

2021–2022 Most Wanted List of Transportation Safety Improvements and Corresponding Safety Recommendations

This report outlines the 2021–2022 Most Wanted List of Transportation Safety Improvements and Corresponding Safety Recommendations.

Total number of recommendations: 175

[Require and Verify the Effectiveness of Safety Management Systems in all Revenue Passenger-Carrying Aviation Operations](#)

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Require and Verify the Effectiveness of SMS in all Revenue Passenger-Carrying Aviation Operations

1. **A-16-34. To the Federal Aviation Administration:** Require all [Title] 14 *Code of Federal Regulations* Part 135 operators to install flight data recording devices capable of supporting a flight data monitoring program.
2. **A-16-35. To the Federal Aviation Administration:** After the action in Safety Recommendation A-16-34 is completed, require all [Title] 14 *Code of Federal Regulations* Part 135 operators to establish a structured flight data monitoring program that reviews all available data sources to identify deviations from established norms and procedures and other potential safety issues.
3. **A-16-36. To the Federal Aviation Administration:** Require all [Title] 14 *Code of Federal Regulations* Part 135 operators to establish safety management system programs.
4. **A-19-28. To the Federal Aviation Administration:** Require all commercial air tour operators, regardless of their operating rule, to implement a safety management system.
5. **A-19-36. To Liberty Helicopters Inc.:** Establish a safety management system.
6. **A-19-38. To FlyNYON:** Establish a safety management system.
7. **A-20-25. To Survival Flight:** Establish a safety management system (SMS) program under the Federal Aviation Administration SMS Voluntary Program that includes compliance with Advisory Circular 120-92B, “Safety Management Systems for Aviation Service Providers.”
8. **A-21-7. To Island Express Helicopters Inc.:** Participate in the Federal Aviation Administration’s Safety Management System Voluntary Program.
9. **A-21-8. To Island Express Helicopters Inc.:** Install flight data recording devices capable of supporting a flight data monitoring (FDM) program on each helicopter in your fleet and establish an FDM program that reviews all available data sources to identify deviations from established norms and procedures as well as other potential safety issues.
10. **A-21-13. To the Federal Aviation Administration:** Require safety management systems for the revenue passenger-carrying operations addressed in Safety Recommendations A-21-9 and -10.
11. **A-21-14. To the Federal Aviation Administration:** For the revenue passenger-carrying operations addressed in Safety Recommendations A-21-9 and -10, provide ongoing oversight of each operator’s safety management system once established.

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Prevent Alcohol- and Other Drug-Impaired Driving

1. **H-12-33. To the National Highway Traffic Safety Administration:** Develop and disseminate to appropriate state officials a common standard of practice for drug toxicology testing, including (1) the circumstances under which tests should be conducted, (2) a minimum set of drugs for which to test, and (3) cutoff values for reporting the results.
2. **H-12-45. To 33 States, the Commonwealth of Puerto Rico, and the District of Columbia:** Enact laws to require the use of alcohol ignition interlock devices for all individuals convicted of driving while intoxicated (DWI) offenses.
3. **H-13-1. To the National Highway Traffic Safety Administration:** Seek legislative authority to award incentive grants for states to establish a per se blood alcohol concentration (BAC) limit of 0.05 or lower for all drivers who are not already required to adhere to lower BAC limits.
4. **H-13-5. To the 50 States, the Commonwealth of Puerto Rico, and the District of Columbia:** Establish a per se blood alcohol concentration (BAC) limit of 0.05 or lower for all drivers who are not already required to adhere to lower BAC limits.
5. **H-15-39. To the Federal Motor Carrier Safety Administration:** Work with motor carrier industry stakeholders to develop a plan to aid motor carriers in addressing commercial motor vehicle driver use of impairing substances, particularly those not covered under current drug-testing regulations such as by promoting best practices by carriers, expanding impairment detection training and authority, and developing performance-based methods of evaluation.
6. **H-16-8. To the Federal Motor Carrier Safety Administration:** Disseminate information to motor carriers about using hair testing as a method of detecting the use of controlled substances, under the appropriate circumstances.
7. **H-18-56. To the National Highway Traffic Safety Administration:** Develop and disseminate best practices, identify model specifications, and create a conforming products list for oral fluid drug screening devices.
8. **H-18-60. To the State of Texas:** Conduct an executive-level review of your impaired driving program and implement data-driven strategies that result in a downward trend in the number of fatalities, injuries, and crashes involving alcohol- and other drug-impaired drivers.

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Require Collision-Avoidance and Connected-Vehicle Technologies on All Vehicles

1. **H-13-30: To the National Highway Traffic Safety Administration:** Develop minimum performance standards for connected vehicle technology for all highway vehicles.

2. **H-13-31. To the National Highway Traffic Safety Administration:** Once minimum performance standards for connected vehicle technology are developed, require this technology to be installed on all newly manufactured highway vehicles.
3. **H-15-4. To the National Highway Traffic Safety Administration:** Develop and apply testing protocols to assess the performance of forward collision avoidance systems in passenger vehicles at various velocities, including high speed and high velocity-differential.
4. **H-15-5. To the National Highway Traffic Safety Administration:** Complete, as soon as possible, the development and application of performance standards and protocols for the assessment of forward collision avoidance systems in commercial vehicles.
5. **H-15-6. To the National Highway Traffic Safety Administration:** Expand the New Car Assessment Program 5-star rating system to include a scale that rates the performance of forward collision avoidance systems.
6. **H-15-7: To the National Highway Traffic Safety Administration:** Once the rating scale, described in Safety Recommendation H-15-6, is established, include the ratings of forward collision avoidance systems on the vehicle Monroney labels.
7. **H-15-8. To Passenger Vehicle, Truck-Tractor, Motorcoach, And Single-Unit Truck Manufacturers:** Install forward collision avoidance systems that include, at a minimum, a forward collision warning component, as standard equipment on all new vehicles.
8. **H-15-9. To Passenger Vehicle, Truck-Tractor, Motorcoach, And Single-Unit Truck Manufacturers:** Once the National Highway Traffic Safety Administration publishes performance standards for autonomous emergency braking, install systems meeting those standards on all new vehicles.
9. **H-17-37. To the United States Department of Transportation:** Define the data parameters needed to understand the automated vehicle control systems involved in a crash. The parameters must reflect the vehicle's control status and the frequency and duration of control actions to adequately characterize driver and vehicle performance before and during a crash.
10. **H-18-8. To the National Highway Traffic Safety Administration:** Require all new school buses to be equipped with collision avoidance systems and automatic emergency braking technologies.
11. **H-18-19. To Blue Bird Corporation, Collins Industries, Inc., IC Bus, Starcraft Bus, Thomas Built Buses, Inc., Trans Tech, and Van-Con, Inc.:** Install a collision avoidance system with automatic emergency braking as standard equipment on all newly manufactured school buses.
12. **H-20-1. To the National Highway Traffic Safety Administration:** Expand New Car Assessment Program testing of forward collision avoidance system performance to include common obstacles, such as traffic safety hardware, cross-

traffic vehicle profiles, and other applicable vehicle shapes or objects found in the highway operating environment.

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Eliminate Distracted Driving:

1. **H-11-39. To the 50 states and the District of Columbia:** (1) Ban the nonemergency use of portable electronic devices (other than those designed to support the driving task) for all drivers; (2) use the National Highway Traffic Safety Administration model of high visibility enforcement to support these bans; and (3) implement targeted communication campaigns to inform motorists of the new law and enforcement, and to warn them of the dangers associated with the nonemergency use of portable electronic devices while driving.
2. **H-14-13. To the 50 states, the District of Columbia, and the Commonwealth of Puerto Rico:** Ban the nonemergency use by pilot/escort vehicle drivers of portable electronic devices (other than those designed to support the pilot/escort vehicle driving task), except to communicate hazard-related information to the escorted vehicle.
3. **H-20-5. To the Occupational Health and Safety Administration:** Review and revise your distracted driving initiatives to increase employers' awareness of the need to develop strong cell phone policy prohibiting the use of portable electronic devices while driving.
4. **H-20-6. To the Occupational Safety and Health Administration:** Modify your enforcement strategies to increase the use of the general duty clause cited in 29 United States Code section 654 against those employers who fail to address the hazards of distracted driving.
5. **H-20-8. To manufacturers of portable electronic devices (Apple, Google, HTC, Lenovo, LG, Motorola, Nokia, Samsung, and Sony):** Develop a distracted driving lock-out mechanism or application for portable electronic devices that will automatically disable any driver-distracting functions when a vehicle is in motion, but that allows the device to be used in an emergency; install the mechanism as a default setting on all new devices and apply it to existing commercially available devices during major software updates.
6. **H-20-9. To Apple Inc.:** Develop and implement a company policy that bans the nonemergency use of portable electronic devices while driving by all employees and contractors driving company vehicles, operating company-issued portable electronic devices, or using a portable electronic device to engage in work-related communications.

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Implement a Comprehensive Strategy to Eliminate Speeding-Related Crashes

1. **H-12-20. To the National Highway Traffic Safety Administration:** Develop performance standards for advanced speed-limiting technology, such as variable speed limiters and intelligent speed adaptation devices, for heavy vehicles, including trucks, buses, and motorcoaches.
2. **H-12-21. To the National Highway Traffic Safety Administration:** After establishing performance standards for advanced speed-limiting technology for heavy commercial vehicles, require that all newly manufactured heavy vehicles be equipped with such devices.
3. **H-17-18. To the United States Department of Transportation:** Complete the actions called for in your 2014 Speed Management Program Plan and periodically publish status reports on the progress you have made.
4. **H-17-19. To the National Highway Traffic Safety Administration:** Identify speeding-related performance measures to be used by local law enforcement agencies, including, but not limited to, the numbers and locations of speeding-related crashes of different injury severity levels, speeding citations, and warnings, and establish a consistent method for evaluating data-driven, high-visibility enforcement programs to reduce speeding. Disseminate the performance measures and evaluation method to local law enforcement agencies.
5. **H-17-20. To the National Highway Traffic Safety Administration:** Identify best practices for communicating with law enforcement officers and the public about the effectiveness of data-driven, high-visibility enforcement programs to reduce speeding, and disseminate the best practices to local law enforcement agencies.
6. **H-17-21. To the National Highway Traffic Safety Administration:** Work with the Governors Highway Safety Association, the International Association of Chiefs of Police, and the National Sheriffs' Association to develop and implement a program to increase the adoption of speeding-related Model Minimum Uniform Crash Criteria Guideline data elements and improve consistency in law enforcement reporting of speeding-related crashes.
7. **H-17-22. To the National Highway Traffic Safety Administration:** Work with the Federal Highway Administration to update the Speed Enforcement Camera Systems Operational Guidelines to reflect the latest automated speed enforcement (ASE) technologies and operating practices and promote the updated guidelines among ASE program administrators.
8. **H-17-23: To the National Highway Traffic Safety Administration:** Work with the Federal Highway Administration to assess the effectiveness of point-to-point speed enforcement in the United States and, based on the results of that assessment, update the Speed Enforcement Camera Systems Operational Guidelines, as appropriate.
9. **H-17-24. To the National Highway Traffic Safety Administration:** Incentivize passenger vehicle manufacturers and consumers to adopt intelligent speed

adaptation (ISA) systems by, for example, including ISA in the New Car Assessment Program.

10. **H-17-25. To the National Highway Traffic Safety Administration:** Collaborate with other traffic safety stakeholders to develop and implement an ongoing program to increase public awareness of speeding as a national traffic safety issue. The program should include, but not be limited to, initiating an annual enforcement mobilization directed at speeding drivers.
11. **H-17-26. To the National Highway Traffic Safety Administration:** Establish a program to incentivize state and local speed management activities.
12. **H-17-27. To the Federal Highway Administration:** Revise Section 2B.13 of the Manual on Uniform Traffic Control Devices so that the factors currently listed as optional for all engineering studies are required, require that an expert system such as USLIMITS2 be used as a validation tool, and remove the guidance that speed limits in speed zones should be within 5 mph of the 85th percentile speed.
13. **H-17-28. To the Federal Highway Administration:** Revise Section 2B.13 of the Manual on Uniform Traffic Control Devices to, at a minimum, incorporate the safe system approach for urban roads to strengthen protection for vulnerable road users.
14. **H-17-29. To the Federal Highway Administration:** Work with the National Highway Traffic Safety Administration to update the Speed Enforcement Camera Systems Operational Guidelines to reflect the latest automated speed enforcement (ASE) technologies and operating practices and promote the updated guidelines among ASE program administrators.
15. **H-17-30. To the Federal Highway Administration:** Work with the National Highway Traffic Safety Administration to assess the effectiveness of point-to-point speed enforcement in the United States and, based on the results of that assessment, update the Speed Enforcement Camera Systems Operational Guidelines, as appropriate.
16. **H-17-31. To the seven states prohibiting automated speed enforcement (Maine, Mississippi, New Hampshire, New Jersey, Texas, West Virginia, and Wisconsin):** Amend current laws to authorize state and local agencies to use automated speed enforcement.
17. **H-17-32. To the twenty-eight states without automated speed enforcement laws (Alabama, Alaska, California, Connecticut, Delaware, Florida, Georgia, Hawaii, Idaho, Indiana, Iowa, Kansas, Kentucky, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nebraska, New Mexico, North Carolina, North Dakota, Oklahoma, Pennsylvania, South Dakota, Vermont, Virginia, and Wyoming):** Authorize state and local agencies to use automated speed enforcement.
18. **H-17-33. To the 15 states with automated speed enforcement restrictions (Arizona, Arkansas, Colorado, Illinois, Louisiana, Maryland, Nevada, New York, Ohio, Oregon, Rhode Island, South Carolina, Tennessee, Utah, and Washington):** Amend current laws to remove operational and location

restrictions on the use of automated speed enforcement, except where such restrictions are necessary to align with best practices.

19. **H-17-34. To the Governor's Highway Safety Association:** Work with the National Highway Traffic Safety Administration, the International Association of Chiefs of Police, and the National Sheriffs' Association to develop and implement a program to increase the adoption of speeding-related Model Minimum Uniform Crash Criteria Guideline data elements and improve consistency in law enforcement reporting of speeding-related crashes.
20. **H-17-35. To the International Association of Chiefs of Police:** Work with the National Highway Traffic Safety Administration, the Governors Highway Safety Association, and the National Sheriffs' Association to develop and implement a program to increase the adoption of speeding-related Model Minimum Uniform Crash Criteria Guideline data elements and improve consistency in law enforcement reporting of speeding-related crashes.
21. **H-17-36. To the National Sheriffs' Association:** Work with the National Highway Traffic Safety Administration, the Governors Highway Safety Association, and the International Association of Chiefs of Police to develop and implement a program to increase the adoption of speeding-related Model Minimum Uniform Crash Criteria Guideline data elements and improve consistency in law enforcement reporting of speeding-related crashes.

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Install Crash-Resistant Recorders and Establish Flight Data Monitoring Programs

1. **A-13-12. To the Federal Aviation Administration:** Require the installation of a crash-resistant flight recorder system on all newly manufactured turbine-powered, nonexperimental, nonrestricted-category aircraft that are not equipped with a flight data recorder and a cockpit voice recorder and are operating under [Title] 14 *Code of Federal Regulations* Parts 91, 121, or 135. The crash-resistant flight recorder system should record cockpit audio and images with a view of the cockpit environment to include as much of the outside view as possible, and parametric data per aircraft and system installation, all as specified in Technical Standard Order C197, "Information Collection and Monitoring Systems."
2. **A-13-13. To the Federal Aviation Administration:** Require all existing turbine-powered, nonexperimental, nonrestricted-category aircraft that are not equipped with a flight data recorder or cockpit voice recorder and are operating under [Title] 14 *Code of Federal Regulations* Parts 91, 121, or 135 to be retrofitted with a crash-resistant flight recorder system. The crash-resistant flight recorder system

should record cockpit audio and images with a view of the cockpit environment to include as much of the outside view as possible, and parametric data per aircraft and system installation, all as specified in Technical Standard Order C197, “Information Collection and Monitoring Systems.”

3. **A-15-7. To the Federal Aviation Administration:** Require that all existing aircraft operated under Title 14 *Code of Federal Regulations* (*CFR*) Part 121 or 135 and currently required to have a cockpit voice recorder and a flight data recorder be retrofitted with a crash-protected cockpit image recording system compliant with Technical Standard Order (TSO)-C176a, “Cockpit Image Recorder Equipment,” TSO-C176a or equivalent. The cockpit image recorder should be equipped with an independent power source consistent with that required for cockpit voice recorders in 14 *CFR* 25.1457.
4. **A-15-8. To the Federal Aviation Administration:** Require that all newly manufactured aircraft operated under [Title] 14 *Code of Federal Regulations* (*CFR*) Part 121 or 135 and required to have a cockpit voice recorder and a flight data recorder also be equipped with a crash-protected cockpit image recording system compliant with Technical Standard Order TSO-C176a, “Cockpit Image Recorder Equipment,” or equivalent. The cockpit image recorder should be equipped with an independent power source consistent with that required for cockpit voice recorders in 14 *CFR* 25.1457.
5. **A-16-34. To the Federal Aviation Administration:** Require all [Title] 14 *Code of Federal Regulations* Part 135 operators to install flight data recording devices capable of supporting a flight data monitoring program.
6. **A-16-35. To the Federal Aviation Administration:** After the action in Safety Recommendation A-16-34 is completed, require all [Title] 14 *Code of Federal Regulations* Part 135 operators to establish a structured flight data monitoring program that reviews all available data sources to identify deviations from established norms and procedures and other potential safety issues.
7. **A-20-27. To Airbus Helicopters, Bell, Leonardo Helicopter Division, MD Helicopters, and Robinson Helicopter Company:** Install, on your newly manufactured turbine-powered helicopters that are not equipped with a flight data recorder and a cockpit voice recorder, a crash-resistant flight recorder system that records cockpit audio and images with a view of the cockpit environment to include as much of the outside view as possible and parametric data per aircraft and system installation, all as specified in Technical Standard Order C197, “Information Collection and Monitoring Systems.” The recorder system installation should be considered essential equipment that remains installed for the life of the helicopter and have provisions to ensure it remains operational during each flight.
8. **A-20-28. To Airbus Helicopters, Bell, Leonardo Helicopter Division, and Sikorsky:** Install, on your newly manufactured turbine-powered helicopters that are equipped with a flight data recorder and a cockpit voice recorder, a crash-protected cockpit image recorder system compliant with Technical Standard Order C176a, “Cockpit Image Recorder Equipment,” or equivalent. The cockpit

image recorder should be equipped with an independent power source consistent with that required for cockpit voice recorders in Title 14 *Code of Federal Regulations* 29.1457. The recorder system installation should be considered essential equipment that remains installed for the life of the helicopter and have provisions to ensure it remains operational during each flight.

9. **A-20-29. To Airbus Helicopters, Bell, Leonardo Helicopter Division, MD Helicopters, Robinson Helicopter Company, and Sikorsky:** Provide, on your existing turbine-powered helicopters that are not equipped with a flight data recorder or a cockpit voice recorder, a means to install a crash-resistant flight recorder system that records cockpit audio and images with a view of the cockpit environment to include as much of the outside view as possible and parametric data per aircraft and system installation, all as specified in Technical Standard Order C197, “Information Collection and Monitoring Systems.” The recorder system installation should be considered essential equipment that remains installed for the life of the helicopter and have provisions to ensure it remains operational during each flight.
10. **A-20-30. To Airbus Helicopters, Bell, Leonardo Helicopter Division and Sikorsky:** Provide, on your existing turbine-powered helicopters that are equipped with a flight data recorder and a cockpit voice recorder, a means to install a crash-protected cockpit image recorder system that is compliant with Technical Standard Order C176a, “Cockpit Image Recorder Equipment,” or equivalent. The cockpit image recorder system should be equipped with an independent power source consistent with that required for cockpit voice recorders in Title 14 Code of Federal Regulations 29.1457. The recorder system installation should be considered essential equipment that remains installed for the life of the helicopter and have provisions to ensure it remains operational during each flight.
11. **A-21-8. To Island Express Helicopters Inc.:** Install flight data recording devices capable of supporting a flight data monitoring (FDM) program on each helicopter in your fleet and establish an FDM program that reviews all available data sources to identify deviations from established norms and procedures as well as other potential safety issues.

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Protect Vulnerable Road Users through a Safe System Approach

Roadways and infrastructure:

1. **H-18-31. To the National Highway Traffic Safety Administration:** Work with the Federal Highway Administration to incorporate motorcycles in the development of performance standards for connected vehicle-to-infrastructure systems.
2. **H-18-37. To the Federal Highway Administration:** Work with the National Highway Traffic Safety Administration to incorporate motorcycles in the

- development of performance standards for connected vehicle-to-infrastructure systems.
- 3. **H-19-35. To the Intelligent Transportation Systems Joint Program Office:** In collaboration with the National Highway Traffic Safety Administration and the Federal Highway Administration, expand vehicle-to-pedestrian research efforts to ensure that bicyclists and other vulnerable road users will be incorporated into the safe deployment of connected vehicle systems.
 - 4. **H-19-37. To the National Highway Traffic Safety Administration:** In collaboration with the Intelligent Transportation Systems Joint Program Office and the Federal Highway Administration, expand vehicle-to-pedestrian research efforts to ensure that bicyclists and other vulnerable road users will be incorporated into the safe deployment of connected vehicle systems.
 - 5. **H-19-41. To the Federal Highway Administration:** Include separated bike lanes and intersection safety treatments on the list of Proven Safety Countermeasures.
 - 6. **H-19-42. To the Federal Highway Administration:** Include separated bike lanes and intersection safety treatments in the Every Day Counts program.
 - 7. **H-19-43. To the Federal Highway Administration:** In collaboration with the Intelligent Transportation Systems Joint Program Office and the National Highway Traffic Safety Administration, expand vehicle-to-pedestrian research efforts to ensure that bicyclists and other vulnerable road users will be incorporated into the safe deployment of connected vehicle systems.
 - 8. **H-19-46. To the American Association of State Highway and Transportation Officials:** Include geometric design guidance materials on separated bike lanes, intersection treatments, and the transition between them in the next revision of the Guide for the Development of Bicycle Facilities.

Vehicle design:

- 9. **H-13-11. To the National Highway Traffic Safety Administration:** Develop performance standards for visibility enhancement systems to compensate for blind spots in order to improve the ability of drivers of single-unit trucks with gross vehicle weight ratings over 10,000 pounds to detect vulnerable road users, including pedestrians and cyclists, in their travel paths.
- 10. **H-13-12. To the National Highway Traffic Safety Administration:** Once the performance standards requested in H-13-11 have been developed, require newly manufactured single-unit trucks with gross vehicle weight ratings over 10,000 pounds to be equipped with visibility enhancement systems meeting the performance standards.
- 11. **H-14-1. To the National Highway Traffic Safety Administration:** Require that newly manufactured truck-tractors with gross vehicle weight ratings over 26,000 pounds be equipped with visibility enhancement systems to improve the ability of

- drivers of tractor-trailers to detect passenger vehicles and vulnerable road users, including pedestrians, cyclists, and motorcyclists.
- 12. **H-18-29. To the National Highway Traffic Safety Administration:** Incorporate motorcycles in the development of performance standards for passenger vehicle crash warning and prevention systems.
 - 13. **H-18-30. To the National Highway Traffic Safety Administration:** Incorporate motorcycles in the development of performance standards for connected vehicle-to-vehicle systems.
 - 14. **H-18-32. To the National Highway Traffic Safety Administration:** Require all new motorcycles manufactured for on-road use in the United States be equipped with antilock braking system technology.
 - 15. **H-18-33. To the National Highway Traffic Safety Administration:** Conduct or sponsor research to evaluate the effectiveness of stability control systems for motorcycles.
 - 16. **H-18-34. To the National Highway Traffic Safety Administration:** Based on the research recommended in Safety Recommendation H-18-33, develop and publish performance standards for stability control systems on motorcycles, and require systems meeting those standards on all new motorcycles manufactured for on-road use in the United States.
 - 17. **H-18-39. To the National Highway Traffic Safety Administration:** Revise Federal Motor Vehicle Safety Standard 108 to include performance-based standards for vehicle headlight systems correctly aimed on the road and tested on-vehicle to account for headlight height and lighting performance.
 - 18. **H-18-40. To the National Highway Traffic Safety Administration:** Revise Federal Motor Vehicle Safety Standard 108 to allow adaptive headlight systems.
 - 19. **H-18-41. To the National Highway Traffic Safety Administration:** Develop performance test criteria for vehicle designs that reduce injuries to pedestrians.
 - 20. **H-18-42. To National Highway Traffic Safety Administration:** Develop performance test criteria for manufacturers to use in evaluating the extent to which automated pedestrian safety systems in light vehicles will prevent or mitigate pedestrian injury.
 - 21. **H-18-43. To the National Highway Traffic Safety Administration:** Incorporate pedestrian safety systems, including pedestrian collision avoidance systems and other more-passive safety systems, into the New Car Assessment Program.
 - 22. **H-18-44. To the National Highway Traffic Safety Administration:** Develop a detailed pedestrian crash data set that represents the current, complete range of crash types and that can be used for local and State analysis and to Model and simulate pedestrian collision avoidance systems.

23. **H-19-36. To the National Highway Traffic Safety Administration:** Incorporate into the New Car Assessment Program tests to evaluate a car's ability to avoid crashes with bicycles.
24. **H-19-44. To the United States Consumer Product Safety Commission:** Conduct an evaluation to determine whether bicycle conspicuity could be improved by modifying the requirements described in Title 16 Code of Federal Regulations 1512.16; if so, revise the regulation accordingly.

Reducing speed and speeding:

25. **H-17-27. To the Federal Highway Administration:** Revise Section 2B.13 of the Manual on Uniform Traffic Control Devices so that the factors currently listed as optional for all engineering studies are required, require that an expert system such as USLIMITS2 be used as a validation tool, and remove the guidance that speed limits in speed zones should be within 5 mph of the 85th percentile speed.
26. **H-17-28. To the Federal Highway Administration:** Revise Section 2B.13 of the Manual on Uniform Traffic Control Devices to, at a minimum, incorporate the safe system approach for urban roads to strengthen protection for vulnerable road users.

Mitigating Injuries:

27. **H-07-38. To States with no motorcycle helmet laws:** Require that all persons shall wear a Department of Transportation Federal Motor Vehicle Safety Standard 218-compliant motorcycle helmet while riding (operating), or as a passenger on any motorcycle.
28. **H-07-39. To the States with partial motorcycle helmet laws:** Amend current laws to require that all persons shall wear a Department of Transportation Federal Motor Vehicle Safety Standard 218-compliant motorcycle helmet while riding (operating), or as a passenger on any motorcycle.
29. **H-07-40. To the States, the District of Columbia, and the Territories with universal motorcycle helmet laws/regulations not specifically requiring FMVSS 218-compliant helmets:** Amend current laws to specify that all persons shall wear a Department of Transportation Federal Motor Vehicle Safety Standard 218-compliant motorcycle helmet while riding (operating), or as a passenger on any motorcycle.
30. **H-19-38. To the National Highway Traffic Safety Administration:** (1) Convene a bicycle safety coalition of stakeholders to develop a comprehensive national strategy to increase bicycle helmet use among bicyclists of all ages that would include, at a minimum, a Model all-ages bicycle helmet law; (2) disseminate the strategy to all States and make it available on your website.
31. **H-19-39. To the National Highway Traffic Safety Administration:** After Safety Recommendation H-19-38 is completed, include the Model all-ages bicycle helmet law in Countermeasures That Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices.

- 32. H-19-45. To the 50 States, the District of Columbia, and the Commonwealth of Puerto Rico:** Require that all persons shall wear an age-appropriate bicycle helmet while riding a bicycle.

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Improve Passenger and Fishing Vessel Safety

Passenger Vessel Safety

1. **M-02-5. To the US Coast Guard:** Require that companies operating domestic passenger vessels develop and implement a preventive maintenance program for all systems affecting the safe operation of their vessels, including the hull and the mechanical and electrical systems.
2. **M-12-3. To the US Coast Guard:** Require all operators of U.S.-flag passenger vessels to implement safety management systems, taking into account the characteristics, methods of operation, and nature of service of these vessels, and, with respect to ferries, the sizes of the ferry systems within which the vessels operate.
3. **M-14-3. To the US Coast Guard:** Require installation of voyage data recorders that meet the International Maritime Organization's performance standard for voyage data recorders on new ferry vessels subject to 46 *Code of Federal Regulations* Subchapters H and K.
4. **M-14-4. To the US Coast Guard:** Require installation of voyage data recorders that meet the International Maritime Organization's performance standard for simplified voyage data recorders on existing ferry vessels subject to 46 *Code of Federal Regulations* Subchapters H and K.
5. **M-14-5. To the US Coast Guard:** Develop a US voyage data recorder standard for ferry vessels subject to 46 *Code of Federal Regulations* Subchapter T and require the installation of such equipment where technically feasible.
6. **M-17-19. To Carnival Corporation:** Develop and/or improve procedures to manage and account for all persons aboard in the event of a mass evacuation of a ship while in port.
7. **M-18-2. To the US Coast Guard:** Evaluate the feasibility of creating a passenger vessel safety specialist billet at each sector that has the potential for a search and rescue activity characterized by the need for immediate assistance to a large number of persons in distress, and staff sector-level billets, as appropriate, based on the findings of that evaluation.
8. **M-18-3. To Baja Ferries:** Perform a worst-case scenario risk assessment for all active water-based fire suppression systems on your vessels to evaluate whether the existing freshwater supply is sufficient.
9. **M-18-4. To Baja Ferries:** Review your lifesaving appliance training program, including recordkeeping procedures, and revise the program to ensure that crewmembers have proficiency with onboard systems.
10. **M-18-5. To Baja Ferries:** Provide formal and recurrent training to shoreside management and senior shipboard officers on the International Safety Management

- (ISM) Code to ensure that all senior leaders are fully knowledgeable about the policies and procedures in the safety management system.
11. **M-18-11. To Tropical Breeze Casino Cruz, LLC:** Develop and apply an oversight system to ensure that your maintenance program complies with the manufacturer's recommended preventive maintenance program for the engines and associated machinery and systems on board your vessels.
 12. **M-18-12. To Tropical Breeze Casino Cruz, LLC:** Revise your marine firefighting and job training programs, including documenting both on board and ashore that all crewmembers are qualified and can continually demonstrate proficiency in their duties, such as firefighting techniques and other emergency situations.
 13. **M-18-13. To the US Coast Guard:** Require fire detection systems in unmanned spaces with machinery or other potential heat sources on board small passenger vessels.
 14. **M-20-14. To the US Coast Guard:** Revise Title 46 *Code of Federal Regulations* subchapter T to require that newly constructed vessels with overnight accommodations have smoke detectors in all accommodation spaces.
 15. **M-20-15. To the US Coast Guard:** Revise Title 46 *Code of Federal Regulations* subchapter T to require that all vessels with overnight accommodations currently in service, including those constructed prior to 1996, have smoke detectors in all accommodation spaces.
 16. **M-20-16. To the US Coast Guard:** Revise Title 46 *Code of Federal Regulations* subchapter T and subchapter K to require all vessels with overnight accommodations, including vessels constructed prior to 1996, have interconnected smoke detectors, such that when one detector alarms, the remaining detectors also alarm.
 17. **M-20-17. To the US Coast Guard:** Develop and implement an inspection procedure to verify that small passenger vessel owners, operators, and charterers are conducting roving patrols as required by Title 46 *Code of Federal Regulations* Subchapter T.
 18. **M-20-18. To the US Coast Guard:** Revise Title 46 *Code of Federal Regulations* Subchapter T to require newly constructed small passenger vessels with overnight accommodations to provide a secondary means of escape into a different space than the primary exit so that a single fire should not affect both escape paths.
 19. **M-20-19. To the US Coast Guard:** Revise Title 46 *Code of Federal Regulations* Subchapter T to require all small passenger vessels with overnight accommodations, including those constructed prior to 1996, to provide a secondary means of escape into a different space than the primary exit so that a single fire should not affect both escape paths.
 20. **M-20-20. To the US Coast Guard:** Review the suitability of Title 46 *Code of Federal Regulations* Subchapter T regulations regarding means of escape to ensure there are no obstructions to egress on small passenger vessels constructed prior to 1996 and modify regulations accordingly.
 21. **M-20-21. To the Passenger Vessel Association, Sportfishing Association of California, and National Association of Charterboat Operators:** Until the US Coast Guard requires all passenger vessels with overnight accommodations, including vessels constructed prior to 1996, to have smoke detectors in all accommodation spaces, share the circumstances of the Conception accident with your members and encourage your members to voluntarily install interconnected smoke and fire

- detectors in all accommodation spaces such that when one detector alarms, the remaining detectors also alarm.
22. **M-20-22. To the Passenger Vessel Association, Sportfishing Association of California, and National Association of Charterboat Operators:** Until the US Coast Guard requires small passenger vessels with overnight accommodations to provide a secondary means of escape into a different space than the primary exit, share the circumstances of the Conception accident with your members and encourage your members to voluntarily do so.
 23. **M-20-23. To Truth Aquatics:** Implement a safety management system for your fleet to improve safety practices and minimize risk.

Amphibious Passenger Vessels (DUKW Boats)

24. **M-16-26. To the US Coast Guard:** Amend Navigation and Vessel Inspection Circular 1-01 to ensure that (1) amphibious passenger vehicle (APV) operators tell passengers that seat belts must not be worn while the vessel/vehicle is operated in the water and (2) before the APV enters the water or departs the dock, the master or other crewmember visually checks that each passenger has unbuckled his or her seat belt.
25. **M-19-15. To the US Coast Guard:** Require DUKW amphibious passenger vessels (commonly referred to as original and/or “stretch” DUKWs) to have sufficient reserve buoyancy through passive means, so that they remain upright and afloat with a full complement of passengers and crewmembers in the event of damage or flooding.
26. **M-19-16. To the US Coast Guard:** For DUKW amphibious passenger vessels without sufficient reserve buoyancy (commonly referred to as original and/or “stretch” DUKWs), require the removal of canopies, side curtains, and their associated framing during waterborne operations to improve emergency egress in the event of sinking.
27. **M-20-1. To the US Coast Guard:** Require that amphibious passenger vessels equipped with forward hatches enable operators to securely close them during waterborne operations to prevent water ingress.
28. **M-20-2. To the US Coast Guard:** Review the circumstances of the Stretch Duck 7 sinking and other amphibious passenger vessel accidents, and revise Navigation and Vessel Inspection Circular (NVIC) 1-01 to address the issues found in these accidents, including operations during imminent severe weather and emergency egress during rapid sinking.
29. **M-20-3. To the US Coast Guard:** Examine existing training and knowledge requirements for understanding and applying fundamental weather principles to waterborne operations for Coast Guard-credentialed masters who operate small passenger vessels; and, if warranted, require additional training requirements for these ratings on recognition of critical weather situations in pre-departure planning and while under way.

- 30. M-20-4. To Ripley Entertainment, Inc.:** Using the operating restrictions found in vessel certificates of inspection, review and revise your current operating policy to provide specific guidance on vessel operations when adverse conditions could be encountered during any part of the waterborne tour by implementing a go/no-go policy.
- 31. M-20-5. To Ripley Entertainment, Inc.:** Modify spring-loaded forward hatches of modified DUKW amphibious passenger vessels to enable their closure during waterborne operations as a prevention for water ingress.
- 32. M-20-6. To Ripley Entertainment, Inc.:** Re-evaluate emergency procedures regarding the donning of lifejackets aboard modified DUKW amphibious passenger vessels when equipped with fixed canopies.

Fishing Vessel Safety

- 33. M-11-23. To the US Coast Guard:** Establish standards for new and existing commercial fishing industry vessels of 79 feet or less in length that (1) address intact stability, subdivision, and watertight integrity and (2) include periodic reassessment of the vessels' stability and watertight integrity.
- 34. M-11-24. To the US Coast Guard:** Require all owners, masters, and chief engineers of commercial fishing industry vessels to receive training and demonstrate competency in vessel stability, watertight integrity, subdivision, and use of vessel stability information regardless of plans for implementing the other training provisions of the 2010 Coast Guard Authorization Act.
- 35. M-11-27. To the US Coast Guard:** Require all crewmembers to provide certification of completion of safety training before getting under way on commercial fishing industry vessels, such training to include both prevention of and proper response to emergency situations as well as actual use of emergency equipment.
- 36. M-17-45. To the US Coast Guard:** Require that all personnel employed on vessels in coastal, Great Lakes, and ocean service be provided with a personal locator beacon to enhance their chances of survival.

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Improve Pipeline Leak Detection and Mitigation

- 1. P-11-10. To the Pipeline and Hazardous Materials Safety Administration:** Require that all operators of natural gas transmission and distribution pipelines equip their supervisory control and data acquisition systems with tools to assist in recognizing and pinpointing the location of leaks, including line breaks; such tools could include a real-time leak detection system and appropriately spaced flow and pressure transmitters along covered transmission lines.
- 2. P-11-11. To the Pipeline and Hazardous Materials Safety Administration:** Amend Title 49 *Code of Federal Regulations* 192.935(c) to directly require that automatic shutoff valves or remote-control valves in high consequence areas and in class 3 and 4 locations be installed and spaced at intervals that consider the factors listed in that regulation.

3. **P-19-1. To the Pipeline and Hazardous Materials Safety Administration:** Require that all new service regulators be installed outside occupied structures.
4. **P-19-2. To the Pipeline and Hazardous Materials Safety Administration:** Require existing interior service regulators be relocated outside occupied structures whenever the gas service line, meter, or regulator is replaced. In addition, multifamily structures should be prioritized over single-family dwellings.
5. **P-19-6. To the International Code Council:** In coordination with the Gas Technology Institute and the National Fire Protection Association, incorporate provisions in the International Fuel Gas Code that requires methane detection systems for all types of residential occupancies with gas service. At a minimum, the provisions should cover the installation, maintenance, placement of the detectors, and testing requirements.
6. **P-19-7. To the National Fire Protection Association:** In coordination with the Gas Technology Institute and the International Code Council, revise the National Fuel Gas Code, National Fire Protection Association 54 to require methane detection systems for all types of residential occupancies with gas service. At a minimum, the provisions should cover the installation, maintenance, placement of the detectors, and testing requirements.
7. **P-19-8. To the Gas Technology Institute:** In coordination with the National Fire Protection Association and the International Code Council, work to develop standards for methane detection systems for all types of residential occupancies in both the International Fuel Gas Code and the National Fuel Gas Code, National Fire Protection Association 54. At a minimum, the provisions should cover the installation, maintenance, placement of the detectors, and testing requirements.
8. **P-21-2. To the Pipeline and Hazardous Materials Safety Administration:** Evaluate industry's implementation of the gas distribution pipeline integrity management requirements and develop updated guidance for improving their effectiveness. The evaluation should specifically consider factors that may increase the likelihood of failure such as age, increase the overall risk (including factors that simultaneously increase the likelihood and consequence of failure), and limit the effectiveness of leak management programs.
9. **P-21-3. To the Pipeline and Hazardous Materials Safety Administration:** Assist the Railroad Commission of Texas in conducting the audit recommended in Safety Recommendation P-21-4.
10. **P-21-4. To the Railroad Commission of Texas:** With assistance from the Pipeline and Hazardous Materials Safety Administration, conduct a comprehensive audit of Atmos Energy Corporation's incident-reporting practices; policies and procedures for responding to leaks, fires, explosions, and emergency calls; and integrity management programs.
11. **P-21-11. To Atmos Energy Corporation:** Revise your policies and procedures for responding to leaks, fires, explosions, and emergency calls to address the challenges caused by wet weather conditions. The revised policies and procedures should include: (1) leak investigation methods that are reliable in wet weather; (2) leak investigation procedures that assess all viable gas migration paths; (3) criteria for when to shut down or isolate gas distribution systems and pressure test main and

service lines; and (4) an alternate safe response such as evacuation when reliable leak investigations are not possible due to wet weather or other circumstances.

12. **P-21-13. To the Gas Piping Technology Committee:** Develop additional guidance that identifies steps gas distribution operators can take to safely respond to leaks, fires, explosions, and emergency calls, considering the limitations due to wet weather conditions, that includes: (1) criteria for when to shut down or isolate gas distribution systems, pressure test main and service lines, and begin evacuations; (2) leak investigation methods that are reliable in wet weather, (3) require an alternate safe response, such as an evacuation when reliable leak investigations are not possible due to wet weather, and (4) leak investigations that assess all viable gas migration paths, including granular backfill and crawlspaces.

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Improve Rail Worker Safety

Roadway Worker Protections

1. **R-12-34. To the Federal Transit Administration:** Issue guidelines to advise transit agencies and state oversight agencies on how to effectively implement, oversee, and audit the requirements of [Title] 49 *Code of Federal Regulations* Section 659.19(r) using industry best practices, industry voluntary standards, and appropriate elements from 49 *Code of Federal Regulations* Part 214, Subpart C—Roadway Worker Protection..
2. **R-12-35. To the Federal Transit Administration:** Emphasize the effective implementation and oversight of [Title] 49 *Code of Federal Regulations* Section 659.19(r) as part of your safety oversight program audits.
3. **R-13-39. To the Federal Transit Administration:** Issue a directive to all transit properties requiring redundant protection for roadway workers such as positive train control, secondary warning devices, or shunting. (urgent).
4. **R-13-40. To the Federal Transit Administration:** Issue a directive to require all transit properties to review their wayside worker rules and procedures and revise them as necessary to eliminate any authorization that depends solely on the roadway worker to provide protection from trains and moving equipment. (urgent).
5. **R-14-36. To the Federal Transit Administration:** Require initial and recurrent training for roadway workers in hazard recognition and mitigation. Such training should include hazards and mitigations of coworkers.
6. **R-14-38. To the Federal Transit Administration:** With assistance from the Federal Railroad Administration and the Occupational Safety and Health Administration, establish roadway worker protection rules including requirements for job briefings.
7. **R-14-39. To the Federal Transit Administration:** Once the action specified in R-14-38 is completed, update the state safety oversight program to ensure that rail transit systems are meeting the safety requirements for roadway workers.

8. **R-14-40. To the Federal Transit Administration:** Establish a national inspection program that specifically includes roadway worker activities.
9. **R-17-18. To the Federal Railroad Administration:** Require railroads to install technology on hi-rail, backhoes, other independently operating pieces of maintenance-of-way equipment, and on the leading and trailing units of sets of maintenance-of-way equipment operated by maintenance workers to provide dispatchers and the dispatch system an independent source of information on the locations of this equipment to prevent unauthorized incursions by trains onto sections of track where maintenance activities are taking place in accordance with the Congressional mandate under the Rail Safety Improvement Act of 2008.
10. **R-17-23. To AMTRAK (National Railroad Passenger Corporation):** Conduct a risk assessment for all engineering projects and use the results to issue significant speed restrictions for trains passing any engineering project that involves safety risks for workers, equipment, or the traveling public, such as ballast vacuuming, as part of a risk-mitigation policy.
11. **R-18-16. To the Federal Railroad Administration:** Review, and modify if necessary, your current inspection guidance regarding watchman/lookout equipment to verify that it requires railroads to provide the necessary equipment for a watchman/lookout to notify a roadway work group of approaching trains and that this accurately reflects the definition contained in Title 49 *Code of Federal Regulations* 214.7.
12. **R-18-17. To the Federal Railroad Administration:** Review railroads' on-track safety programs to determine if the necessary equipment is required and provided for a watchman/lookout to notify roadway work groups of approaching trains. If deficiencies are discovered, use enforcement options to encourage compliance.
13. **R-18-18. To the Federal Railroad Administration:** Revise your guidance for inspectors regarding required watchman/lookout equipment and procedures, train all of your inspectors on the revised guidance, and audit subsequent inspections to verify adherence to the specifications outlined in Title 49 *Code of Federal Regulations* 214.
14. **R-18-19. To the Federal Railroad Administration:** Modify the National Inspection Plan to require periodic unannounced inspections for roadway worker protection regulation compliance.
15. **R-18-20. To BNSF Railway:** Include evaluations on the visual detection of trains as a regular component of roadway work group employees' required operational testing
16. **R-18-21. To BNSF Railway:** Revise your on-track safety program to include the proper equipment for watchmen/lookouts to provide train approach warning for roadway work groups.
17. **R-18-22. To BNSF Railway:** Provide instruction for on-track safety procedures and conduct operational testing for roadway worker-in-charge personnel on their knowledge of roadway work group job briefing procedures to ensure that they know to include information on how on-track safety is to be provided when a roadway worker will be fouling a track.

18. **R-18-24. To the Federal Railroad Administration:** Issue a guidance document railroads can use to assess their on-track safety program to ensure it encompasses the role of signal and train control equipment, including redundant protection, such as supplemental shunting devices to protect roadway workers and their equipment.
19. **R-18-25. To the Federal Railroad Administration:** Study available technologies that automatically alert maintenance-of-way workers fouling tracks of approaching trains, then require that such technology be implemented as a redundant protective measure.
20. **R-20-5. To the Federal Railroad Administration:** Revise your oversight inspection process to focus on roadway worker activities, especially when roadway workers are using train approach warning for protection.
21. **R-20-6. To the Federal Railroad Administration:** Define when the risks associated with using train approach warning are unacceptable and revise Title 49 *Code of Federal Regulations* 214.329 to prohibit the use of train approach warning when the defined risks are unacceptable.
22. **R-20-7. To the Federal Railroad Administration:** Promulgate scientifically based hours of service requirements for roadway workers.
23. **R-20-8. To the Metropolitan Transportation Administration:** Identify the risks associated with using train approach warning as a method of on-track protection and require mitigations of the risks and prohibition of its use if effective mitigations are not possible.
24. **R-20-9. To the Metropolitan Transportation Administration:** Work with the International Association of Sheet Metal, Air, Rail and Transportation Workers to develop and implement a work scheduling program for roadway workers using a validated biomathematical model of fatigue avoidance to ensure that roadway workers at risk of being fatigued are not eligible for overtime.
25. **R-20-10. To the International Association of Sheet Metal, Air, Rail and Transportation Workers (SMART Union):** Work with Metropolitan Transportation Authority management to develop and implement a work scheduling program for roadway workers using a validated biomathematical model of fatigue avoidance to ensure that roadway workers at risk of being fatigued are not eligible for overtime.

Operations Crew Protections

26. **R-12-23. To the Association of American Railroads:** Revise Association of American Railroads Standard S-580 to provide protection for the occupants of isolated operating cabs in the event of a collision, and make the revision applicable to all locomotives, including those newly constructed, rebuilt, refurbished, and overhauled.
27. **R-17-1. To the Pipeline and Hazardous Materials Safety Administration:** Evaluate the risks posed to train crews by hazardous materials transported by rail, determine the adequate separation distance between hazardous materials cars and locomotives and occupied equipment that ensures the protection of train crews during both normal operations and accident conditions, and collaborate with the Federal

- Railroad Administration to revise 49 Code of Federal Regulations 174.85 to reflect those findings.
- 28. **R-17-2. To the Pipeline and Hazardous Materials Safety Administration:** Pending completion of the risk evaluation and action in accordance with its findings prescribed in Safety Recommendation R-17-01, withdraw regulatory interpretation 06-0278 that pertains to 49 Code of Federal Regulations 174.85 for positioning placarded rail cars in a train and require that all trains have a minimum of five non-placarded cars between any locomotive or occupied equipment and the nearest placarded car transporting hazardous materials, regardless of train length and consist.
 - 29. **R-17-3. To the Federal Railroad Administration:** Evaluate the risks posed to train crews by hazardous materials transported by rail, determine the adequate separation distance between hazardous materials cars and locomotives and occupied equipment that ensures the protection of train crews during both normal operations and accident conditions, and collaborate with the Pipeline and Hazardous Materials Safety Administration to revise 49 Code of Federal Regulations 174.85 to reflect those findings.
 - 30. **R-17-31. To the Union Pacific Railroad:** Develop and implement a modification to the existing man-down alarms that allows yard workers to reliably differentiate between legitimate and noncritical man-down messages from remote control units.
 - 31. **R-19-6. To the CSX Transportation Corporation:** Prohibit employees from fouling adjacent tracks of another railroad unless the employees are provided protection from trains and/or equipment on the adjacent tracks by means of communication between the two railroads

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