Electrification of Off-Road Vehicles in California

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Off-Road Vehicle Electrification

- CEC IEPR (Integrated Energy Policy Report)
  - Project off-road vehicle electricity demand in CA through 2026
  - Show medium projections for vehicle electrification
- Sectors studied
  - Airport GSE, Port CHE
  - Forklifts, Transport refrigeration units (TRUs)
  - Utility work trucks
  - Truck stop electrification, Shore power (not discussed)
- Barriers/Drivers
  - Cost: barrier and driver
  - Risk (e.g. eTRU can plug in?)
  - Regulations (TRU, shore power, others could be implemented)
  - Environmental perception

Ports and Airports

- Ground support equipment (GSE)
  - Baggage tug, Belt Loader, Cargo Tractor, Forklift, A/C Tug, Passenger stand, etc.
  - LAX Report: electric equipment can save $
  - Presently ~ 20% electrified, project 35% by 2025
- Cargo handling equipment (CHE)
  - Yard tractors, forklifts, RTG Cranes
  - No specific regulation but strong pressure to reduce emissions
  - Very few vehicle presently electrified, project 10-20% by 2025

Transport Refrigeration Units and Forklifts

- TRUs can be designed for plug-in electric standby at truck stops (eTRU)
  - Presently ~ 11% electrification (except OOS)
  - Anti-idling regulation could be increased (APU, eTRU)
  - Could reach 25-50% electrification over next 10 years
- Forklifts can be electric (class 1-3) or ICE (class 4 and 5)
  - Roughly 55% are electric in CA
  - Project additional 7% purchased as electric in 10 years (i.e. 15% of present ICE purchases could be electric)

Utility Work Truck

- Utility bucket trucks maintain and service worksites (PG&E, SCE, SMUD, SEMPRA)
- Edison Electric Institute study indicates cost savings possible for work trucks
- In 2014 utilities made pledges to use 5% of funds for PEVs for their fleets (PG&E led coalition)
- PG&E plans to electrify 100% of work trucks by 2025
- Project 50-65% electrification by 2025

Thank You