding broadcast AM radio in our vehicles, particularly electric vehicles (EVs). Kia takes the safety and security of its vehicles seriously, and our vehicles provide a variety of ways that drivers can access critical emergency response information in the vehicle, including through broadcast radio and connection of smartphones in the vehicle.

To answer the questions in your letter, Kia has not discontinued access to free AM or FM broadcast radio in any vehicles sold in the U.S. market, and we do not currently have plans to discontinue these features in future models, whether EVs or gas-powered vehicles. All Model Year 22 and Model Year 23 Kia vehicles include free digital broadcast radio as a standard feature. Finally, we are not aware of issues with electromagnetic interference with AM radio signals from our EVs.

I hope that you find this information useful. Please let us know if you have any follow-up questions.

Sincerely,

A handwritten signature in black ink, appearing to read 'C. Wenk', written over a light blue horizontal line.

Christopher Wenk
Vice President of Government Affairs
Kia Corporation