WESTAR-WRAP Air Quality Initiatives

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AAPCA

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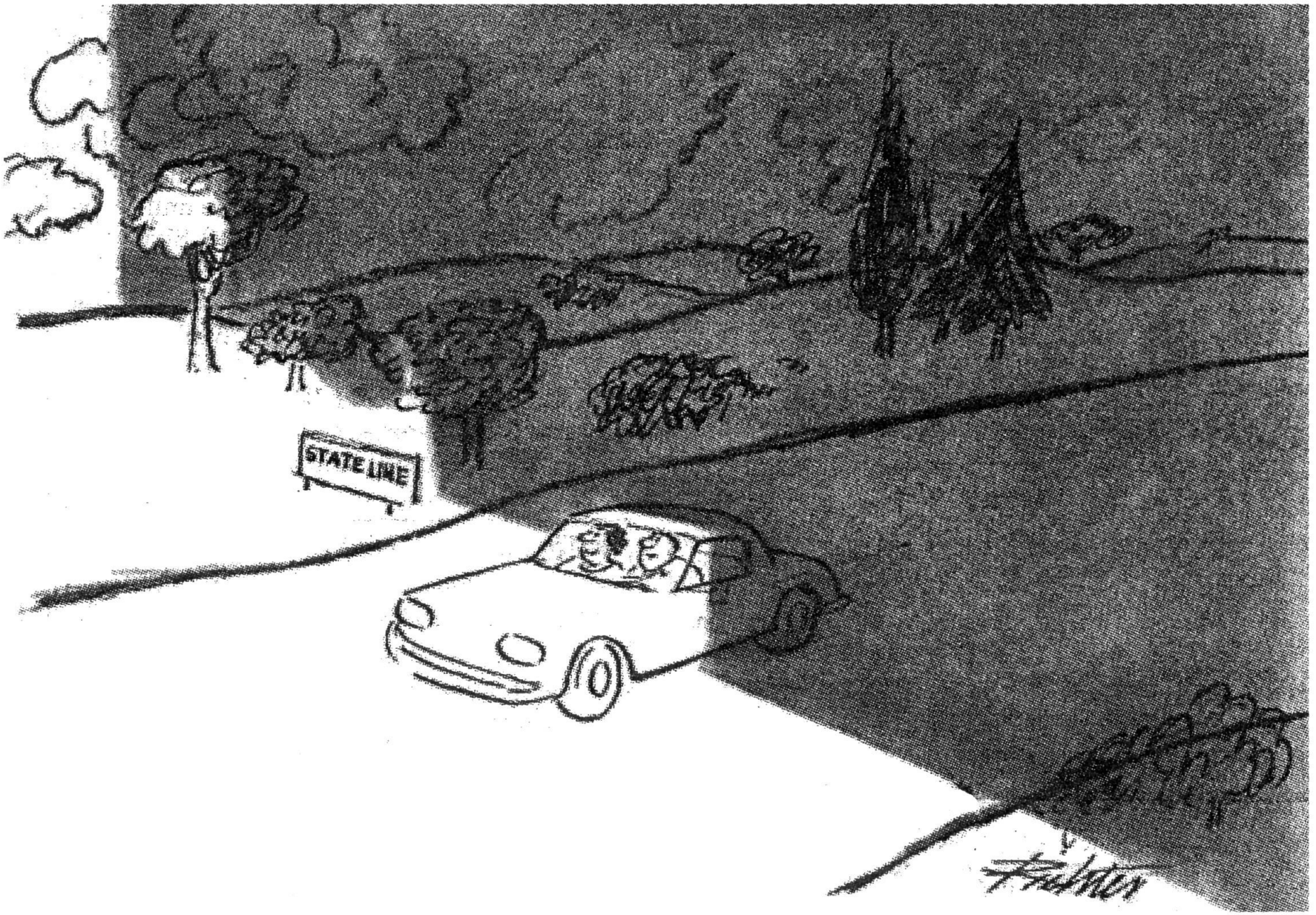
WESTAR
Western States Air Resources Council

WRAP
Western Regional Air Partnership

WESTAR-WRAP

www.westar.org

www.wrapair2.org



"They have very strict anti-pollution laws in this state."

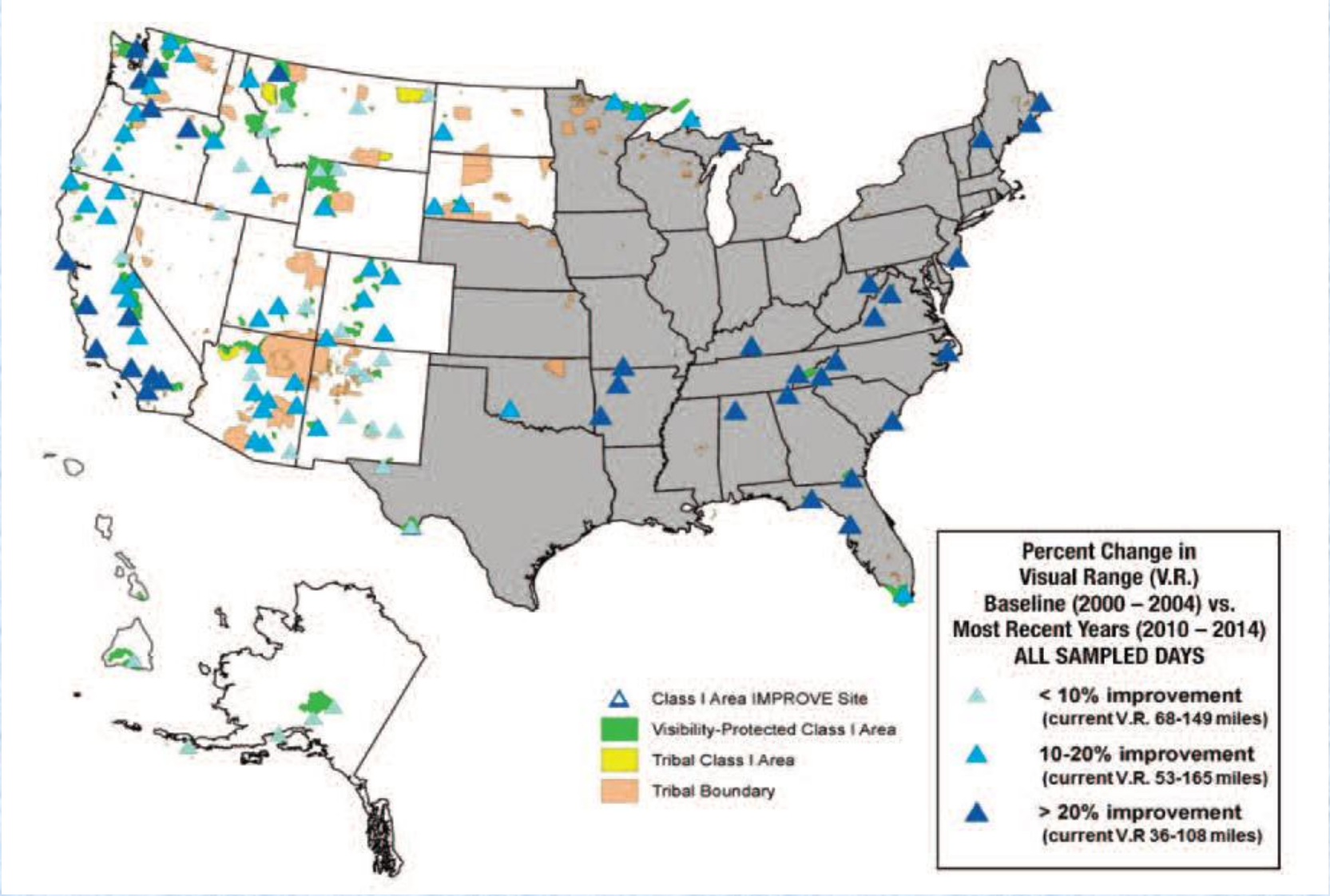
Recent Projects

- National Oil and Gas Emission Inventory Improvement
- Regional Haze Rule Technical Analysis
- Background Ozone

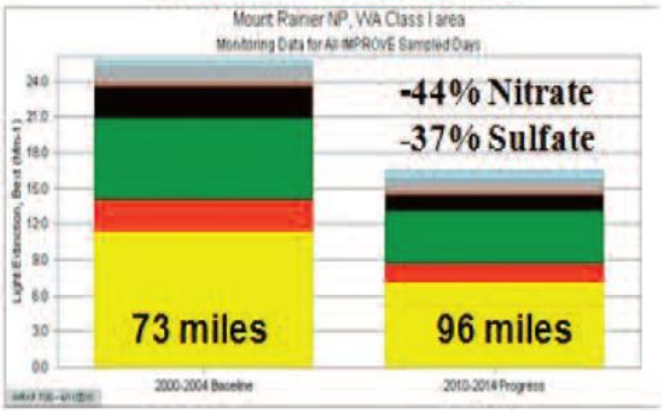
National Oil and Gas Inventory Work

- Sponsored by WESTAR, MARAMA, CenSARA and LADCO
  - received in-kind support from U.S. EPA and review by the members of the National Oil & Gas Emissions Committee
  - Project website: https://www.wrapair2.org/NatOilGas.aspx
- Scope of Work:
  - Review data available in the various portions of the 2014 national inventory, its representativeness and completeness
  - Perform detailed basin-level analyses to provide insight into O&G inventory inputs and emissions for selected basins.
- Project outcomes:
  - Prioritized recommendations of which input data sources could be improved to enhance inventory accuracy.
  - Results will also be maintained as part of the resources available on the National Oil & Gas Emissions Committee Information Repository.

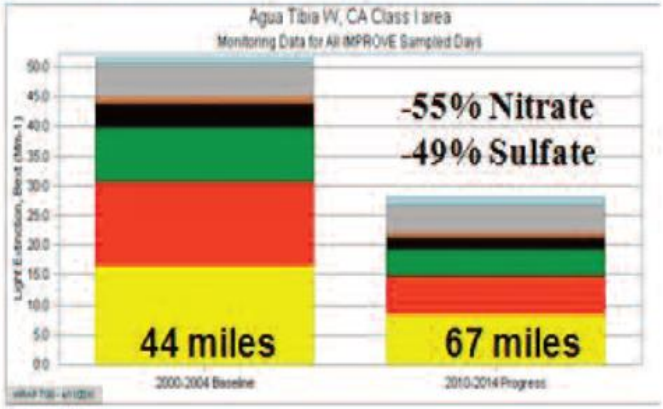
Regional Haze in the West



Mt. Rainier, near Seattle

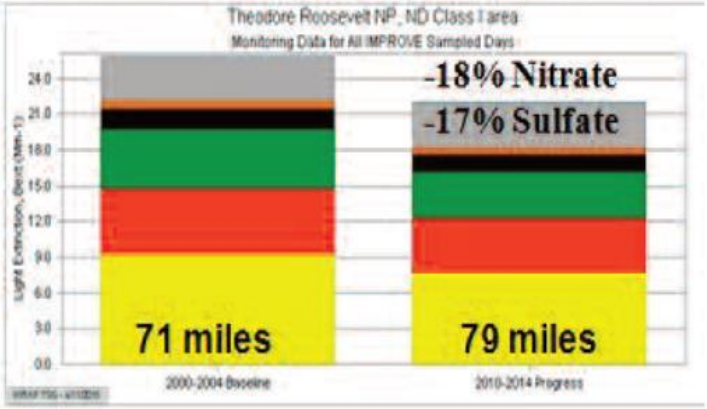


Agua Tibia, near the Los Angeles Basin

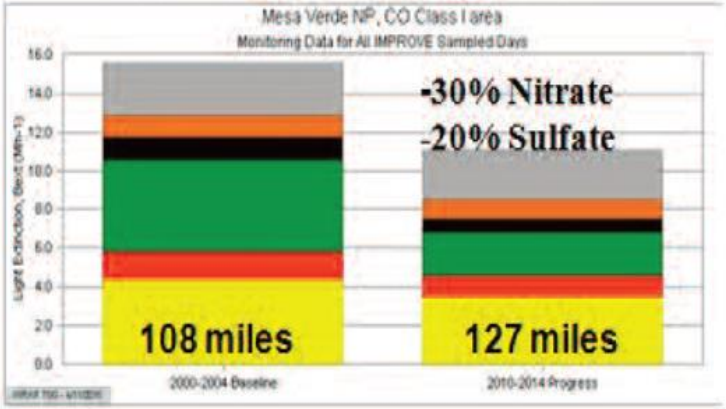


- **After a decade of annual anthropogenic NOx and SOx reductions in <u>nearby</u> urban areas, particle Light Extinction and Visual Range improve more than 20% on "average" days at Class 1 areas.**

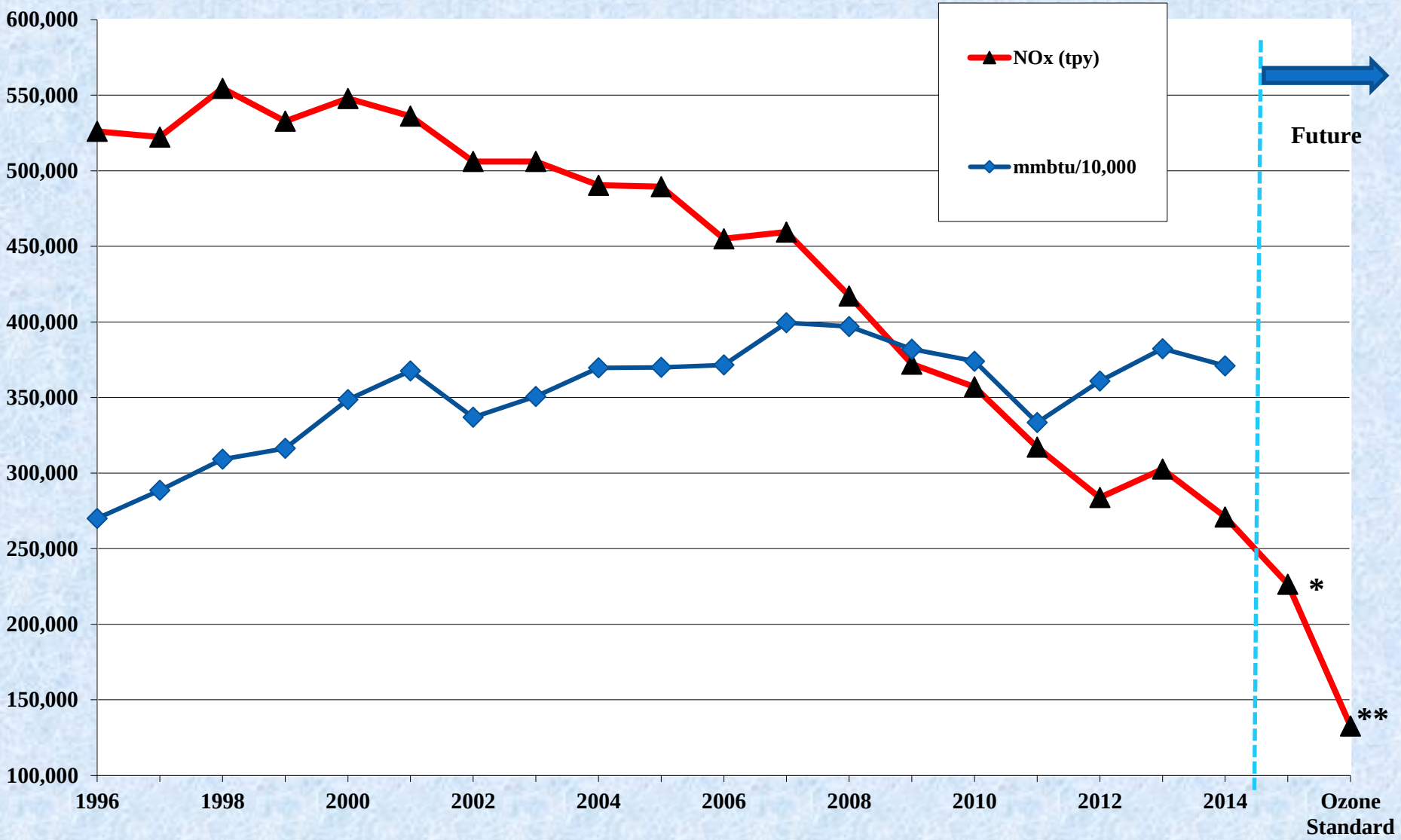
Theodore Roosevelt NP, western North Dakota



Mesa Verde, near "Four Corners"



Western Interconnect Fossil Fuel Power Plant Emissions



1996through 2014 data from EPA data for fossil fuel-fired electrical generating units in the 11-state Western Interconnect

* Additional NOx reductions estimate - BART controls from Regional Haze baseline planning

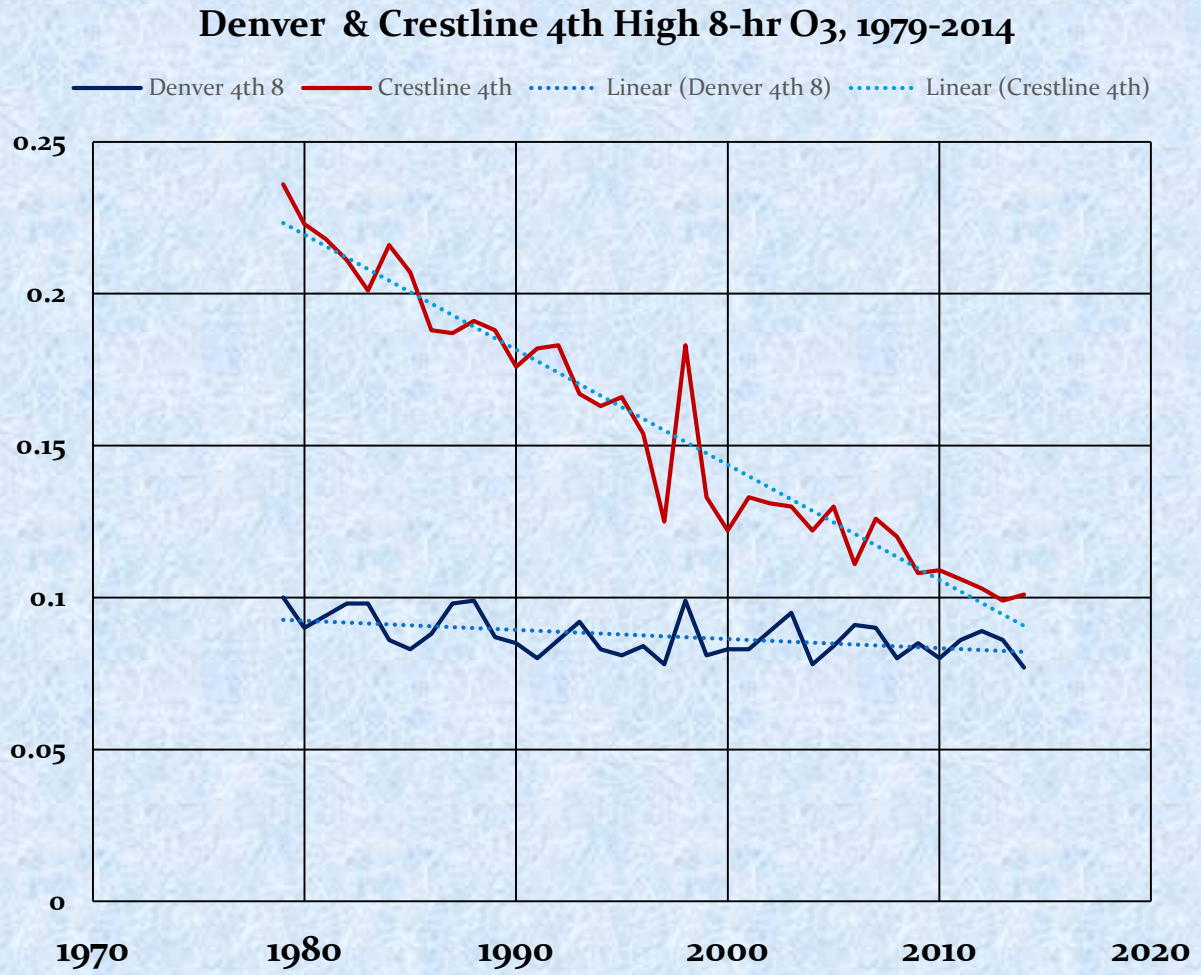
** Further NOx reductions estimate from applying maximum post-combustion controls to all remaining units

O3 trends at high elevation sites in Western U.S.

Flat O3 trend in Denver

Need to understand roles of:

- International and interstate transport
- Wildfires
- Stratospheric O3
- Population growth
- Oil and gas development
- Seasonal variation



Strategies for Improving the State of the Science for modeling O3 in the western U.S.

- More monitoring data to improve characterization of background O_3 and to evaluate the accuracy of model-based estimates of USB:
  - More measurements to improve characterization of vertical O_3 profiles.
  - Network of O_3 LIDAR vertical profiles (NASA TOLNET pilot study)
  - More ground based O_3 and precursor measurements in rural areas.
- Perform comprehensive model evaluation studies using new monitoring data to assess contributions to background O_3.
  - Do global models accurately estimate BC inflow?
  - Do regional models accurately simulate natural sources of O_3 from wildfires and biogenic precursors?
  - Do regional models accurately simulate vertical mixing of O_3?
  - ***Need improved projections of future emissions for uncontrollable sources as well as trends in global O3***.
- Increase state/federal & planner/researcher collaborations to improve modeling and data analysis for O3 transport, wildfires, and stratospheric intrusion.