Hands Off the Wheel
What autonomous vehicles mean for Washington Truck Drivers

THE TECHNOLOGY LAW AND PUBLIC POLICY CLINIC
UNIVERSITY OF WASHINGTON SCHOOL OF LAW
Introduction

The Technology Law and Public Policy Clinic
Introduction
What Are Autonomous Trucks?

<table>
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<th>SAE AUTOMATION LEVELS</th>
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<tbody>
<tr>
<td><strong>0</strong></td>
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<td><strong>No Automation</strong></td>
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<td>Zero autonomy; the driver performs all driving tasks.</td>
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Introduction
What Are Autonomous Trucks?

- Assistive Technology?
- Fully Autonomous?
- Platooning?
Introduction
What Are Autonomous Trucks?
UBER’S SELF-DRIVING TRUCK MAKES ITS FIRST DELIVERY: 50,000 BEERS 10/16 Fort Collins to Colorado Springs
Autonomous Trucks
How Shall They Be Used?

Autonomous trucks will likely roll out in four waves.

- **Constrained platooning of trucks**
  - 2018-20: Driver in each truck
  - 2022-25: Driver in leading truck
  - Platooning only on interstate highway between dedicated truck stops with 2 trucks, with single driver in leading vehicle
  - Drivers drive individually on noninterstate highway
  - 2 drivers platoon 2 trucks on interstate highway

- **Constrained autonomy**
  - 2025-27: Driver for pickup and drop-off
  - Autonomous trucks ride on interstate highway without drivers (platooning 2 or more trucks when possible)
  - Drivers drive individually on noninterstate highway
  - Drivers drop off trucks at dedicated truck stops
  - -20%

- **Full autonomy**
  - 2027+: Driverless
  - Autonomous trucks drive individually on all highways and in platoons of 2 or more trucks
  - Driver involvement eliminated throughout the journey
  - 50%

Total-cost-of-ownership (TCO) savings

Source: Route 2030: The last track to the future of the commercial vehicle industry, September 2018, McKinsey.com
Dog-like robots could one day be delivering packages from driverless vans, as demonstrated in a vision of the future presented by Continental at the CES electronics show in Las Vegas.
Autonomous Trucks
Benefits and Burdens

- Cost savings
  - McKinsey & Company report:
    - A fully autonomous trucking market would cut operating costs by 45 percent, saving carrier companies between $85 billion and $125 billion annually.
    - Highway trips are the least popular for drivers. Using autonomous trucks would save $24 billion in labor costs and enable carriers to use truck assets 20 hours per day rather than 11, thereby increasing efficiency and expanding capacity.
Autonomous Trucks
Benefits and Burdens

- Improved Productivity
  - Allowing a computer to handle tasks, such as driving on a highway, might also allow for relaxing restrictions on the number of hours a driver may drive.
  - Could allow driver to undertake other tasks such as paper work or making calls.
  - Fully autonomous vehicles will not be limited by driver fatigue; could operate up to 20 hours per day greatly increasing flexibility.
  - Size of national fleet of trucks might not need to increase even as demand grows.
Autonomous Trucks
Benefits and Burdens

Safety
- 4,000 fatalities per year
- 330,000 accidents involving trucks
- 90% caused by human error
Autonomous Trucks
Benefits and Burdens

- **Reduced fuel consumption** - vehicle platooning with automated trucks, can reduce fuel consumption by 10%.

- **Reduced CO2 emissions** - platooning can reduce CO2 emissions by up to 16% from the trailing vehicles and by up to 8% from the lead vehicle.

- **Traffic reduction?** V2V, V2I, V2C

- **Misc.**
  - **Relationship with railroads** competition or cooperation?
  - **More efficient ports** run 20 hours per day?
Autonomous Trucks
Benefits and Burdens

- **Safety - bright sunlight** can blind sensors, also makes it difficult for them to distinguish between white vehicles and **bright skies, snow and sand** throw off laser sensors, while recognizing the facial expressions of other drivers, or their roles.

- **Hacking and human intervention** - security researcher Jonathan Petit showed that lidar can be easily fooled into detecting a non-existent obstacle using a **handheld laser pointer**, which can force the car to slow down, stop or swerve.
Autonomous Trucks
Benefits and Burdens
A recent analysis by Cornerstone Capital Group suggests that 7.5m retail jobs – the most common type of job in the country – are at “high risk of computerization”, with the 3.5m cashiers likely to be particularly hard hit.
Autonomous Trucks
Legislative Considerations

- **Goals**
  - Public safety
  - Encourage innovation

- **Options**
  - “Light touch” regulation (Florida)
  - Detailed regulation (California)
Autonomous Trucks
Legislative Considerations

- Common components of legislation
  - Definitions
  - Testing requirements
    - Entity
    - Driver
    - Self certification?
  - Deployment?
  - Oversight agency
Autonomous Trucks
Legislative Considerations

- Information gathering and reporting
- Insurance and liability
- Misc.
  - Privacy protections, Warning display, TNCs, Study Committee/Advisory Body
Autonomous Trucks
Legislative Considerations

- **Sample of states which permit platooning** (and have amended existing laws to allow shorter following distances)
  - Alabama—allows platooning; amended law to allow closer following distances
  - Indiana—defines “vehicle platoon,” Iplan allowing for vehicle platooning, to be submitted to Transportation Commissioner
  - Kentucky—allows platoons, must submit plan to State Police
  - Mississippi—allows platoons but limited to two trucks on certain highways; plan to be approved by State Department of Transportation and State Police
Autonomous Trucks
Recommendations

1. Decide how to regulate ("light touch" or other)?
3. Work closely with industry
4. Begin to consider potential secondary impacts (traffic, parking, revenue losses?)
5. Develop a strategic plan/Consider equity issues
6. Remember often new technologies arrive sooner than we expect
Autonomous Trucks
The End