Air Resources Board
Certification Update

2017 EMA Compliance Workshop

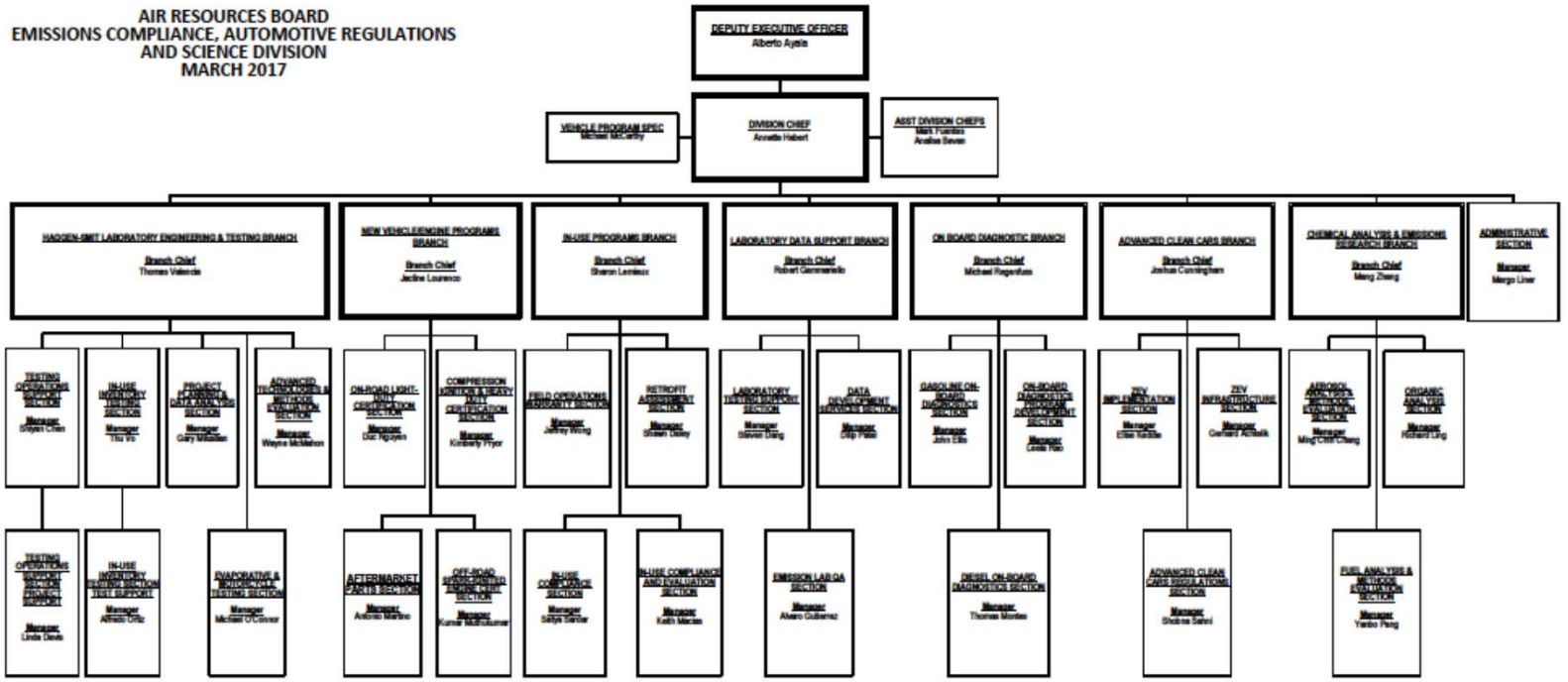
April 25, 2017

California Environmental Protection Agency
AIR RESOURCES BOARD

Outline

- Organization Charts
- Certification Statistics
- DMS Update
- AECD Update
- Compression-Ignition and Heavy-Duty Certification
- Off-Road Spark-Ignited Engine Certification
- Field Operations and Warranty Section

ECARS Organization Chart



NVEPB Organizational Chart

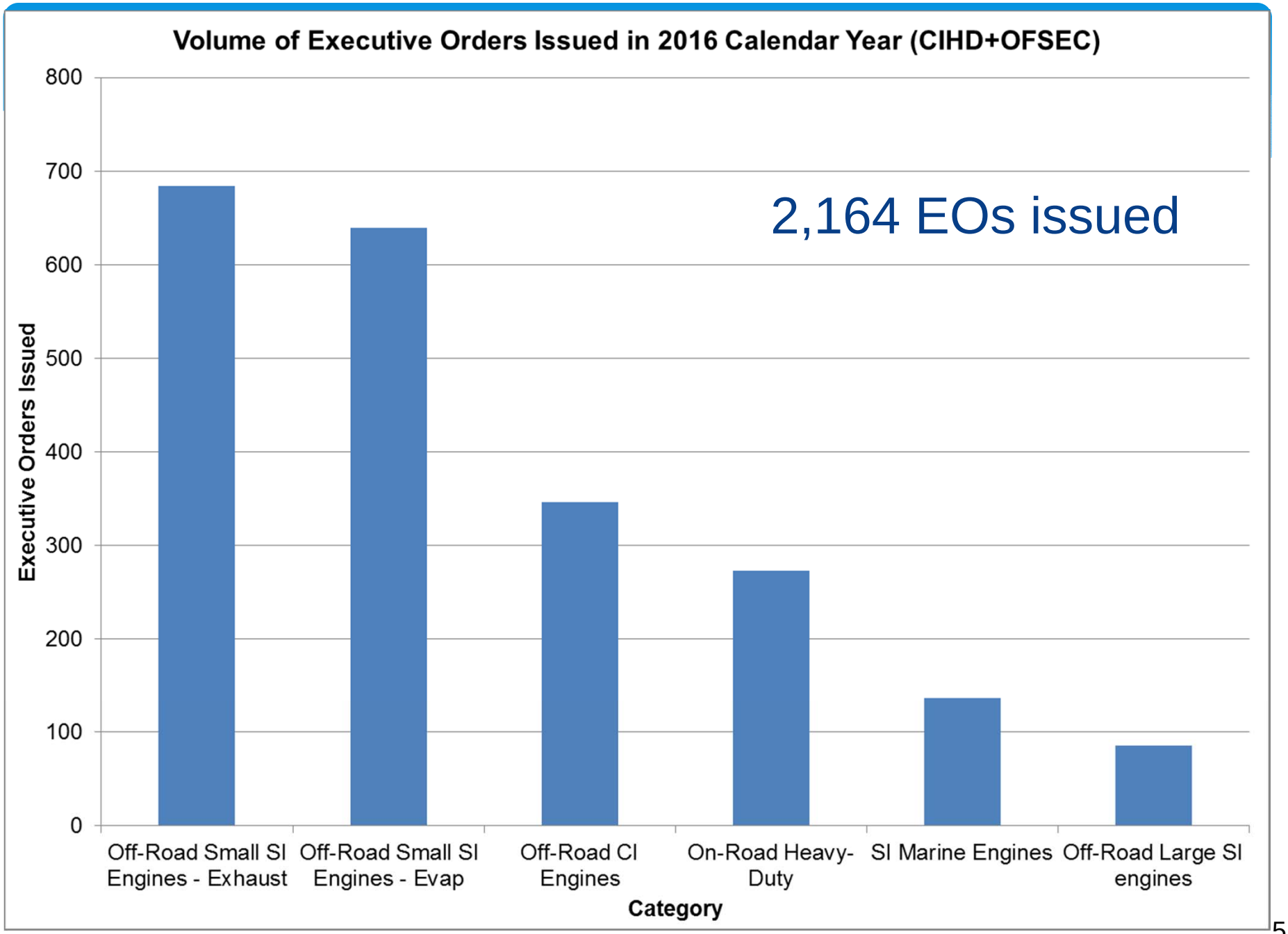
ECARS
New Vehicle/Engine Programs Branch
Branch Chief
Jackie Lourenco
Branch Secretary
Bonnie Garlow

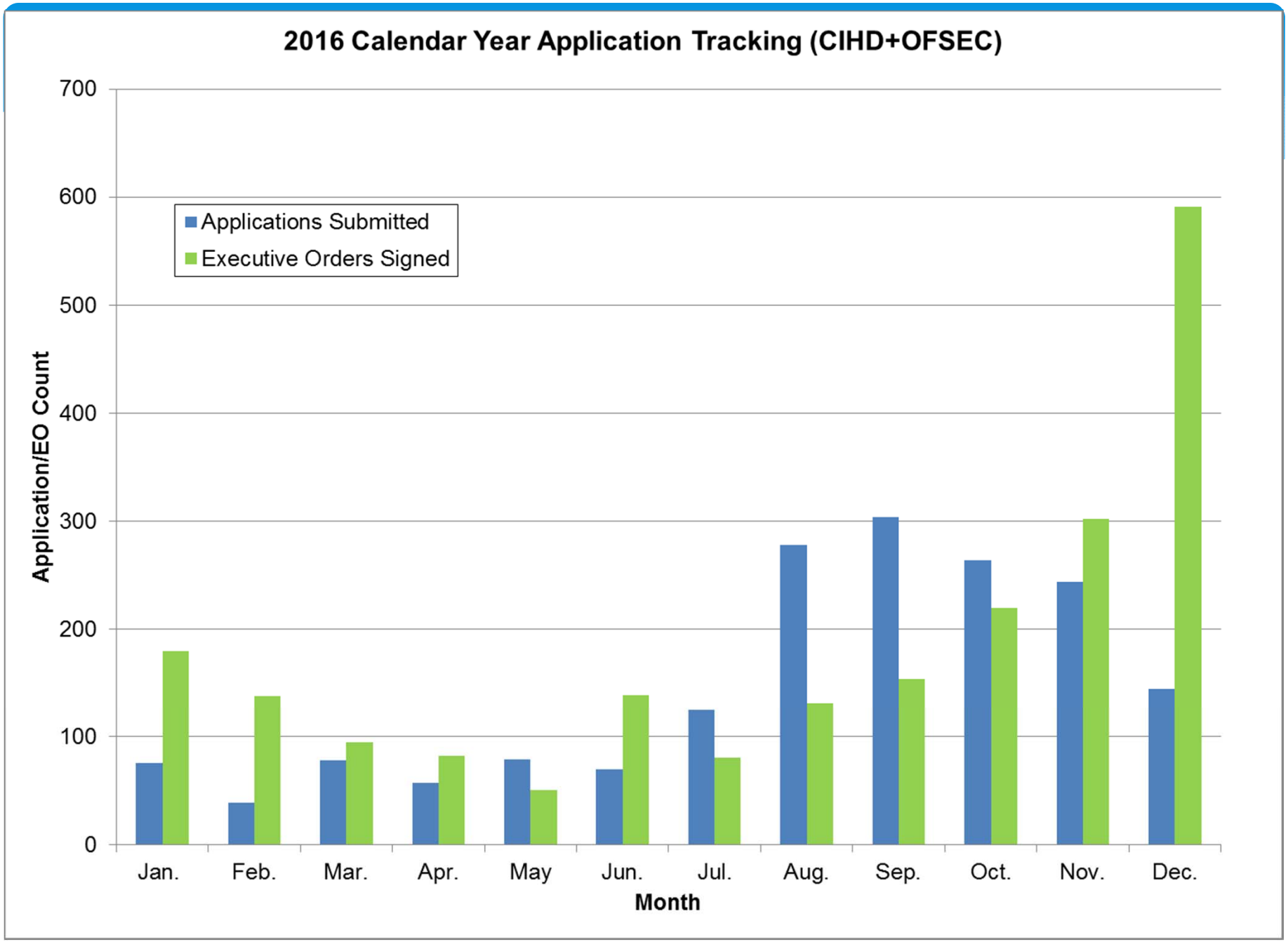
On-Road Light-Duty Certification Section
Manager
Duc Nguyen
Staff
Ivonne Guzman-Cicero
Veronica Longhi
Steven Hada
Bill McDuffee
Seongyup Kim
Depinder Paul
Lucky Benedict
Telena Vo
Alan Leung
Lan Nguyen
Mark Campbell

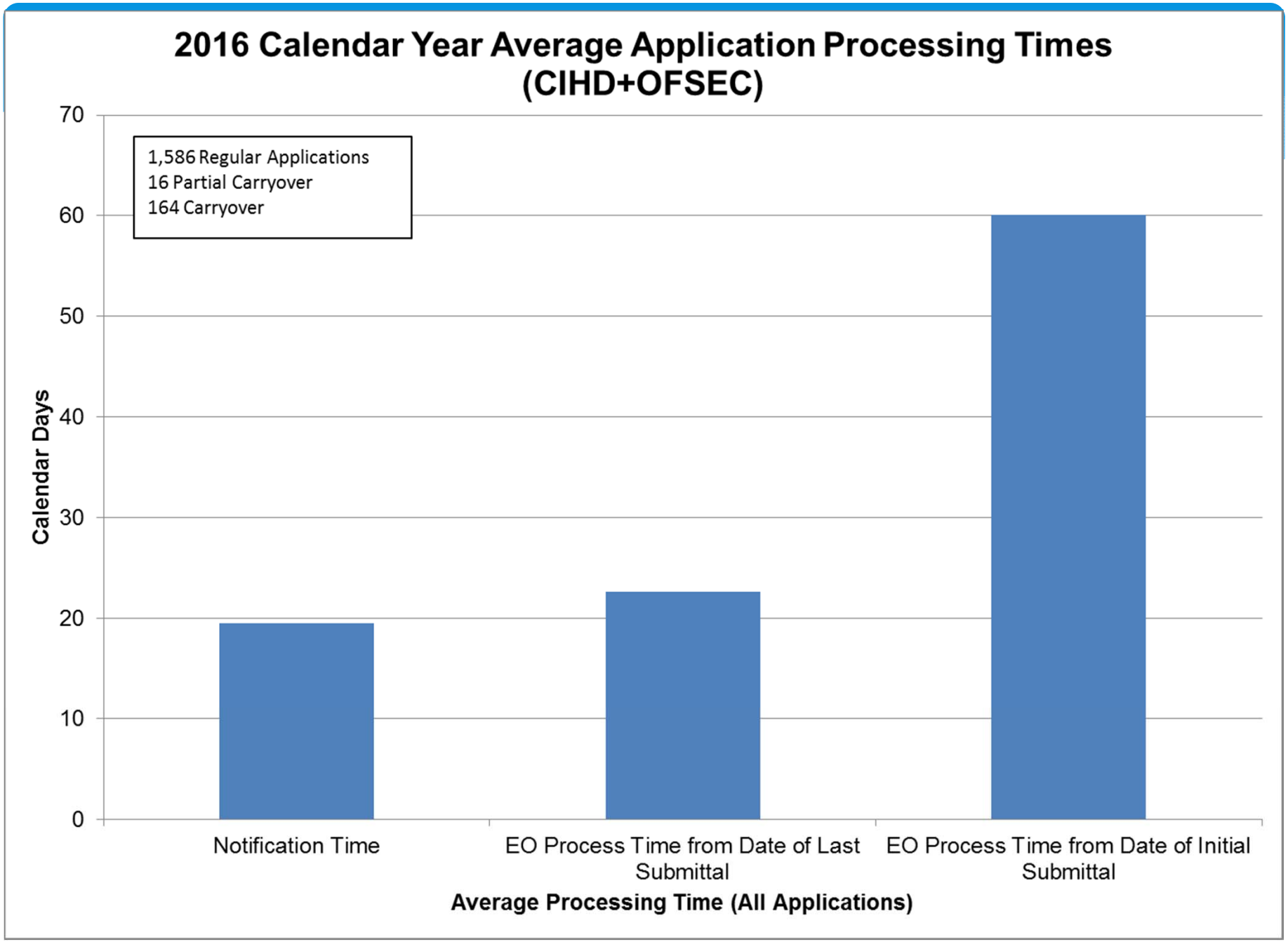
Off-Road Spark-Ignited Engine Certification Section
Manager
Kumar Muthukumar
Staff
Alan Chow
Geeta Osborn
Joseph Jegede
Michael Lin
Kevin Curley
Janie Han-Luu
David Pino
Byron Ng
Sophia Mahmood

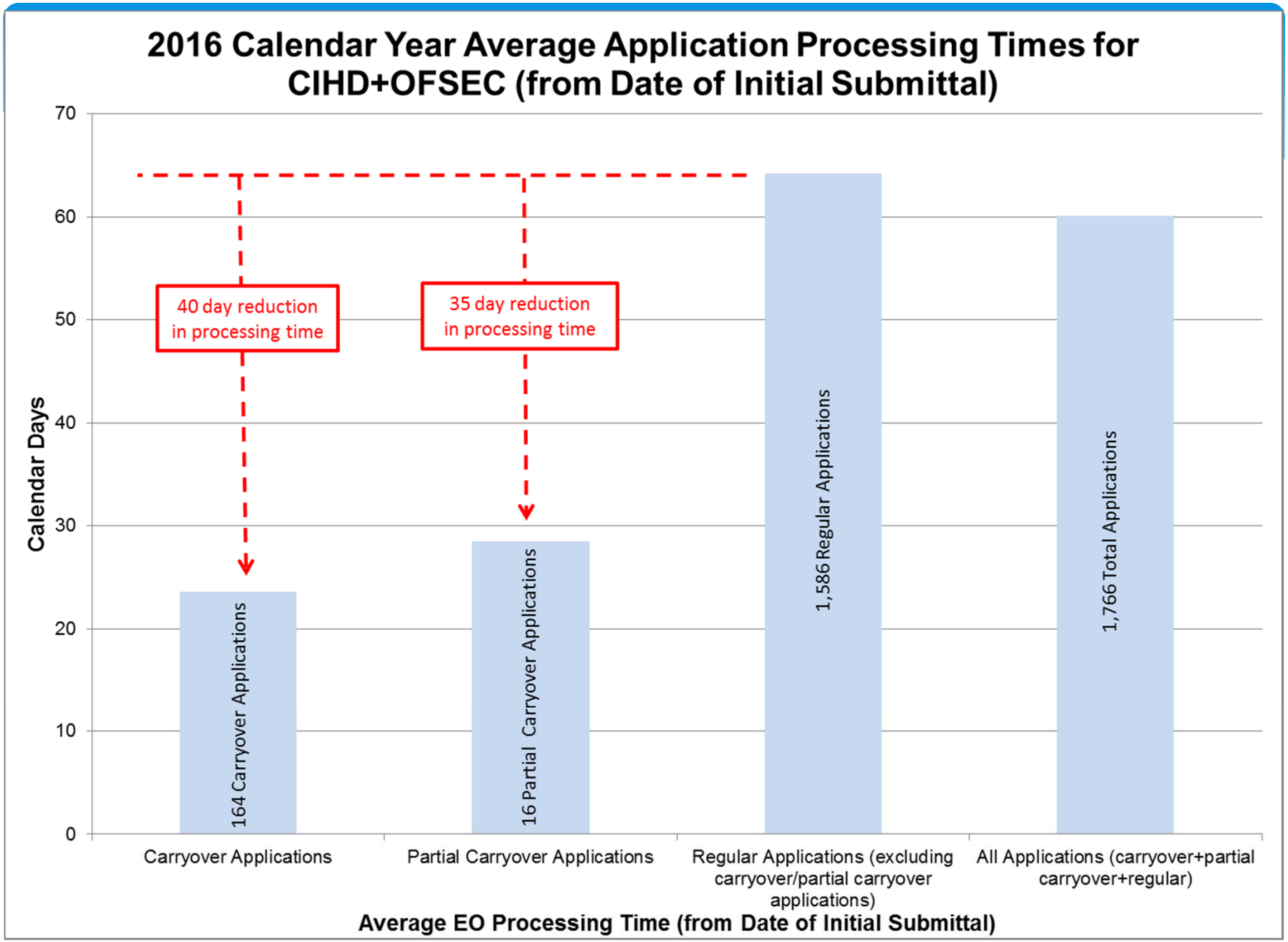
Aftermarket Parts Section
Manager
Antonio Martino
Staff
Jae Do
Rich Muradliyan
Sidd Futaba
Richard Carranza
Curt Schrieber
Jose Arguelles
Yun Hui Park
Jason Flores

Compression Ignition and Heavy Duty Certification Section
Manager
Kimberly Pryor
Staff
Paul Adnani
James Pang
Tsatsu Nukunya
Zachary Evans
Babak Pazokifard
Mel Capistrano
Michael Pham
Elena Florea


Volume of Executive Orders Issued in 2016 Calendar Year (CIHD+OFSEC)
2,164 EOs issued
Executive Orders Issued
800
700
600
500
400
300
200
100
0
Off-Road Small SI Engines - Exhaust
Off-Road Small SI Engines - Evap
Off-Road CI Engines
On-Road Heavy-Duty
SI Marine Engines
Off-Road Large SI engines
Category


2016 Calendar Year Application Tracking (CIHD+OFSEC)
Application/EO Count
700
600
500
400
300
200
100
0
Applications Submitted
Executive Orders Signed
Jan.
Feb.
Mar.
Apr.
May
Jun.
Jul.
Aug.
Sep.
Oct.
Nov.
Dec.
Month


2016 Calendar Year Average Application Processing Times
(CIHD+OFSEC)
1,586 Regular Applications
16 Partial Carryover
164 Carryover
Calendar Days
70
60
50
40
30
20
10
0
Notification Time
EO Process Time from Date of Last Submittal
EO Process Time from Date of Initial Submittal
Average Processing Time (All Applications)


2016 Calendar Year Average Application Processing Times for CIHD+OFSEC (from Date of Initial Submittal)
Calendar Days
70
60
50
40
30
20
10
0
40 day reduction in processing time
35 day reduction in processing time
164 Carryover Applications
16 Partial Carryover Applications
1,586 Regular Applications
1,766 Total Applications
Carryover Applications
Partial Carryover Applications
Regular Applications (excluding carryover/partial carryover applications)
All Applications (carryover+partial carryover+regular)
Average EO Processing Time (from Date of Initial Submittal)

Document Management System (DMS)

- New DMS is being procured for 2017
- Currently working with vendor setting up system requirements
- ARB will be asking for manufacturers to participate in the New DMS Pilot Program
- The current DMS will continue to be used while the new system is configured
- Current DMS training is being provided on a monthly basis

AECD WORKING GROUP

- Initial Kick –off meeting held on March 14, 2017
- Agency and Manufacturer Associations submitted names for category specific workgroups
- Workgroup Lists will be emailed to participants by Friday
- Expect ARB and EPA leads to schedule May meeting

Auxiliary Emission Control Devices

Compression-Ignition and Spark-Ignited Engines

Things Learned from 2017 MY AECD Review

- Manufacturers were responsive and understood the necessity of supplying accurate information
- Some manufacturers submitted AECDs early which helped to facilitate an early review and approval
- Disclosure and description of all AECDs is a major element of certification.
- AECD reviews take time; manufacturers encouraged to start discussions early

Example of "Good vs Bad" AECD Answers

Question from EPA's AECD Reporting Template: CCD-04-12 (HD)	Good AECD Answer	Bad AECD Answer
Question 3) a) i. Type and location of sensors used to directly measure design parameter or operating conditions for which limits may be exceeded	The coolant temperature (ECT) sensor which is directly located on the engine and the engine oil pressure sensor (EOP) at the oil main gallery of the engine are used.	ECT, EOP Problem: • Not enough details were provided.

Example of "Good vs Bad" AECD Answers

<table>
<tr>
<th>Question
from EPA's AECD Reporting Template: CCD-04-12 (HD)</th>
<th>Good AECD Answer</th>
<th>Bad AECD Answer</th>
</tr>
<tr>
<td>Question 3) c) i.

Summary of operational conditions expected to activate the AECD; i.e. range of altitudes, temperatures, loads, speeds, etc…</td>
<td>This AECD is active at either:

1. ECT greater than 105°C,
a. Typical operating ECT over FTP cycle is 92°C. Typical ECT while the engine is being operated normally is 90-102°C.
or
2. EOP less than values explained in the table below:

<table>
<tr><th>Engine Speed (RPM)</th><th>EOP values activating AECD (psi)</th><th>Typical EOP values under normal driving conditions (psi)</th></tr>
<tr><td>600</td><td>7.1</td><td>None</td></tr>
<tr><td>1000</td><td>12.8</td><td>35.6</td></tr>
<tr><td>1500</td><td>21.3</td><td>52.6</td></tr>
<tr><td>1800</td><td>26.3</td><td>58.3</td></tr>
<tr><td>2000</td><td>29.9</td><td>58.3</td></tr>
</table>
</td>
<td>This AECD is active at high ECT and low EOP.

Problems:
• AECD activating conditions are not quantified.
• No assurance that the AECD is not active during normal operation.</td>
</tr>
</table>

Example of "Good vs Bad" AECD Answers

Question from EPA's AECD Reporting Template: CCD-04-12 (HD)	Good AECD Answer	Bad AECD Answer
Question 4) c) i. Emissions rates when AECD activated	This AECD only reduces EGR flow, however SCR will be still fully functional. With this AECD active, NOx emissions increases about 4 times compared to FTP cycle. No impact on other pollutants.	This AECD is primarily used for engine protection. Problems: • Irrelevant answer. • Emissions rates when AECD activated were not quantified.

2017 MY AECD Approvals

- Approved 2017 MY AECDs and format will be accepted as carryover for the 2018 MY if:
  - Submitted Information has not changed
  - There are no new concerns regarding the specific content of the AECD
- CARB may ask for additional information that may have been missed during the 2017 MY which could lead to additional questions and concerns.

Compression-Ignition and Heavy-Duty Certification Section

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E-Cert Update

- New design to include:
  - Diesel and Otto cycle engines and vehicles
  - Carryover and Partial Carryover applications
  - Greenhouse gas certification
- System staff currently working on Data Requirements
- Data Requirements to manufacturers once complete
- Workshop planned for the summer

E-Cert Update (cont'd)

- E-Cert will replace existing certification templates:
  - Filemaker Pro
  - On-highway certification Excel templates
- ARB will be asking manufacturers to participate in the E-Cert Pilot Program

On-Road HD Phase I GHG

- The California Phase 1 regulation includes Deemed to Comply provisions. ARB will approve manufacturers as “deemed to comply” with the Phase 1 GHG regulation once they comply with the requirements of the of the U.S. Phase 1 GHG program

- Engine and vehicle manufacturers are receiving EOs using the “deemed to comply” provision

On-Road HD Phase I GHG Submittal Information Necessary
"Deemed to Comply Option"

- Copies of all data submitted to U.S. EPA in accordance with the reporting requirements of 40 CFR 1036.205, 1036.250, 1037.205, and 1037.250
- An application for certification for each engine family or vehicle subfamily.
- Manufacturers must submit California values, rather than national values, for the number of engines and vehicles sold and produced in California
- For GHG Vehicle certification, include list of CA engine families used in the production of vehicles

On-Road HD Phase I GHG

- Engine manufacturers should inform their vehicle customers that they must also comply with CA GHG regulations
- Please continue to include GHG data in the ABT reports

ARB Proposing to Adopt California Phase 2 Regulation That Harmonizes With Federal Phase 2

- Harmonize with the federal rules in structure, timing and stringency
  - Enables California to certify vehicles and engines
  - Enables California to enforce requirements
  - If Federal Phase 2 is revoked, ensures California requirements will remain in place
- Not “Deemed to Comply” with California Phase 2 if federally certified
- California differences to facilitate enforcement, align with existing California programs, and provide additional incentive for advanced technologies

Areas Where California Phase 2 May Differ From Federal Phase 2

- Additional credits for use of Low-Global Warming Refrigerants
- Label Information
  - Additional information to be included in vehicle and trailer labels to aid in enforcement
  - Require “light-duty style” consumer labels for heavy duty pick ups and vans (provides fuel efficiency and environmental performance scores)
- Exclude transit buses and refuse trucks from the custom chassis provisions
- Hybrids must demonstrate no NOx increases to qualify for Advanced Technology Credit multiplier
- Alternate emission standards for specialty vehicles

Areas Where California Phase 2 May Differ From Federal Phase 2 (continued)

- Engine and Vehicle Certification Requirements
  - Require engine family for each certified vehicle in end-of-year report
  - Require additional air conditioning system information to support A/C leakage standard
- Natural Gas Engine Requirements - Continue to include ethane in the hydrocarbon emission standards for natural gas compression-ignition engines
- Adopting tampering and selective enforcement audit Provisions of Phase 2 (didn't for California Phase 1)

CERTIFICATION FOCUS AREAS

2017 FOCUS AREAS

- DPF Regeneration
  - Infrequent Regeneration Factors (IRAFs) Calculations
  - DPF regeneration during deterioration factor (DF) and exhaust testing

- Selective Catalytic Reduction (SCR)
  - Adaptive or Dual Dosing strategies
  - Aging factors

Off-Road Spark-Ignited Engine Certification Section

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SSIE Evaporative Regulations
November 2016 Board Hearing

- Board adopted Resolution 16-14
  - Requires all SSIEs to meet emission standards
  - Strengthen enforcement provisions
  - Requires E10 certification fuel
  - Provide optional streamlined fuel tank test procedure
- 15-day changes published

SSIE Evaporative Regulations
Regulatory Timeline

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SSIE Evaporative Regulations Amendments

Late 2017
Amendments become effective

2018
- Production volume reports required
- Amended certification and test procedures optional

2019
Low-permeation and small production-volume tank exemptions eliminated

2020
- All > 80 cc engines must meet diurnal emission standards
- Amended certification and test procedures required

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2020+ MY Certification Fuel Requirement

- New certification test fuel requirement (LEV III) for gasoline engines starting 2020 MY
- Applies to off-road categories for SSIE and LSIE. 40 CFR 1065.701(a) (California Version)
- Production-line testing must use same fuel as certification test fuel
- New Deterioration Factor (DF) testing required for engines certified with LEV III fuel

2020+ MY Certification Fuel Requirement (cont'd)

- Current DFs not representative of new engines
- DFs cannot be carried over to 2020+ MY engine families
- Manufacturers encouraged to coordinate with ARB and EPA to use same DF test data
- Manufacturers may utilize DF Carry-Across from worst case engine families to others
- Provide technical justification for DF carry-across

Field Operations
Warranty Section

Defect Reporting Requirements

- EMA request single defect reporting
  - CARB already is aligned with EPA for off-road defect reporting
  - CARB Emissions Warranty and Information Reporting Title 13 CCR 2144-2146
    - EWIR, FIR, and EIR reporting requirements very robust program
    - Since 2010 CY responsible for
      - 228 ARB-required recalls
      - 77 extended warranties
      - Affecting some 2.3M CA vehicles

Contact Information

Compression-Ignition and

Heavy-Duty Certification Section

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Questions