

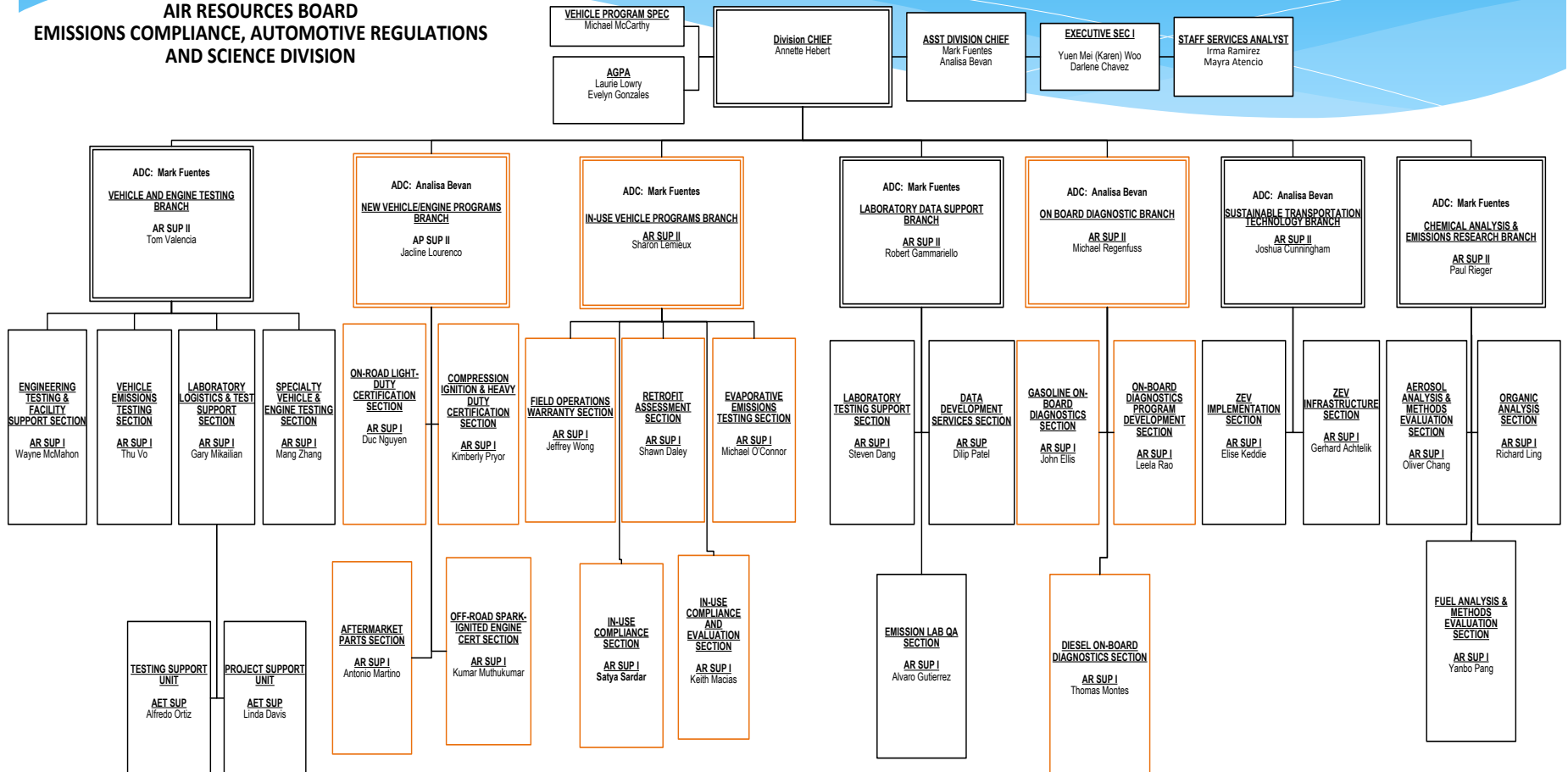
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California Air Resources Board

2015 EMA Certification Workshop

April 21, 2015

ECARS Organization Chart

**AIR RESOURCES BOARD
EMISSIONS COMPLIANCE, AUTOMOTIVE REGULATIONS
AND SCIENCE DIVISION**

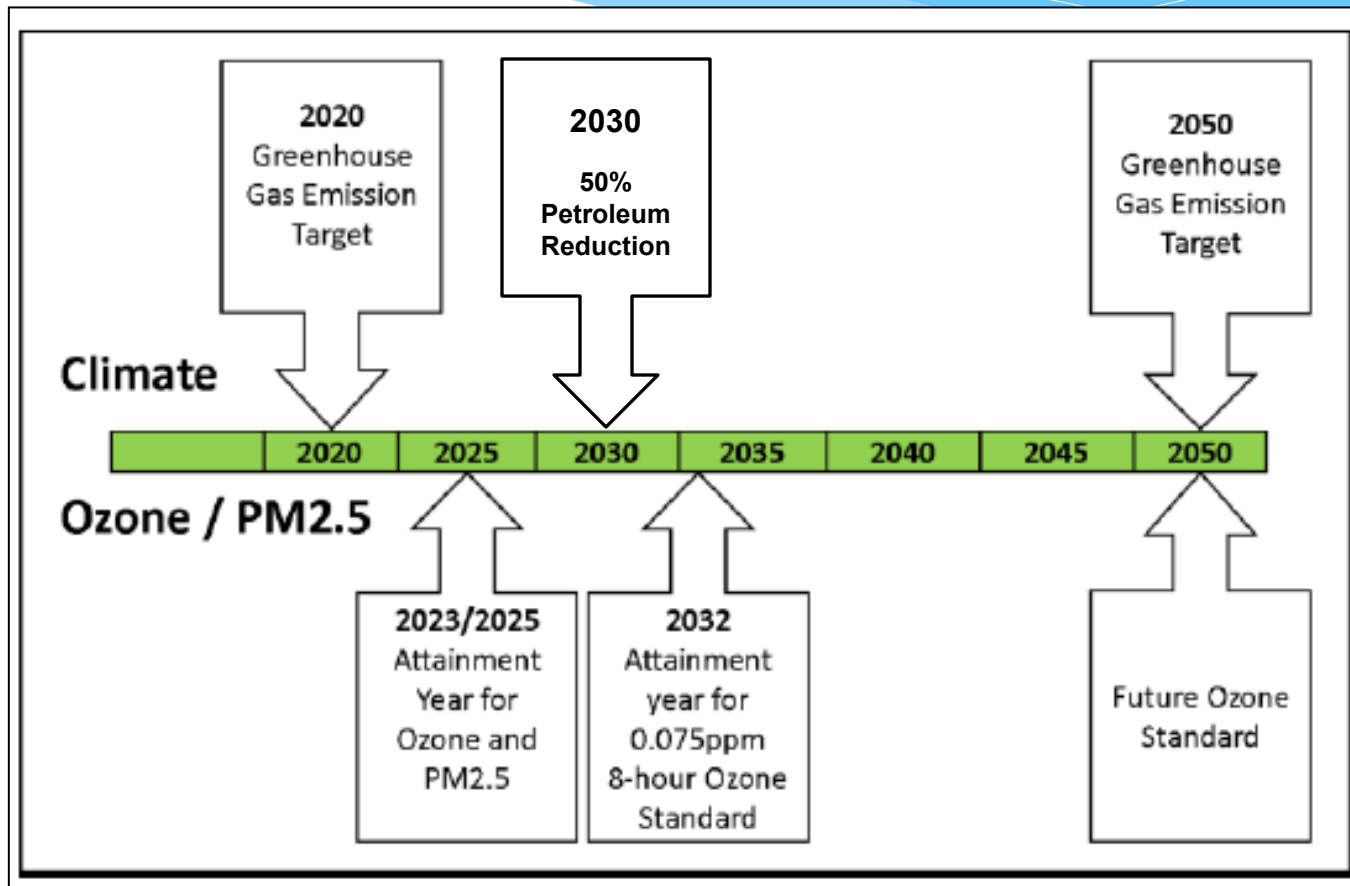


Vision for Clean Air: Framework for Air Quality and Climate Planning



California's Air Quality and Climate Goals

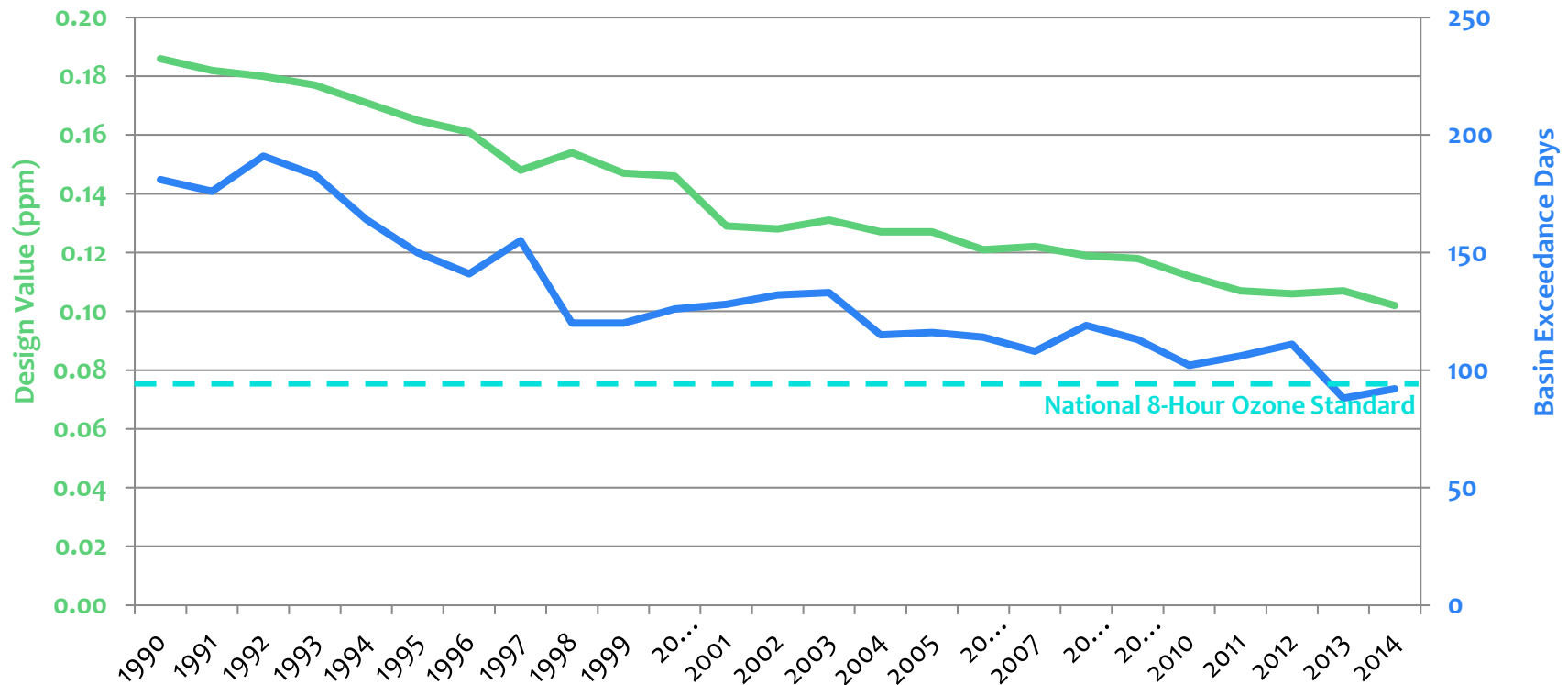
Climate Change Goal



Regional Ozone & PM Requirements

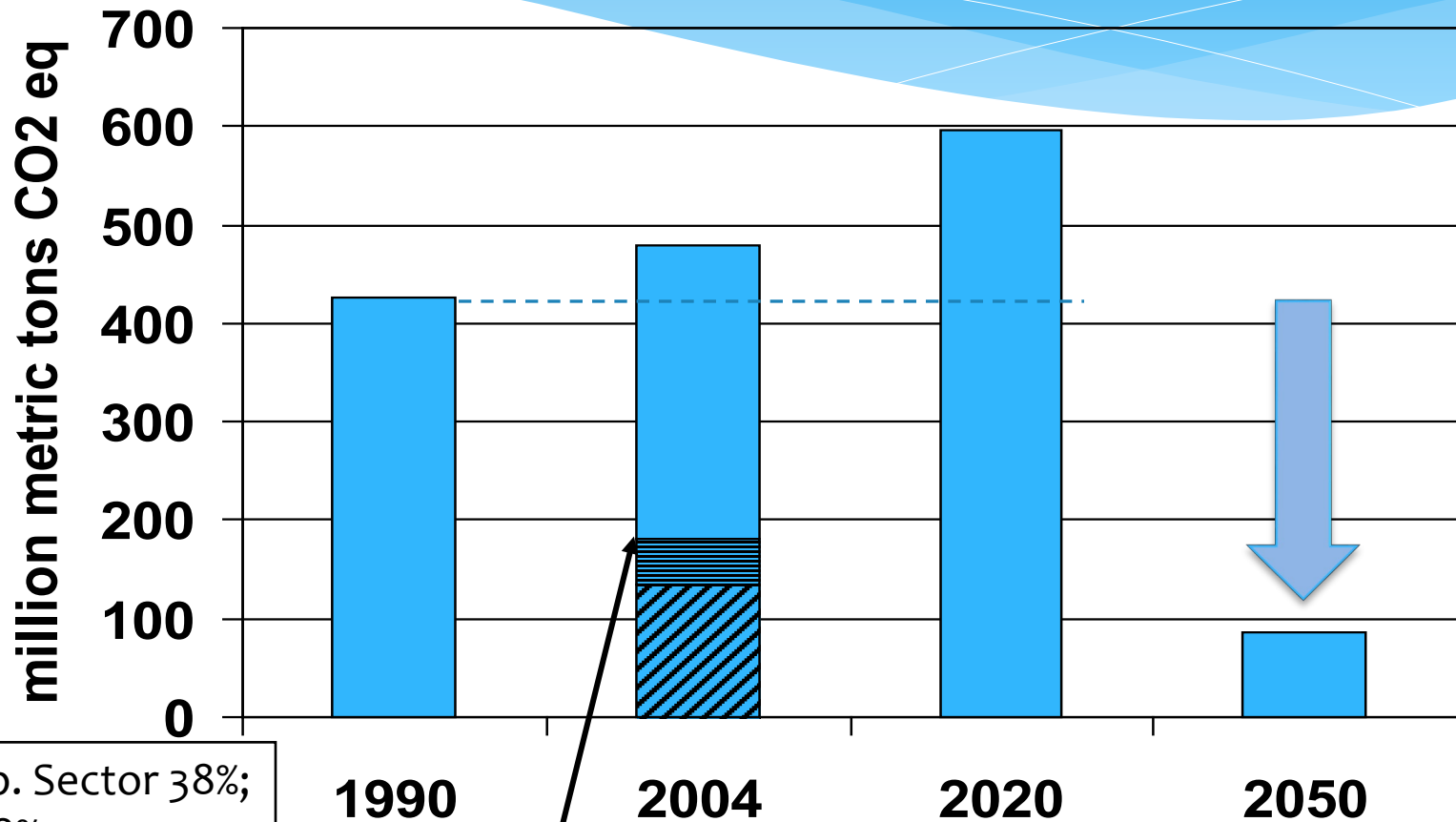
Current actions show strong progress, but ~75% NO_x reductions needed by 2032 below baseline

South Coast Air Basin 8-Hour Ozone Trends



Statewide GHG Targets

- 1990 levels by 2020 (AB 32)
- 80% below 1990 levels by 2050



Transp. Sector 38%;
LDV 28%

How Do We Get There?

- * Transition to Zero / near-zero technologies
 - * True zero tailpipe (e.g., battery electric, fuel cells, electrified wayside) passenger transportation
 - * Move towards electrified goods movement
 - * Off-road equipment
 - * Electrified in smaller applications
 - * Biofuels in larger applications
- * Lowest possible combustion emissions
 - * Lower and broader engine certification
 - * Enhanced preventative maintenance

Lower and Broader Engine Certification

- * Demonstrate new technologies that achieve low NOx and low GHG emissions together
- * Lower NOx standard
- * Broader standard
 - * Wider not-to-exceed windows
 - * Longer warranties
 - * Stronger recall provisions
 - * Improved durability testing



Enhanced Preventative Maintenance

- * Define best practices
 - * Based on OEM guidance
 - * Enhanced with lessons learned from ARB retrofit program
 - * Many repair shops have expressed concerns about having access to latest diagnostics software and service manuals
 - * This information is critical to make informed repairs on any engine
 - * Need EMA assistance to make this information widely available
- * Outreach to fleets through stakeholder associations in California

Achieving the Vision

- * Demonstrate new technologies that provide anticipated benefits.
- * Push conventional technologies to lower certification levels.
- * Focus combustion technologies in highest marginal utility applications.
- * Ensure technical assessments based on best science.

Looking Ahead

- * “Innovative technologies” regulatory item
 - * Develop tiered certification process for new technologies, ramp up requirements as market develops
- * “Phase 2 GHG” regulatory item
 - * Build on engine and vehicle improvements
 - * Opportunity to achieve further GHG reductions
- * Improvements to the certification program
 - * Streamlined certification process

Certification Comments

- * Continued Good Communication between Manufacturer and ARB staff
- * Improvement in Application Status
- * Alternate Fuels Conversions
 - * New vs Used
 - * EPA and ARB Harmonized, But Minor Differences Remain