

Proposed Off-Highway Recreational Vehicle (OHRV) Evaporative Emission Control Requirements

July 25, 2013



Today's Presentation

- Background
- Need for Evaporative Control
- Regulatory Development
- Cost Analysis
- Emissions Benefits
- Stakeholder Participation
- Industry Concerns

Types of OHRVs



Off-road motorcycles



All-terrain vehicles



Off-road utility vehicles



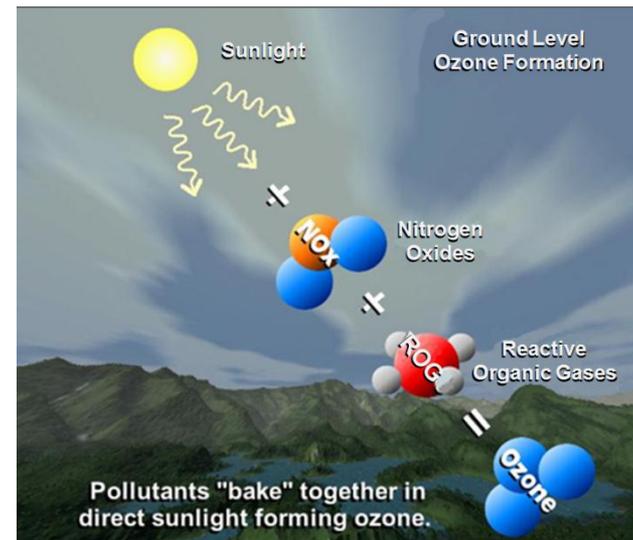
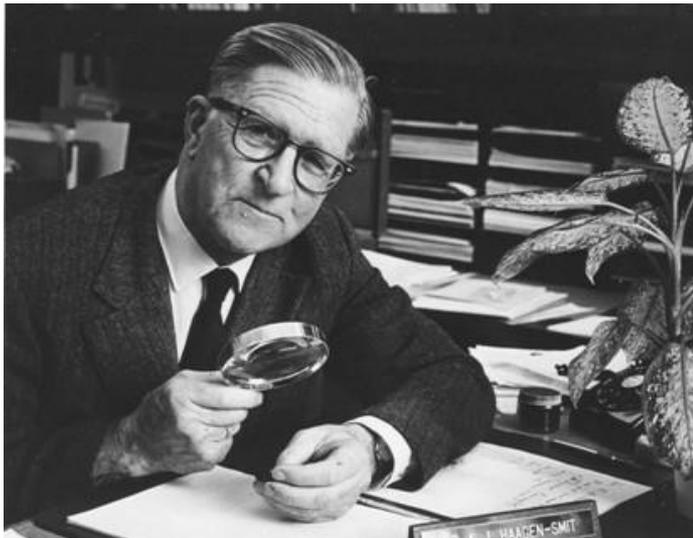
Sand cars



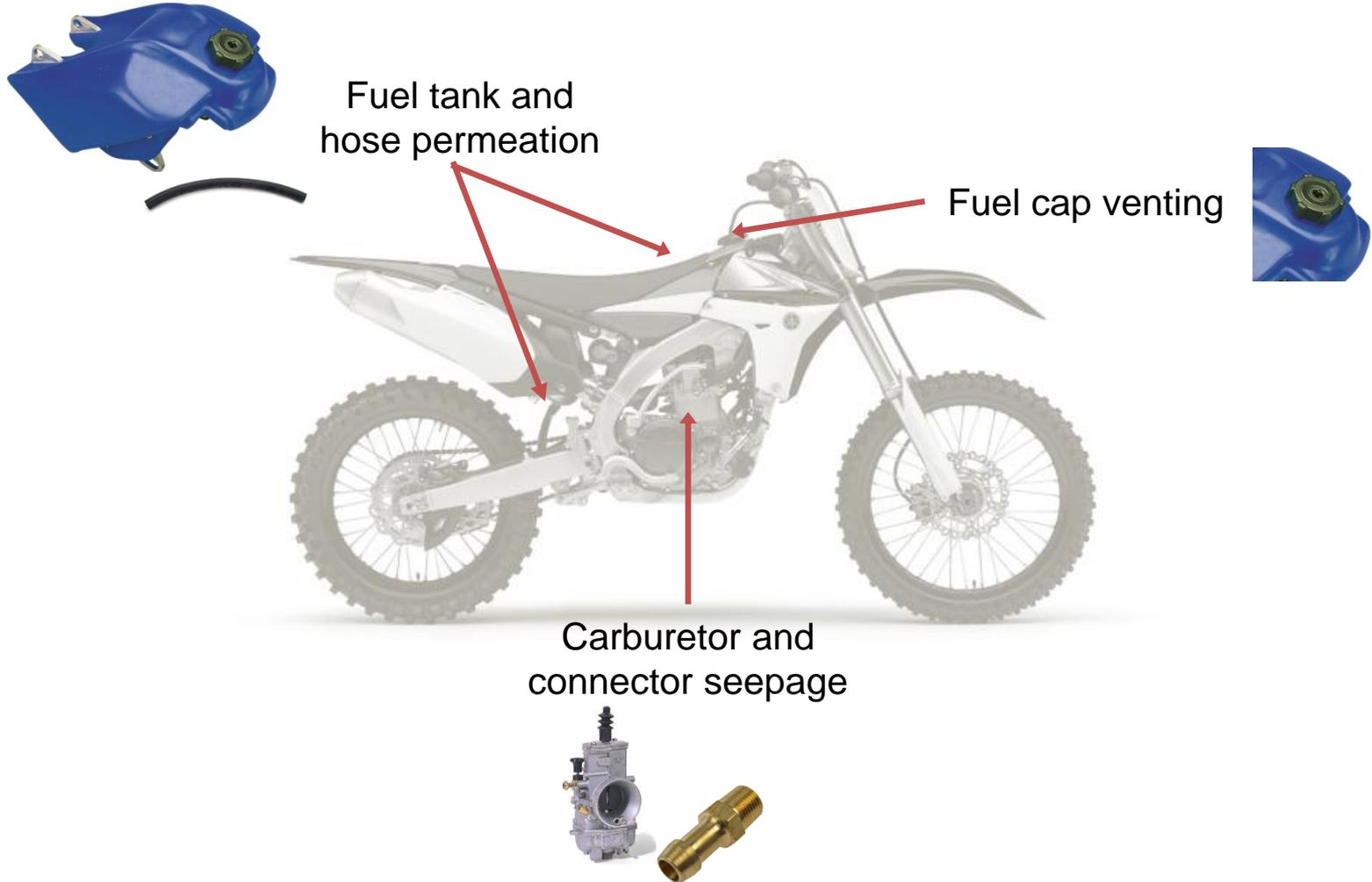
Off-road sports vehicles

Need for Emission Reductions

- Reactive Organic Gases (ROG)
 - Ozone precursor
 - Reductions needed
- OHRVs are a major source
- Proposed measure meets 2007 SIP commitment



ROG Evaporative Emission Sources



Evaporative Emission Processes



Running Loss
Operating

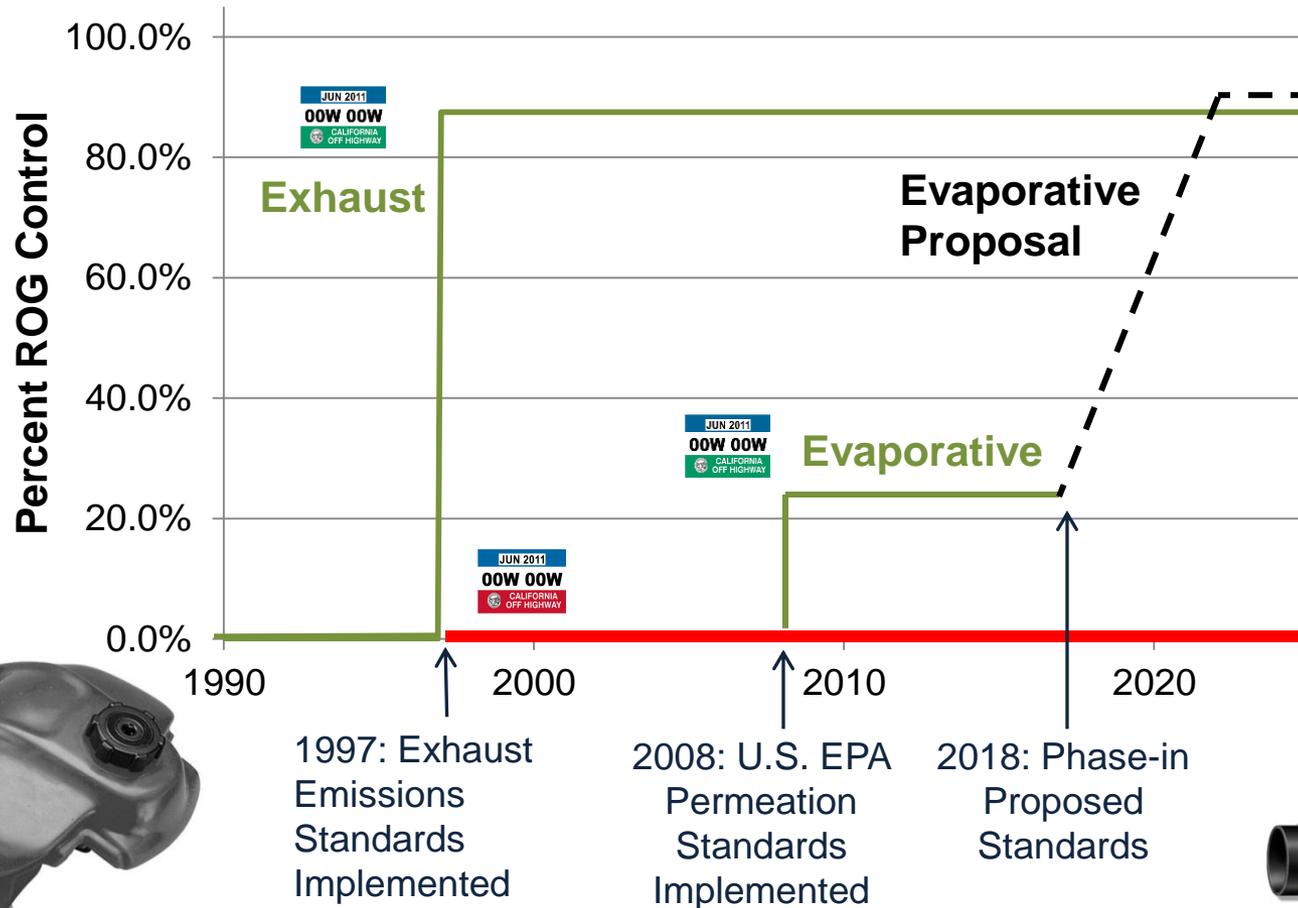


Hot Soak
Immediately After Operation

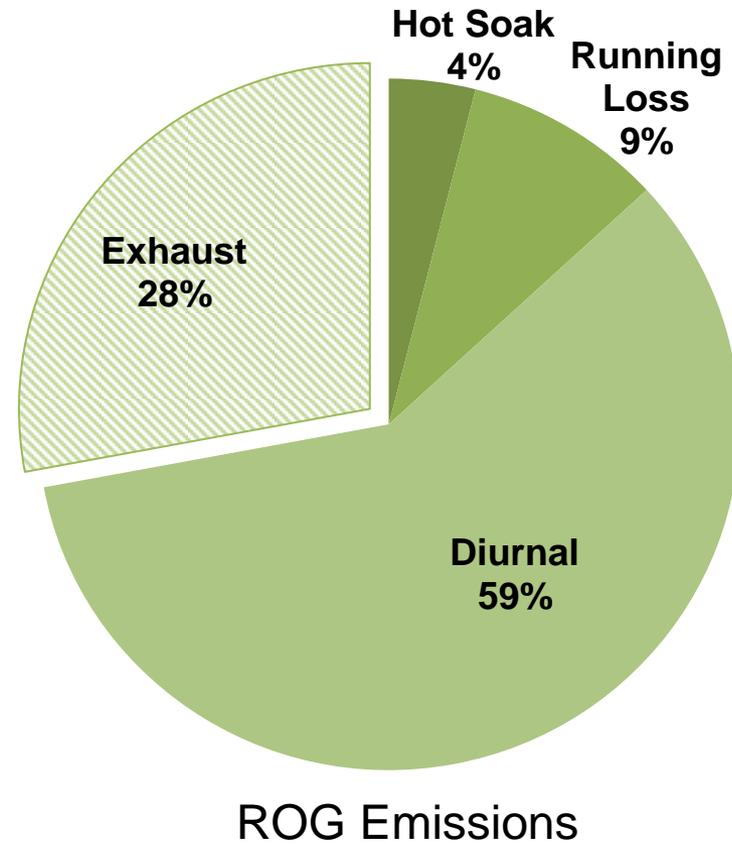


Diurnal
Storage

OHRV Regulatory History



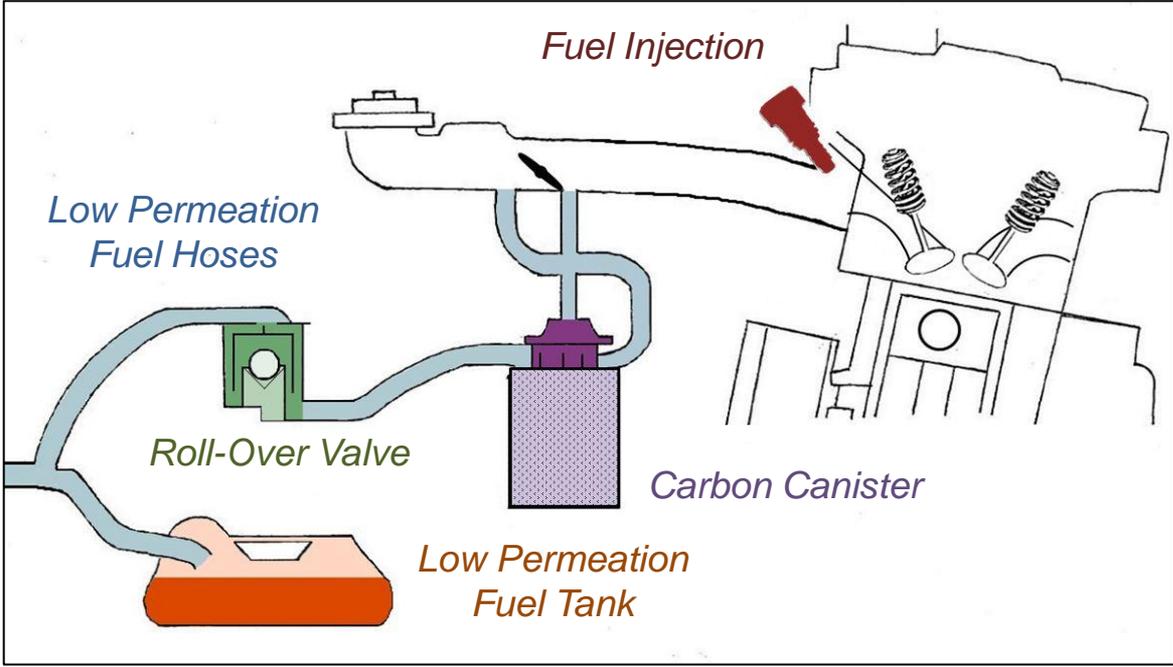
Need For Diurnal Control



Technology Transfer



On-Road Evaporative Emissions Control Technology

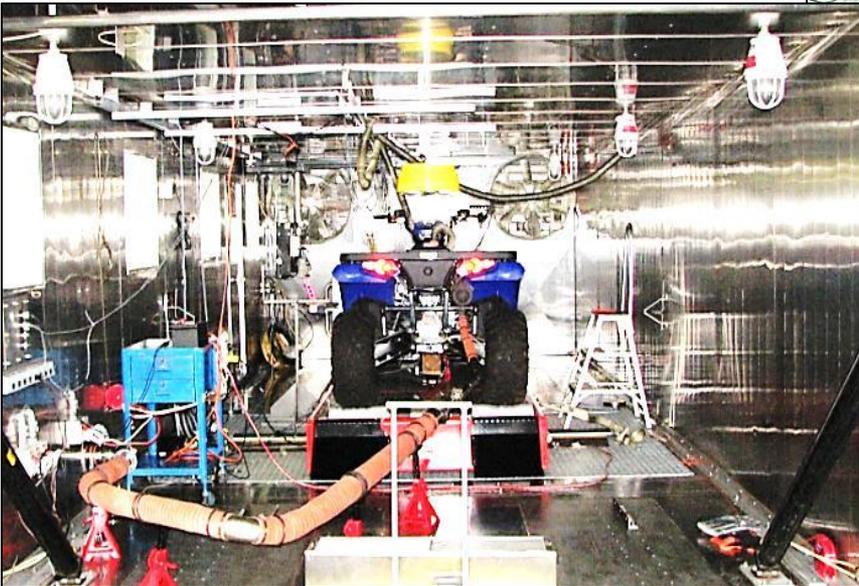


Transferred to off-highway recreational vehicles



OHRV Technology Testing at ARB

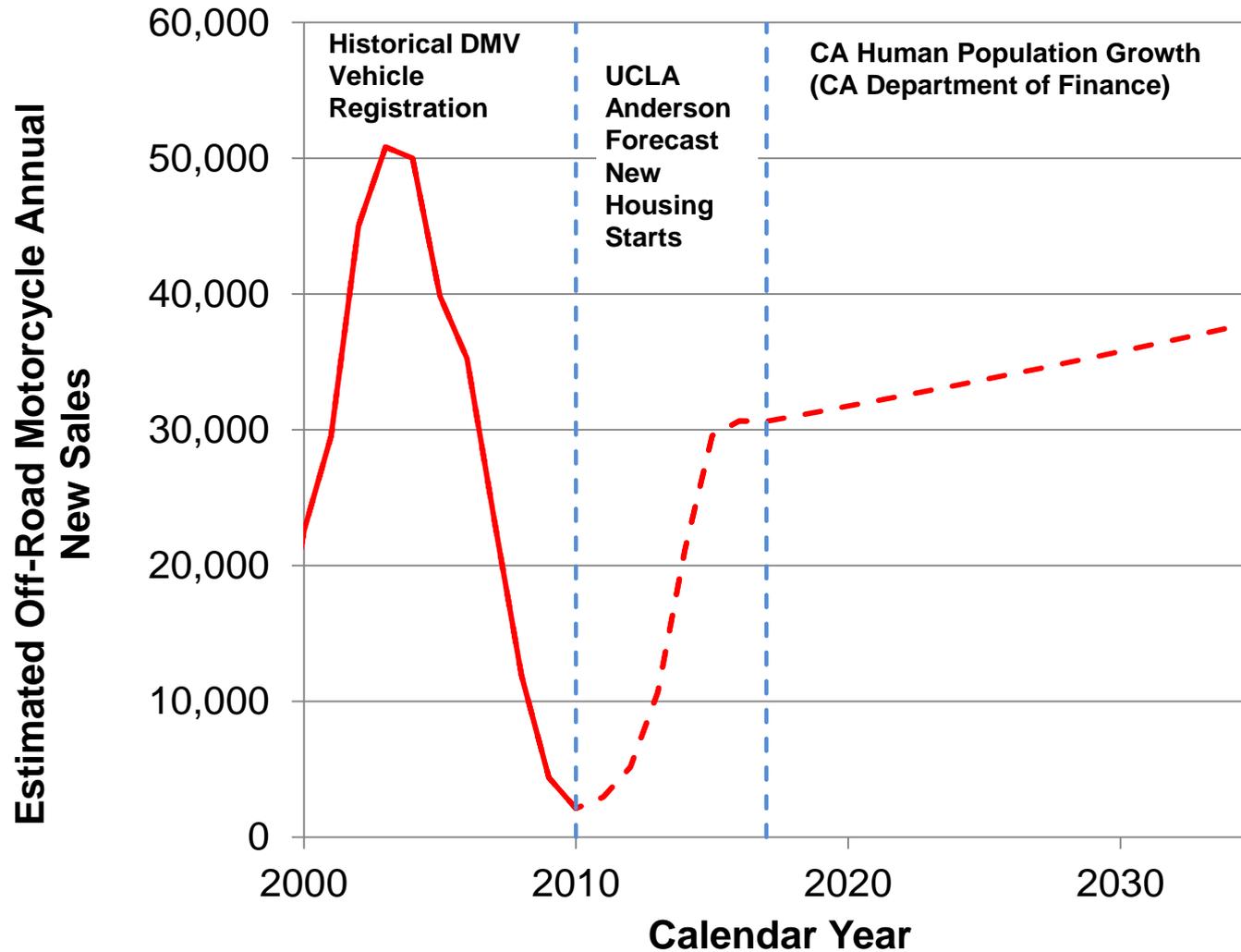
- OHRVs tested with and without evaporative controls
- SHED tests performed
 - Running loss
 - Hot soak
 - Diurnal



Inventory Development

- Comprehensive Update
 - 2000-2010 DMV registration data
 - Updated usage and storage based on surveys
- Updated forecast reflects recession and estimated recovery
 - During recession OHRV sales declined by 90%
 - Short-term sales track UCLA economic forecast
 - Long-term sales based on population growth

ARB Inventory Sales Forecast



Proposed Evaporative Emission Regulation

Vehicle and Model Year	Required Tests	72-Hour Diurnal Standard	Steady State Diurnal Standard
2018 and later model years	Diurnal	1 gram TOG/day	1 gram TOG/day

- Flexible certification options
- Requirements to reduce tampering
- New test procedure

Innovative Features

Flexible Certification



Tamper Resistance



Carbon Canister Preservation

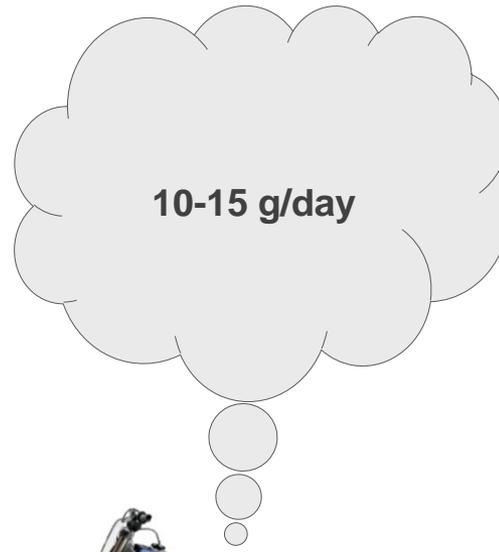
- Vehicles frequently tipped during use
- Fuel exposure permanently damages carbon canister
 - Properly designed vehicle
 - Rollover valve protection
 - Assures emission reductions



Comparison of ROG Evaporative Emissions for 2018 Model Year Vehicles



Adopted Passenger
Car Standards



Without Proposed
Regulation

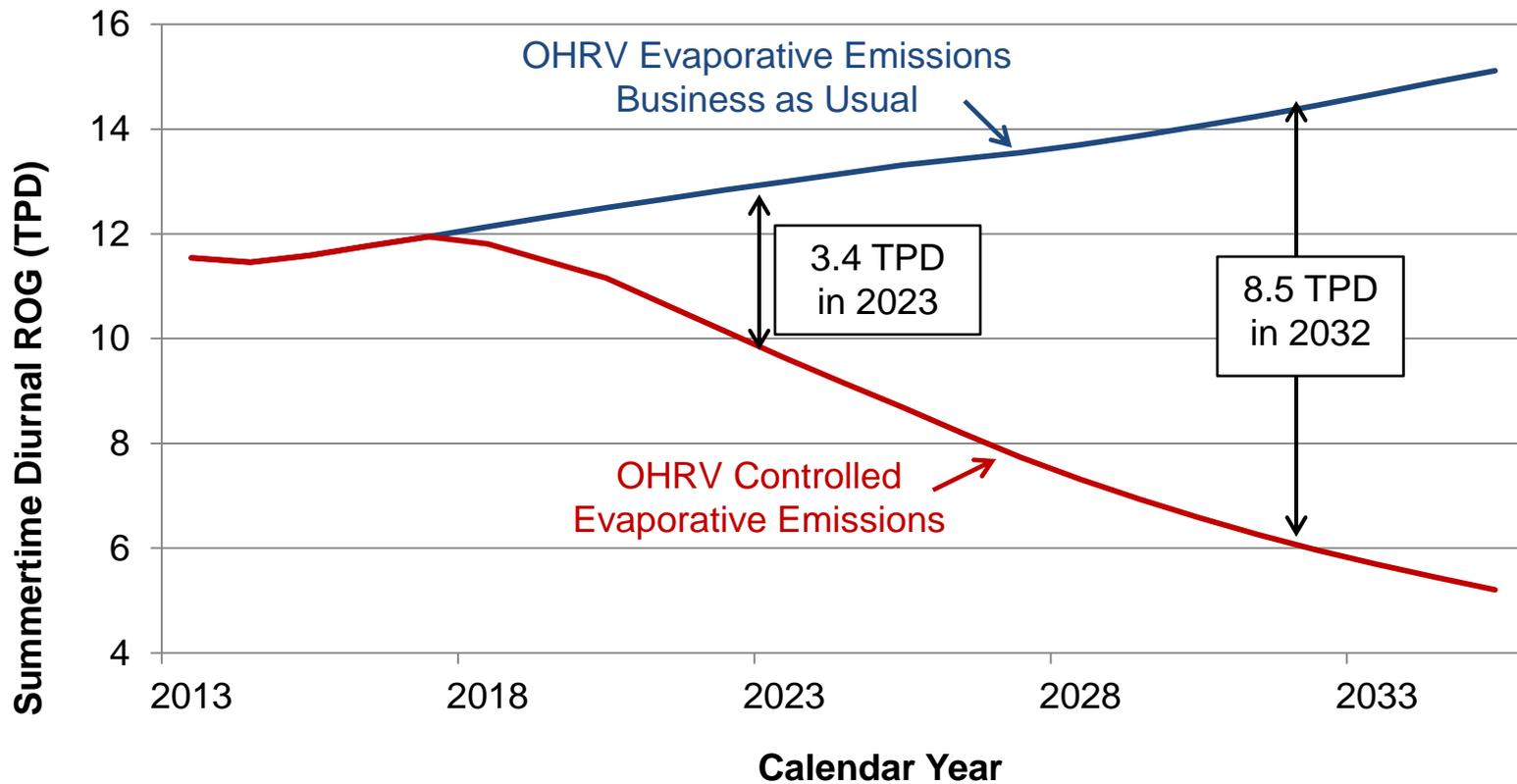


With Proposed
Regulation

Cost-Effectiveness

- Control measure is cost-effective
- Ranges from \$4.09 - \$9.76 per lb. of ROG
- Based on industry reported costs
- Dependent on vehicle sales

Statewide ROG Emissions Reductions



Reduced Benzene Exposure

- Many OHRVs stored in attached garages
- Benzene emitted during storage
- High garage concentration
 - Garage exposure
 - Residence exposure



Stakeholder Participation

- Extensive stakeholder input over 7 years
 - 4 public workshops
 - 40 stakeholder meetings
 - On-road manufacturers
- Addressed stakeholder concerns
 - Phased-in standards
 - Advanced fuel system credits
 - Small volume alternative
 - Streamlined test procedure
 - Integrated emissions label

Outstanding Industry Concerns

- OHRV sales recovery



- Red sticker compliance



Proposed 15-Day Change

- Staff propose continuing to exclude red sticker vehicles from evaporative controls in the near term
- Return with comprehensive rulemaking to address both evaporative and exhaust emissions
- Would provide time to develop consistent warranty provisions and address other industry concerns

Summary

- Emissions reductions needed for air quality
- Rule is phased in over four years starting in 2018
- Controls are technologically feasible
- Proposal is cost-effective
- Results in reduced benzene exposure
- Staff recommends adoption with a 15-day change
- Staff will develop a comprehensive future proposal for both evaporative and exhaust emissions