

Concepts to Reduce Emissions from Locomotives and Railyards



Meeting Agenda

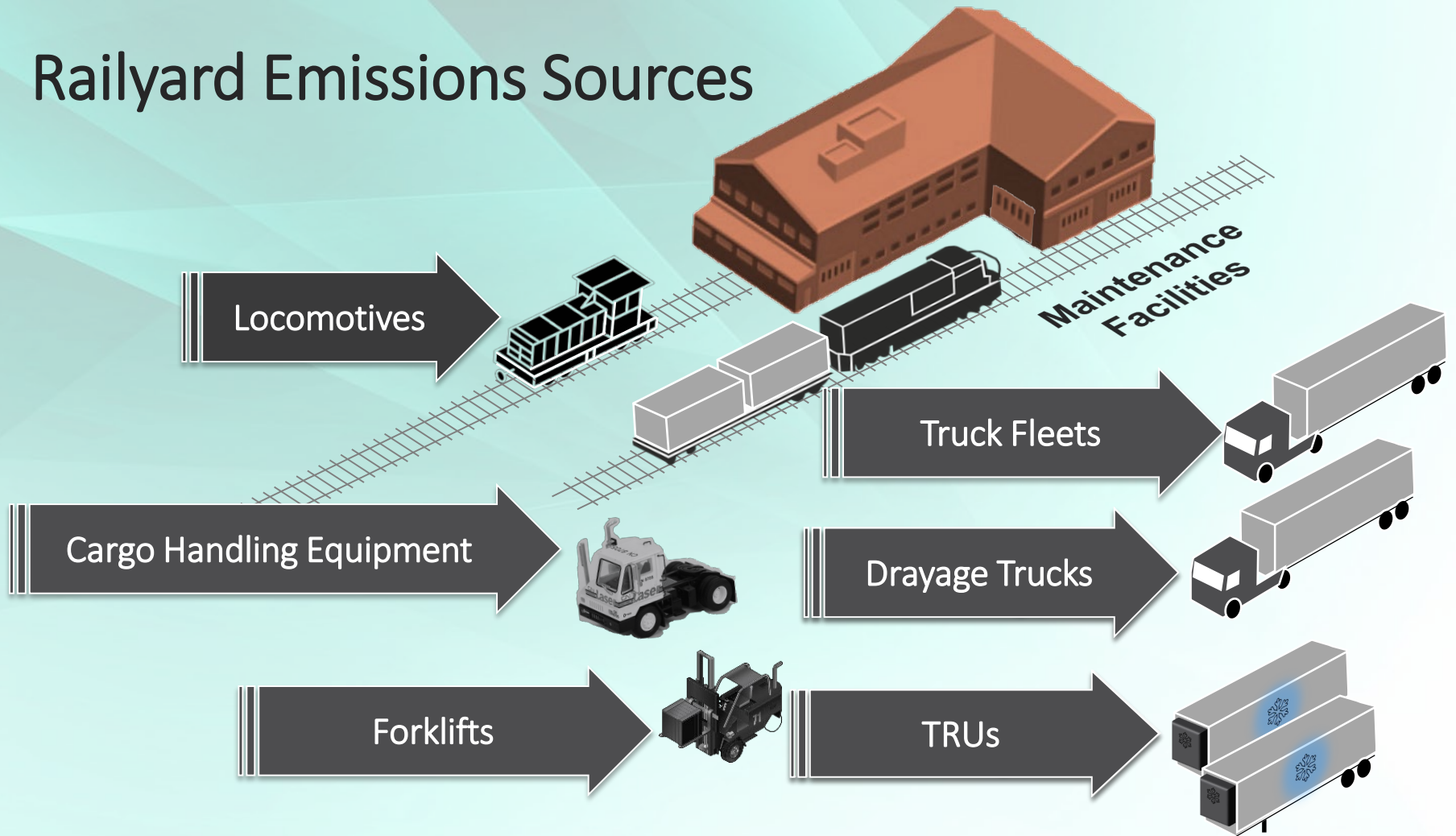
- Introductions
- Background
- CARB Concepts
- South Coast Concepts
- Questions



What do we need to minimize the community health impacts from locomotives?

- Engaged community partners
- Industry leadership
- Coordinated state and local government actions
- Multi-year incentive funding
- More stringent national standards

Railyard Emissions Sources



Line Haul Locomotives



- Large, high horsepower
- Travel throughout country
- Difficult to incentivize



Switchers

- Small, lower horsepower
- Typically older
- Generally stay local
- State incentives available



CARB Background on Rail

1998 South Coast Agreement (sunset 2030)

- Average Tier 2 NOx emissions standard
- Railroads report activity
- Credits provided for early technology adoption

2005 Statewide Railyard Agreement (sunset 2015)

- Idle reduction, repair and reporting effort
- Use of cleaner diesel fuel
- 17 railyard health risk assessments

South Coast AQMD – Rail Activities

- **2017**

South Coast AQMD Board directed staff to develop a draft Indirect Source regulation on railyards, and explore voluntary approaches

- **2018/2019**

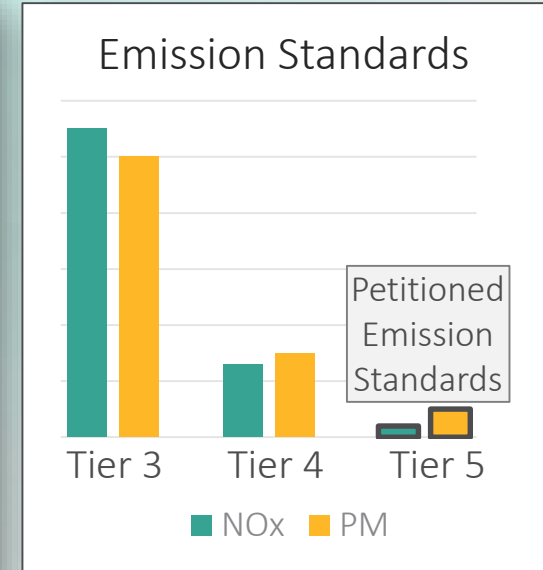
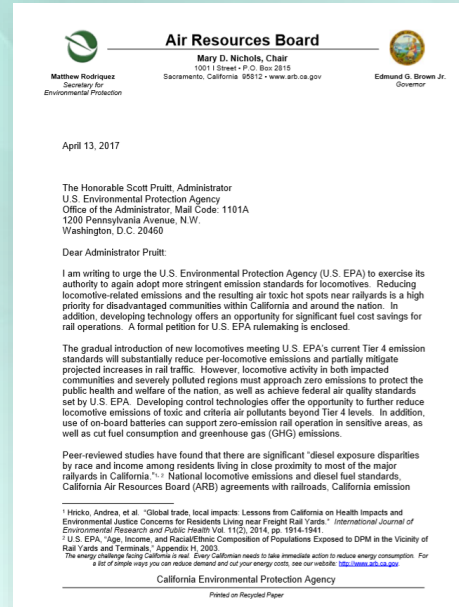
Staff collected emission inventory information from UP/ BNSF

- **2019**

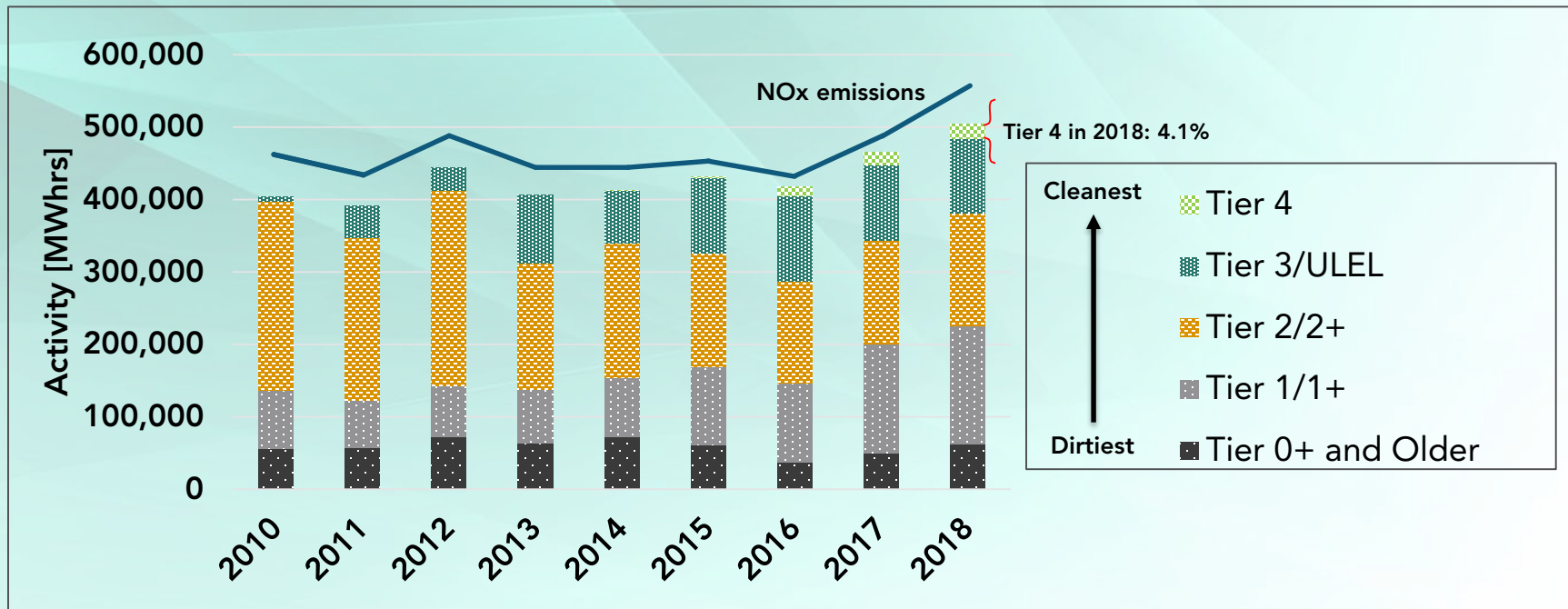
All three year-1 AB617 communities identified railyards as a top priority (Commerce/E. LA, Wilmington/West Long Beach/Carson, San Bernardino)

State of Locomotive Technology

- Tier 4 (2015)
- Locomotive Petition to U.S. EPA
- Currently Demonstrating Batteries on Locomotives



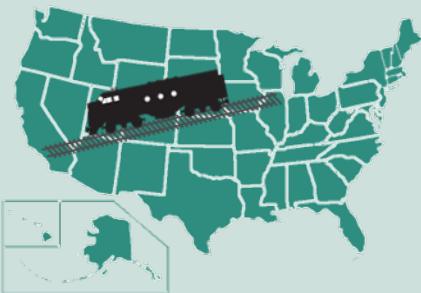
Locomotive Emissions in the South Coast



Who Can do What?

Federal: U.S. Environmental Protection Agency

- Regulate locomotive emissions standards
- Stationary and Mobile Source Authority



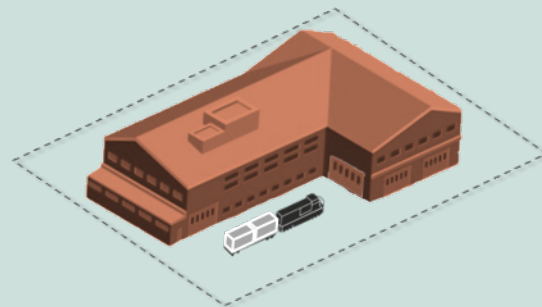
State: California Air Resources Board (CARB)

- Regulate locomotive activity
- Primarily Mobile Source Authority



Local: Air Quality Management Districts (SCAQMD)

- Regulate railyard emissions
- Primarily Stationary and Indirect Source Authority



CARB Statewide Concepts

1

Establish a Locomotive Emissions Reduction Spending Account

2

In-Use Locomotive Remanufacture Limit

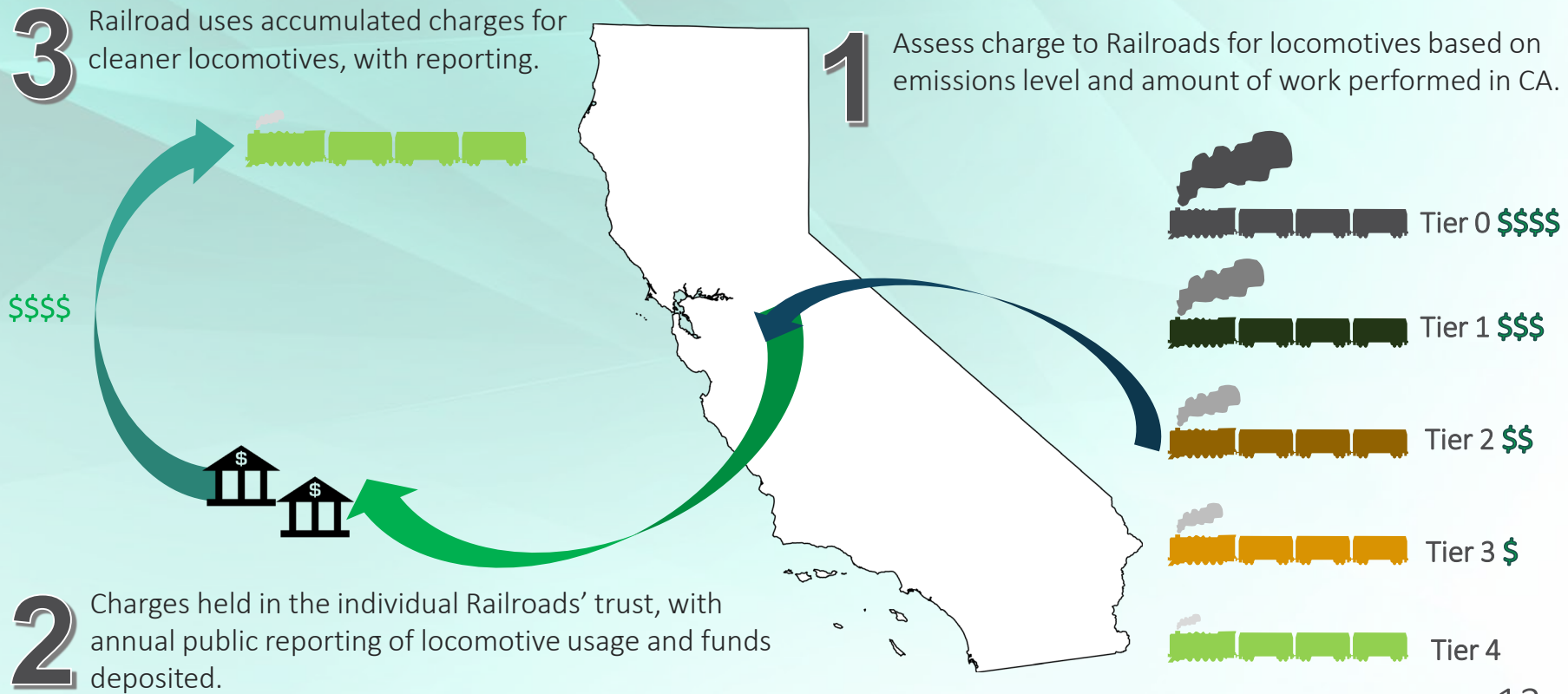
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Adopt U.S. EPA 30 Minute Idling Limit

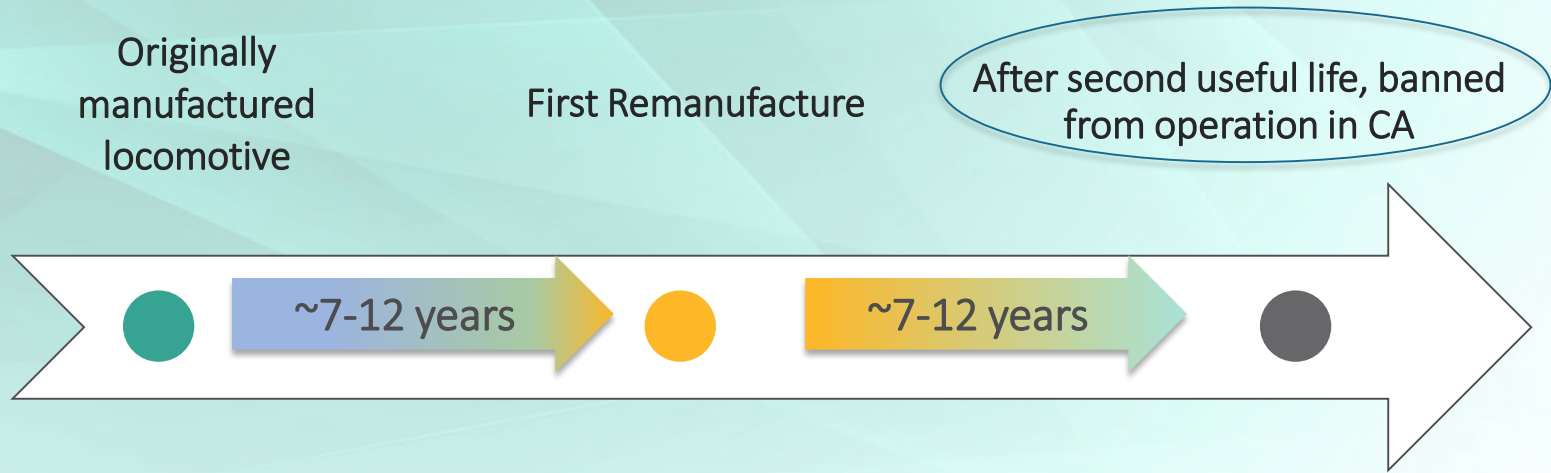
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Genset Repurposing

1. Establish a Locomotive Emissions Reduction Spending Account



2. In-Use Locomotive Remanufacture Limit



- Railroads currently have no limit how many times they can remanufacture
 - Remanufacture only needs to be as-built or “plus” standard
- When implemented, any locomotive already remanufactured more than once would be banned from California
 - Alternative: remanufacture to Tier 4 and continue California operation

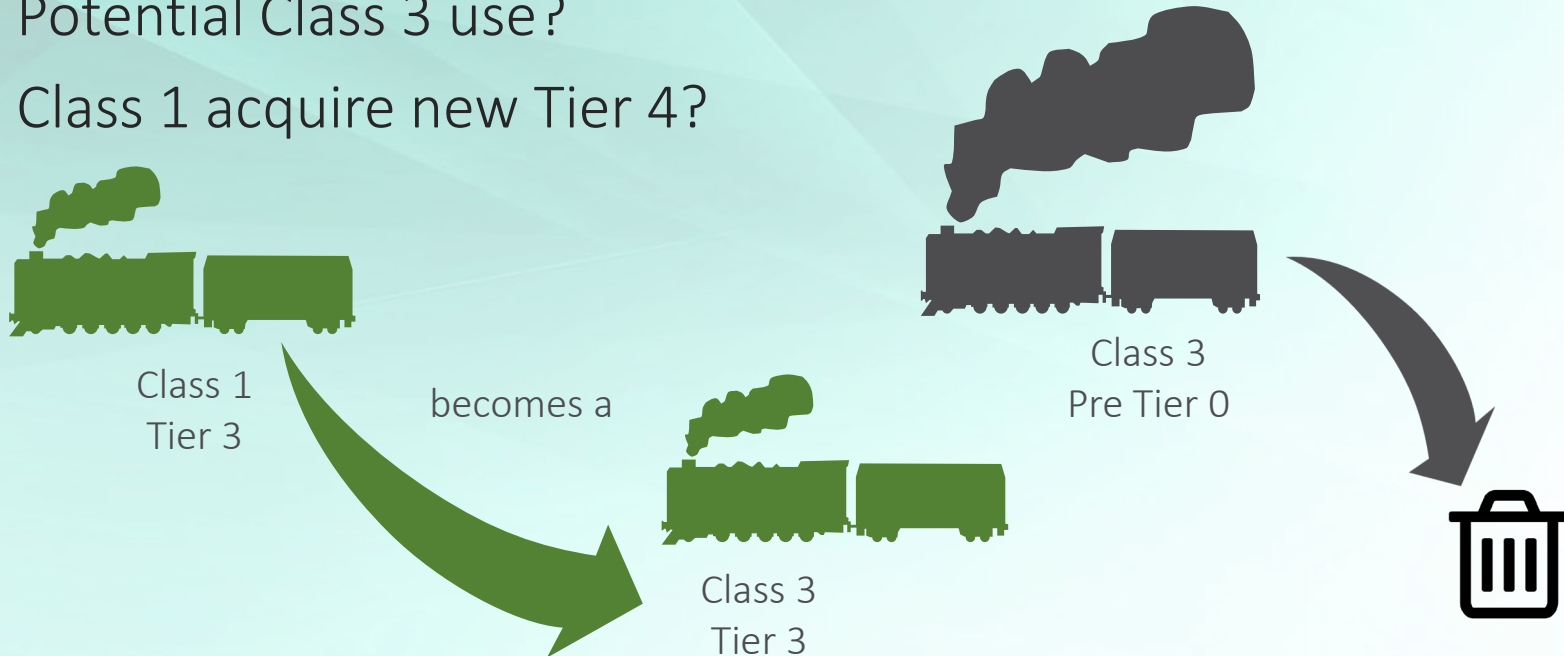
3. Adopt U.S. EPA 30 Minute Idling Limit

- Incorporates Federal requirements in California SIP
- Makes the rule CARB enforceable
- Enforcement by Air Districts possible through enforcement MOU



4. Genset Repurposing

- Tier 3 generator sets not fit for Class 1 use
- Class 3 operating much older, lower use locomotives
- Potential Class 3 use?
- Class 1 acquire new Tier 4?



South Coast AQMD Concepts

1

Indirect Source Rule (ISR) to Reduce Exposures from Locomotive Maintenance Emissions

2

ISR to Require Engineering Plans for Zero Emissions Operations

3

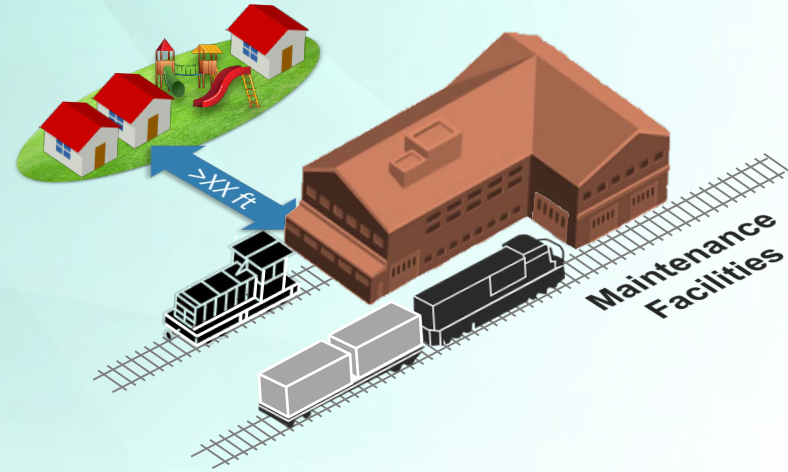
New Incentive Program Focused on Cleanest Locomotive Use

4

Evaluate New Monitoring Approaches for In-Use Locomotives

1. Reduce Exposures from Locomotive Maintenance Emissions

- Community has placed high priority on reducing exposure from locomotive maintenance
- Some railyards have >10,000 maintenance events per year
 - Load testing and idling can have high emissions

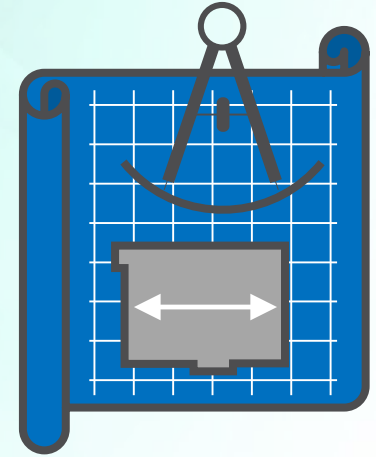


Proposed ISR Requirements

- Minimum distances to sensitive receptors (buffer)
- Install/Use emission control equipment
- Schedule maintenance activities to reduce impacts

2. Engineering Plans for Zero Emissions Operations

- Community priority on zero emission on-site equipment
- For transition to Zero Emissions operations, significant infrastructure upgrades are needed
 - Land, electrical equipment, site-specific engineering, etc.
- Coordination with local utilities is critical



Proposed ISR
Requirements

- Railroads prepare site-specific Zero Emissions Plans
- South Coast AQMD and CARB would evaluate plans to identify next steps (regulations, incentives, etc.)

3. New Incentive Program Focused on Cleanest Locomotive Use

- Current incentive programs have limited effectiveness in accelerating the widespread use of the cleanest locomotives (Tier 4)
 - Programs require in-state use and replacement
- Railroads have shown that preferential routing is possible with 1998 MOU Tier 2 requirement
- Attract cleanest existing locomotives now
 - Faster possible emission reductions than regulations
- Potentially funded by Railroads through proposed CARB spending account

*South Coast AQMD
funded 19 freight
locomotives since 2016
(~\$37 million total)*

Potential
Approach

- Develop new local program that provides incentives tied to clean locomotive use, not replacement
- Increased incentives in disadvantaged communities

4. Evaluate New Monitoring Approaches for In-Use Locomotives

- South Coast AQMD continues to receive air quality complaints about smoking locomotives
 - We pass along the complaint to the railroads
 - EPA sets emissions standards, but only requires in-use testing for up to five locomotives per railroad per year
- Better data on local air quality impacts of smoking locomotives can lead to follow-up actions/ priorities

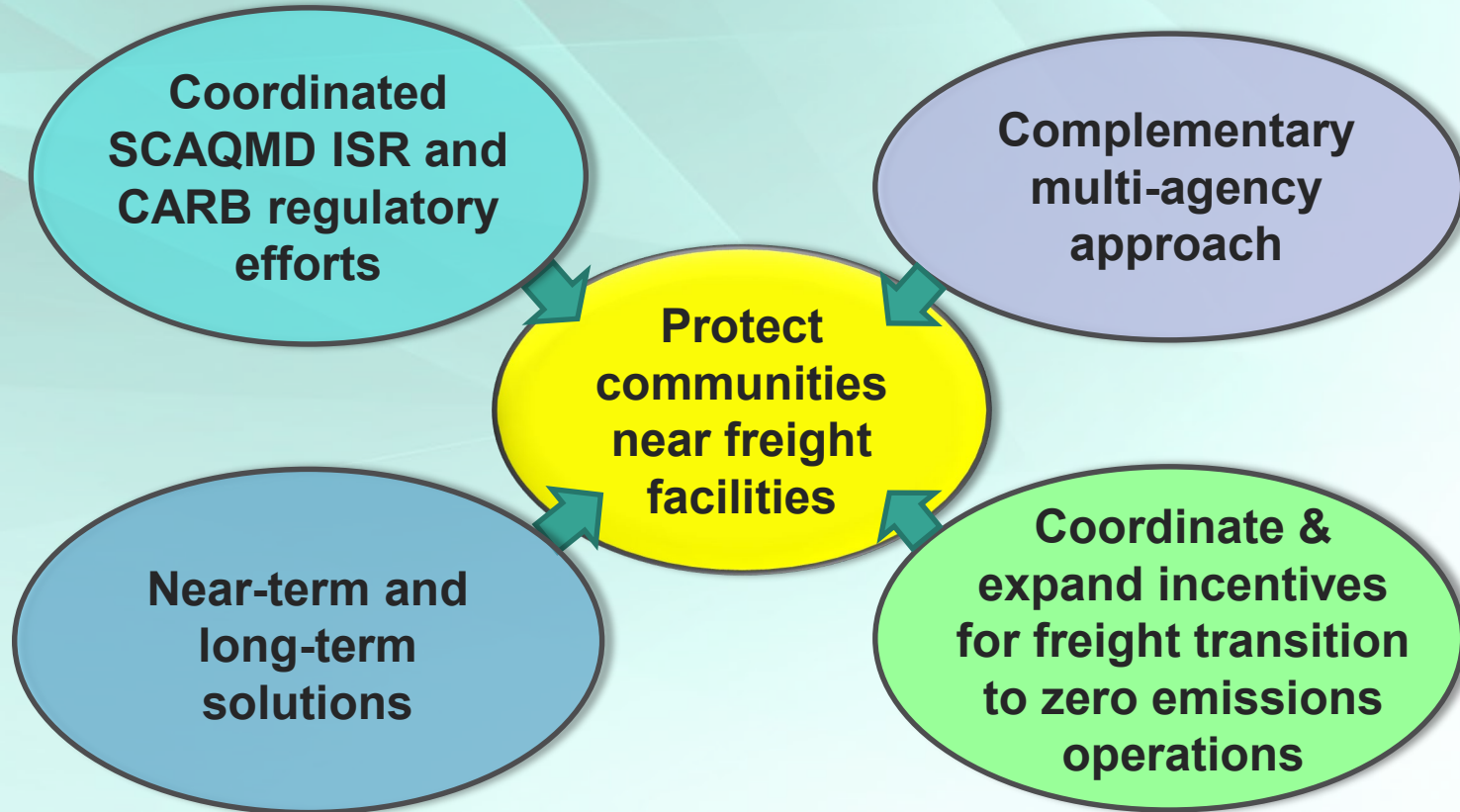


Potential
Approach

→ Evaluate new monitoring technologies to document air quality impacts

→ Use data to support follow-up regulatory or enforcement actions to reduce emissions

Path Forward on Freight



Next Steps

- Hold second joint workshop in South Coast
- Continue to reach out to stakeholders to develop South Coast AQMD concepts
- Continue South Coast AQMD partnership with CARB as they develop their concepts
- CARB to hold additional workshops statewide



Stakeholder Feedback



- CARB Freight Team
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- South Coast AQMD: Ian MacMillan
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