



**SOUTH COAST**  
**AQMD**

**ZERO & NEAR-ZERO EMISSION**  
**TRUCKS**



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Deputy Executive Officer  
Science & Technology Advancement

# South Coast Air Quality Management District

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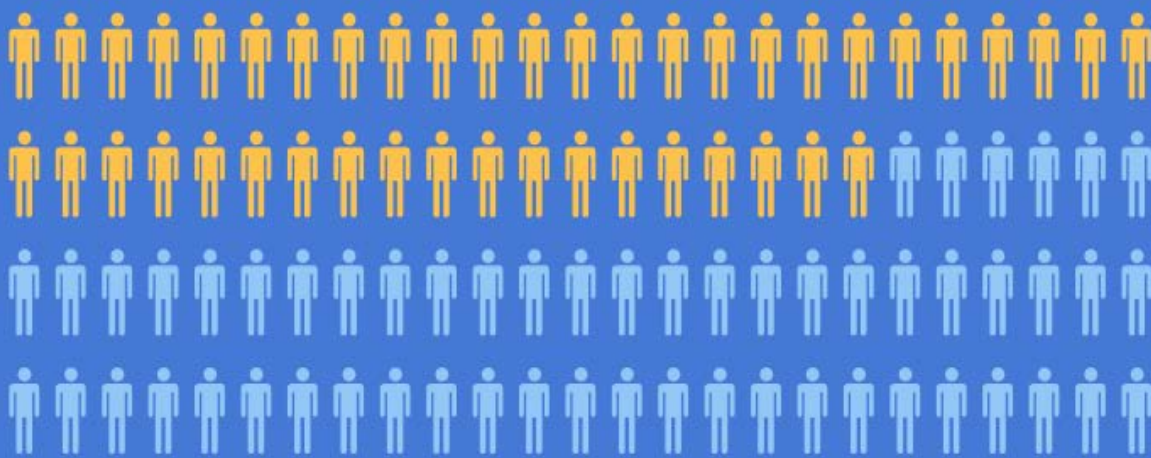
Counties of

- Los Angeles
- Orange
- San Bernardino
- Riverside



44%

State's population in  
South Coast



■ AQMD (44%) ■ CA (56%)

# South Coast Air Quality Management District

40%

Containerized goods to nation



44%

State's population in South Coast



# SCAQMD Population



27,500,000



22,600,000



20,300,000



19,800,000



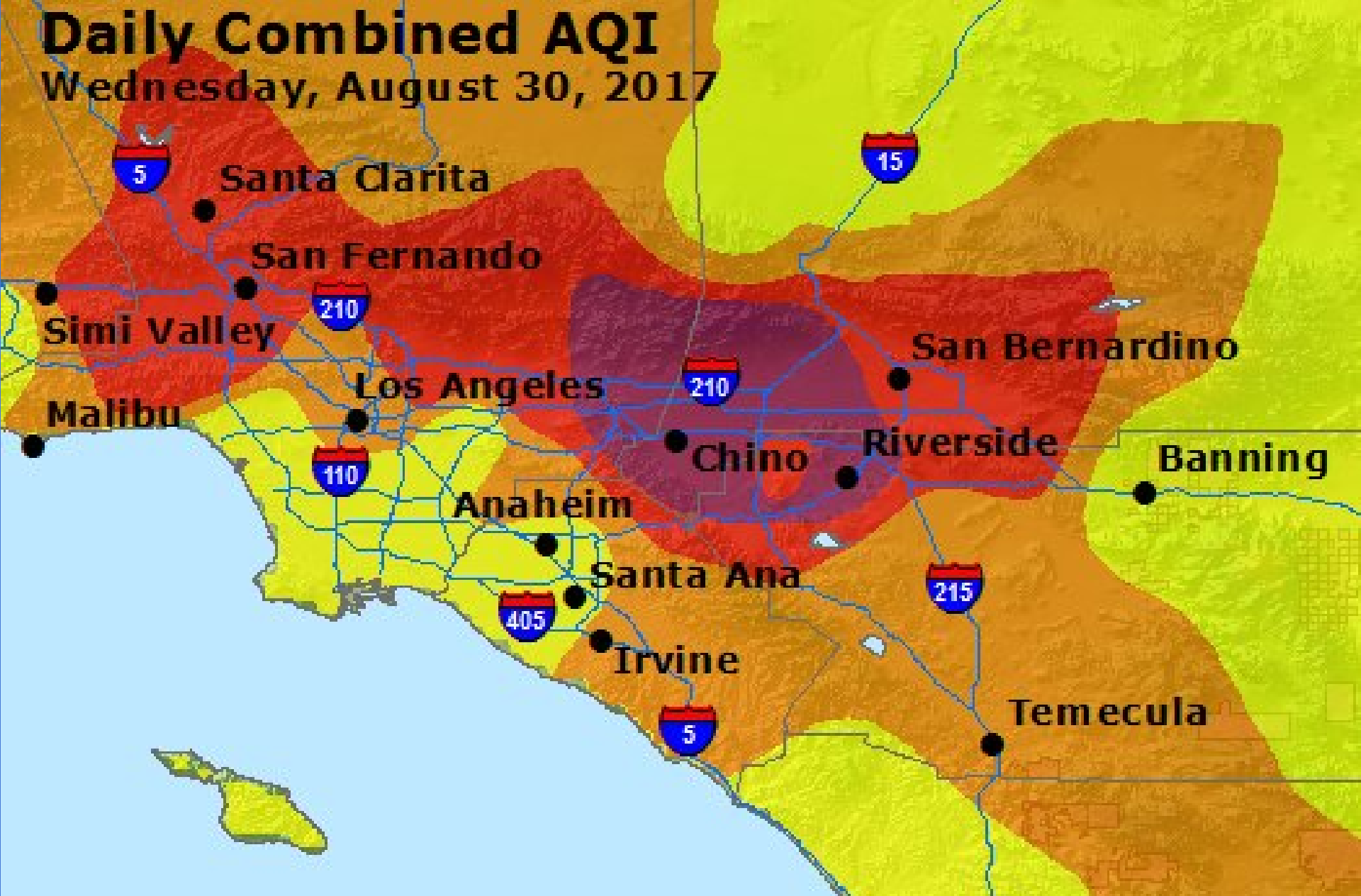
16,500,000



12,900,000

# Daily Combined AQI

Wednesday, August 30, 2017



Good

Moderate

USG

Unhealthy

Very Unhealthy

Hazardous



Los Angeles Times

# L.A. Now

California: This just in

## Thousands of lives could be saved in California by stricter air pollution limits, study finds



## SoCal hit with worst smog in years as hot, stagnant weather brings surge in hospital visits

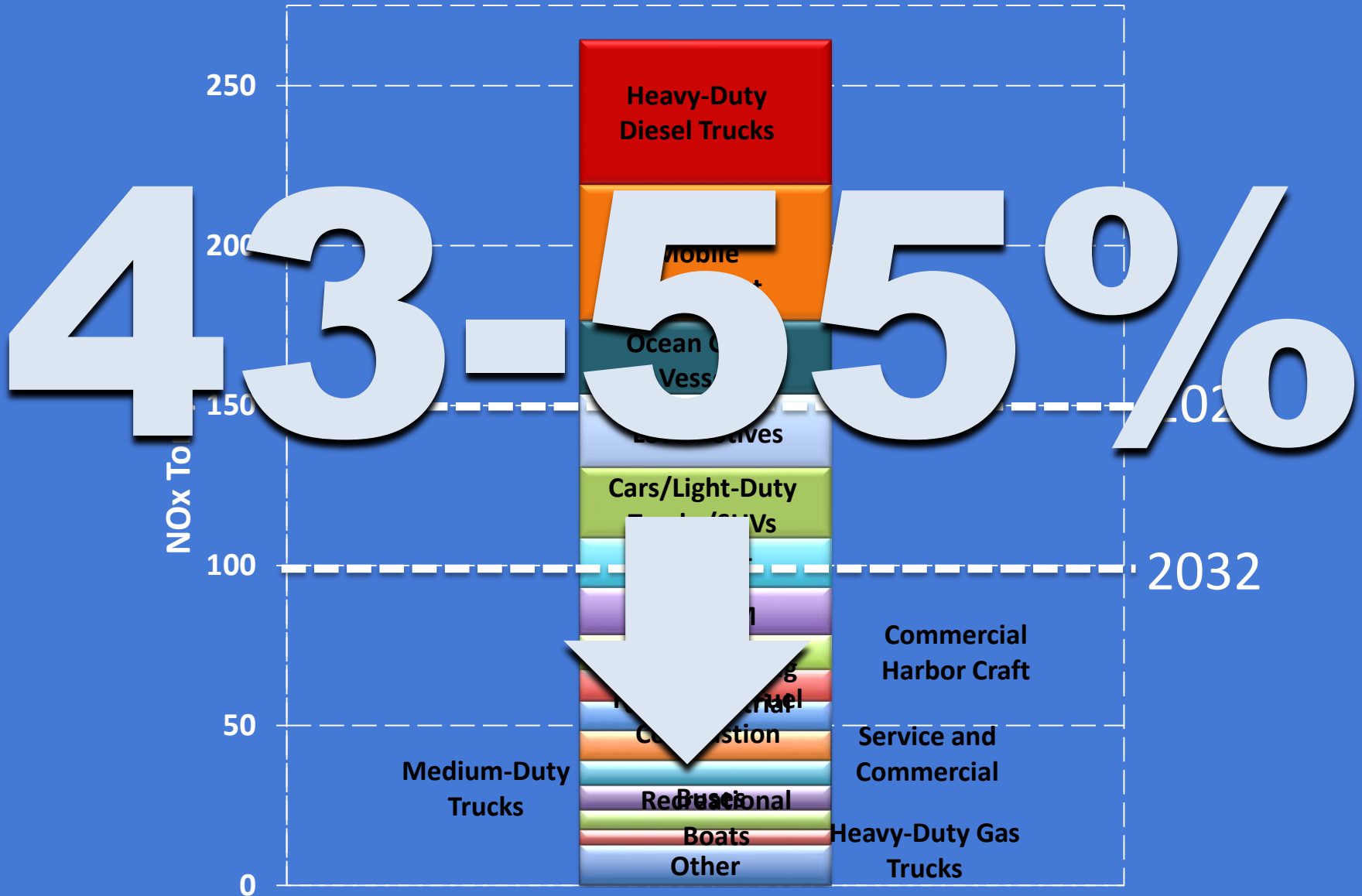


Smog descends on downtown Los Angeles during a November afternoon in 2015. (Los Angeles Times)

By **Tony Barboza**

AUGUST 11, 2016, 9:00 AM

# Top NOx Sources 2023





## Ryder signs exclusive deal with L.A. electric-truck maker Chanje



The Changje all-electric delivery truck will be leased out by Ryder. (Changje)





# Near-Zero Emission NG Engines

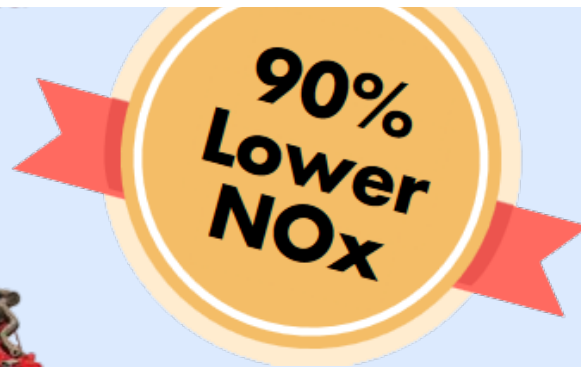
Ultra-Low Emission Heavy-Duty Natural Gas Engine Tests Better Than 99.8 Percent Clean



SOURCE: UNIVERSITY OF CALIFORNIA RIVERSIDE'S CE-CERT AUG 15, 2017



2016



12L



2018





# Zero Emissions Cargo Transport 1 & 2



Battery



NG Rex



Fuel Cell



The Port of  
LONG BEACH



# Zero Emissions Drayage Trucks



\$24 Million



California Environmental Protection Agency  
**AIR RESOURCES BOARD**



**KENWORTH**



Battery



BAY AREA  
AIR QUALITY  
MANAGEMENT  
DISTRICT



**San Joaquin Valley**  
AIR POLLUTION CONTROL DISTRICT



NG Rex



**APCD**  
AIR POLLUTION CONTROL DISTRICT  
COUNTY OF SAN DIEGO



**VOLVO TRUCKS**

Diesel PHEV





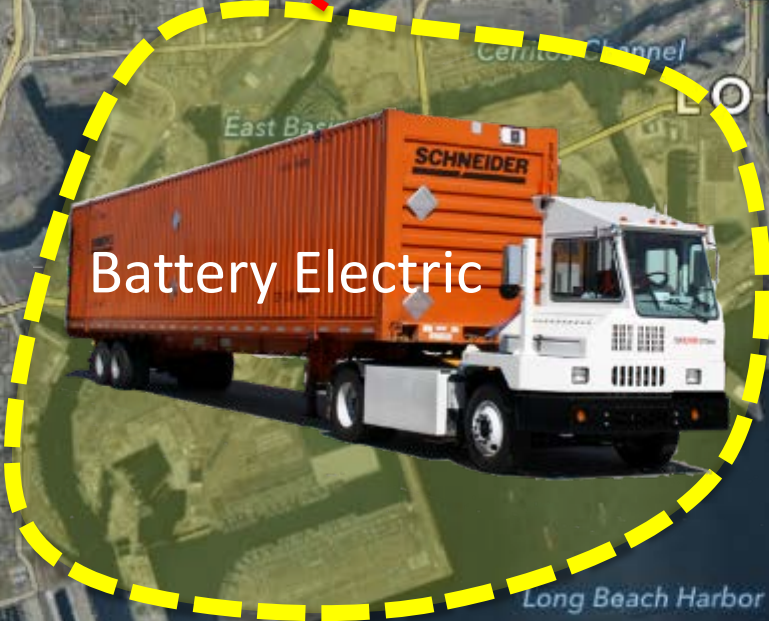
< 10 miles



Plug-in Hybrid

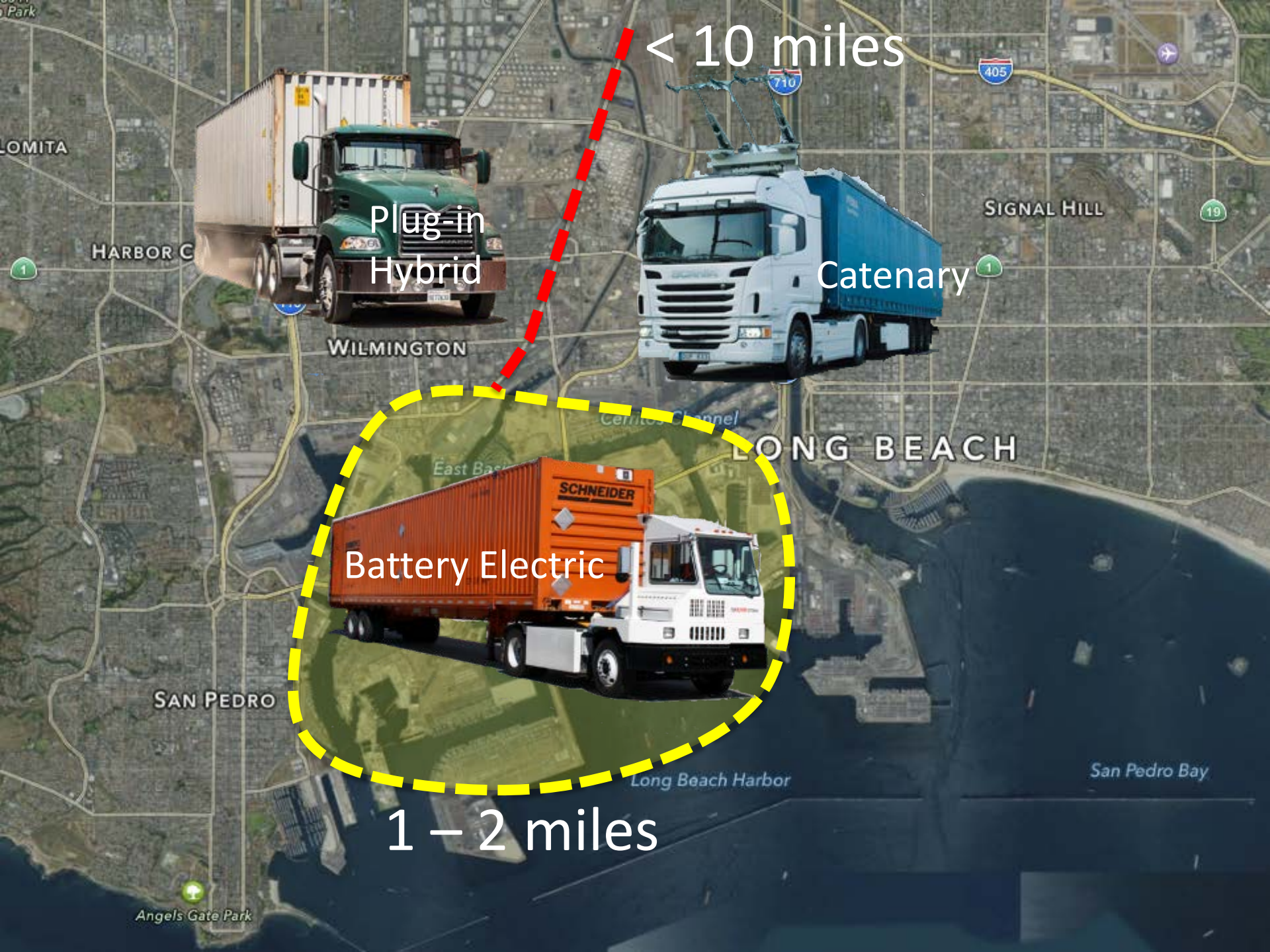


Catenary



Battery Electric

1 – 2 miles





Near-Zero  
Natural Gas



> 20 miles

Plug-in  
Hybrid



Fuel Cell



Catenary



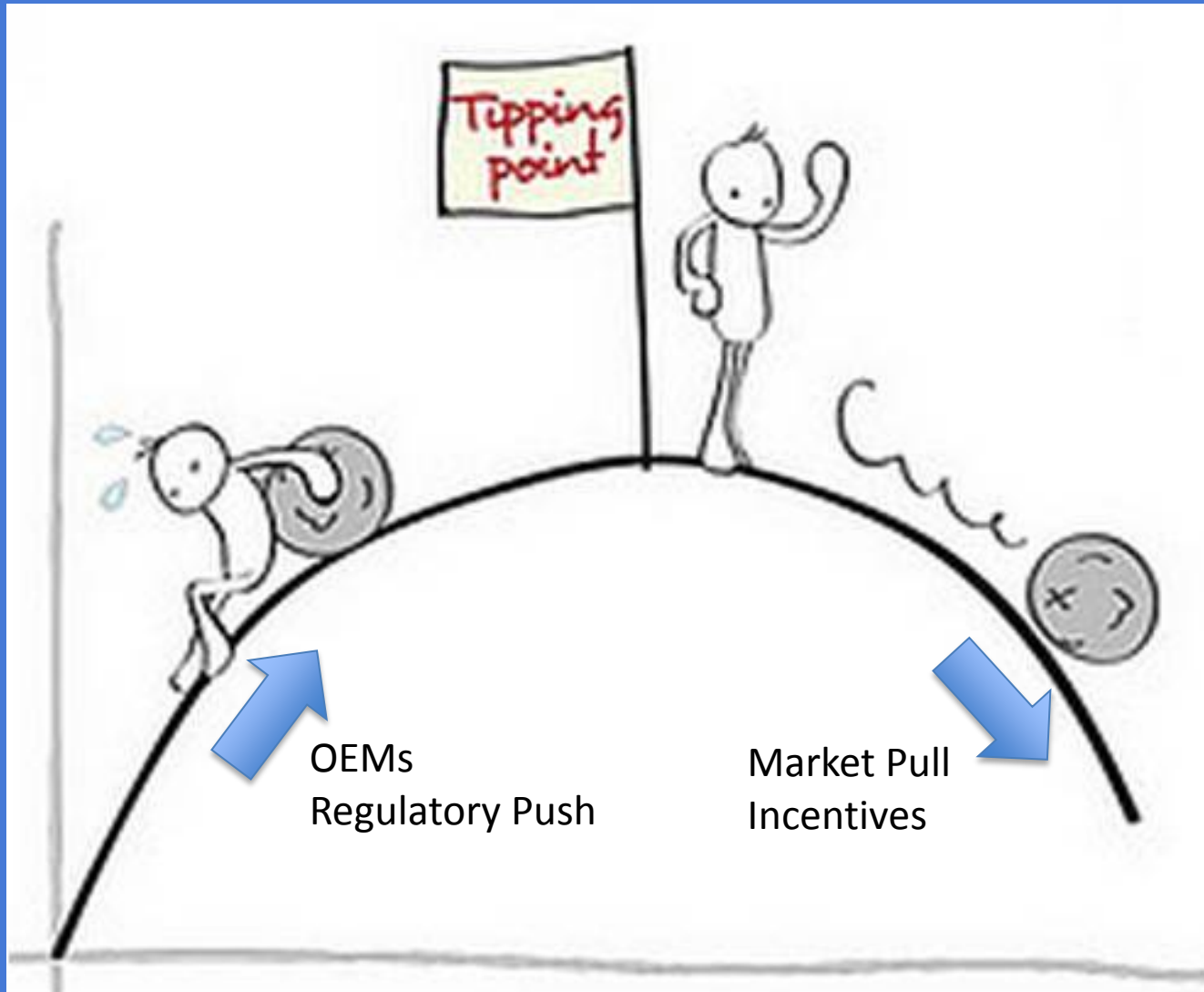
LONG BEACH





# How to get to Tipping Point?

Initiating Market for Zero and Near-Zero Trucks



# Medium & Heavy-Duty Trucks

- \* SCAQMD helped coordinate
- \* Initiated regulatory generation heavy-duty

## Petition to EPA for Rulemaking to Adopt Ultra-Low NOx Exhaust Emission Standards for On-Road Heavy-Duty Trucks and Engines

Submitted by:

- South Coast Air Quality Management District
- Pima County Dept. of Environmental Quality (Arizona)
- Bay Area Air Quality Management District (California)
- Connecticut Dept. of Energy and Environmental Control, Division of Air Quality
- Delaware Dept. of Natural Resources and Environmental Control
- Washoe Co. Health District, Air Quality Management Services
- New Hampshire Dept. of Environmental Protection (New York)
- New York City Dept. of Environmental Protection (Ohio)
- Akron Regional Air Quality Management District (Ohio)
- Washington State Dept. of Ecology
- Puget Sound Clean Air Agency (Washington)

Standard



Optional

Low NOx

Future Reg

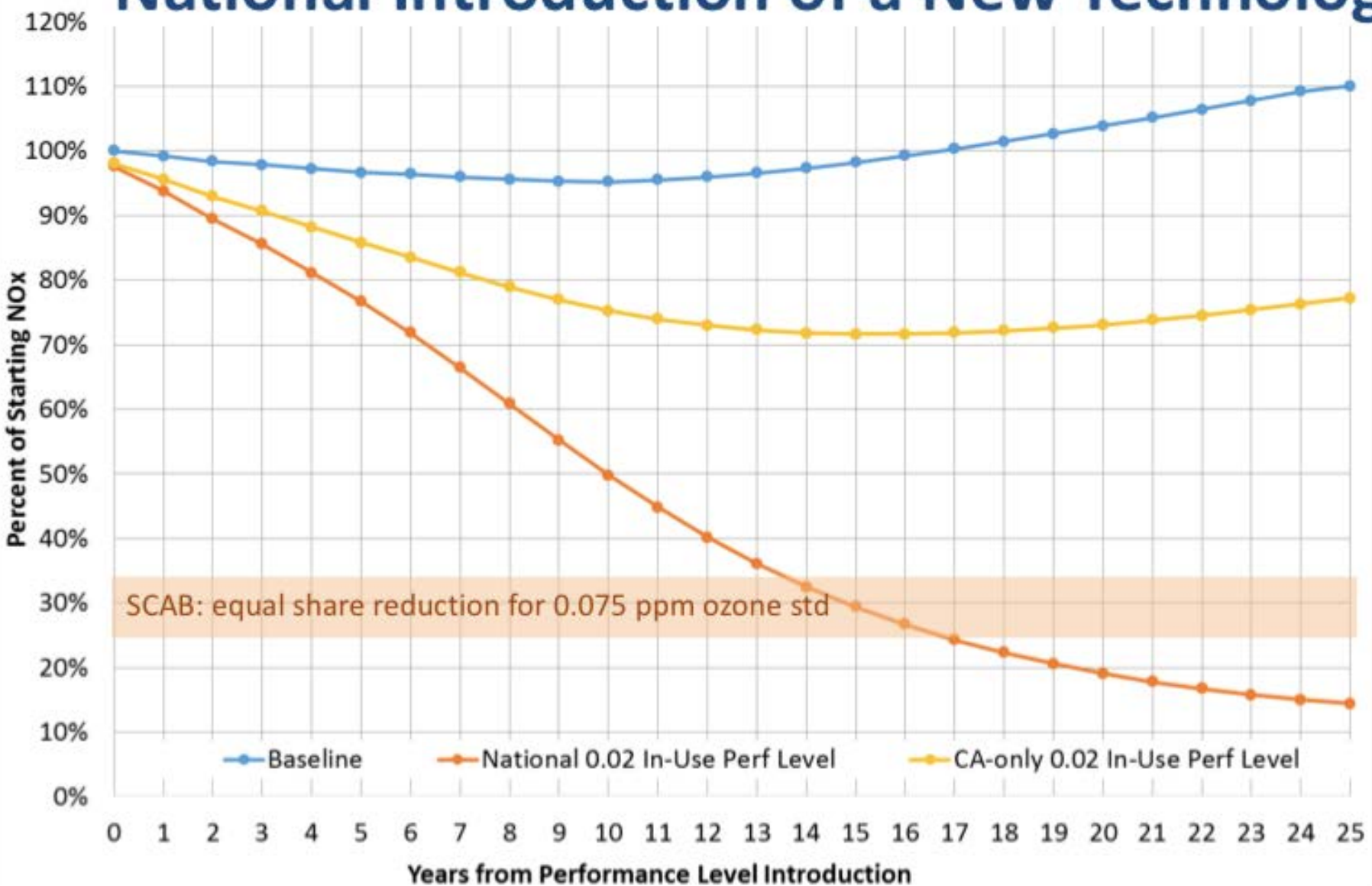


2014

Standard



# Emissions Analysis of a Statewide vs National Introduction of a New Technology



AUG. 21, 2017, 7:00 A.M.

# California Senate leader eyes cap-and-trade funding for cleaner tractors, trucks and cars



Chris Megerian



(Eliot Bednarek III / Associated Press)

# Takeaways

- Need NOx reductions from mobile sector
- In order to scale up, need OEM engagement
- Funding to accelerate commercialization *and* Incentives for fleet turnover in CA
- National markets needed
- CA issues will challenge rest of US

