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## Morgan Lewis

## INTRODUCTIONS

Section 01

## **Foundational Concept – Levels of Automation**

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE) AUTOMATION LEVELS

Full Automation -













0

#### No Automation

Zero autonomy; the driver performs all driving tasks.

#### Driver Assistance

Vehicle is controlled by the driver, but some driving assist features may be included in the vehicle design.

#### Partial Automation

2

Vehicle has combined automated functions, like acceleration and steering, but the driver must remain engaged with the driving task and monitor the environment at all times.

#### Conditional Automation

3

Driver is a necessity, but is not required to monitor the environment. The driver must be ready to take control of the vehicle at all times with notice.

#### High Automation

The vehicle is capable of performing all driving functions under certain conditions. The driver may have the option to control the vehicle.

#### Full Automation

5

The vehicle is capable of performing all driving functions under all conditions. The driver may have the option to control the vehicle.

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## FEDERAL LEGISLATIVE INITIATIVES

Section 02

#### **Efforts to Pass Federal AV Legislation**

"Safely Ensuring Lives Future Deployment and Research in Vehicle Evolution Act" (SELF DRIVE Act – H.R. 3388)	First major US legislation establishing policies for regulating self-driving vehicles. Designed to speed up adoption of self-driving cars and preempt states from setting design, construction, and performance standards; failed in 2018.
"American Vision for Safer Transportation through Advancement of Revolutionary Technologies Act" (AV START Act – S. 1885)	Companion bill to SELF DRIVE Act; excluded self-driving trucks from bill; failed in 2018.
SELF DRIVE Act #2 (H.R. 8350)	Introduced 9/2020 revised Act would have mandated updates to the FMVSS, and it aimed to have taken steps to provide specific safety standards for autonomous vehicles.
SELF DRIVE Act #3 (H.R. 3711)	Introduced 6/2021; would similarly preempt state regulation of automated vehicles, and covers updated standards, cybersecurity, and privacy.
US Congressional Autonomous Vehicle Causus	Bipartisan effort by representatives Robert Atta and Debbie Dingell to help revive legislation efforts to boost self-driving vehicles.

117th CONGRESS 1st Session

#### H. R. 3711

To amend title 49, United States Code, regarding the authority of the National Highway Traffic Safety Administration over highly automated vehicles, to provide safety measures for such vehicles, and for other purposes.

#### "(b) Preemption.—

- "(1) HIGHLY AUTOMATED VEHICLES.—No State or political subdivision of a State may maintain, enforce, prescribe, or continue in effect any law or regulation regarding the design, construction, or performance of highly automated vehicles, automated driving systems, or components of automated driving systems unless such law or regulation is identical to a standard prescribed under this chapter.
- "(2) MOTOR VEHICLE STANDARD.—When a motor vehicle safety standard is in effect under this chapter, a State or political subdivision of a State may prescribe or continue in effect a standard applicable to the same aspect of performance of a motor vehicle or motor vehicle equipment only if the standard is identical to the standard prescribed under this chapter.

117th CONGRESS 1st Session

#### H. R. 3711

To amend title 49, United States Code, regarding the authority of the National Highway Traffic Safety Administration over highly automated vehicles, to provide safety measures for such vehicles, and for other purposes.

#### "(a) SAFETY ASSESSMENT CERTIFICATION.—

- "(1) FINAL RULE.—Not later than 24 months after the date of the enactment of this section, the Secretary of Transportation shall issue a final rule requiring the submission of safety assessment certifications regarding how safety is being addressed by each entity developing a highly automated vehicle or an automated driving system. Such rule shall include—
  - "(A) a specification of which entities are required to submit such certifications;
  - "(B) a clear description of the relevant test results, data, and other contents required to be submitted by such entity, in order to demonstrate that such entity's vehicles are likely to maintain safety, and function as intended and contain fail safe features, to be included in such certifications; and
    - "(C) a specification of the circumstances under which such certifications are required to be updated or resubmitted.

117th CONGRESS 1st Session

#### H. R. 3711

To amend title 49, United States Code, regarding the authority of the National Highway Traffic Safety Administration over highly automated vehicles, to provide safety measures for such vehicles, and for other purposes.

#### "§30130. Cybersecurity of automated driving systems

"(a) CYBERSECURITY PLAN.—A manufacturer may not sell, offer for sale, introduce or deliver for introduction into commerce, or import into the United States, any highly automated vehicle, vehicle that performs partial driving automation, or automated driving system unless such manufacturer has developed a cybersecurity plan that includes the following:

#### SEC. 12. PRIVACY PLAN REQUIRED FOR HIGHLY AUTOMATED VEHICLES.

(a) Privacy Plan.—A manufacturer may not sell, offer for sale, introduce or deliver for introduction in interstate commerce, or import into the United States, any highly automated vehicle, vehicle that performs partial driving automation, or automated driving system unless the manufacturer has developed a privacy plan that includes the following:

## Federal Initiatives: Updates to FMVSS Terminology

- NHTSA Final Rule (March 2022): updates requirements for vehicles that don't have traditional human controls
- Changes FMVSS terminology (i.e., "driver's seat," "steering wheel," or "pedals")
- Emphasizes such cars "must continue to provide the same high levels of occupant protection as current passenger vehicles."



Zoox AV (left)

Cruise Origin (right)



#### Federal Initiatives: Crash Reporting

#### UNITED STATES DEPARTMENT OF TRANSPORTATION NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION 1200 Nov. Leggy Avenue SE

1200 New Jersey Avenue SE Washington, DC 20590

In re:	
Second Amended Standing General Order 2021-01	
Incident Reporting for Automated Driving Systems (ADS) and Level 2 Advanced Driver Assistance Systems (ADAS)	

#### TO: Each Manufacturer and Operator on the Attached Service List

This Second Amended Standing General Order 2021-01 (General Order) is issued by the National Highway Traffic Safety Administration (NHTSA or the agency), an Operating Administration of the United States Department of Transportation, pursuant to 49 U.S.C. § 30166(g)(1)(A) and 49 C.F.R. § 510.7. This General Order takes effect on May 15, 2023, and, as of that date, supersedes NHTSA's August 12, 2021 Standing General Order 2021-01.

Under the National Traffic and Motor Vehicle Safety Act, as amended (the Safety Act), 49 U.S.C. Chapter 301, NHTSA is charged with authority "to reduce traffic accidents and deaths and injuries resulting from traffic accidents." 49 U.S.C. § 30101. To carry out this statutory mandate, NHTSA has broad information gathering authority, including authority to obtain information on vehicle crashes, potential defects related to motor vehicle safety, and compliance

- NHTSA: Issued Standing General Order in June 2021 (most recently amended April 2023)
- Requires reporting of certain crashes involving vehicles equipped with automated driving systems (ADS) or SAE Level 2 advanced driver assistance systems (ADAS)
- Aimed at evaluating whether the manufacturers of ADS and Level 2 ADAS systems meeting obligations to ensure that vehicles and equipment free of defects that pose "unreasonable risks to motor vehicle safety."

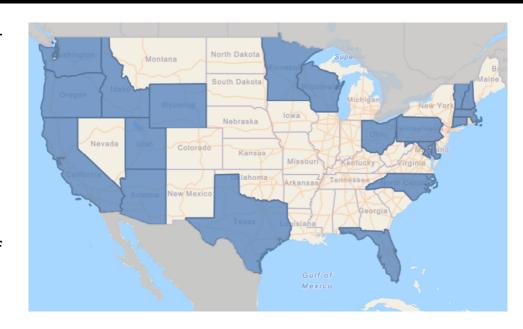
## **Federal Initiatives: Crash Reporting**

- NHTSA issued reports for ADS and ADASequipped vehicles (June 2022)
- Details certain crash information (e.g., month, reporting entity, collision detail, damage and location)



#### **NHTSA's AV Test Initiative**

- AV TEST Initiative launched in June 2020 creates test tracking tool.
- Aggregates and makes publicly available nationwide data on existing autonomous vehicle testing
- Tracking Tool shows on-road testing locations and activity data
- Goal to provide the public with direct and easy access to information about testing of ADS-equipped vehicles, information from states regarding activity, legislation, regulations, local involvement in automation.



Currently tracks AV testing in 19 states.

## **US NHTSA's AV Test Tracking Tool**

- Red dots
   represent
   location where
   a company has
   reported
   testing.
- Larger dots indicate a higher number of reported vehicles tested.

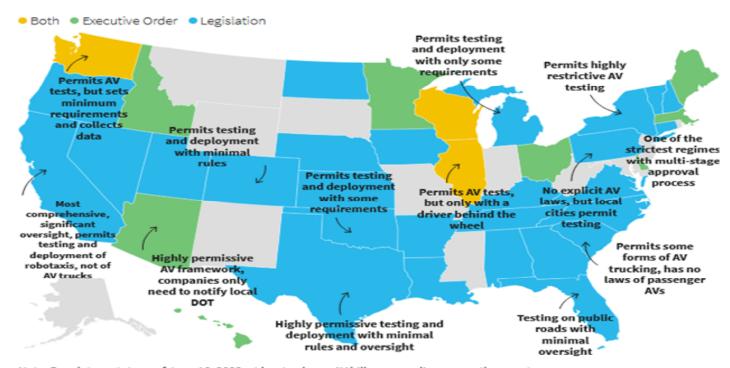


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## STATE LEGISLATIVE AND REGULATORY ACTIVITY

Section 03

## **State Legislative and Regulatory Activity**



Note: Regulatory state as of June 16, 2022; at least a dozen AV bills are pending across the country Source: National Conference of State Legislators, Dentons, Reuters research

#### **Arizona – State Legislation**

- Executive Order 2015-09
  - Directing agencies to "undertake any necessary steps to support the testing and operation of self-driving vehicles on public roads in Arizona."
- Executive Order 2018-04
  - Removed requirement that safety driver be present
  - Pledges AZ to keep pace with emerging technology
  - Directs Dept. of Public Safety to work with law enforcement on first responder protocols for AVs in emergency and traffic enforcement situations
- Executive Order 2018-09 established Institute of Automated Mobility

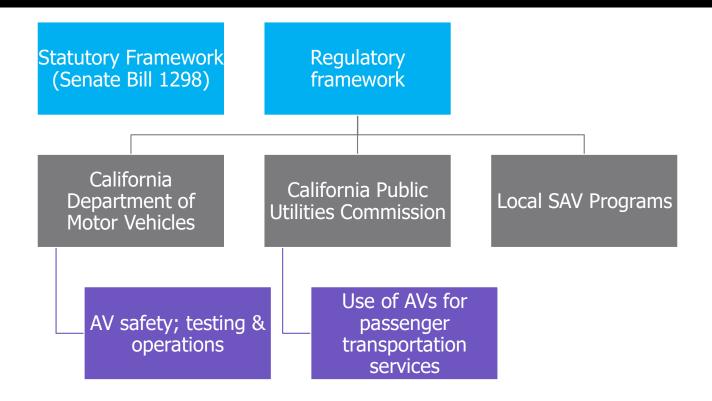
## **Arizona – State-Sponsored Innovation**

- Executive Order 2018-09 established Institute for Automated Mobility
  - Consortium designed to embrace innovation and collaboration in AV space
- Members from academia, public sector and global industry leaders
- State-of-the-art research, development, testing, and evaluation of AV systems
- Vision for AV R&D facilities, simulation lab, and infrastructure projects

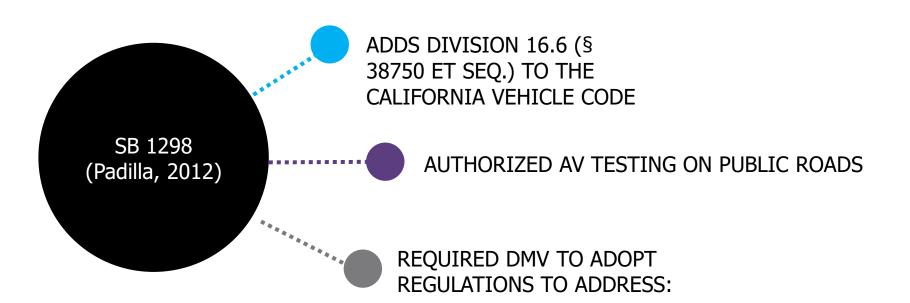
#### **Arizona – Hotbed of AV Activity**

- Advertises light touch regulatory approach
  - "Where self-driving cars go to learn" New York Times
  - "[P]roving ground for this transformative technology" AZ Commerce Authority
- First state to:
  - Enact executive order supporting testing and operation
  - Allow commercial self-driving taxi service
- 600+ vehicles and more than a dozen companies testing on public roads

## **Deep Dive: California**



#### **California Legislation**



 Testing, equipment and performance standards

drivered and driverless AVs

Requirements related to insuranceApplication and permitting process for

#### **California Regulatory Framework**

#### DMV Regulations (Cal. Code Regs., tit. 13 §§ 227 et seq.)

- Adopts SAE classification system: levels 3-5 qualify as AV
- Authorizes public passenger transport in test vehicles, without compensation
- Provides for separate permits for <u>testing</u> and <u>deployment</u> of <u>drivered</u> and <u>driverless</u> vehicles
- Manufacturers only
- \$5 million in insurance required for either program
- Considering AV trucks (> 10,000 lbs)

#### CPUC Authority

Use of AVs for passenger transportation

## **California Testing Programs**

DMV
"Autonomous
Vehicle Tester
Program"

- Established in 2014
- Stringent test driver requirements
- Requires reporting of unanticipated disengagements of autonomous technology annually
- Two year term
- Manufacturers must identify specific test vehicles and describe technology
- Currently 60 manufacturers hold testing permits

DMV
"Autonomous
Vehicle Tester
(AVT)
Driverless
Program"

- Established in 2018
- Notify local authorities in writing
- Remote operator with two-way continuous communication link
- Maintain training program with remote operators
- Require reporting of unanticipated disengagements of autonomous technology annually
- Establish means of communication with third parties in event of collision
- Provide law enforcement interaction plan

#### **California Public Utilities Commission**

## **Decision 18-05-043**

- CPUC authorized two pilot programs for AV passenger transport
  - "Drivered AV Passenger Service"
  - "Driverless AV Passenger Service"
- Must possess parallel DMV permit for drivered or driverless operation
- Restricted from collecting fares and passengers must provide explicit consent
- Quarterly trip data submission

#### **California Public Utilities Commission**

#### **Decision 20-11-046**

- CPUC authorized Phase 1 Deployment (Drivered and Driverless)
- Permits Commercial Service
- ODD specific
- Requires Passenger Safety Plan
- More extensive quarterly data reporting
- First two permits to be considered on 6/29/23

## **California Local SAV Projects**

- SAVs Shared Autonomous Vehicles
- Bishop Ranch San Ramon SAV Project
  - Shared autonomous vehicle testing at business park in San Ramon, CA
  - On hold pending NHTSA certification of new SAV models
    - Testing currently taking place at local AV testing facility
- Livermore Amador Valley Transit Authority SAV Project
  - On-street testing began in June
  - SAVs hold up to 6 passengers, travel at 13 MPH and must have an operator at all times
  - Provide reliable, safe and eco-friendly transport between bus routes and BART

## **2022: More States Clear Path for Deployment of AVs**

- Pennsylvania starting in July full driverless deployment is permitted under certain conditions
- West Virginia HB 4787
  - Law Enforcement Interaction Plan,
  - Proof of Financial Responsibility/Insurance
  - incident reporting
  - platoons up to three
- Oklahoma SB 1541
  - Similar framework to West Virginia

## **Michigan AV Developments**

- State of the art infrastructure
  - 500+ miles of roadway equipped for CAV testing
- Manufacturing hub
  - 18 OEMs and 60 of the top 100 automotive suppliers headquartered in Michigan
- State funding
  - Earmarked \$20 million in 2019 for investment in mobility initiatives and startups
- Partnering with tech and auto companies to retrofit 40 miles of roads exclusively for AVs
  - Includes installation of cameras, sensors and barriers
  - Private funding for retrofit and public funds for maintenance

#### Florida AV Legislation

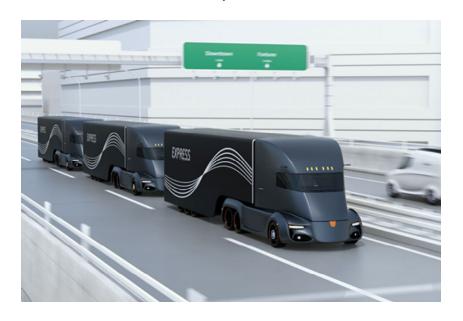
- CS/HB 311 (2019)
  - Driverless AVs allowed on public roads (SAE 4-5 only)
  - Passengers exempted from laws against texting or other distracted driving activities
  - Ride-sharing companies must provide at least \$1 million in liability insurance
  - No state inspection or certification required to operate
  - Cars must be equipped with safeguards to achieve "minimal risk condition"
    - Pull over and activate hazard lights
- Gov. Ron DeSantis
  - "With this bill, Florida officially has an open-door policy to autonomous vehicle companies, and I encourage them to relocate from California to Florida"

#### Texas AV Legislation

- SB 2205 (2017)
  - Preempts previous local regulation
  - Driverless vehicles can operate on public roads throughout state
  - Equipped with video recording devices and proper insurance
  - Manufacturer liable for accidents or violations, provided AV system has not been modified
- TX DOT created CAV Task Force
  - Coordinate CAV efforts across the state
  - Compile data, host industry forums, and shape future state legislation

## "Driver-in" Legislation: Headwind for Trucking and Commercial AV service

- California AB 316- limit use of AVs in trucking applications by requiring presence of human safety driver in vehicles over 10,000 lbs.
- Illinois HB 1403
- Indiana SB 141
- Texas HB 3274
- Nebraska LB 625
- New Mexico HB 378



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# MITIGATING LEGAL EXPOSURE FOR ACCIDENTS INVOLVING ADAS TECHNOLOGIES

Section 04

#### **Automotive Fatalities**

- Approximately 1.25 million global motor vehicle fatalities
  - 20 million more are injured each year
- NHTSA projects that an estimated 42,915 people died in motor vehicle traffic crashes in 2021 in the United States
  - 10.5% increase from the 38,824 fatalities in 2020
  - Highest fatality rate in the past 16 years
- Leading causes of accidents
  - Drunk driving (35%)
  - Excessive speed (27%)



#### **ADAS Technologies – Reduction of Accidents**

- ADAS have the potential to greatly improve roadway safety.
- National Motor Vehicle Crash Causation Survey, conducted by NHTSA, shows the driver error is a factor in 94% of crashes.
  - Although it is important to remember that multiple factors contribute to all crashes, the largest portion of driver error issues involve the driver failing to recognize hazards, including distraction.
  - Many of the most promising ADAS technologies are designed to identify and react to potential hazards faster than a human driver.
- Human errors, which is caused, in part, by certain tech-based systems (i.e., driver aids and electronics), are responsible for 90% of these accidents.

## Potential ADAS Manufacturer Liability — System Control



- When introducing partially or fully ADAS systems, manufacturers must be cognizant of their insurability and associated insurance premiums in the event of accidents.
- When are AV manufacturers/systems liable for accidents?
  - Bright Line: whether the human occupant was in control of the AV at the time of the accident.
  - ORRP Test: In such a case the human would have acted more optimally to prevent or avoid the accident, even if the human did not cause it.

#### **Potential ADAS Manufacturer Liability – Defects**

- When are ADAS manufacturers liable for defects that cause accidents?
  - If the design flaw in the ADAS system's programming causes the system to improperly react to a situation, or behave in a manner in which a human driver would not act in the safe operation of a vehicle under similar circumstances.
    - Blueprint exits in the aviation space i.e., autopilot.
  - If the product has not spent enough time on closed-track development time, real-world development time, LiDAR mapping is not as developed as other manufacturers, etc. any input that causes the system to an engage in an unsafe manner.
    - Delay in allowing human intervention in system operations
    - Delay in accident reporting functions
  - If the system has not developed robust safety driver manuals and procedures.

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## Potential ADAS Manufacturer Liability — False Advertising

- When are AV manufactures/systems liable for false advertising?
  - FTC's Truth in Advertising Law collection of rules contained in the Federal Trade
     Commission Act that regulate most ad content nationwide.

- There are also separate and additional advertising regulations from various state and

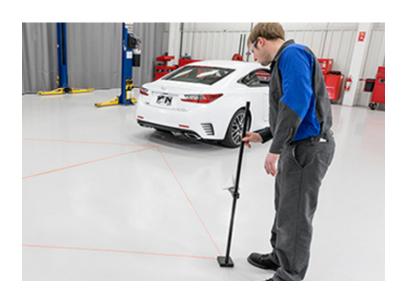
local governmental agencies.



## Risk Mitigation in Product Development and Aftermarket

- Establishing a culture of safety during the product development stage
  - In-House Trainings On:
    - Automated Driving Safety Training
    - Functional Safety STPA Training
    - Functional Safety Workshops





## **Development of Safety Driver Manuals for Various AV Driving Scenarios**

- **Purpose:** Create autonomous in-vehicle monitoring and assessment tools to ensure confidence in AV fleet performance and public safety.
  - Key Guideposts:
    - ISO 26262
    - UL 4600
    - ISO 22737



### ISO 26262 - Road Vehicles / Functional Safety

- Published in June 2009
  - ISO 26262 has gained traction in the automotive industry
- Because a public draft standard is available, lawyers treat ISO 26262 as the technical state of the art.
  - The technical state of the art is the highest level of development of a device or process at a particular time.
  - Under German law, car producers are generally liable for damage to a person caused by the malfunction of a product.



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## ISO 26262 - Road Vehicles / Functional Safety



- ISO 26262 provides regulations and recommendations throughout the product development process, from conceptual development through decommissioning.
- ISO 26262 details how to assign an acceptable risk level to a system or component and document the overall testing process.
  - Provides an automotive safety lifecycle (management, development, production, operation, service, decommissioning) and supports tailoring the necessary activities during these lifecycle phases
  - Provides an automotive specific risk-based approach for determining risk classes ("Automotive Safety Integrity Levels, ASILs")
  - Uses ASILs for specifying the item's necessary safety requirements for achieving an acceptable residual risk
  - Provides requirements for validation and confirmation measures to ensure a sufficient and acceptable level of safety being achieved

## **UL 4600 – Standard for Safety for the Evaluation of Autonomous Products**

 In April 2020, UL 4600 was published as the first standard designed for automated and connected vehicle technologies. UL 4600 addresses:



- The ability of autonomous products to perform safely and as intended without human interaction.
- The reliability of the hardware and software necessary for machine learning, sensing of the operating environment and other safety aspects of autonomous operation.



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## **UL 4600 – Standard for Safety for the Evaluation of Autonomous Products**



- UL 4600 uses a claim-based approach which prescribes topics that must be addressed in creating a safety case.
  - Security is addressed as a requirement, but the details of compliance are currently outside the scope of UL 4600.
  - UL 4600 does not cover performance criteria or define pass/fail criteria for safety; nor does it benchmark the road testing of prototype vehicles.
  - UL 4600 remains technology neutral, meaning that it does not mandate the use of any specific technology in creating the autonomous system, and it also permits design process flexibility.

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## ISO 22737 — Standard for Intelligent Transport Systems / Low-Speed Automated Driving

- LSAD systems are used for applications like last-mile transportation, transport in commercial areas, business or university campus areas and other lowspeed environments.
  - A vehicle that is driven by the LSAD system (which can include interaction with infrastructure) can potentially have many benefits, like providing safe, convenient and affordable mobility and reducing urban congestion.



## ISO 22737 — Standard for Intelligent Transport Systems / Low-Speed Automated Driving



- LSAD systems (cont'd.)
  - Could provide increased mobility for people who are not able to drive.
  - ISO 22737 requirements are intended to assist manufacturers with incorporating minimum safety requirements into their designs and to allow end users, operators and regulators to reference a minimum set of performance requirements in their procurements.

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## INVESTMENT TRENDS IN ADAS DEVELOPMENT

Section 05

## **Investment in ADAS Hits Record \$9.7 Billion in 2021**

- In 2021, investors poured a record \$9.7 billion into the development of ADAS technologies.
  - Funded by venture capital firms, legacy automakers, and tech companies.
    - Legacy automakers have created ecosystems for AV startups to develop ADAS systems







### **Investment in ADAS Falls By 60% in 2022**

- In 2022, ADAS investment fell to \$4.1 billion
  - Investments were smaller and more targeted
  - Market indicator that ADAS systems are maturing
  - More ADAS Level 2 and 3 systems will be coming to market based on consumer demand
- Other market factors driving ADAS investment decline
  - Legacy automakers are retooling factories / building new plants in preparation for ramping up EV production
  - Investment in rare earth materials to develop EV battery supply chain
  - Inflationary costs associated with both processes
  - Focus on monetizing current ADAS technologies and increasing exposure to consumers



## What ADAS Technologies Will Soon Become More Widely Available?



- ADAS Level 2 and 3 technologies are being introduced in passenger vehicles
  - Level 2 ADAS includes "partially automated" technologies
    - Carry approximately \$1,500 to \$2,500 in component costs
    - Low-speed in-path object monitors, adaptive cruise control that can navigate regular traffic, heavy traffic jam pilots, and adaptive braking
    - Costs for Level 2 ADAS sensors and highperformance computers are decreasing as market saturation continues to expand and, as a result, system safety standards and operative efficiencies are continuing to advance.

## What ADAS Technologies Will Soon Become More Widely Available?

- ADAS Level 2 and 3 technologies are being introduced in passenger vehicles
  - Level 3 ADAS includes "conditionally automated" technologies
    - Carry approximately \$3,000 to \$5,000 in component parts
    - Engaged in light or moderate traffic and in clear, precipitation-less weather
    - Technologies can navigate a vehicle on a highway trip, excluding on- and off-ramp travel and city driving
    - Consumer demand for ADAS Level 4 technologies warrants the continued investment in the evolution of these systems for passenger vehicles



## What ADAS Technologies Will Soon Become More Widely Available?



- ADAS Level 4 technologies will be introduced in Class 4 to 8 trucks
  - Level 4 ADAS include "high automation" technologies
    - Level 4 ADAS is the highest level of autonomous driving technology available
  - Level 4 ADAS technologies can support first- and lastmile delivery routes and could revolutionize the commercial trucking industry by reducing long-term costs and increasing supply chain efficiencies.
  - In 2021, first- and last-mile delivery transportation and logistics routes were valuated at \$131.5 billion.
  - Between 2022 to 2031, first- and last-mile delivery routes are expected to increase in value to \$288.9 billion.

#### Morgan Lewis Automotive Hour Webinar Series

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- **FEBRUARY 22** | Key Issues Facing the EV Industry in 2023
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### **Biography**



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F. Jackson Stoddard represents and advises clients on energy, utility, and transportation regulatory matters and proceedings before state and federal agencies, including the California Public Utilities Commission (CPUC), California Air Resources Board (CARB), California Energy Commission, and Federal Energy Regulatory Commission. Jack also represents clients in matters involving the California Independent System Operator (CAISO), including the transmission planning process, interconnection process, and CAISO stakeholder processes. As head of the firm's Autonomous and Connected Vehicles Working Group, Jack is regularly called to counsel on, and speak to, issues regarding regulation of autonomous vehicles (AVs), AV transportation services, and vehicle electrification.

### **Biography**



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Pejman Moshfegh leverages over a decade of experience in California energy and environmental law, including federal and state environmental compliance counseling. Prior to joining Morgan Lewis, Pejman served in the California Public Utilities Commission's Enforcement Division, where he spent eight years investigating various violations of the Public Utilities Code, and supporting enforcement proceedings brought by the Commission.

## **Biography**



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Mark Fanelli represents market-leading US and international clients in high-stakes complex civil and criminal antitrust lawsuits. These disputes often involve alleged price fixing, market allocation, exclusive dealing, monopolization, price discrimination, tying, bundling, reverse payments, and other alleged violations of federal and state antitrust laws. Mark is also a member of Morgan Lewis's automotive and mobility industry team that counsels a variety of automotive and mobility stakeholders on consumer protection, regulatory compliance, product launch, and new market entry matters.

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