MEETING 1
STAKEHOLDERS GROUP
KNOWLEDGE ASSESSMENT
COMMUNITY AIR QUALITY STAKEHOLDERS GROUP
Because the Fairbanks North Star Borough (FNSB) continues to exceed the national air quality standard for fine particulates (PM$_{2.5}$), the Environmental Protection Agency (EPA) has designated the borough as a…

1. Moderate Nonattainment Area
2. Serious Nonattainment Area
3. Critical Nonattainment Area
THE EPA HAS DESIGNATED FNSB AS A PM$_{2.5}$…

- Moderate Nonattainment Area: 0%
- Serious Nonattainment Area: 92%
- Critical Nonattainment Area: 8%
Due to the reclassification of FNSB as a Serious PM$_{2.5}$ non-attainment area, a Serious SIP (State Implementation Plan) must be drafted by…

1. Fairbanks North Star Borough (FNSB)
2. City of North Pole
3. Alaska Department of Environmental Conservation (ADEC)
4. Environmental Protection Agency (EPA)
A SERIOUS SIP MUST BE DRAFTED BY…

- Fairbanks North Star Borough (FNSB): 14%
- City of North Pole: 0%
- Alaska Department of Environmental Conservation (ADEC): 86%
- Environmental Protection Agency (EPA): 0%
What is the current statutory date for Fairbanks to attain the PM$_{2.5}$ standard:

1. 2019
2. 2021
3. 2023
4. 2025
THE CURRENT STATUTORY DATE FOR FAIRBANKS TO ATTAIN THE PM$_{2.5}$ STANDARD IS...
Which of these is a requirement of the State Implementation Plan (SIP) for a Serious nonattainment area:

1. Updated Emission Inventory for the community’s base year (2013)
2. Updated Emission Inventory model for the mandated attainment date (2019)
3. Evaluation of control measures implemented in other PM$_{2.5}$ nonattainment areas for technological and economic feasibility in FNSB
4. Implementation of Best Available Control Measures (BACM) and Best Available Control Technologies (BACT) determined to be technologically and economically feasible
5. Photochemical modeling of PM$_{2.5}$ emissions that demonstrates attainment
6. All of the above
A SERIOUS SIP MUST INCLUDE…
Which of the following must be used to show attainment?

1. Three years of monitoring data below 35mg/m³ collected at the Fairbanks and North Pole monitors
2. Modeling results below 35 mg/m³ for every grid cell in the nonattainment area
3. Both monitoring and modeling to show attainment everywhere
WHAT IS NEEDED TO SHOW ATTAINMENT…

- 3 yrs monitoring data at Fairbanks and North Pole: 29%
- Modeling results for every grid cell in nonattainment area: 9%
- Both monitoring and modeling: 63%
Expanded availability of natural gas is an example of a
Control Measure likely to help us demonstrate
attainment by 2019.

1. True

2. False
Natural gas is a potential control measure likely to help us show attainment by 2019.
If attainment by 2019 cannot be shown, required controls would rise from Best Available Control Measures (BACM) to Most Stringent Measures (MSM).

1. True
2. False
IF ATTAINMENT BY 2019 CANNOT BE SHOWN, REQUIRED CONTROLS WOULD RISE FROM BEST AVAILABLE CONTROL MEASURES (BACM) TO MOST STRINGENT MEASURES (MSM).
Most Stringent Measure (MSM) requirements will apply only to large industrial facilities (point sources).

1. True
2. False
MOST STRINGENT MEASURE (MSM) REQUIREMENTS WILL APPLY ONLY TO LARGE INDUSTRIAL FACILITIES (POINT SOURCES).
The primary reason FNSB is unlikely to show attainment by 2019 is...

1. FNSB has not made progress in reducing PM$_{2.5}$ concentrations yet.
2. More time is needed for large reductions required in North Pole.
3. All four PM$_{2.5}$ “precursor pollutants” (VOCs, NOx, SO$_2$, NH$_3$) must also be lowered.
THE PRIMARY REASON FNSB IS UNLIKELY TO SHOW ATTAINMENT BY 2019 IS...

- 15%: FNSB has not made progress in reducing PM2.5 concentrations yet.
- 65%: More time is needed for large reductions required in North Pole.
- 21%: All four PM2.5 “precursor pollutants” (VOCs, NOx, SO2, NH3) must also be lowered.
Based on monitoring at North Pole, our PM$_{2.5}$ concentrations (as measured in our design value) must be reduced by how much to demonstrate attainment?

1. 25%
2. 33%
3. 50%
4. 67%
5. 75%
TO SHOW ATTAINMENT, PM$_{2.5}$ CONCENTRATIONS AT THE MONITOR IN NORTH POLE MUST BE REDUCED BY…
If attainment cannot be demonstrated by 2019, ADEC can request an extension. The latest extension possible is for:

1. 2021
2. 2024
3. 2027
4. 2030
THE LATEST EXTENSION POSSIBLE IS UNTIL...
Which is one of the reasons 2013 was chosen as a baseline year by ADEC and EPA?

1. 2013 was a cold winter
2. 2013 was a representative year, meteorologically speaking
3. 2013 was a big wildfire year in Interior Alaska
ONE REASON 2013 WAS CHOSEN AS A BASELINE YEAR BY ADEC AND EPA WAS...

11% 89% 0%

2013 was a cold winter  2013 was a representative year  2013 was a big wildfire year
One reason FNSB had a large increase in its Design Value* between 2006-2008 and 2014-2016 is that the initial designation was based on monitoring in downtown Fairbanks only, and the later value was based on monitoring in Fairbanks and North Pole.

1. True
2. False

*A community’s design value is the 3-year average of 98\textsuperscript{th} percentile 24-hour PM\textsubscript{2.5} concentrations.
ONE REASON FNSB HAD A LARGE INCREASE IN ITS DESIGN VALUE IS THAT THE INITIAL DESIGNATION WAS BASED ON MONITORING IN DOWNTOWN FAIRBANKS ALONE, AND THE LATER VALUE WAS BASED ON MONITORING IN FAIRBANKS AND NORTH POLE.
The community has made no progress in reducing fine particulate emissions since 2013.

1. True
2. False
THE COMMUNITY HAS MADE NO PROGRESS IN REDUCING FINE PARTICULATE EMISSIONS SINCE 2013.
According to the 2013 baseline emissions inventory, the largest concentrations of PM$_{2.5}$ during winter inversions in FNSB come from…

1. Point sources (large industrial facilities) and heating with oil
2. Space heating with wood
3. On-road and non-road mobile sources combined
ACCORDING TO THE 2013 BASELINE EMISSIONS INVENTORY, THE LARGEST WINTER SEASON CONCENTRATIONS OF PM$_{2.5}$ HAVE COME FROM

- **3%** Point sources & oil heating
- **97%** Wood burning
- **0%** Mobile sources
According to the 2013 baseline emissions inventory, the largest winter season concentrations of SO$_2$ (Sulfur Dioxide) in FNSB have come from which of these…

1. Point sources and heating with oil
2. Space heating with wood
3. On-road and non-road mobile sources combined
According to the 2013 baseline emissions inventory, the largest winter season concentrations of SO$_2$ (sulfur dioxide) in FNSB have come from...

- **86%** Point sources & oil heating
- **9%** Wood burning
- **6%** Mobile sources
Which of these nonattainment communities had the largest increase in measured PM$_{2.5}$ concentrations between its initial designation (2006-2008) and its reclassification as a Serious nonattainment area (2014-2016):

1. Fairbanks North Star Borough, Alaska
2. Los Angeles County, California
3. Salt Lake City, Utah
4. San Joaquin County, California
The community with the largest increase in measured PM$_{2.5}$ concentrations between initial designation and reclassification was Fairbanks North Star Borough, Alaska with 92% increase. Other communities with smaller increases include Los Angeles County, California (0%), Salt Lake City, Utah (6%), and San Joaquin County, California (3%).
The fact that space heating is the dominant PM$_{2.5}$ contributor is not surprising because of our community’s…

1. High heating energy demand (per square foot) due to extreme winter climate
2. Large number of heating degree days due to length of winter heating season
3. High cost of heating oil due to Fairbanks’ remote location
4. Lack of widespread availability of affordable natural gas
5. Strong inversions and low wind speeds during coldest time of year.
6. All of the above
The fact that space heating is the dominant PM$_{2.5}$ contributor is not surprising because of which of the following:

- 0% High heating energy demand
- 3% Number of heating degree days
- 0% High fuel oil cost
- 0% Lack of affordable natural gas
- 3% Strong inversions & low wind speeds
- 94% All of the above
What percent of households in the nonattainment area have a wood burning device as their sole heating source?

1. 0-5%
2. 10-15%
3. Over 20%
HOUSEHOLDS IN THE NONATTAINMENT AREA WITH A WOOD DEVICE AS THE SOLE HEATING SOURCE?
Among existing control measures, the largest potential reduction is expected from an increase in compliance with burn bans.

1. True
2. False
Among existing control measures, the largest potential emissions reduction is expected from increased compliance with burn bans.
Which of these precursor pollutants is a significant contributor to PM$_{2.5}$ concentrations in FNSB?

1. Volatile Organic Compounds (VOC)
2. Oxides of Nitrogen (NOx)
3. Ammonia (NH$_3$)
4. Sulfur Dioxide (SO$_2$)
WHICH OF THESE PRECURSOR POLLUTANTS IS A SIGNIFICANT CONTRIBUTOR TO PM$_{2.5}$ CONCENTRATIONS IN FNSB?

- Volatile Organic Compounds (VOC): 26%
- Oxides of Nitrogen (NOx): 6%
- Ammonia (NH3): 0%
- Sulfur Dioxide (SO2): 69%
At this time, ADEC is considering requiring multiple control measures per major stationary source to reduce \( \text{SO}_2 \) emissions at the five power plants in Fairbanks.

1. True

2. False
ADEC IS CONSIDERING MULTIPLE CONTROL MEASURES PER MAJOR STATIONARY SOURCE TO REDUCE SO$_2$ EMISSIONS AT LOCAL POWER PLANTS.