California-Mexico Medium- and Heavy-Duty Zero-Emission Vehicles (MHD ZEV) Transition

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University of California-Riverside
Center for Environmental Research and Technology

http://www.cert.ucr.edu
CE-CERT is dedicated to addressing society’s most pressing environmental challenges in air quality, climate change, energy and transportation through research, education and public service.

150 student employees
60 faculty & engineers
$30 million in ongoing research
30 laboratories and testbeds
Vehicle Electrification Projects at UCR CE-CERT

**Light-Duty EV Research Projects**
- Carbon-Based EV Charging Strategies: developing pricing strategies to promote EV charging mid-day
- Vehicle-to-Building Energy Connectivity

**Medium and Heavy-Duty Electrification**
- Participation in several ZANZEFF (Zero- and Near Zero-Emission Freight Facilities) pilot projects; e.g., see VolvoLights: [https://www.lightsproject.com/](https://www.lightsproject.com/)
- Vehicle Performance Testing: see [https://www.cert.ucr.edu/caltestbed#electric_drive_vehicle_testing_laboratories](https://www.cert.ucr.edu/caltestbed#electric_drive_vehicle_testing_laboratories)

**Battery Electric Truck (BET) Fleet Management**
- Current limitations of BETs could significantly impact fleet operations, so we have developed BET-specific fleet management solutions
- New methods of scheduling, dispatching, SOC monitoring & forecasting, opportunity charge events
Binational Workshop on ZEV Transition of MHD Vehicles

Focused on ZEV transition of CA-MX MHD vehicle cross border traffic

Organized by UC AlianzaMX and CE-CERT, UCR

Encourage dialog between stakeholders and identify challenges and opportunities

Topics included:

- Drayage and MHD ZEV regulations, current and proposed
- Trade and environmental implications
- Infrastructure and vehicle technologies

Participants included regulatory agencies, government, industry, utilities, and academia from both countries
## Workshop Participants

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<thead>
<tr>
<th>MEXICO</th>
<th>UNITED STATES</th>
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<tr>
<td>Asociación Nacional de Productores de Autobuses, Camiones y Tractom</td>
<td>California Air Resources Board</td>
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<td>camiones, A.C. (ANPACT)</td>
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<td>Asociación Nacional de Transporte Privado (ANTP)</td>
<td>GHD</td>
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<td>Cámara Nacional de Autotransporte de Carga (CANACAR)</td>
<td>Kenworth</td>
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<td>CUMMINS</td>
<td>Nikola Corporation</td>
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<td>Foton México</td>
<td>Riverside Public Utilities</td>
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<td>Kenworth Mexicana</td>
<td>San Diego Gas &amp; Electric Company (SDGE)</td>
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<td>NAVISTAR (INTERNATIONAL)</td>
<td>San Diego Regional Chamber of Commerce</td>
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<tr>
<td>Secretaría de Economía e Innovación Gobierno del Estado de Baja</td>
<td>South Coast Air Quality Management District</td>
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<tr>
<td>California</td>
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<tr>
<td>Secretaría de Medio Ambiente y Desarrollo Sustentable Baja California</td>
<td>UC Davis Institute of Transportation Studies Plug-in Hybrid &amp; Electric Vehicle (PH&amp;EV) Research Center</td>
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<tr>
<td>UC Alianza México</td>
<td>UC Riverside Center for Environmental Research and Technology (CE-CERT)</td>
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<td>US Embassy in México</td>
<td>UC Riverside Office of Technology Partnerships</td>
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Workshop Summary

California is the first state to propose MHD ZEV mandates (Advanced Clean Fleets)

- Will improve air quality and GHG emissions
- Potential impacts on logistics companies, trade, border infrastructure, and vehicle manufacturing
- Offers an opportunity to develop strategies for a well planned transition that can be applied to other states and regions

Discussion Topics

- Differences between CA and MX fleets; incentives; and regulatory requirements
- Small fleet companies will be unable to meet mandates under current circumstances; Age limit of 15 years will mean 50% of MX fleet will fall under ‘out of service’ category
- Support to install border charging and fueling infrastructure
- Supply chain and raw material issues, especially for EVs
- Hydrogen integrated microgrids and other novel approaches necessary to meet energy needs
Proposed strategies

- Explore coordinated regulatory approaches; advocate for policy mechanisms on both sides
- Address differences in regulatory requirements and technology/operational protocols
- Incorporate stakeholder input from both countries during the planning and deployment process
- Trade: implications of regional value content requirements on sourcing and supply chain
- Battery recycling, environmental issues associated with disposal
- Address differences in fleets between the two countries
- Workforce development
- Improve efficiency at border crossing stations
- Environmental justice
Convene working groups to continue the discussion and identify specific issues and solution strategies

Encourage stakeholder participation in the planning process on both sides

Identify incentives, and opportunities to collaborate

UC AlianzaMX will sponsor a CE-CERT research project to develop a roadmap for the MHD ZEV transition of CA-MX border traffic

Analysis will include
- Current and projected vehicle population mix; trip and route data
- Infrastructure needs; resource needs (renewable electricity and hydrogen)
- Charging and fueling station specifications and locations
- Cost analysis; air quality and GHG benefits estimates

Roadmap intended to be used by stakeholders to address challenges and help the transition process