

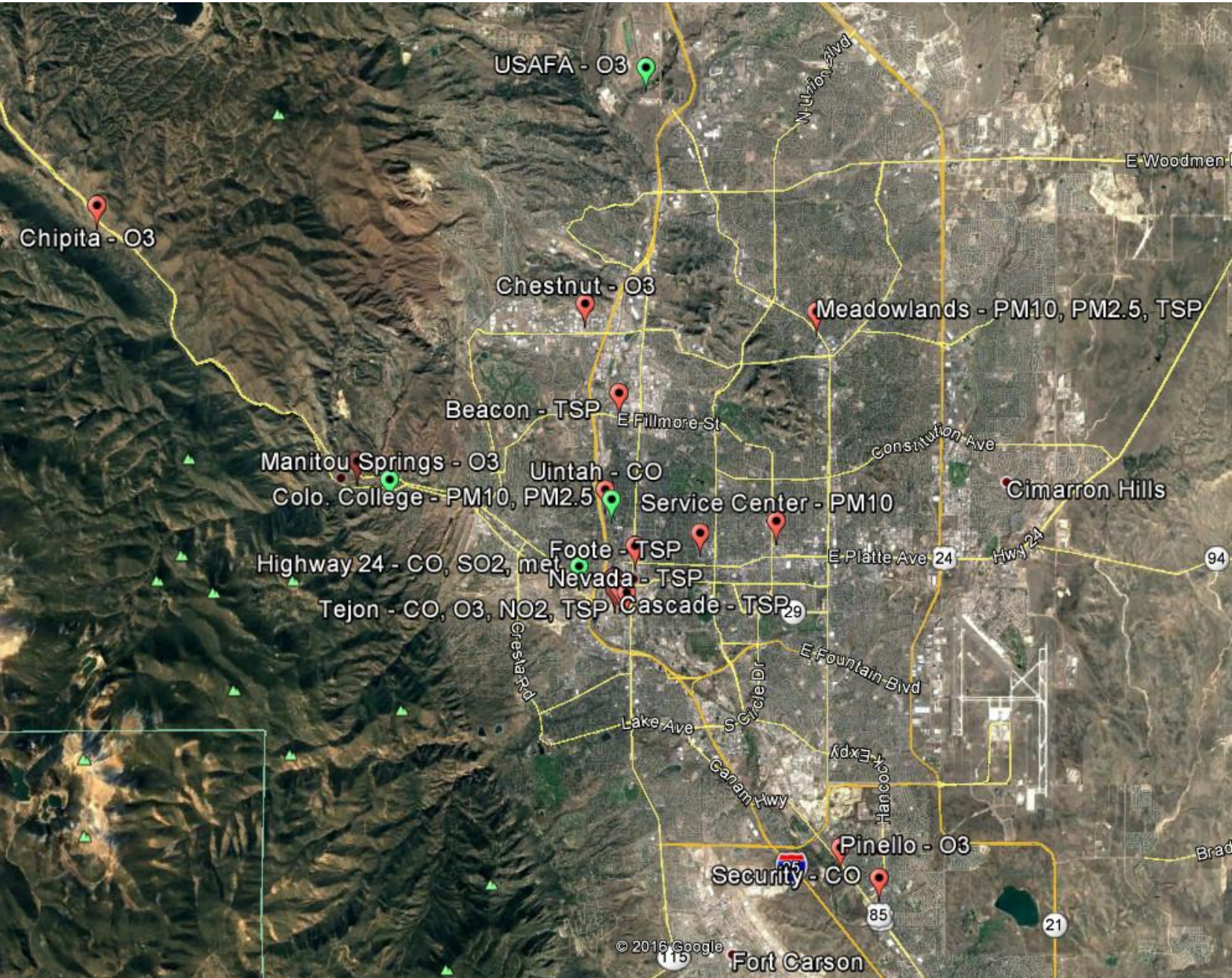
Colorado Springs Air Quality Overview: SO₂ Focus



Primary National Ambient Air Quality Standards (NAAQS) Table

Pollutant		Averaging Time	Level	Form
Carbon Monoxide (CO)		8 hours	9 ppm	Not to be exceeded more than once per year
		1 hour	35 ppm	
Nitrogen Dioxide (NO ₂)		1 hour	0.1 ppm	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
Ozone (O ₃)		8 hours	0.070 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Sulfur Dioxide (SO ₂)		1 hour	0.075 ppm	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
Lead		Rolling 3 month average	0.15 µg/m ³	Not to be exceeded
Particle Pollution (PM)	PM _{2.5}	1 year	12.0 µg/m ³	annual mean, averaged over 3 years
		24 hours	35 µg/m ³	98th percentile, averaged over 3 years
	PM ₁₀	24 hours	150 µg/m ³	Not to be exceeded more than once per year on average over 3 years

Air Quality Monitors in Colorado Springs Region



Current monitors:
Green
 Historic monitors:
Red

Understanding Pollutant Origins: Specific to Colorado Springs

- Nitrogen Oxides (NO_x)
 - Motor vehicles ($\approx 44\%$)
 - Power plants/manufacturing ($\approx 32\%$)
- PM_{10}
 - Commercial cooking & construction (each $\approx 30\%$)
 - Road dust ($\approx 26\%$)
- SO_x (SO_2 indicator criteria pollutant)
 - Power plants ($\approx 99\%$)
- VOCs (volatile organic compounds)
 - Motor vehicles ($\approx 55\%$)
 - Paints & Solvents ($\approx 26\%$)
 - Manufacturing/industrial ($\approx 10\%$)
- Carbon monoxide
 - Motor vehicles ($\approx 62\%$)
 - Nonroad combustion ($\approx 20\%$)



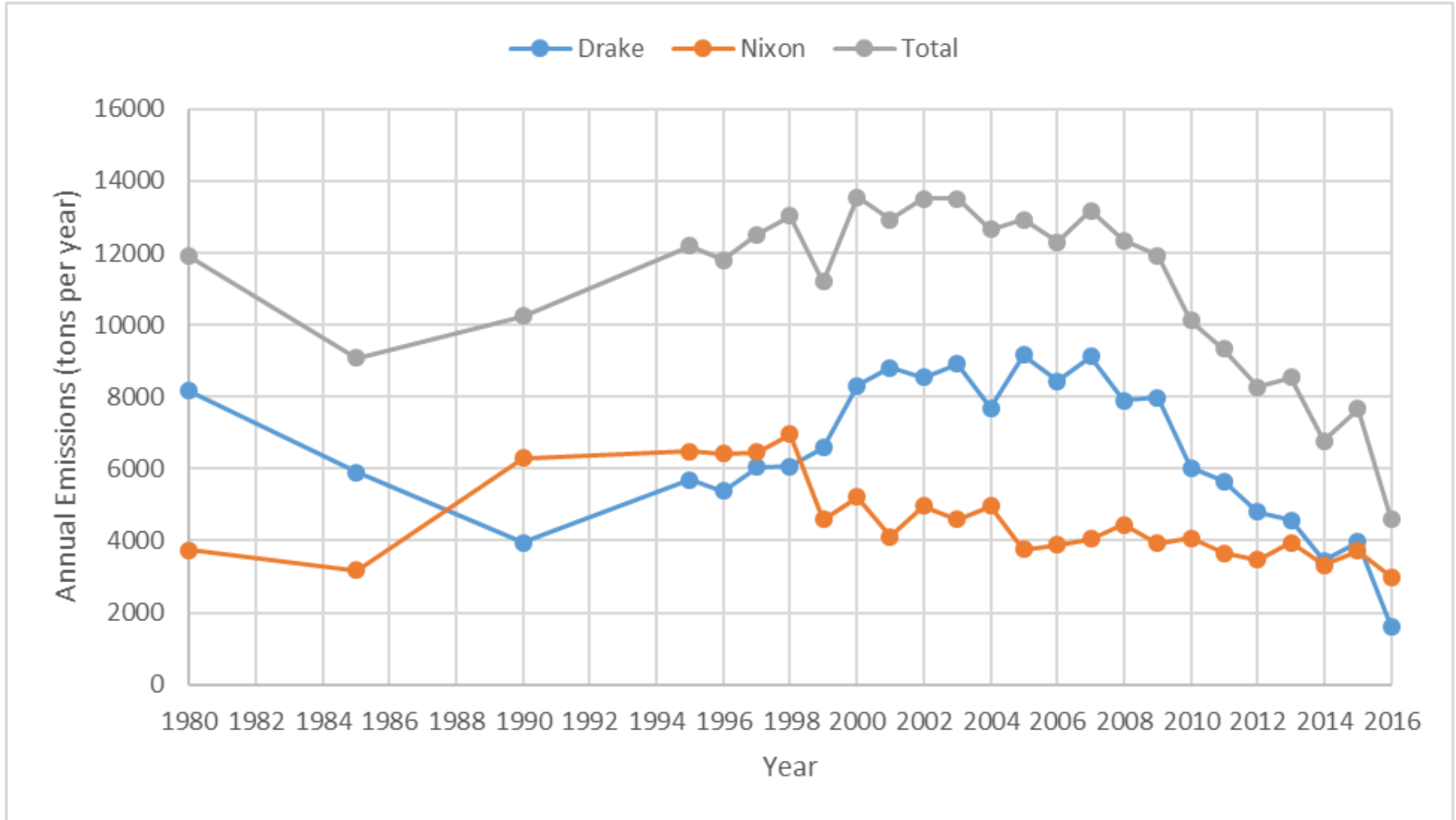
Specific Sources of Pollution

- Motor vehicles largest source of NO_x, VOCs, and CO
- Nixon and Drake are largest SO₂ sources
 - 2013 Regional Haze plan requires stringent limits by end of 2017
 - Both facilities are regulated and inspected annually
 - Drake SO₂ Status:
 - Neumann scrubber system SO₂ controls installed and operational on Units 6 & 7 as of September 2016, currently in testing phase
 - Unit 5 shut down in 2016: new permit issued effective December 27, 2016
 - Major source permit (Title V) renewal anticipated in 2017
 - Nixon SO₂ Status:
 - Dry Flue Gas Desulfurization system installation underway and on schedule to be installed in spring 2017 and testing to start in summer 2017

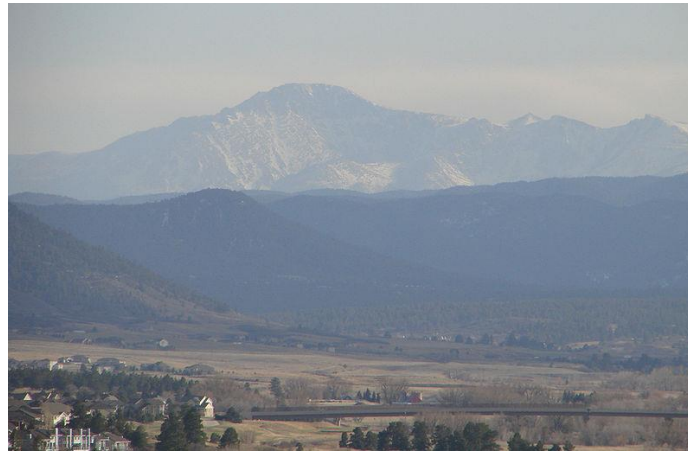


Great Sand Dunes National Park & Preserve, closest Class I area for Regional Haze visibility considerations

Regional SO₂ Emissions



Wintertime Inversions



Pikes Peak as seen from north



Grand Junction



Salt Lake City

courtesy Jude Tibway



Air Quality Designations

- Geographic areas are designated as:
 - Attainment (meeting a standard)
 - Nonattainment (failing to meet a standard)
 - Unclassifiable (not enough information to classify)
- Designations are pollutant-specific
 - Areas can have different designations for different pollutants
- Colorado makes recommendations, EPA makes final designations

SO₂ Standard Designation Process

- Federal Consent Decree set SO₂ designation deadlines for several Colorado power plants
 - Designation takes into consideration multiple factors, including monitoring, modeling, and permit requirements
 - Multiple rounds of designations
- Martin Drake area designated “unclassifiable” in 2016 round
- Nixon and Drake are subject to 2017 round
- EPA allows 2017 SO₂ designations to utilize air quality monitoring or modeling
 - Sources can also take specified emission limit (<2,000 tpy) to meet requirements. Limits do not automatically make an area attainment.



Drake SO₂ Modeling Process



- Colorado Springs Utilities constructed & operated on-site meteorological tower
 - Finished collecting data end of Jan 2017
 - Currently being validated
- Modeling for Drake will be conducted by Colorado Springs Utilities
- CDPHE oversight
- Model will use realistic permitted emission limits & validated on-site meteorological data
- EPA and public input on modeling protocol
- Modeling results expected summer 2017

Questions?

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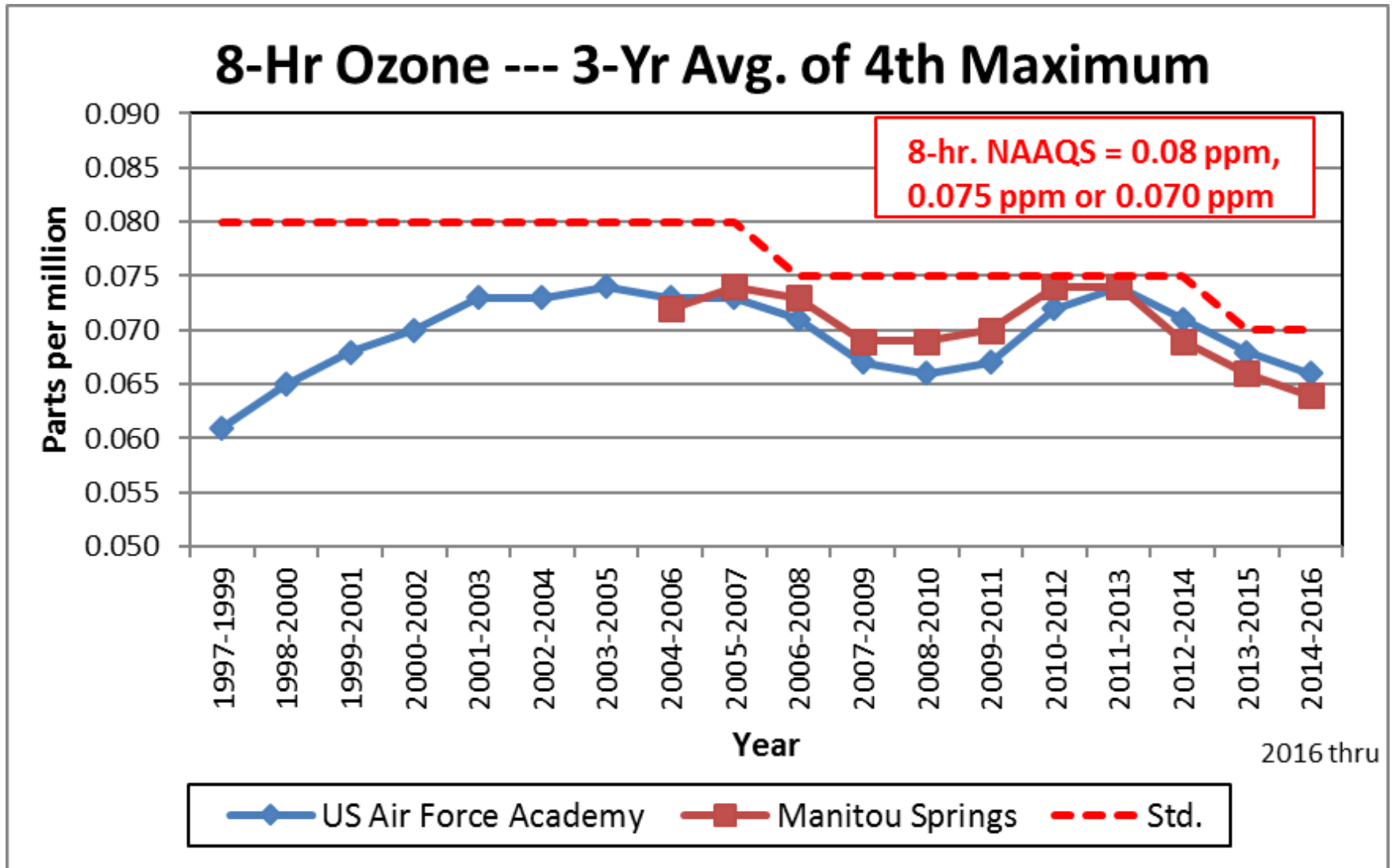
Nonattainment Designation

Consequences: SO₂

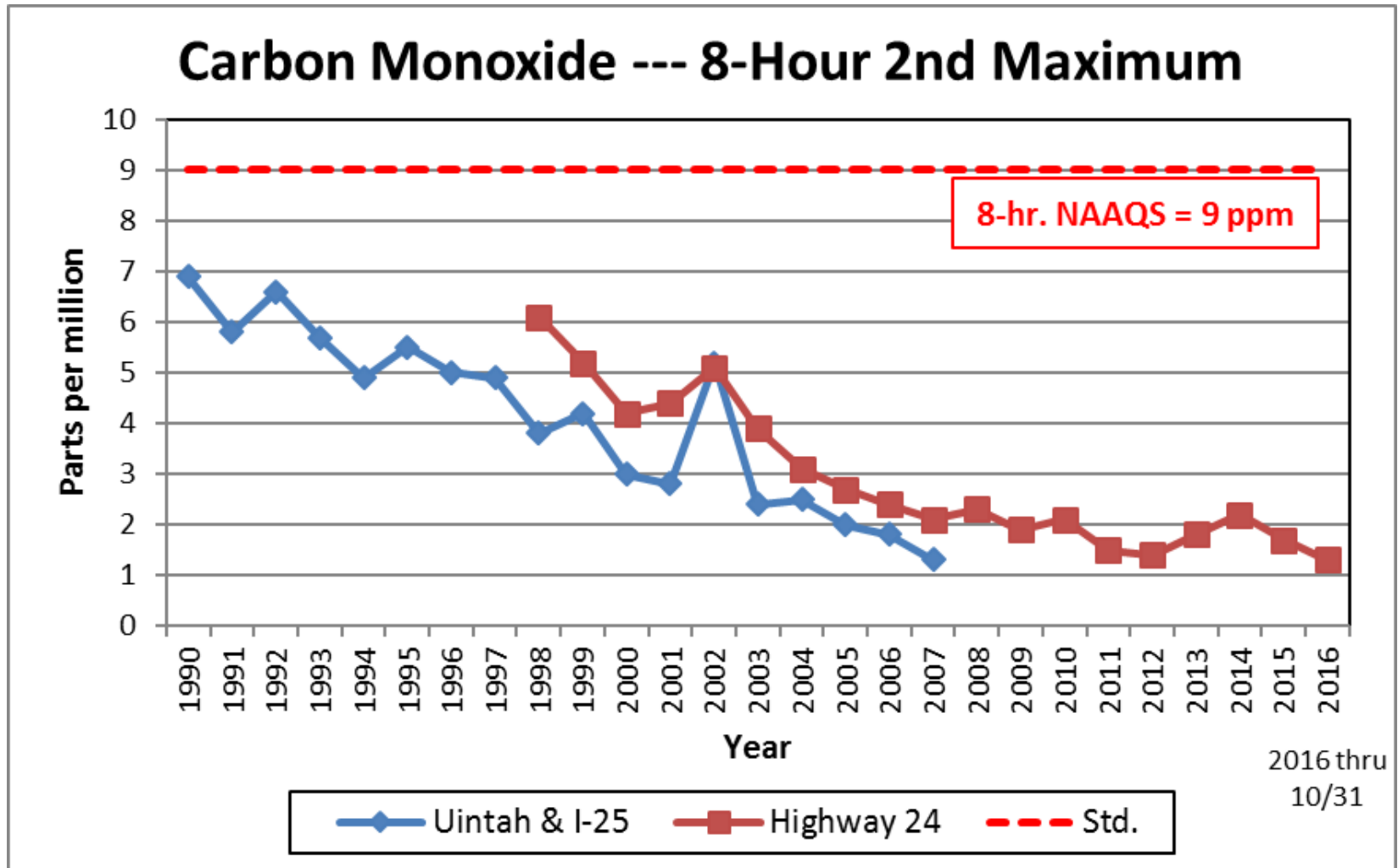
- State Implementation Plan (SIP) due to EPA within 18 months
 - Public notice and opportunity for comment
 - EPA may sanction Colorado for failure to submit approvable SIP
 - EPA may impose federal plan
- SIP must demonstrate attainment within 5 years after final designation
 - Take credit for existing rules
 - Adopt regulations to require **reasonable** controls on contributing sources
- After attaining standard, Colorado must uphold a maintenance SIP for about 20 years (requires monitoring, additional plans)



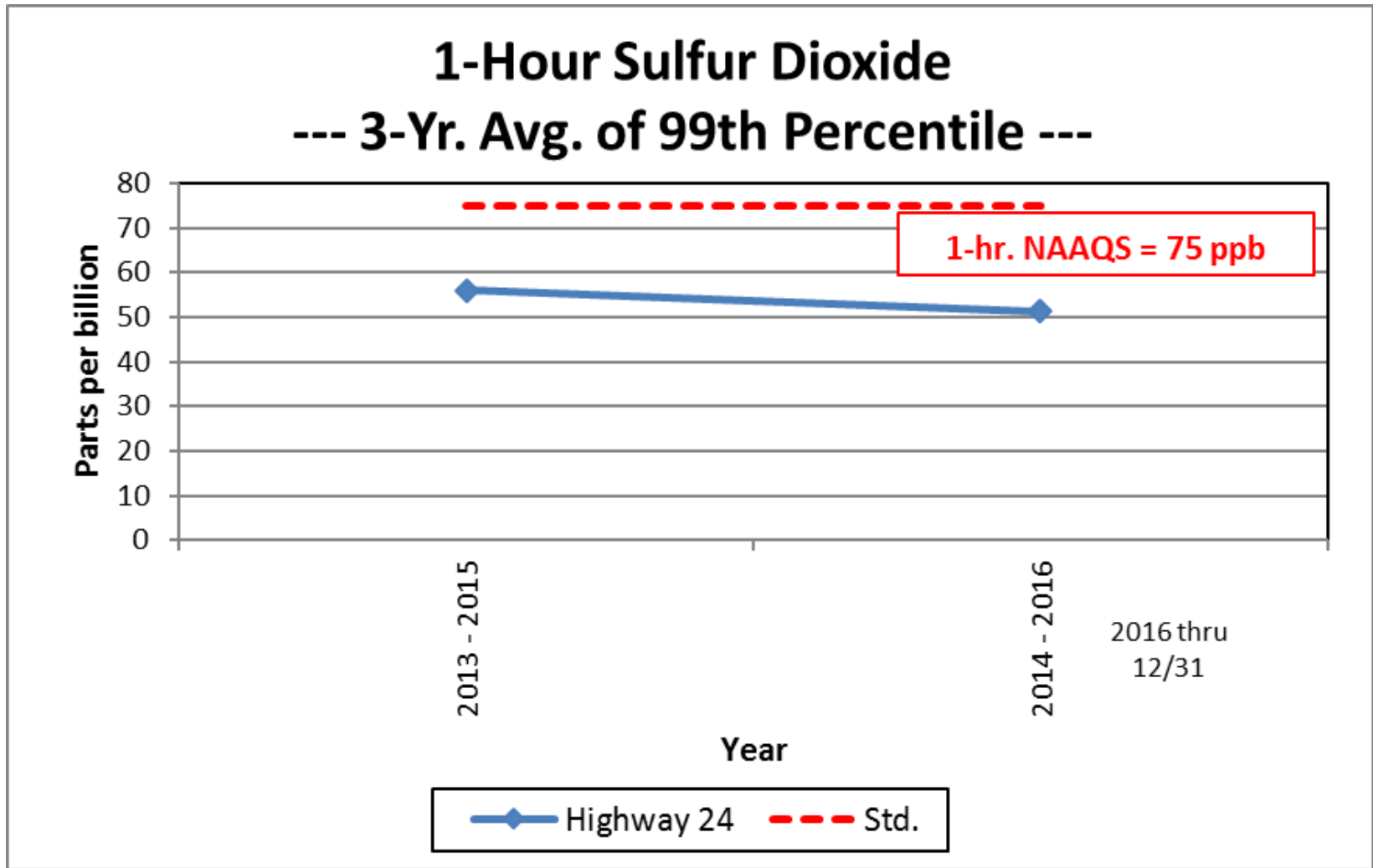
Colorado Springs Ozone Trends



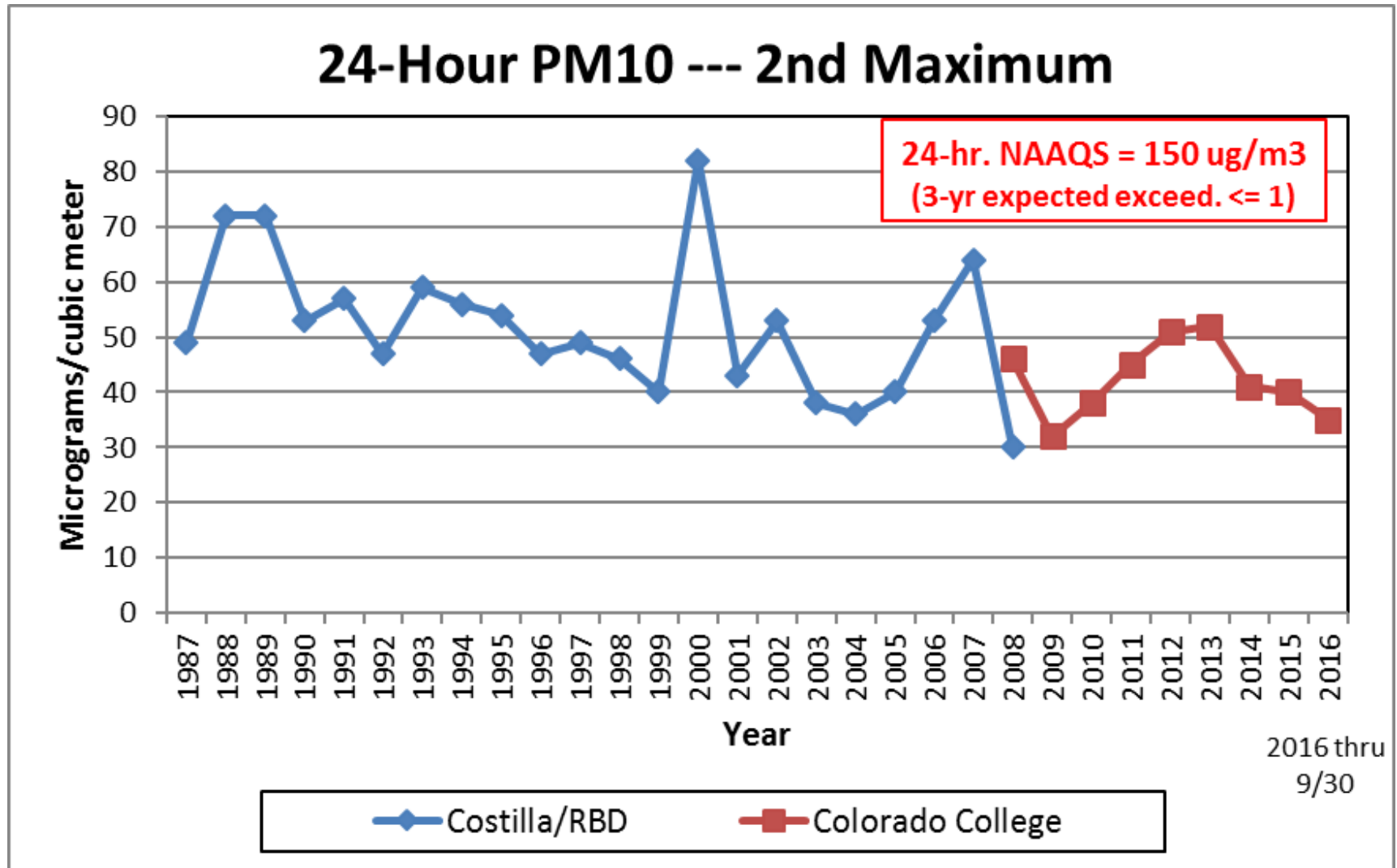
Carbon Monoxide Trends



Sulfur Dioxide Trends



PM₁₀ Trends



PM_{2.5} Trends

