



# Fairbanks North Star Borough Air Quality: Serious Implementation Plan (SIP)

Presentation To:  
Open House – Westmark Fairbanks Hotel

Cindy Heil, Program Manager

June 25, 2019



## Overview

- Presentation and Open House Format
- What is PM<sub>2.5</sub> and Why Are We Here?
- Current Air Quality Trends
- When can the area attain?
- Key Goals and Elements of SIP
- Summary of Control Measures
- Serious SIP Public Review Timeline
- How to Comment
- The Future:
  - Next SIP
  - Advantages of a 5% Plan
  - Planning Timelines –What Comes Next?



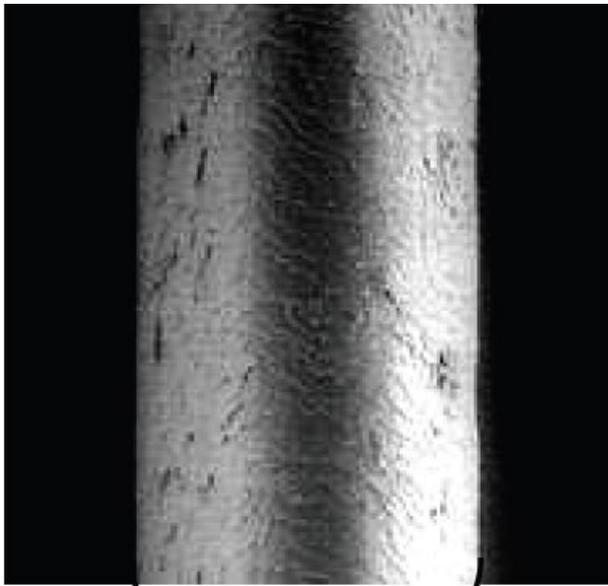
## Open House Format

- Directly following presentation
- 8 tables staffed by personnel directly responsible
  - Regulations
  - SIP/BACM/ESP
  - Modeling/Emission Inventory/BACT
  - Compliance
  - Monitoring/Science
  - Comments/Questions
  - BurnWise/Dry Wood/Real Estate
  - FNSB Woodstove Change out program



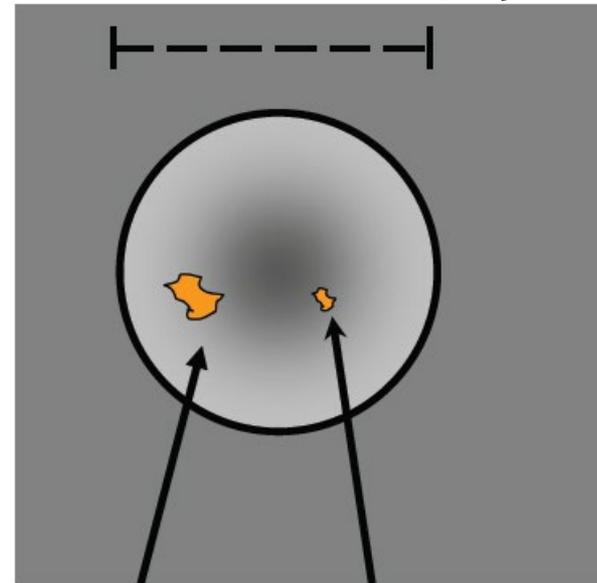
## Particulate Matter: What is it?

**A complex mixture of extremely small particles and liquid droplets.**



Human Hair (70  $\mu\text{m}$  diameter)

Hair cross section (70  $\mu\text{m}$ )



$\text{PM}_{10}$   
(10  $\mu\text{m}$ )

$\text{PM}_{2.5}$   
(2.5  $\mu\text{m}$ )

Source: M. Lipsett, California Office of Environmental Health Hazard Assessment



Wood-Burning Stoves



Power Plants



Heavy Duty Diesel Engines



Natural Sources



**Fine Particles Can Be  
Emitted Directly or Formed  
in the Air from Gases**

Cars and Trucks



Non-Road Vehicles



Forest Fires



Industrial Sources

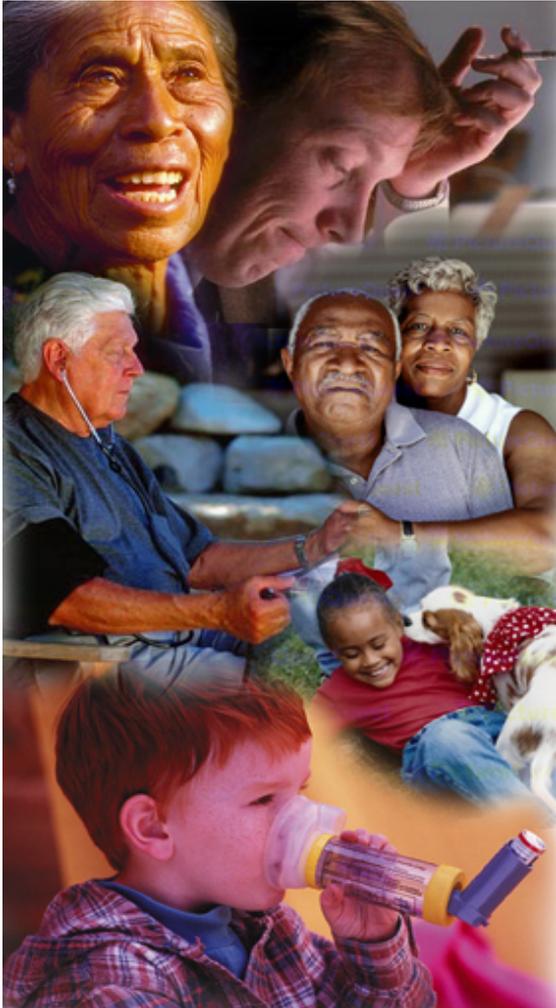




# Public Health Risks Are Significant

## **Particles are linked to:**

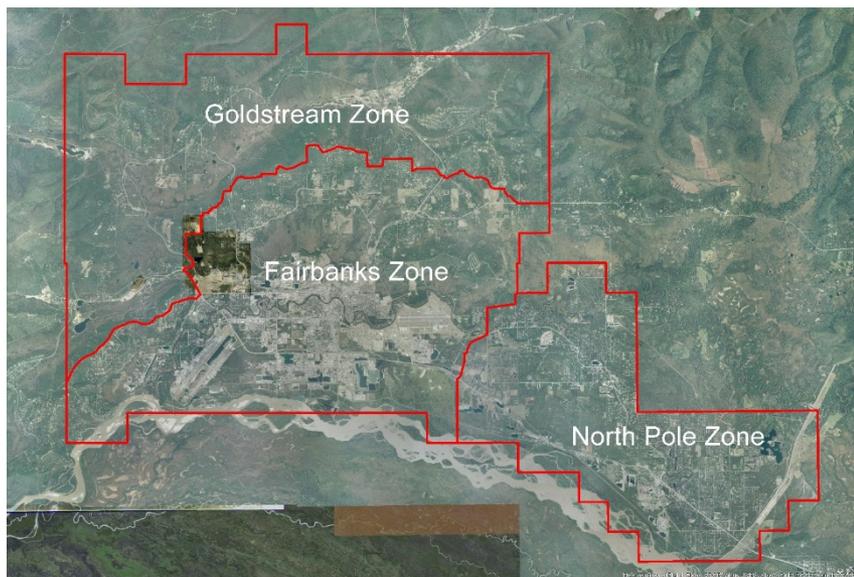
- Premature death from heart and lung disease
- Aggravation of heart and lung diseases
  - Hospital admissions
  - Doctor and ER visits
  - Medication use
  - School and work absences
- And possibly to
  - Lung cancer deaths
  - Infant mortality
  - Developmental problems in children, such as low birth weight
- Some groups are more at risk:
  - People with heart or lung disease
  - Older adults
  - Children





# Fairbanks North Star Borough PM<sub>2.5</sub> Nonattainment

## Where are we at?



- Serious nonattainment area
  - Public health concerns
    - Goal is to have healthy air to breathe
  - Federal planning requirements
    - Initial control plan is being implemented
    - Reclassification to Serious area means a new plan must be developed
    - Sanctions are imposed for state failure to act
  - Serious plan requires more controls to bring area into compliance



# What Happens if We Don't Take Action?

Do Not Submit  
A SIP on Time

- EPA will file a “Failure to Submit”
- Sanction clock started
- 18 months later sanctions in effect
- Federal Implementation Plan start soon after

Federal Plan

Submit SIP

## Incomplete/Inadequate

- EPA identifies inadequacies
- Sanction clock started
- 18 months to update Serious SIP for deficiencies

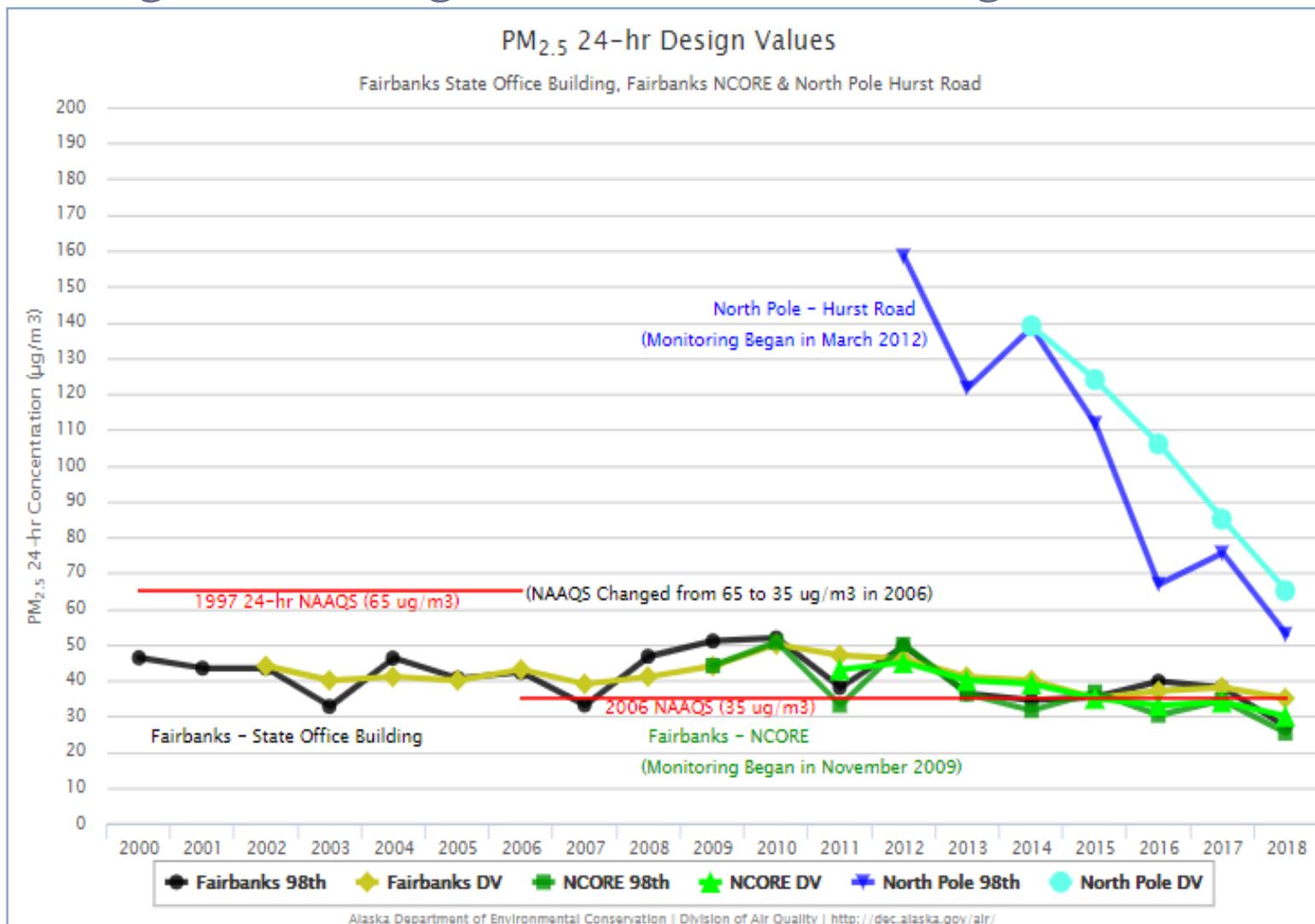
State Plan

## Complete/Adequate

- EPA has 6 months to determine completeness
- EPA begins process to approve SIP
- Committed measures in SIP implemented



# Progress is Being Made - Air Monitoring Trend





## Current Air Quality

- Air monitoring trends show great improvement
- More pollution reduction needed to reach a Design Value of 35 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) across the entire area

Air Monitoring Site 3-Year Design Value	Year:	2012	2013	2014	2015	2016	2017	2018
State Office Building		46	41	40	35	37	38	35
Ncore		45	40	39	35	33	34	30
North Pole Hurst Rd				139	124	106	85	65



## When can the area attain the PM<sub>2.5</sub> standard?

- Serious Plan cannot demonstrate attainment in 2019
- Plan shows that the area will realistically be able to reach attainment in the timeframe between 2024 and 2029.





## Key Goals and Elements of the Serious SIP

- Show how the area can reach attainment
- Continue to allow the use of solid fuel fired devices
- Limit the impact on large industrial sources as they are not the main contributors of the problem
- Meet the EPA completeness criteria for a SIP (avoid sanction)
- Meet the Best Available Control Measure (BACM) and Best Available Control Technology (BACT) Requirements
  - Are Proposed Controls Technically and Economically Feasible?
- Position the SIP and control measures for transition to a 5% Plan, the next SIP update needed



## A Complete Serious Area SIP – What is it?

- A Serious area SIP must meet federal Clean Air Act requirements
  - Must adopt and implement Best Available Control Measures/Best Available Control Technologies
  - Must have contingency measures
  - Must have an episode plan
  - Must either demonstrate attainment by 12/31/2019 or demonstrate why it is impracticable to attain by the attainment date and request an extension
  - Must meet all technical requirements (emission estimates, modeling, milestones)



## Summary of Control Measures

- Proposed control measures build off existing/continuing controls and Stakeholder recommendations
  - Existing controls continue – some revisions proposed to meet BACM
  - Required to look at measures from across the nation
  - Timing of proposed controls varies to allow time to prepare and plan
  - Seeking comment on controls including timing, technical and economic impacts
- Suite of updated requirements related to solid fuel heating devices
  - New stove standards (cleaner burning), change-out requirements, dry wood sales, stove registration for certain programs
  - 2-Stage solid fuel burning curtailments remain in place with new thresholds and an updated waiver program.
  - Retrofit Electrostatic Precipitators (ESPs) are not mandated but are included as a technology that needs more study



## Summary of Control Measures (cont)

- Proposing a switch to Diesel #1 for space heating in the nonattainment area in 2020
- Small commercial sources
  - Charbroilers, incinerators, used oil burners – Will request information
  - Coffee roasters – Control or show technical/economic infeasibility within one year
- Individual BACT determinations for large industrial sources
  - Ft. Wainwright ☐
  - Aurora Energy Chena Power Plant
  - GVEA North Pole & Zehnder
  - UAF



## Main Control Measures (for the nonattainment area)

- Control Measures build off of existing controls, which continue
- 2-Stage solid fuel burning curtailments remain in place
  - Propose to call at lower concentrations
  - Hope that curtailments are primarily a bridge as other measures implemented and the need for curtailments will be reduced over time.
- Only dry wood may be sold,
  - Proposed effective date October 2021 to allow time to prepare
- Only Diesel #1 may be sold in the nonattainment area for space heating
  - Proposed effective date is July 2020.
- Solid fuel devices may still be used but EPA uncertified devices and devices older than 25 years old will need to be removed by December 2024 or earlier if part of a real estate transaction.



## Main Control Measures (continued)

- Only pellet-fueled hydronic heaters will be allowed to be sold.
- Only pellet-fueled or catalyst-equipped woodstoves will be allowed to be sold. Non-catalytic woodstoves may be sold if the manufacturer provides additional information and DEC approves.
- All new solid fuel fired devices must be professionally sized and installed.
- Stage 1 and No Other Adequate Source of Heat (NOASH) Waivers to curtailment will still be available
  - Have proposed changes to eligibility requirements.
  - Length of the waivers will depend on age, type and emission rating of device.
- Retrofit Electrostatic Precipitators (ESPs) are not mandated but they are acknowledged as a technology that needs more study.
  - Borough has issued a Request For Proposal (RFP) to begin testing to get the data needed.
- Device registration will be required for waivers, new device sales and real estate transactions that contain a solid fuel fired device.



## Main Control Measures (continued)

- Small commercial source requirements
  - Information request for businesses with charbroilers, incinerators, used oil burners
  - Proposal for emission control for coffee roasters
- Best Available Control Technologies (BACT) for large industrial sources
  - Individual BACT analysis and determinations for each source
    - Ft. Wainwright
    - Aurora Energy Chena Power Plant
    - GVEA North Pole
    - GVEA Zehnder
    - UAF



# Proposed BACT Determination Highlights

Highlights of BACT Controls by Pollutant					
Pollutant	Aurora	Fort Wainwright	GVEA North Pole	GVEA Zehnder	UAF
<b>Fine Particulate Matter (PM<sub>2.5</sub>) - Direct</b>	Existing No new control	Existing No new control	Existing No new control	Existing No new control	Existing No new control
<b>Volatile Organic Compounds (VOC)s</b>	Existing No new control	Existing No new control	Existing No new control	Existing No new control	Existing No new control
<b>Nitrogen Oxides (NO<sub>x</sub>)</b>	No new control Precursor Determination	No new control Precursor Determination	No new control Precursor Determination	No new control Precursor Determination	No new control Precursor Determination
<b>Ammonia (NH<sub>3</sub>)</b>	No controls available	No controls available	No controls available	No controls available	No controls available
<b>Sulfur Dioxide (SO<sub>2</sub>)</b>	Economically infeasible  Use low sulfur coal 0.2% S by weight by 2021	NEPA process to determine either SO <sub>2</sub> control on existing facility or replace facility  Use low sulfur coal 0.2% S by weight by 2021	<u>Short-term:</u> fuel switch to Diesel #1 during curtailments <u>Long-term:</u> ULSD or Natural Gas once decision on utilization of Healy 1 & Healy 2 finalized around 2022.	Owner requested limit to lower emissions below BACT threshold	Economically infeasible, fuel switch to ULSD in emergency generators  Use low sulfur coal 0.2% S by weight by 2021



## Serious SIP Available for Public Review & Comment

- May 14 - Start public comment period
- May 16 - Presentation to FNSB Assembly
- June 25 - Open House at Westmark Hotel
  - 6-8 PM
- June 26 - Hearings at FNSB Assembly Chambers
  - 12- 1:30 PM and 5-8 PM
- July 26 - End comment period



## How to Comment

- DEC wants your feedback
  - Comments are important to finalizing the plan
- Several ways to submit comments:
  - Electronically - online form
  - Email
  - Mail
  - Public Hearing
- Handout with details on how to comment is provided in the back of the room.



## Next SIP – 5% Plan

- The Clean Air Act and EPA regulations give two options for a Serious SIP
  - Reach attainment by 2019
  - Request an extension that shows attainment by 2024.
- Area cannot reach attainment by 2019, and cannot realistically demonstrate attainment by 2024.
- Serious SIP requests an extension, but likely it will not be granted, therefore a 5% Plan will be due December 2020.



## Advantages of 5% Plan

- Benefits of the regulations in Serious Plan will get credited in the 5% Plan
  - Example, fuel switch to Diesel #1 could provide almost 3 years of benefits
- Most Stringent Measures (MSM) are not required
  - Including MSM to Point Sources
- New modeling Design Value and base year
  - Will be able to use lower monitored values
- Likely will have a positive impact on approvability of Serious SIP if 5% Plan can be submitted to EPA prior to final EPA action on Serious SIP
- Will likely show attainment earlier than 2029, however this depends on final control measures adopted in Serious SIP



## Planning Timelines – What Comes Next?

- Finish Serious SIP after end of public comment period, adopt and submit to EPA. Estimate early winter 2019.
- Begin development of 5% Plan. Gather 2018 emission data for a new baseline. Develop new Design Value. Develop new modeled forecasts once regulations are adopted.
- Target for release of 5% Plan for public comment approximately May 2020. Submittal to EPA before December 2020 (due date).
- Also begin collecting data over the winter of 2019-2020 as the first step to updating the model used in the SIPs. Current data is from 2008 and does not reflect the Hurst Road Monitor.
- Once the model has been updated, which will take approximately 2 years once the data has been gathered, an update to the 5% Plan will be needed. This update will also use latest monitored results and a new baseline.



## Where can I find information

- The entire SIP and all its supporting documentation are posted on the website.
  - Easiest url: [dec.alaska.gov](http://dec.alaska.gov)
  - First item under current events
    - “Fairbanks Particulate Matter PM<sub>2.5</sub> Proposed Regulations & SIP”
- All previous regulation proposals are also available online, including all the previously asked questions and their posted answers.
- Hardcopies or a desk copy of most of the major items will be available at the tables
- All presentations that have been presented over the years are posted



Thank You!