

# CARB ON-ROAD MOTORCYCLE (ONMC) UN EPPR UPDATE

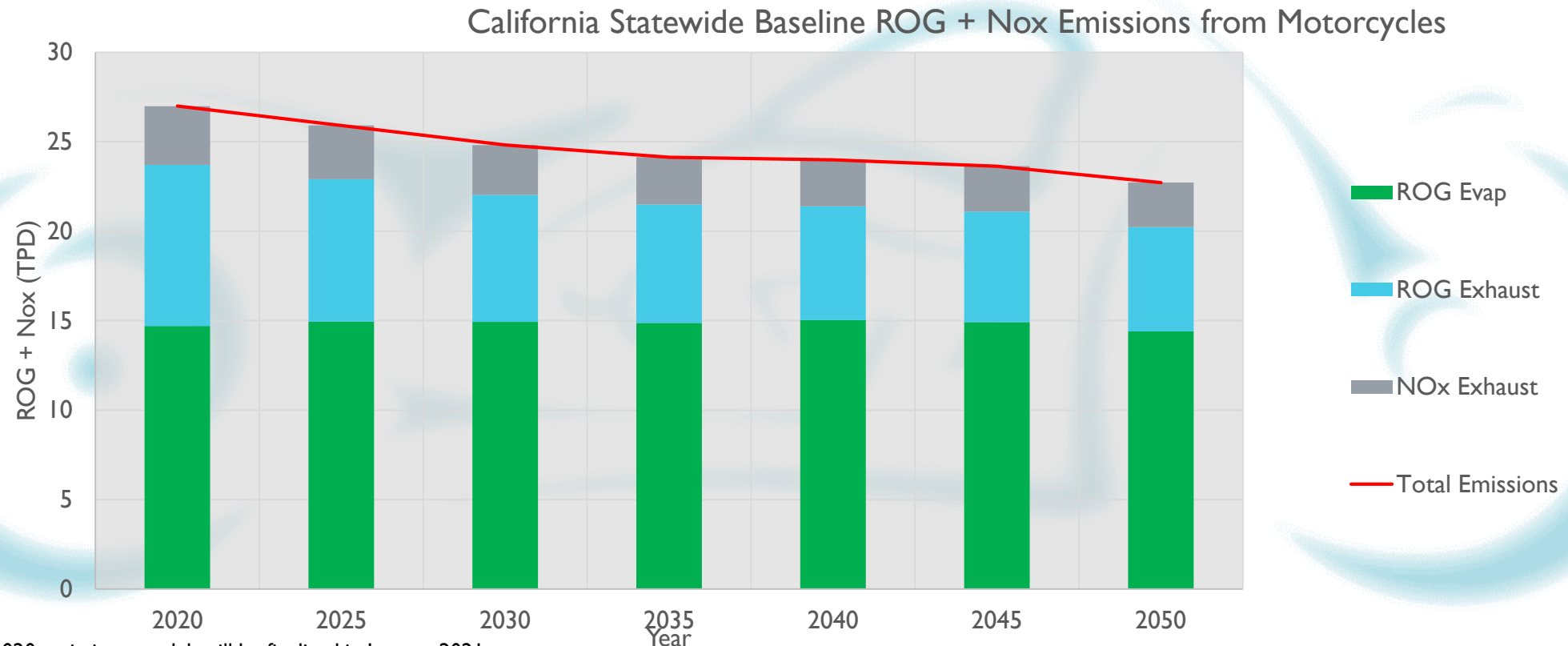


## UN EPPR Update on CARB Tentative Regulatory Proposal For Amendments to California ONMC Certification Standards

December 10, 2020



# ONMC EMISSIONS INVENTORY IN CALIFORNIA

- California's ~700,000 motorcycles produce an estimated 27 tons per day of smog forming emissions
- Evaporative emissions are a significant portion of 2020 emissions inventory estimates\*



\*Draft EMFAC 2020 emissions model, will be finalized in January 2021

# CURRENT CALIFORNIA AND EU MOTORCYCLES REGULATIONS

	 <b>Current CARB Requirements</b>	 <b>Euro 5 Requirements</b>
<b>Exhaust Limits</b>	0.8 g/km HC + NO <sub>x</sub> 12 g/km CO No NMHC limits	0.100 g/km HC 0.060 g/km NO <sub>x</sub> 1 g/km CO 0.068 g/km NMHC
<b>Exhaust Drive Cycle</b>	UDDS (passenger car, lower speeds)	WMTC (motorcycle, higher speeds)
<b>OBD</b>	Not Required	Required
<b>Evaporative Test Procedure</b>	1-hour heat build, 1-hour hot soak, UDDS Prep Cycle 10% Ethanol Fuel	1-hour heat build, 1-hour hot soak WMTC Prep Cycle 5% Ethanol Fuel
<b>Evaporative Limit</b>	2.0 g / test	1.5 g/test

# REGULATORY PROPOSAL - OBJECTIVES

- Quickly bring lower emissions motorcycles to California market
  - Euro 5 exhaust and OBD will provide real emissions reductions for California
  - Harmonizing with existing standards reduces development costs and implementation time
- Require additional cost-effective reductions in subsequent years
  - Focus on evaporative emissions, which make up the majority of ONMC ROG
- Ensure compliance with emissions standards over the vehicle's useful life
  - Increase useful life mileage, in-use verification, anti-tampering
- Transition towards zero emissions motorcycles (ZEMs) as technology improves and costs decrease

# TENTATIVE PROPOSAL – EXHAUST

- MY 2023 - **50%** of sales must meet Euro 5 exhaust requirements
- MY 2024+ - **All** motorcycles must meet Euro 5 exhaust requirements
- Manufacturers may use their EU test data if engine family has EU Type Approval
  - EU spec fuel may be used for testing if manufacturer is using EU Type Approval data
  - Vehicle must also comply using CARB LEVIII fuel
  - CARB confirmatory and compliance testing will be conducted using CARB LEVIII fuel
  - Testing need not be witnessed by an EU Technical Services representative
- Exhaust testing must be conducted as prescribed in Euro 5 regulations, except as follows:
  - Bikes with displacement between 50cc and 150cc, and max speed of > 85km/h, shall use WMTC Subclass 2-I (max speed 82.5 km/h) instead of Subclass 1-3 (max speed 50 km/h)

Tentative proposal - All effective dates subject to change

# TENTATIVE PROPOSAL – DURABILITY

- MY 2023-2024 – Manufacturers must meet either Euro 5 or CARB durability requirements
- MY 2025+ – CARB durability procedures will be harmonized with Euro 5
- Manufacturers using catalyst bench aging must conduct in-use verification testing and meet evaporative component durability requirements

Durability Method	Current CARB	Current EU	EU 2024+	CARB 2025+
Full Mileage		X	X	X
Partial Mileage	X	X	X	X
Bench Aging		X	X	X
Mathematical (fixed)		X		

Tentative proposal - All effective dates subject to change

# TENTATIVE PROPOSAL – INCREASE USEFUL LIFE MILEAGE

- MY 2025+ - All **NEW** engine families are subject to increased useful life distance

CARB/EPA Class	Most Common Comparable EU Class	Current EPA/CARB Distance (kilometers)	Current Euro 5 Distance (kilometers)	Proposed CARB Distance for MY 2025+ (kilometers)	% Increase over current CARB/EPA Distance
IA (<50cc)	L1e-B, L2e	6,000	5,500	6,000	0%
IB (50-169 cc)	L3e-A1	12,000	11,000	15,000	25%
II (170-279 cc)	L3e-A2	18,000	20,000	25,000	38.8%
III (279+ cc)	L3e-A3	30,000	35,000	50,000	66.6%

- Median age of motorcycles dropping from California DMV registration = 18.5 years
- Median age of motorcycles with 50,000km = 10.5 years\*

\* 2017 NHTSA Motorcycle Safety Survey

Tentative proposal - All effective dates subject to change



# TENTATIVE PROPOSAL – OBD

- MY 2023 - **50%** of all new motorcycles must meet Euro 5 OBD requirements
- MY 2024-25 - **All** new motorcycles must meet Euro 5 OBD requirements
- MY 2026+ - All new Class III motorcycles must meet Euro 5 OBD plus additional CARB-specific requirements:
  - New OBD Monitors will be based on CARB light duty vehicle OBD requirements
  - Evaporative system, cold start, crank case ventilation, fuel system, engine cooling, and variable valve timing
  - When OBD system detects catalyst removal, vehicle speed must be limited to 40 MPH max
    - Discourages tampering, prompts owners to make timely repairs

Tentative proposal - All effective dates subject to change

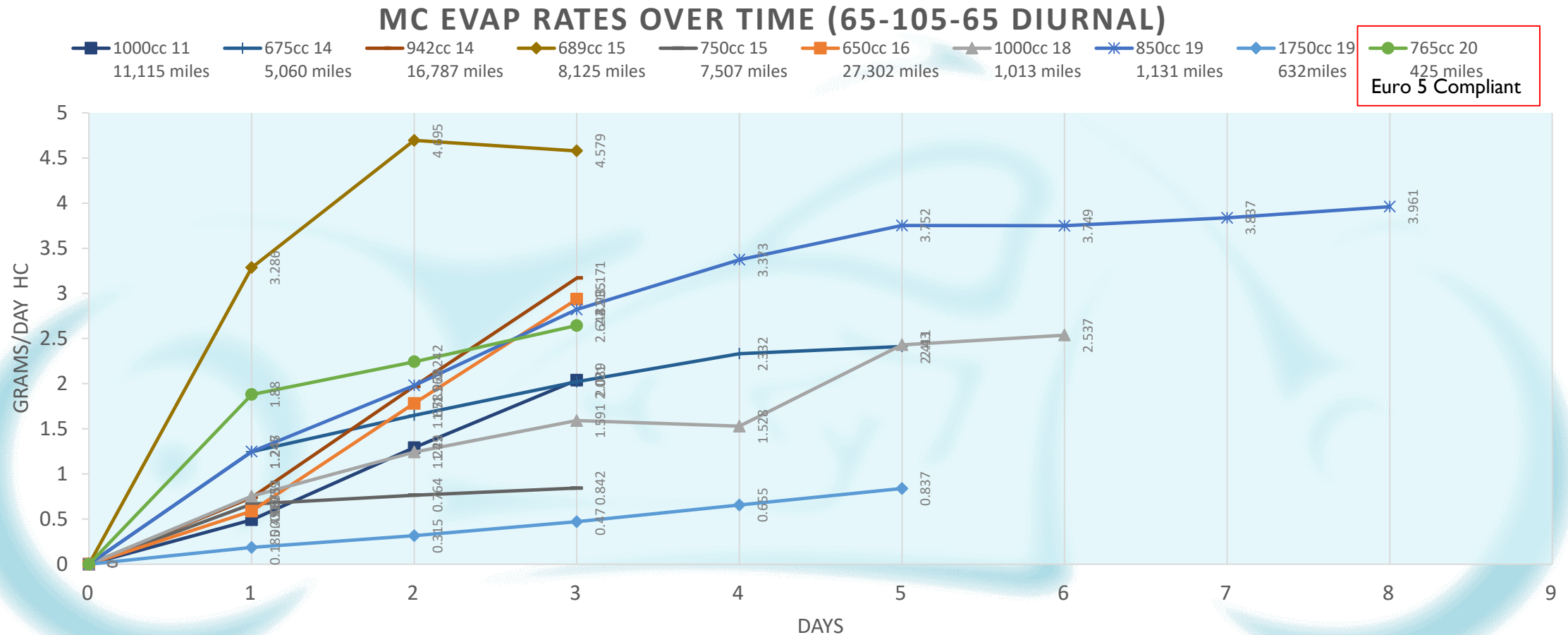


# TENTATIVE PROPOSAL – EVAPORATIVE CONTROLS

- MY 2023-2024: All motorcycles must meet either Euro 5 or current CARB evaporative system requirements
- MY 2025-26: All motorcycles must meet either Euro 5 or current CARB evaporative system requirements, plus additional evaporative component performance specifications
  - U.S. EPA tank and hose permeation requirements
  - Minimum ratio requirement for carbon canister working capacity to fuel tank volume
  - Maximum carbon canister bleed emissions
- MY 2027+: All motorcycles must meet full vehicle diurnal SHED standard
  - SHED test protocol based on CARB TP-933 and LDV requirements

Tentative proposal - All effective dates subject to change

# CARB INVENTORY EVAPORATIVE TEST DATA

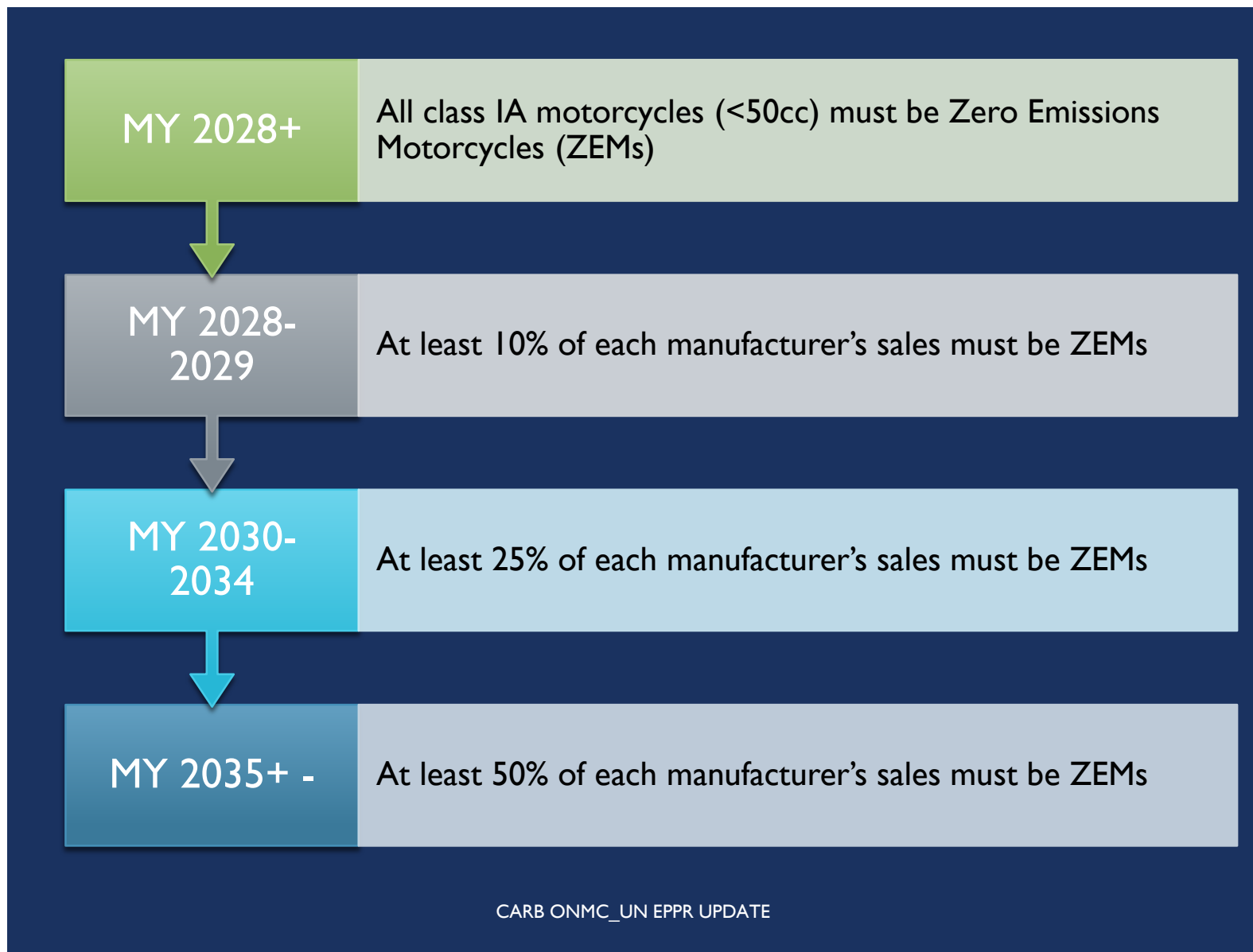


- Compliance with current CARB evaporative requirements does not correlate with low diurnal emissions
- Euro 5 evaporative requirements are similar to CARB, so no benefit expected by simply harmonizing

# TENTATIVE PROPOSAL: TRANSITION TO ZERO EMISSIONS



CARB will establish a zero-emissions credit trading program to help manufacturers comply with these requirements



Tentative proposal - All effective dates subject to change

# ESTIMATED TIMELINE



# CONTACTS AND QUESTIONS

## Please Contact Us With Any Questions or Concerns Regarding CARBs Tentative Regulatory Proposal for California ONMC Certification Standards

- Project Lead:  
Jason McPhee, P.E.  
(916)323-1104  
[jason.mcphee@arb.ca.gov](mailto:jason.mcphee@arb.ca.gov)
- Lead OBD and Verification:  
Anthony Grandov  
(916) 322-2411  
[anthony.grandov@arb.ca.gov](mailto:anthony.grandov@arb.ca.gov)
- Manager, Engineering & Regulation Development Section:  
Scott Bacon  
(916) 322-8949  
[scott.bacon@arb.ca.gov](mailto:scott.bacon@arb.ca.gov)

