

Fairbanks PM_{2.5} Planning Activities Past, Present & Yet-to-Come

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Overview

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 - ❖ Borough Air Quality Ordinances & Activities
 - ❖ State Regulations & Activities
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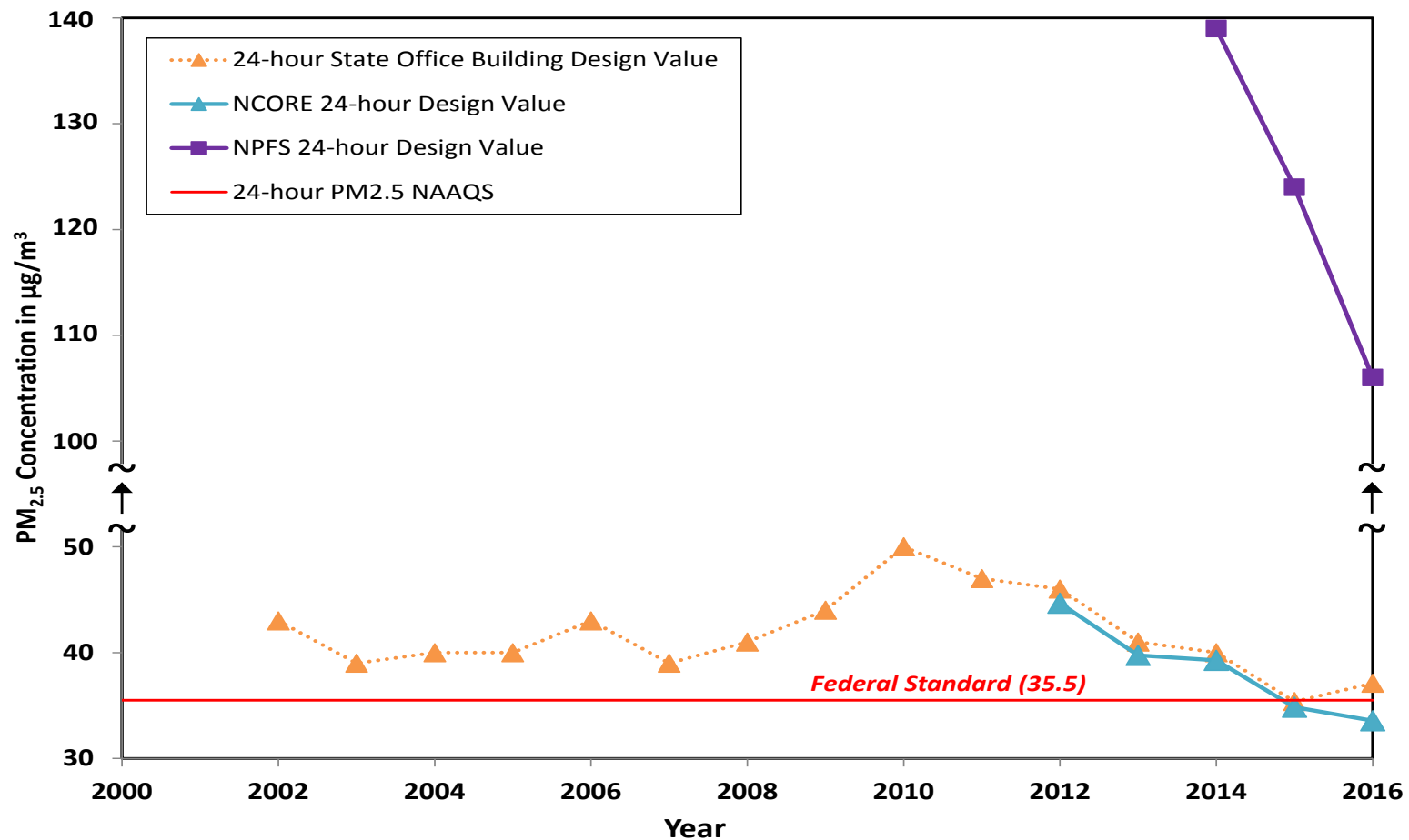
Brief History of PM_{2.5} Regulatory Activities

- > 24-hr standard revised (lowered from 65 - 35 $\mu\text{g}/\text{m}^3$), 12/06
- > Moderate nonattainment designation (based on SOB values), 12/09
- > Moderate SIP submitted to EPA, 12/14
 - ❖ 2008 base year, 2015 attainment year
 - ❖ Design value - 44 $\mu\text{g}/\text{m}^3$
 - ❖ 20% reduction (9 $\mu\text{g}/\text{m}^3$) required to demonstrate attainment
 - ❖ Borough adopts wood stove change out program, best burning practices
 - ❖ Impracticable to demonstrate attainment by 12/15
 - ❖ Modeling showed it was possible to demonstrate attainment 12/19
- > Reduction in fuel oil prices (drop from \$4.00/gallon to \$2.50/gallon)
- > Adoption of new control measures
- > Less clarity in natural gas availability

Brief History of PM_{2.5} Regulatory Activities (cont.)

- > Expanded monitoring activity
- > Reclassification of North Pole Fire Station Monitor
 - ❖ 2015 design value of 124 µg/m³
 - ❖ 2016 design value of 106 µg/m³
- > Collection of space heating survey data
- > EPA promulgates Final PM_{2.5} Rule
- > Submission of nonattainment area separation request

Assessment of Trends in Concentrations Independent of Meteorology



What's Changed Since Last Year?

Federal Regulatory Findings – Serious Designation

- > On April 28, 2017 EPA made final attainment determinations for ten communities designated Moderate for 24-hr PM_{2.5} NAAQS
 - ❖ Attainment demonstration required by 12/15
 - ❖ 7 – areas attained
 - ❖ 3 – areas failed to attain (Fairbanks, Provo & Salt Lake UT) and were reclassified from “Moderate” to “Serious”
- > Serious designation requires preparation of a new SIP meeting more stringent control measure requirements
 - ❖ BACT
 - ❖ BACM
- > Must demonstrate attainment by 12/19 using monitoring data from
 - ❖ NCORE (downtown) monitor
 - ❖ NPFS (North Pole) monitor

What's Changed Since Last Year?

Federal Regulatory Findings – Moderate SIP Approval

- > On August 29, 2017 EPA approved the Moderate air quality improvement plan for Fairbanks
- > EPA found the plan met requirements for:
 - ❖ Base & projected emission inventories
 - ❖ RACM/RACT controls
 - ❖ Reasonable further progress
 - ❖ Quantitative milestones
 - ❖ 12/15 impracticable demonstration
- > Five comment letters received
 - ❖ Two commenters were supportive of efforts to improve air quality
 - ❖ Three commenters raised concerns about the stringency of control measures adopted
- > EPA approved the 2017 motor vehicle emission budgets

What's Changed Since Last Year?

Serious Plan Development Efforts – Emission Inventory Improvements

> Space Heating

- ❖ Spatially-refined estimates based on Borough parcel database
- ❖ Updated non-residential space heating fuel use – survey of commercial business solid-fuel burning device use
- ❖ Evaluating impacts of low heating oil prices on wood vs. oil device use

> Industrial/Point Sources

- ❖ Account for updated operating conditions/emissions, permit conditions
- ❖ 2013 estimates scaled from 2013 vs. 2008 annual emissions by facility
- ❖ PM_{2.5} 3% higher, SO₂ and NO_x 15% lower (less HAGO) than 2008

> Mobile Sources

- ❖ Latest travel model forecasts (including travel from Eielson growth)
- ❖ MOVES revisions (MOVES2014a vs. MOVES2010b)

What's Changed Since Last Year? Serious Plan Development Efforts – Emission Inventory Improvements

> All Sources

- ❖ Socioeconomic and demographic projections generated by the Borough that reflect growth across all inventory sectors from Eielson F-35s
- ❖ These projections show growth focused in the North Pole/Eielson areas reflecting where population/employment influx likely located

What's Changed Since Last Year?

Serious Plan Development Efforts – Best Available Control Technology (BACT) Analysis

- > Focus on industrial point sources
- > BACT analyses are required by the CAA once the area is designated Serious
- > All Fairbanks NAA area point sources have completed a BACT analysis and they are currently under review by DEC and EPA
- > Evaluating reasonable controls through a BACT determination that will be incorporated into the Serious SIP, similar to BACM
- > Part of a comprehensive control plan (or at least put this somewhere, that BACM is similar in evaluating controls for the community)

What's Changed Since Last Year?

Serious Plan Development Efforts – Best Available Control Measure (BACM) Analysis

- > Review of state & local control programs, EPA guidance, regional association guidance, etc. to identify implemented measures
- > Identified 29 separate state/local PM control programs
- > Prepared separate comparisons between Fairbanks controls and PM program controls - regulation by regulation
- > Summarized differences and identified measures more stringent than those employed in Fairbanks
- > Contacted staff responsible for implementing more stringent regulations in each community to gain insights into enforcement efforts
- > Currently in the process of assessing technical/economic feasibility and implementation schedule for more stringent controls

What's Changed Since Last Year? Serious Plan Development Efforts – Best Available Control Measure (BACM) Analysis (cont.)

- > Examples include:
 - ❖ More stringent alert thresholds (16 $\mu\text{g}/\text{m}^3$)
 - ❖ Moisture content labeling and sale restrictions
 - ❖ Reduction in fuel sulfur content (ULSD, propane, natural gas)
 - ❖ More stringent opacity limits (10%)
 - ❖ More restrictive SFBD removal requirements
- > Coordinating with EPA regional and HQ staff on analysis methods and level of detail required for approval
 - ❖ Penalties
 - ❖ Level of enforcement (staffing, funds, etc.)
 - ❖ Exemptions

What's Changed Since Last Year?

Serious Plan Development Efforts – Modeling

> Methodology

- ❖ Episode selection (same as moderate SIP)
- ❖ Meteorology (same as moderate SIP)
- ❖ Emissions inventory updated
- ❖ Photochemical modeling (2013 base year, 2019 attainment year)
- ❖ Assessment of model performance at SOB, NCORE, NPE, & NPFS
- ❖ Precursor demonstration approach finalized
- ❖ Speciated Modeled Attainment Test updated to 2015 for SOB, NCORE, NPE, & NPFS sites

What's Changed Since Last Year?

Assessment of Trends in Concentrations Independent of Meteorology

Time Trends in Fairbanks PM _{2.5} Concentrations At Constant Meteorology (Based on PM _{2.5} Predictive Equation in the AQ Alert Model)		
Time Period (Oct – Mar)	% Change Between 2016 – 2017 and Previous Winters	
	NCore Monitor	NPFS Monitor
2016 – 2017 Last Winter	-29% ↓	-57% ↓
2015 – 2016	+9% ↑	-25% ↓
2014 – 2015	+14% ↑	-19% ↓
2013 – 2014 (=100%)	-	-