

# Facility-Based Mobile Source Measures Commercial Marine Ports (MOB-01)



3<sup>rd</sup> Working Group Meeting  
January 17, 2018



# Agenda

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- Background
- Commercial Marine Port Emissions Inventory
- Emission Reduction Opportunities
- Emission Reduction Strategies
- Next Steps

# Background – Previous FBMSM Activities

## 2016 AQMP Approved

- Calls for year-long process to identify potential facility-based measures

## 1<sup>st</sup> FBMSM Working Group Meeting

- FBMSM Framework and SIP Integrity Elements introduced

## Ports Adopt 2017 CAAP

- CAAP includes many emission reduction strategies

## Introductory FBMSM Working Group Meeting

- Focused on process for working group

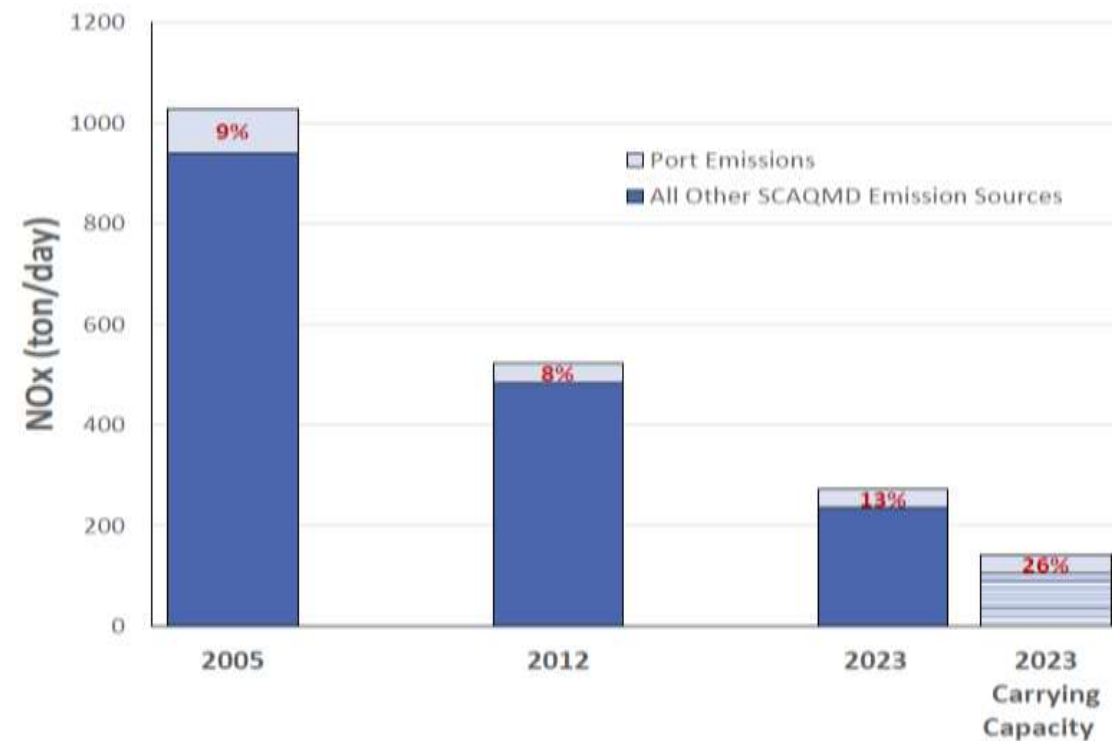
## 2<sup>nd</sup> FBMSM Working Group Meeting

- Discussed key requirements for obtaining SIP credit

# Background – CAAP Targets

- 2017 CAAP maintained same NOx, SOx, and DPM emission reduction targets established in 2010 CAAP

| Pollutant | 2023 Emission Reduction Target* | 2016 Actual Emission Reductions** |      |
|-----------|---------------------------------|-----------------------------------|------|
|           |                                 | POLB                              | POLA |
| DPM       | 77%                             | 88%                               | 87%  |
| NOx       | 59%                             | 56%                               | 57%  |
| SOx       | 93%                             | 97%                               | 98%  |



- However, additional emission reductions needed beyond existing targets
  - Potential effectiveness of new emission reduction strategies in 2017 CAAP unclear
  - Additional GHG targets included in 2017 CAAP may also have co-benefit of reducing criteria pollutants

\* Targets based on 2005 baseline emissions

\*\*2016 Air Emissions Inventories for Port of Long Beach and Los Angeles

# Background – Key Emission Sources at Ports



Ocean Going Vessels (OGV)



Commercial Harbor Craft (HC)



Cargo Handling Equipment



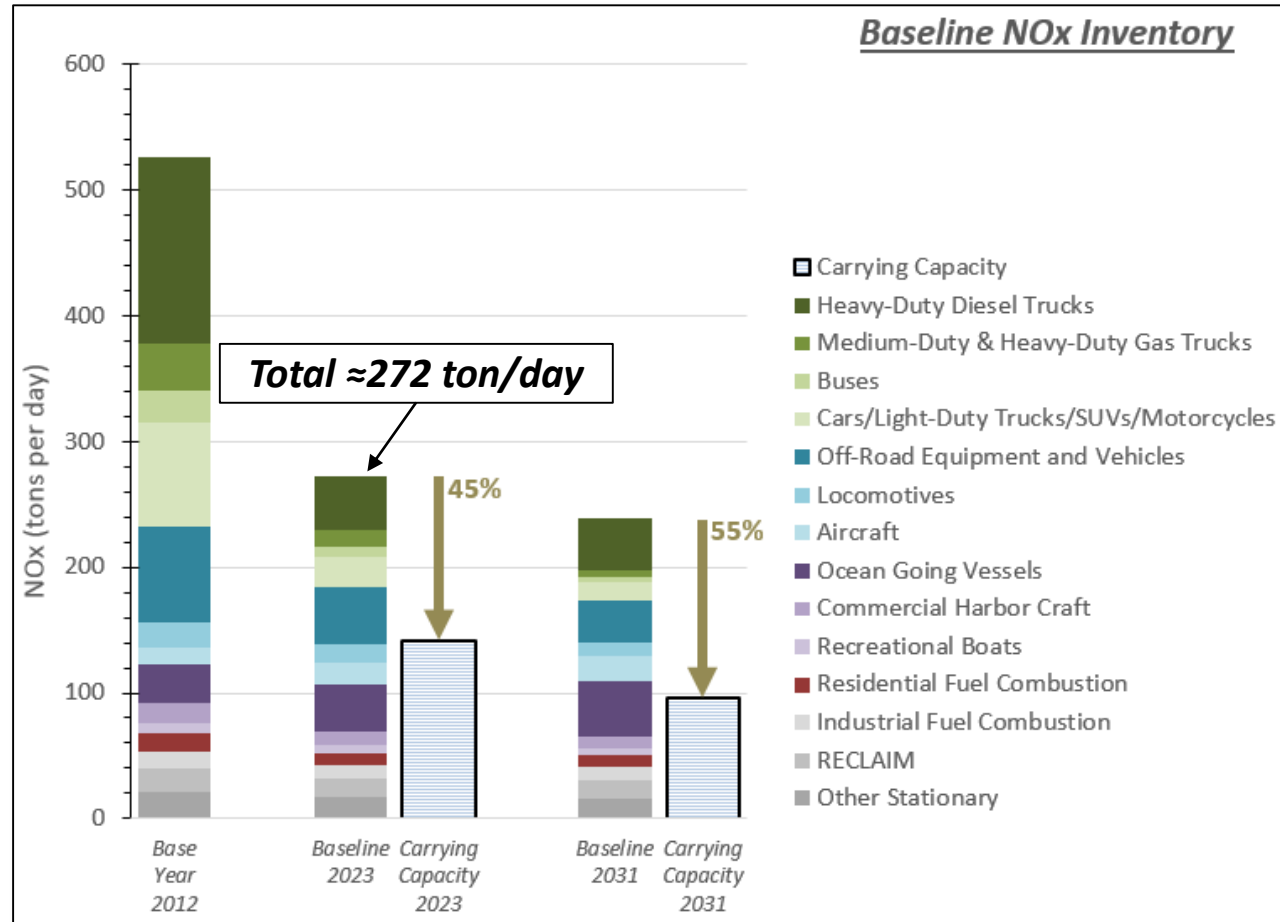
Locomotives



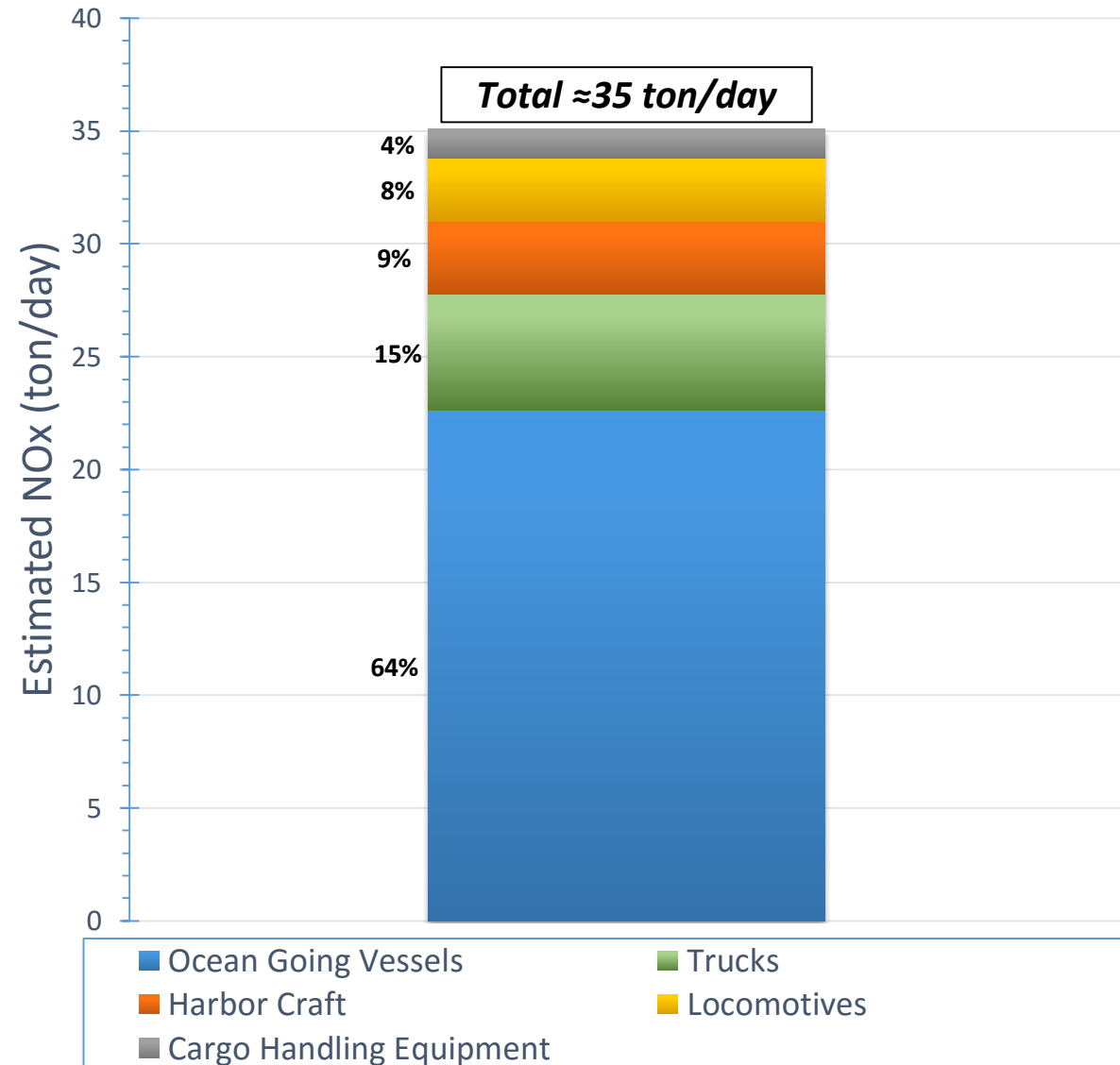
Heavy Duty Trucks

## Total South Coast SIP NOx Inventory

### Baseline NOx Inventory



## Estimated 2023 NOx Emissions Associated with Ports



# Opportunities for Emission Reductions

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- 2017 CAAP proposed many emission reduction strategies
  - Specific targets and timelines are needed to get SIP credit for future emission reductions
    - SCAQMD comment letter on Final CAAP proposed potential targets and timelines to implement, supplement, and accelerate CAAP measures
      - <http://www.aqmd.gov/docs/default-source/planning/fbmsm-docs/scaqmd-comments-on-the-2017-caap-update.pdf>
- Proposed measures on following slides take into account previous work in FBMSM working groups, the work done by the ports to develop the CAAP, and SCAQMD comments

# Key Considerations for Emission Reduction Mechanisms



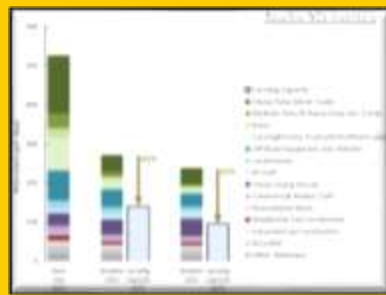
## Regulation

- Must be feasible based on cost, availability of technology, etc.
- Should avoid significant administrative or cost burdens
- Should not hinder available incentives



## MOU

- Includes mutually agreeable emission reduction target
- Procedure to make-up shortfalls required in case target not met to be SIP creditable



## Inventory Adjustment

- Requires demonstrated history of behavior (e.g., VSR)
- Records of behavior must be available to be SIP creditable



## Facilitating Measures

- Infrastructure projects (e.g., vehicle charging)
- Generally not SIP creditable but critical to facilitate emission reductions



## Incentives

- Availability of technology
- Funding commitment
- Must demonstrate that incentivized activity meets 'integrity elements' to be SIP creditable



# Potential Emission Reduction Strategies-Ocean Going Vessels

## Already Proposed Emission Reduction Strategies

- Regulation ✓
- MOU
- Inventory Refinement
- Facilitating Measures ✓
- Incentives ✓

### Regulation

- Potential CARB At-Berth rule (up to 100% compliance by 2030)

### Facilitating Measures

- Demonstrate new technologies & install infrastructure to support proposed CARB At-Berth regulation

### Incentives

- Proposed rate structure to incentivize cleaner vessels (2025)
- Incentives for energy efficiency improvements
- Expand the VSR program
- Incentivize additional at-berth emission reduction technology

## Potential Additional Emission Reduction Strategies

- Regulation
- MOU
- Inventory Refinement
- Facilitating Measures ✓
- Incentives ✓

### Incentives

- Pursue incentives for introduction of cleaner ships before 2025

### Facilitating Measures

- Review opportunities for expansion of VSR program (e.g., extended distances and modified speeds)
- Develop technologies for ship engine retrofits

# Potential Emission Reduction Strategies-Commercial Harbor Craft

## Already Proposed Emission Reduction Strategies

- Regulation
- MOU
- Inventory Refinement
- Facilitating Measures ✓
- Incentives ✓

### Incentives

- Provide incentives for repowering engines to Tier 4 or low emissions hybrid

### Facilitating Measures

- RFP for demonstration projects to reduce harbor craft emissions (2018)

## Potential Additional Emission Reduction Strategies

- Regulation ✓
- MOU
- Inventory Refinement
- Facilitating Measures ✓
- Incentives

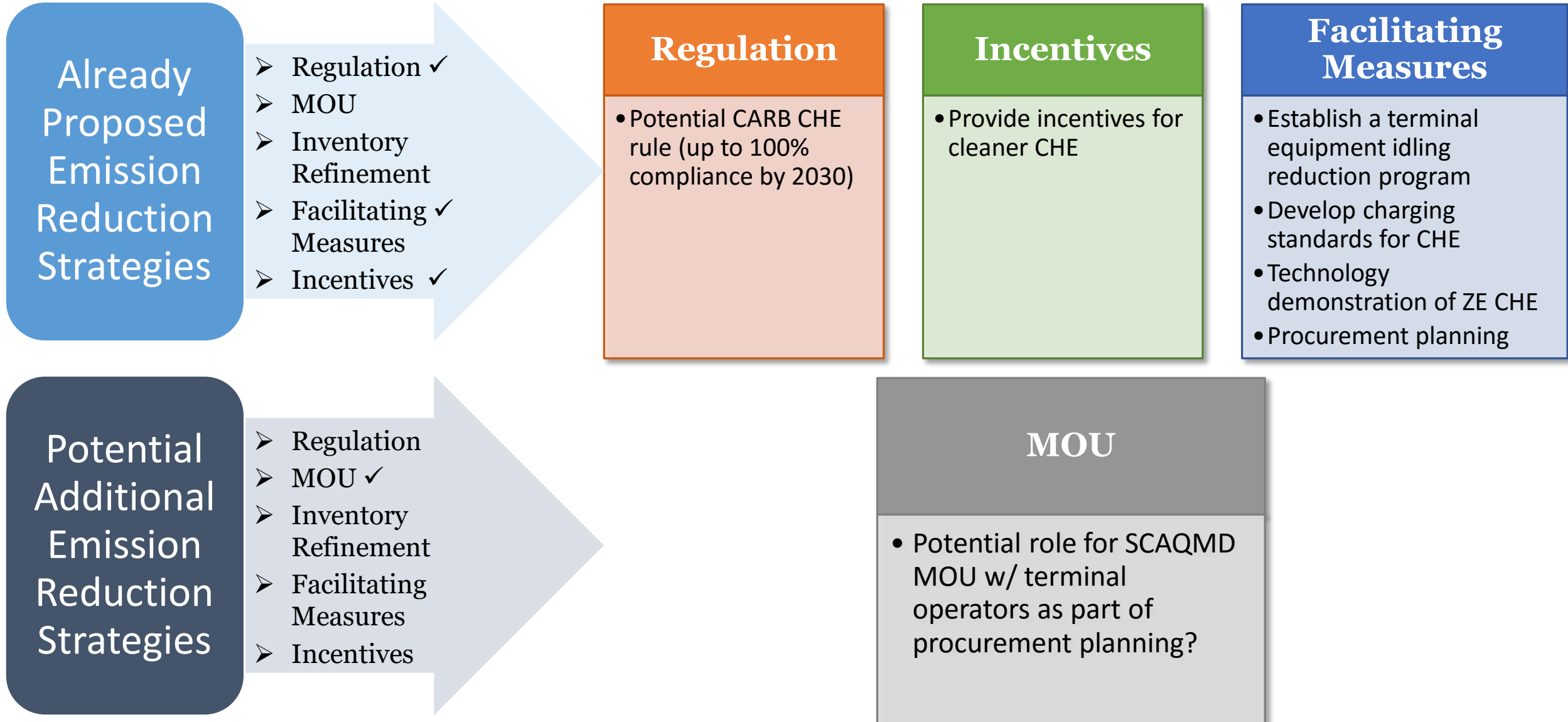
### Regulation

- Opportunity for a new regulation? (CARB?, SOON?)

### Facilitating Measures

- Continue to support new demonstration projects to reduce harbor craft emissions

# Potential Emission Reduction Strategies- Cargo Handling Equipment



# Potential Emission Reduction Strategies – Heavy Duty Trucks

## Already Proposed Emission Reduction Strategies

- Regulation ✓
- MOU
- Inventory Refinement
- Facilitating Measures ✓
- Incentives ✓

## Potential Additional Emission Reduction Strategies

- Regulation
- MOU ✓
- Inventory Refinement
- Facilitating Measures
- Incentives

### Regulation

- Clean Truck Program
  - 2018, new trucks must have 2014+ model year engines
  - 2023, new trucks must be NZE or ZE, and new rate for non-NZE/ZE
  - 2035, new rate for non-ZE
- Potential CARB rule for new NZE truck standard by 2023

### Facilitating Measures

- Ports' Truck Inspection Program
- Petition from SCAQMD to EPA for new NZE truck standard
- SB 350 Transportation Electrification activities
- CAAP pilot program of 50-100 ZE trucks
- Truck appointment systems

### Incentives

- Incentives for NZE/ZE trucks

### MOU

- Potential SCAQMD MOU with ports to ensure Truck Program is SIP creditable

# Potential Emission Reduction Strategies- Locomotives

## Already Proposed Emission Reduction Strategies

- Regulation
- MOU
- Inventory Refinement
- Facilitating Measures ✓
- Incentives ✓

## Facilitating Measures

- Expand use of on-dock rail and infrastructure to remove bottlenecks (if emissions are lower than using trucks)
- CARB petition to EPA for new locomotive standards

## Incentives

- Incentives for Tier 4 locomotives

## Potential Additional Emission Reduction Strategies

- Regulation
- MOU ✓
- Inventory Refinement
- Facilitating Measures
- Incentives

## MOU

- Opportunity for new Agreement with rail companies to supplement existing 1998 Tier 2 Agreement?

# Potential Indirect Source Rule Concept for Ports if Proposed Emission Reduction Measures are Not Sufficient

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- Terminal operators would be required to:
  - Submit a detailed existing emissions inventory from all sources
  - Submit a plan for their facility to reduce emissions from all indirect sources
    - Emission reduction requirement could be based on Best Management Practices, XX% reduction approach, etc.
      - Benefits/drawbacks of different approaches would be explored during rulemaking
    - Potential for facilities already achieving best-in-practice emission reduction strategies could have fewer or no new emission reduction requirements
    - Likely implementation milestones in 2023 and 2031
- Potential timing to re-evaluate potential need for ISR = 2019-2020

# Next Steps

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- Report to Mobile Source Committee on February 16, 2018 and to Governing Board on March 2, 2018
- Present emission reduction strategies to the Governing Board and seek direction

# Staff Contacts

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# Discussion Period

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- Question 1: What types and levels of incentives would be needed to have greater number of calls from cleaner ocean going vessels (e.g., tier 3, retrofitted pre-tier 3)?
- Question 2: If MOUs are pursued (e.g., trucks, CHE, etc.), what key components should be included?
- Question 3: What additional or replacement strategies should SCAQMD consider and why would they be better?