An aerial photograph of a city skyline, likely Los Angeles, with a hazy atmosphere. The text is overlaid on the image.

Natural Gas Vehicle Technical Forum
February 21, 2018

Technology Program Overview

Fred Minassian, SCAQMD

Daily Combined AQI

Friday, July 29, 2016



Good

Moderate

USG

Unhealthy

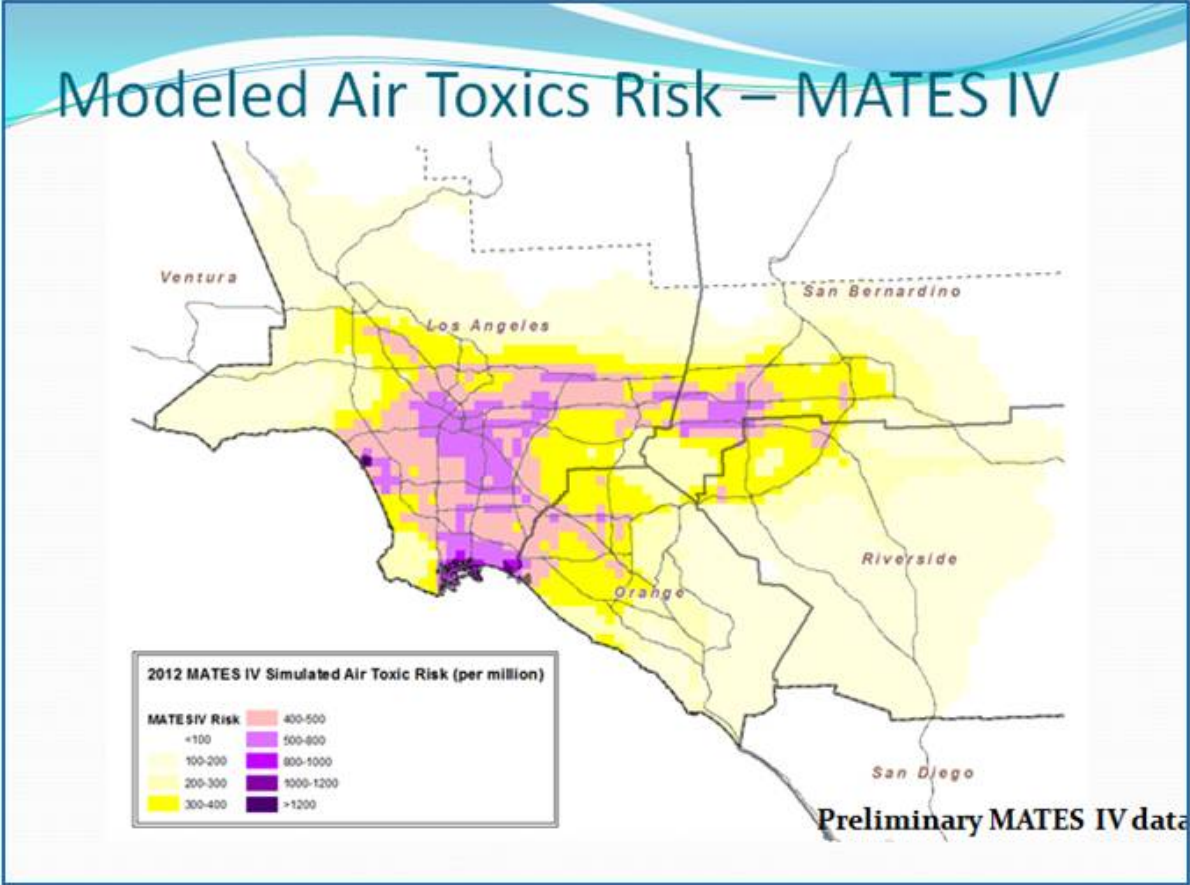
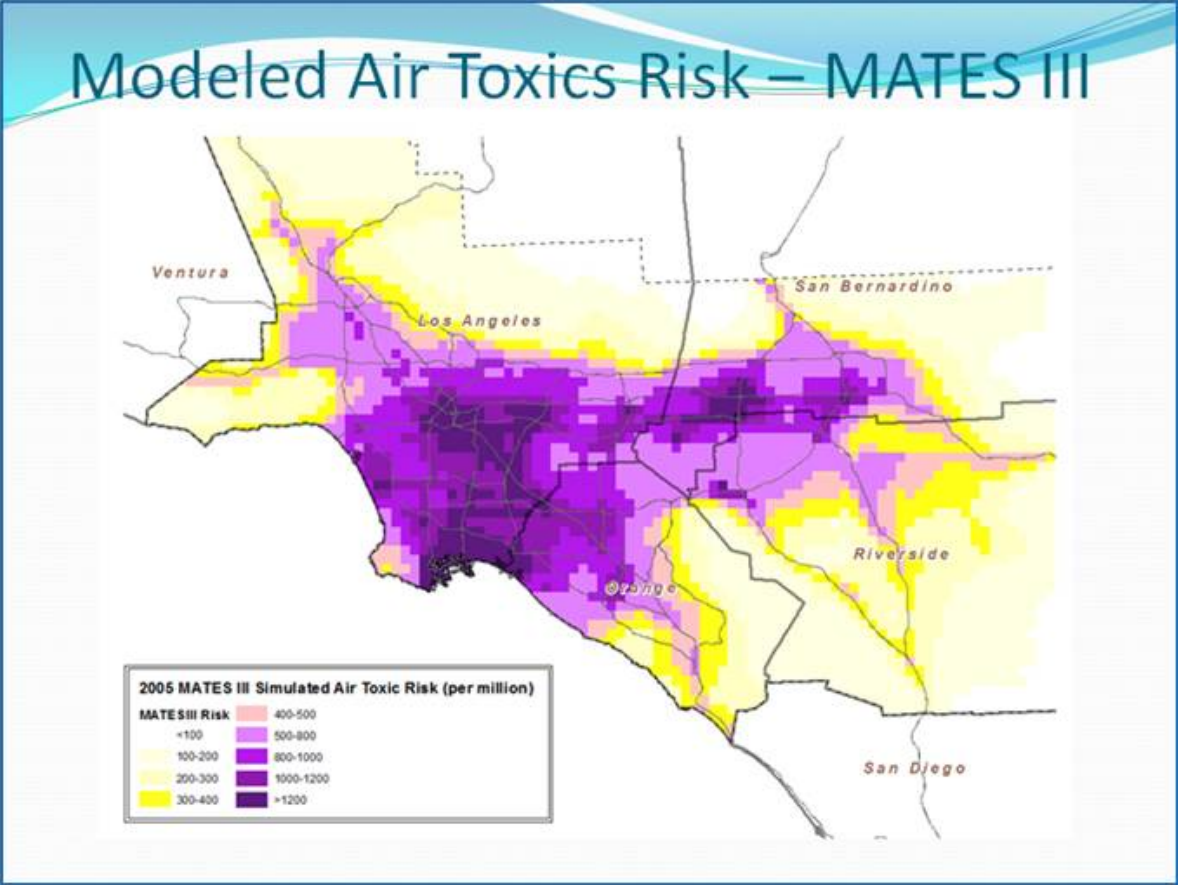
Very Unhealthy

Hazardous

Cancer Risk Assessment – Diesel Exhaust

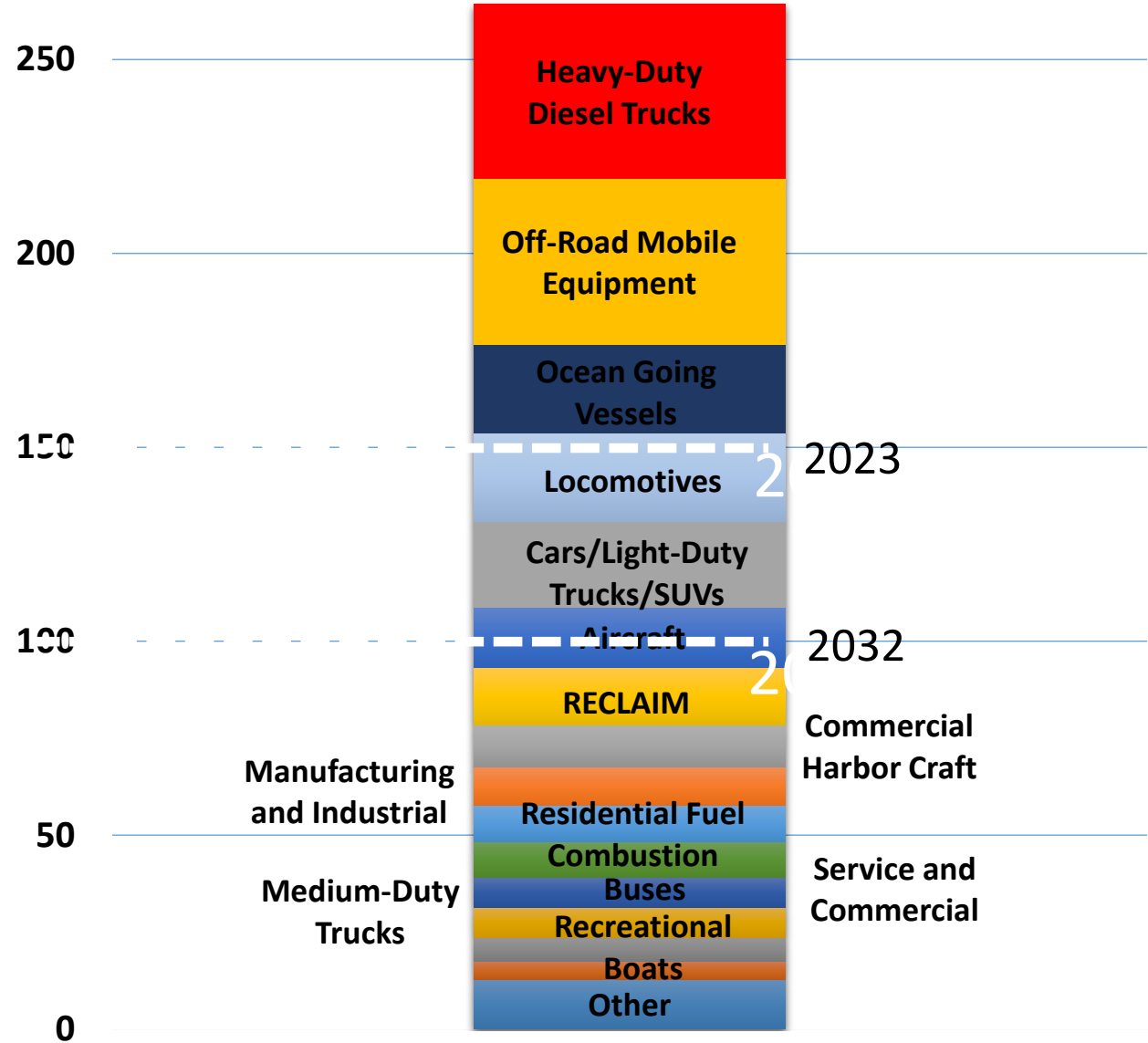
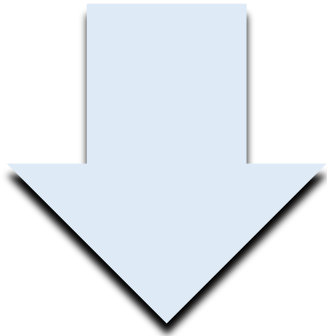
2005

2012



NOx Reductions Needed

43-55%

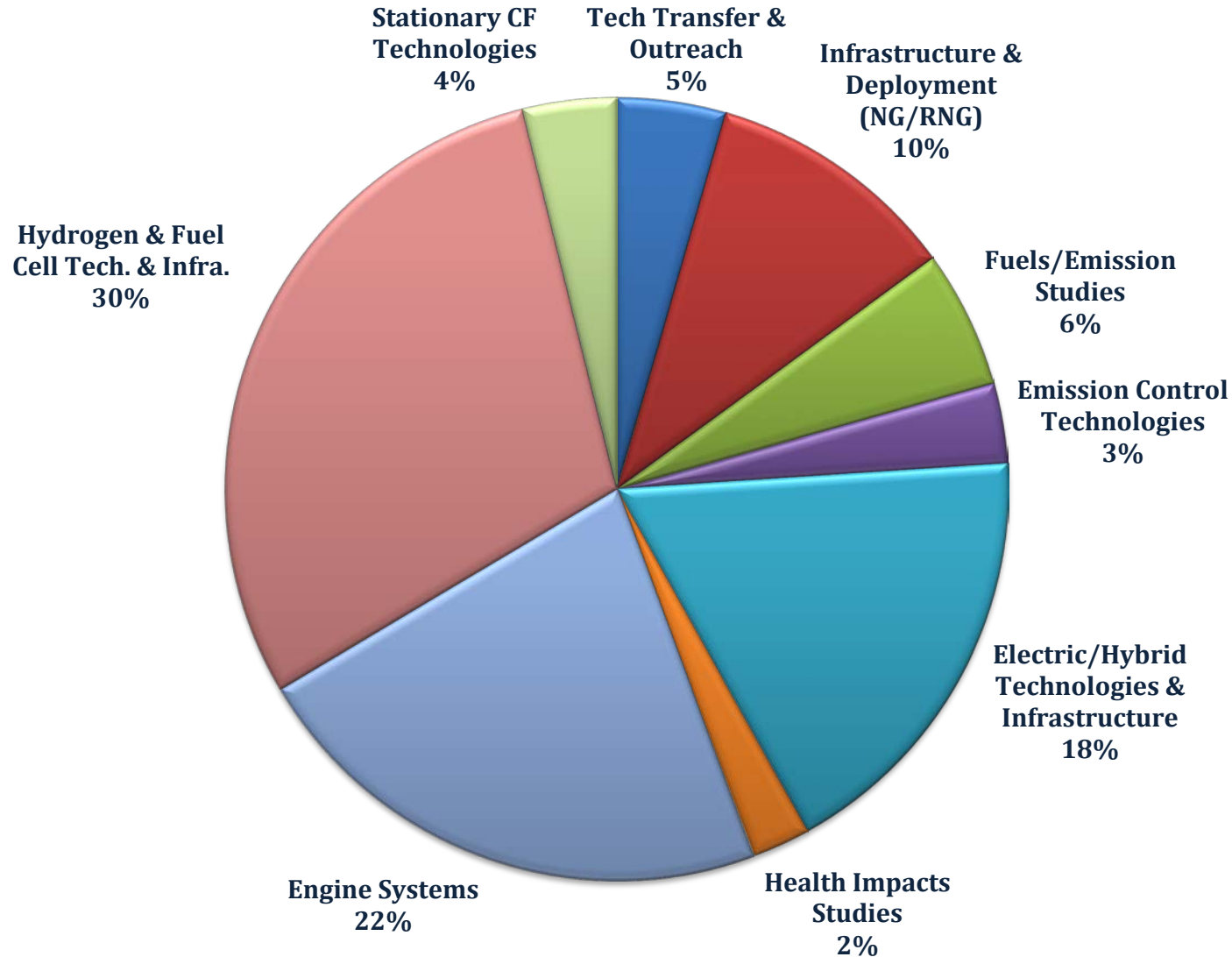


Clean Fuels Program-Core Technologies

- Hydrogen/Fuel Cell Technologies and Infrastructure
- Engine Systems/Technologies (ultra-low emission NG HDVs)
- Electric/Hybrid Technologies and Infrastructure
- Fueling Infrastructure and Deployment (NG/RNG)
- Fuels/Emissions Studies
- Stationary Clean Fuel Technologies
- Emission Control Technologies
- Health Impacts Studies
- Technology Assessment/Transfer and Outreach



Draft 2018 Plan Update



\$16.7M



Battery Electric



Near-Zero Natural Gas



Plug-in Hybrid



Fuel Cell

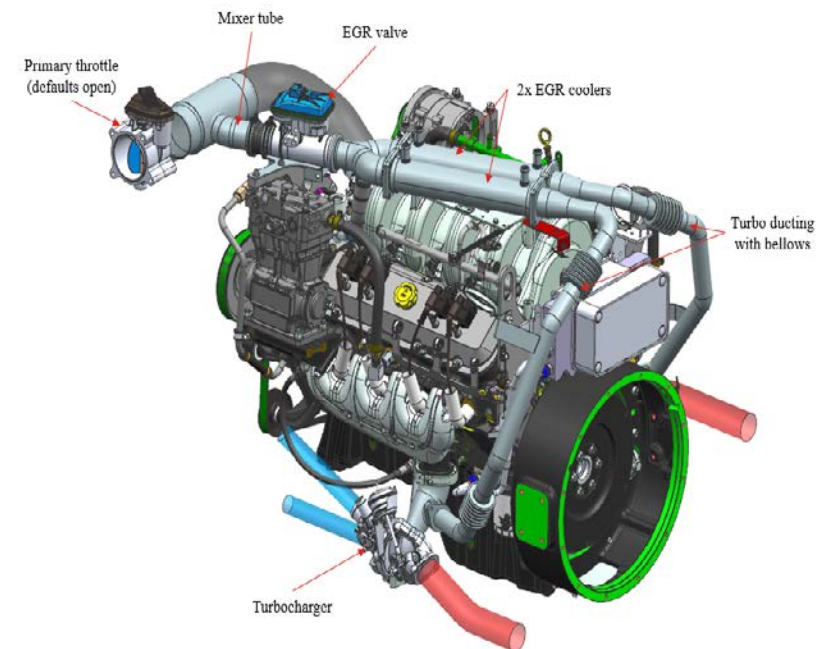


Catenary



Key CNG Projects

- CWI 8.9-liter certified at .0.02 g/bhp-hr NOx
Refuse trucks and buses
- CWI 12-liter certified at 0.02 g/bhp-hr NOx
Class 8 trucks and articulated buses
- PSI 8.8-liter engine
Class 4-8 trucks
- VeRail Switcher locomotive
Pacific Harbor Lines POLA and POLB



Future Potential projects

- 6.7-7-liter & 15-liter engines for class 4-8 trucks
- Locomotives
- Plug-In Hybrids
- Increased Power and fuel economy through Laser Ignition, lean burn, Turbulent Jet Ignition
- Improved Three Way Catalyst
- Ultrafine emissions analysis and reduction



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

