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<th><strong>Docket Number:</strong></th>
<th>20-IEPR-02</th>
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<td><strong>Project Title:</strong></td>
<td>Transportation</td>
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<td><strong>TN #:</strong></td>
<td>233862</td>
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<tr>
<td><strong>Document Title:</strong></td>
<td>Presentation - Platooning and Autonomous Heavy Trucks</td>
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<tr>
<td><strong>Description:</strong></td>
<td>S2 3C. Mike Roeth, NACFE</td>
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<tr>
<td><strong>Filer:</strong></td>
<td>Raquel Kravitz</td>
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<td><strong>Organization:</strong></td>
<td>Energy Commission</td>
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<td><strong>Submitter Role:</strong></td>
<td>Commission Staff</td>
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Platooning and Autonomous Heavy Trucks

Mike Roeth, Executive Director, NACFE
CEC, July 16, 2020
NACFE

- Unbiased, non-profit
- Mission to double freight efficiency
- Scaling Available Technologies
- Guiding Future Change
- Run on Less Demonstrations

www.NACFE.org
www.runonless.com
Why bother with saving fuel?

- Fuel cost
  - Fleets in the study reducing fuel use 2% per year.
- Future fuel costs
- Government Regulations – US Federal GHG, State & Local
- Corporate Sustainability
October 2016
CONFIDENCE REPORT:
Two-Truck Platooning

TRUCKING EFFICIENCY
PUBLISHES CONFIDENCE REPORT ON TWO-TRUCK PLATOONING

www.nacfe.org/technology/two-truck-platooning/
Safety Equipment Adoption

Platooning Capable

Average NACFE Fleets "Unit" Adoption

Time


0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

NACFE
Conclusions

• Valid/proven fuel-saving strategy for fleets ~ 4%.
• Bulk of required technology currently available
• Intervals not as close as widely believed ~ 50 ft.
• Minimal stress on drivers
• Begin as intra-fleet option
• Become inter-fleet option quickly
• Operational challenges

To Do:
1. Validate operation between different OEMs
2. Pass legislation to make platooning legal in more places
3. Logistics controls between fleets
Different Scenarios for Autonomy

“Autonomous Trucks and the Future of the American Trucker”
By Steve Viscelli September 2018

1. Cooperative Adaptive Cruise-Control Platooning
2. Human & Auto-Follower Platooning
3. Exit-to-Exit Autonomous Trucks
4. Drone Operation at Depot
5. Driver-in-the-Sleeper Scenario
6. Facility-to-Facility Autonomous Trucking

https://gspp.berkeley.edu/centers/cepp/news-and-publications
## Benefits & Costs

### Safety Techs

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Safety Techs</th>
<th>Platooning</th>
<th>Assisted Driving</th>
<th>Auto-Follower</th>
<th>Self-Driving</th>
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<tbody>
<tr>
<td></td>
<td>Less accidents &amp; Repairs</td>
<td>Fuel</td>
<td>Enhanced Performance</td>
<td>Lower labor</td>
<td>Labor and 24/7 operation</td>
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<tr>
<td></td>
<td>Fuel</td>
<td>Higher Adoption of Safety Equip</td>
<td>Docking, parking &amp; traffic jams</td>
<td>24/7 for trailer No cab, EV?</td>
<td>Cost, weight &amp; complexity</td>
</tr>
<tr>
<td>Costs</td>
<td>Increasing upfront costs until vehicle redesigns with autonomous operation.</td>
<td>Labor savings for follower, no cab</td>
<td>No cab reduces tractor cost ~40%</td>
<td>Maintenance increases with complexity and decreases with gentler operation.</td>
<td></td>
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THANK YOU & QUESTIONS
Autonomous Trucks & “Corner Cases”

Corner Cases are Typically The Development & Validation Challenge

- Accident Scene Work Arounads
- Unusual/Unexpected Weather
- “Normal” or Anticipated Driving Situations
- Unusual Failure Mode On Other Vehicle or This Vehicle
- Protestors on an Interstate
Corners for Confidence in Autonomy

In Their Neighborhood

Supports Consumers

Limited to no Consumers

Other Applications: Drayage, Private Tour Grounds, Airport Rental Car Shuttles...

Other Operational Features: Platooning, Parking, Docking, Yard tractors...

NOT In Their Neighborhood
Many New Companies in Truck Autonomy

And others...