Status of PM$_{2.5}$ Air Quality Plan

Presentation to the Fairbanks North Star Borough Assembly
October 3, 2013
Overview

- Control measure analyses has been refined.
- Conservative assumptions needed to offset uncertainty in meteorology and public participation.
- Results indicate pathway to PM2.5 standard with a combination of Borough and State measures.
- Public input needed to confirm benefits of State proposals.
- Borough and State partnership needed to enhance public participation and air quality benefits.
Pathway to Compliance with PM$_{2.5}$ Standard

- Preliminary modeling analysis indicates that a combination of several programs can reduce PM$_{2.5}$ levels between now and 2019.
  - Borough programs
    - Woodstove Change Out program
    - Enhanced Solid Fuel Burning Appliance
    - Voluntary Measures and Public Education
  - State programs
    - State Regulation Proposals
    - Natural Gas
Borough Wood Stove Change Out Program Summary*

- Started in July 2010
- Incentives for removal, replacement, repairs of *uncertified* wood/coal stoves/inserts, *unqualified* OWBs
- Program closed 10/12; modified and adopted 4/13; reopened 5/13
- Device Change Outs:
  - As of end of 2012 = 930 (240 removed, 690 replaced)
  - Additional by 2019 = 1,984 (615 removed, 1,369 replaced)
- 2019 Space Heating Emission Reductions:
  - 25.4% PM$_{2.5}$ emissions reduction in non attainment area

*(corrected)*
Borough Enhanced Solid Fuel Burning Appliance (SFBA) Program Summary*

- Began in July 2013
- Targets replacement of OWBs and certified or uncertified stoves/inserts in specific “hot zones”
- Program will help offset the cost of replacing a SFBA (including OWBs) with an EPA certified SFBA that has an emission rate less than or equal to 2.0 grams/hour and be at least half the emissions if already certified, or an appliance designed to use pellets, home heating oil (excluding waste oil), natural gas, propane, hot water district heat, or electricity, or a masonry heater.

Program Participants:
- 41 for the enhanced program with 15 completed as of 9/30/13
- 424 for the regular program with 105 completed as of 9/30/13

2019 Space Heating Emission Reductions:
- Additional Projected by 2019 = (423 appliances removed/replaced)
- 5-8% additional reduction in hot zones, 0.2% over entire non-attainment area

*(corrected)
AQIP Program Devices August 2013
Public Education & Outreach

- Outreach continues to be essential to success of programs
  - Education on health benefits and cost savings of reduced emissions
  - Awareness of existing programs/resources to help the community realize benefits
  - Hourly AQ measurements in specific areas available on FNSB website
- Presentations to the community to build support for positive community action
- Booths at local events, open house/public meetings
- Media campaign – TV, radio, print, web
- Multiple mass mailings
- Door to door in hot zones
Voluntary Measures

- Public Education
  - Device change-outs, burning practices, dry wood, vehicle plug-ins, etc.
- Transportation Projects
  - Electrical plug-ins to reduce cold start emissions
  - New bus routes and vans
  - Van Pool
  - Diesel replacements, retrofits, and anti-idling
- AHFC energy rebate and weatherization programs
State Regulation Proposals

- Emission standards for new wood heating devices
- Requirement to burn the appropriate fuels (wood or coal) in solid-fuel heating devices
- Wintertime restrictions on outdoor open burning
- State emergency episode levels for PM2.5 coupled with revisions to allow a more flexible response program for wood heaters on formal episode days (high concentration days)
State Regulation Proposals – Key Points

• Wood stoves stay
  • Proposals allow for wood heating to continue
  • No requirement for residents to upgrade their existing wood heaters
    • Voluntary change outs remain important and are encouraged
• Wood heater emission standards apply only to new units in the non-attainment area
• It is important to reduce wood smoke in the area
  • 60-80% of the PM2.5 pollution comes from solid fuel heating
• Proposal adds flexibility to addressing wood smoke on days with unhealthy air quality
• We want to hear from the community!
  • Extended public review process to allow ample time for review and comment
  • Open houses and public hearing
State Wood Device Emission Standards
Program Summary

- July 2014 projected start date

- Requires new wood devices sold and installed in non attainment area to meet a 2.5 g/hr PM emission standard

- 2019 Space Heating Emission Reductions:
  - 1.4% additional reduction in non attainment area PM$_{2.5}$ emissions from cleaner devices in new homes
  - reductions achieved through turnover of existing wood heaters is included in the baseline modeling projection
State Air Quality Episode/Wood Heating Program Summary

- July 2014 projected start date
- Allows DEC a more flexible approach for curtailing use of wood-burning devices on projected “high concentration” days
- Projections affect only households with secondary (e.g., oil) heating device – wood-only households not subject

2019 Space Heating Emission Reductions:
- 11.6% addition reduction on high concentration episode days
- In 2019, potential benefits of this measure are reduced due to the anticipated conversions to natural gas
State Natural Gas Expansion Program Summary

- Examined impacts of switching of existing residential households from wood or heating oil to natural gas
- Projections of sign-up/availability based on recent work released by AIDEA
- Augmented with results from recent DEC survey of wood-burning households
  - Participation will depend on the price of natural gas
  - Need to augment with wood heat at cold temperature
- 2019 Space Heating Emission Reductions:
  - 31.2% additional reduction in non attainment area PM
Natural Gas Market Penetration Rate Projections
## Preliminary Forecast of PM$_{2.5}$ Program Benefits

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*Note: Modeled Benefits for State Office Building*
Can PM$_{2.5}$ Levels be Reduced More Quickly?

- Modeling forecast with current/proposed programs and assumptions shows a pathway to reduced PM$_{2.5}$ levels between 2015 and 2019
- Options to accelerate PM$_{2.5}$ reductions
  - Additional public education/stronger community engagement?
  - Accelerated change-outs?
  - Ideas to improve burning through availability or use of dry wood?
  - Other voluntary programs?
- Borough and State partnership needed to enhance public participation, support programs and air quality benefits.
SIP Composition

- Air quality – review of trends in PM concentrations
- Monitoring – location and operation of monitors
- Emission inventory – methods used to estimate emissions
- Control programs – summary of program benefits, costs
- Air quality modeling – model inputs and baseline forecasts
- Attainment projection – forecasts of selected programs and demonstration that Borough will attain the PM standard
- Contingency plan – programs to be implemented if fail to attain the standard
- Conformity – motor vehicle emission budget
Next Steps

- Air quality open houses
- Gather public comment on state regulations
- Review comments and adjust state regulations as needed
- Finalize modeling, technical assessment, and SIP
- FNSB/Assembly and state review process
- Adjust SIP as needed
- State adopts SIP
- Final state legal review and filing
- Send SIP to EPA
- Continue implementation of programs to reduce PM2.5
Current SIP Completion Schedule

Note: Time to finalize the SIP will depend on the volume and content of comments.