



CITY OF BEVERLY HILLS

“DRIVEN BY INNOVATION”

AUTONOMOUS VEHICLE INITIATIVE (AVs)

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GOOGLE E-CITY

“Known for its glitzy shopping, Beverly Hills is home to everything from the most expensive store in the world to an ATM that dispenses fresh cupcakes. But it’s also tech savvy. The city’s website offers over 20 different online services, from paying bills to getting building permits.”



Since 2013, Google has been recognizing the strongest online business community in each state. These Businesses are using the web to find new customers, connect with existing customers and fuel their local economies. Google and independent research firm, Ipsos, analyzed the online strength of local businesses in cities in all fifty states. The city with the highest scores in each state was designated a Google eCity.



Autonomous Vehicle

What is an Autonomous Vehicle (AV)?

- **Level 4: Full Self-Driving Automation.** The driver no longer has any responsibility for safe operation of the vehicle, and is not expected to monitor road conditions or take control at any point during the trip (other than specifying the destination). At this level of automation, the vehicle does not need even need a human driver to be present, and can operate unoccupied



Future of Driverless Cars





Why Beverly Hills' Interest

- MTA Subway arrives in 2023 (no station parking)
- Beverly Hills needs a last mile solution
 - Too small for conventional bus system
 - City owned shuttles are expensive and underutilized (hard to schedule and unreliable timing)
 - City has a taxi franchise but it is being decimated by TNCs
 - Smart City Committee investigated on demand transportation as modeled by TNC's
 - Committee realized that AVs have reached a pivot point, and are an **IMMINENT** DISRUPTIVE TECHNOLOGY



AVs are **IMMINENT**

- AV technology is taking care of itself, driven by **HUGE** benefits - Stanford, MIT, CMU, IDEO, RAND
 - Safety: up to 90% decrease annual impacts of
 - 6.1 million auto crashes in US
 - 2.2 million injuries
 - 32,000+ deaths
 - \$230 billion is spent to cover accidents (2-3% of GDP)
 - AVs will be 75% of auto sales in less than 25 years
 - 20X increase in existing road capacity
 - Less ownership of autos – on demand / subscription model



AVs Are Safer Than Humans

Number of Crashes, by Crash Type

Crash Type	2013	2014	Change	% Change
Fatal Crashes	30,203	29,989	-214	-0.7%
Non-Fatal Crashes	5,657,000	6,034,000	+377,000	+6.7%
Injury Crashes	1,591,000	1,648,000	+57,000	+3.6%
Property Damage Only	4,066,000	4,387,000	+321,000	+7.9%
Total Crashes	5,687,000	6,064,000	+377,000	+6.6%

Source: FARS 2013 [Final], 2014 [ARF], NASS GES 2013, 2014

The National Highway Safety Traffic Administration estimates more than 90 percent of road crashes involve human error, a figure that had led some experts to predict that autonomous driving will reduce the number of accidents on the road by a similar percentage.



Who is working on this?

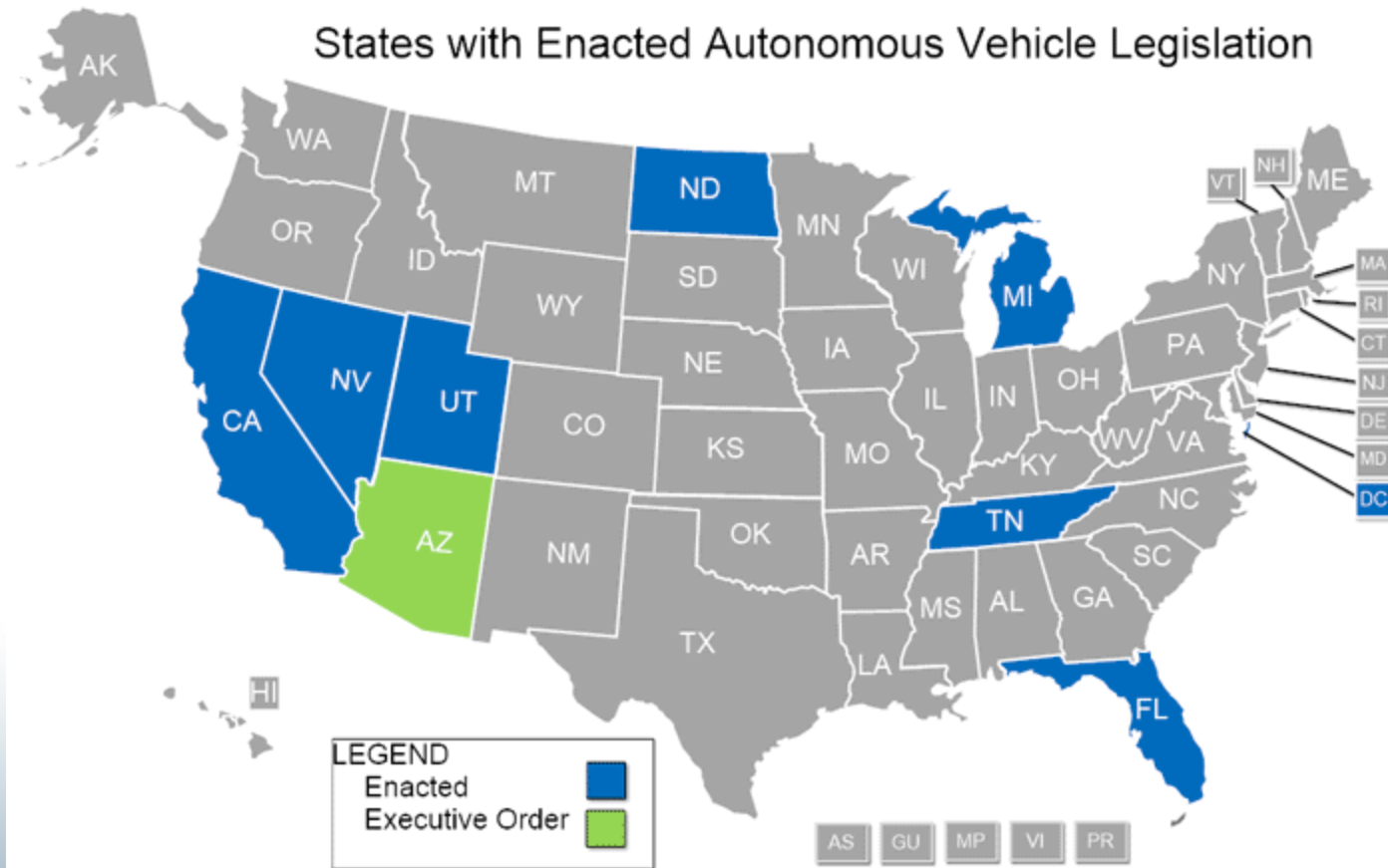
Every One

30 Corporations Working On Autonomous Vehicles





States with Enacted Autonomous Vehicle Legislation





California AVs on the Road

- California DMV allows testing of Level 4 AVs public roads
 - www.dmv.ca.gov/portal/dmv/detail/vr/autonomous/testing
- Auto has be owned by an approved manufacturer.
- Auto may operate in Level 4 mode but must have a human driver who is an employee of the manufacturer
- Manufacturer assumes all liability
- Volkswagen, Mercedes Benz, Google, Delphi Automotive, Tesla Motors, Bosch, Nissan, GM Cruise, BMW, Honda, Ford, Zoox, Drive.ai, Faraday



Time Frame

- Does 2, 15 or 25 years make a difference to policy makers? **No. Policy (especially land use impact) needs to be addressed now**
- Beverly Hills City Council unanimously adopted a resolution that commits the City to legislative support of AVs, local testing AVs, with a goal of a fleet of driverless municipal vehicles. City wants to be a test bed.



Beverly Hills' Future

- Beverly Hills Vision:
 - City owned autonomous fleet – as compared to individual cars
 - First/last mile solution – no park and ride
 - Seniors, disabled
 - Discourage cars – certainly second cars
 - Local use – supermarket, soccer, etc.
 - Kids without parents?
 - Next generation – Uber/Lyft – no driver



We Are Ideal Test Bed

- Elements of Beverly Hills concept
 - 5.7 miles
 - Well-paved streets
 - Strong fiber optic system, great and engaged IT department
 - Robust GIS functionality in place already
 - Independent city – our own Fire and Police and Public Works departments to support
 - All in commitment



Need For Federal Standards

- Federal Issues

- Acceptable technology – only electric?

- Safety standards

- Manufacturing controls

- Large scale data collection

- Rules for interstate use

- Liability/Insurance

- Funding

- Mark Rosekind, Administrator of the NHTSA

“What the states actually implement is their call.” He added that NHTSA will have “no say” in what states want to do.



CA Issues in the Mean Time

- State Issues:
 - DMV reset
 - Who is the driver?
 - State certifications
 - Rules for use on the State Highway system
 - Licensing – who owns?
 - Liability
 - Funding



Municipal Issues

- Local Issues:
 - Public policy and land use
 - Buildings to last 50-75 years – obsolete?
 - Where to drop-off and pick-up – every block?
Cut-out? Multi-stop or point-to-point?
 - Do parking requirements change? Meters?
 - Separate lanes?
 - What happens when they break?
 - Do they react to sirens and red lights?



Municipal Issues (cont.)

- Local Issues (continued):
 - Are there cameras inside? What are the privacy implications?
 - Are there cameras outside? What are the privacy implications?
 - Are the cameras subject to Public Information Act requests? How long do you keep the video?
 - Can we use the cameras as a force multiplier for the police? For public works looking for potholes?



DRIVEN BY INNOVATION

Are you ready?

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