

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 PM_{2.5} 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

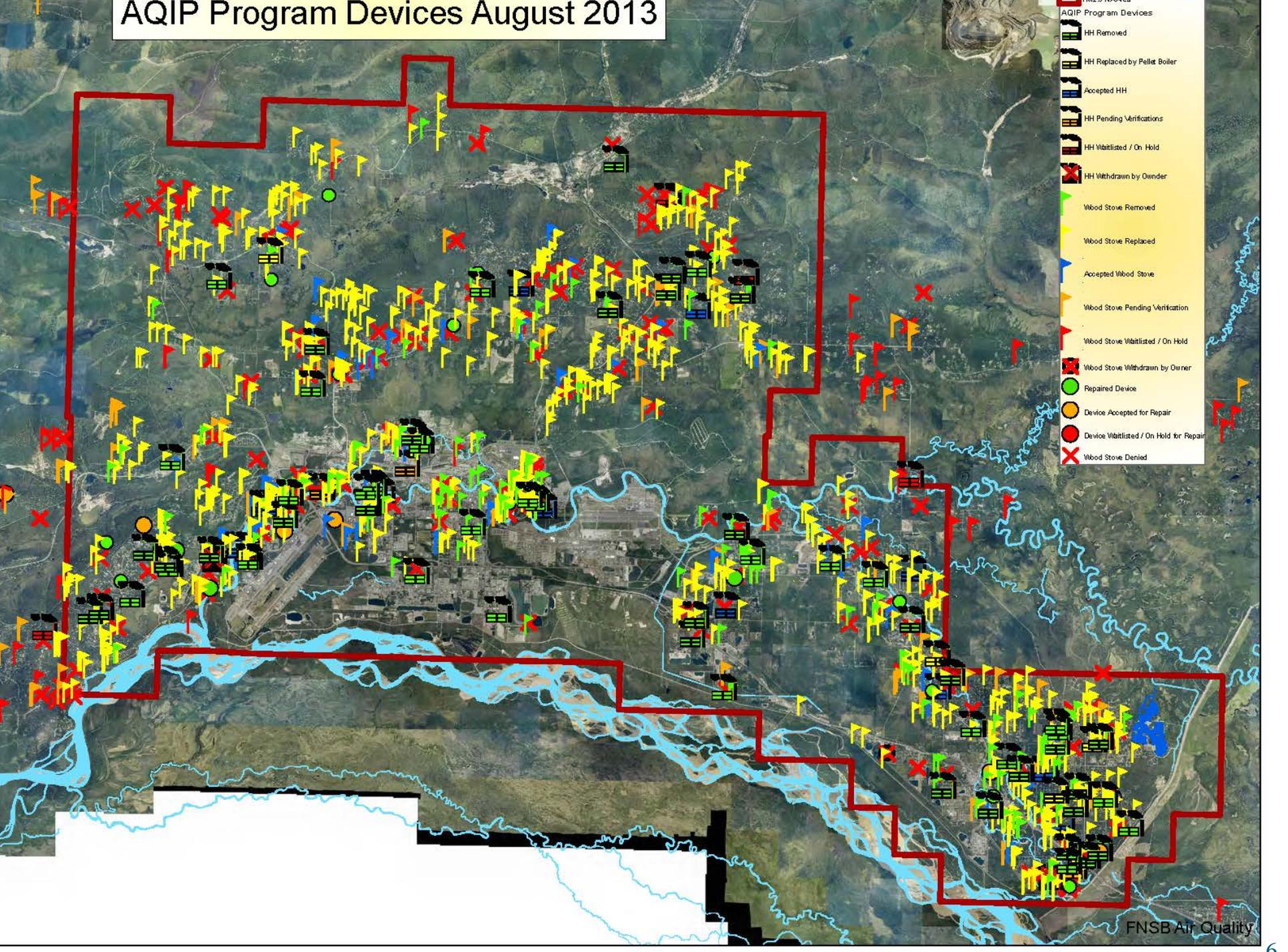
*(corrected)

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 PM_{2.5} 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 PM_{2.5} 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

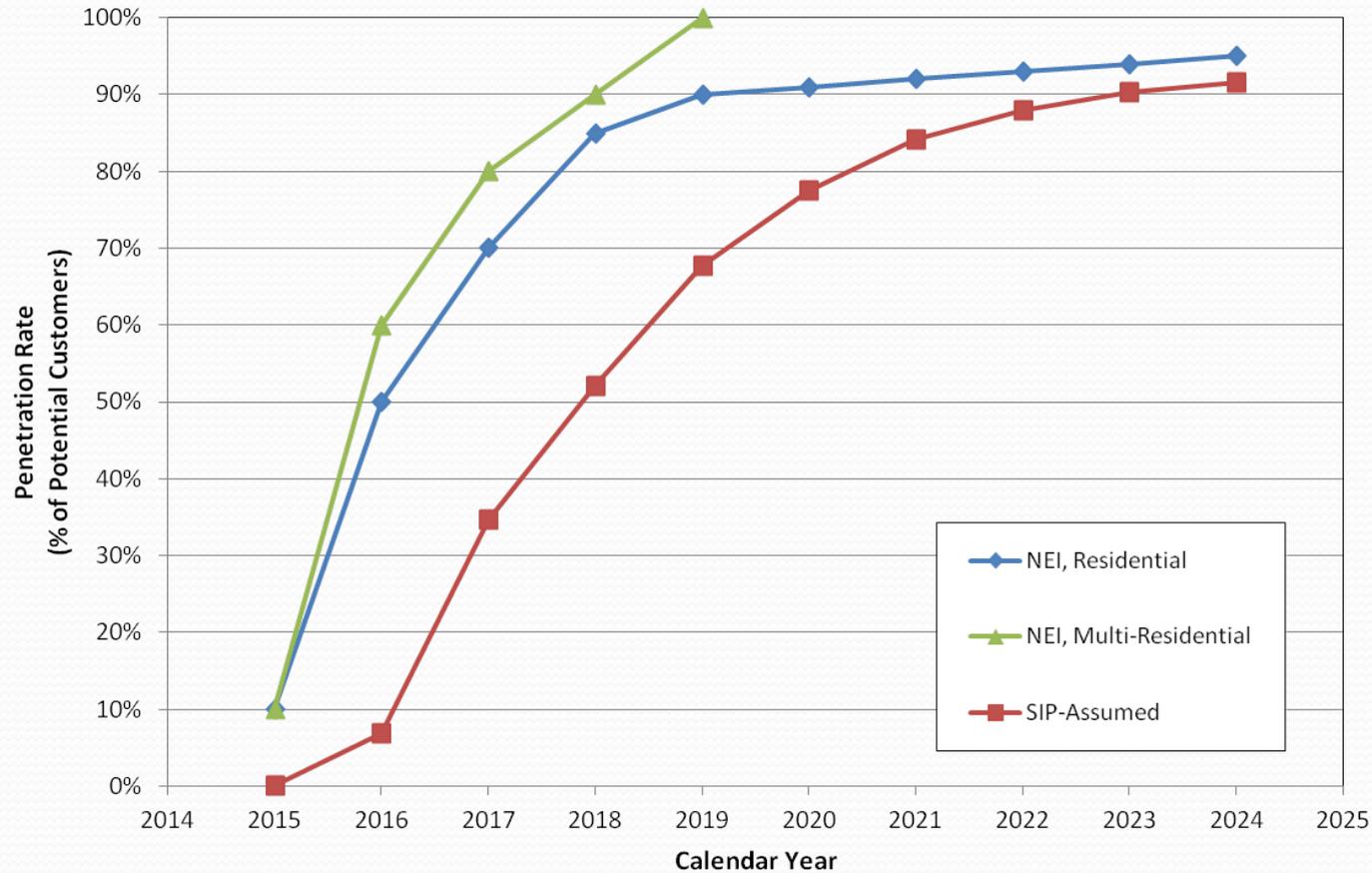
State Air Quality Episode/Wood Heating Program Summary

- 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

	2008 ($\mu\text{g}/\text{m}^3$)	2015 ($\mu\text{g}/\text{m}^3$)	2015 Programs	2019 ($\mu\text{g}/\text{m}^3$)	2019 Programs
Baseline	44.7	43.7		43.0	
			<u>Borough</u> <ul style="list-style-type: none"> • Wood Stove Change Out • Enhanced Solid Fuel Burning Device 		<u>Borough</u> <ul style="list-style-type: none"> • Wood Stove Change Out • Enhanced Solid Fuel Burning Device
			<u>State</u> <ul style="list-style-type: none"> • New Wood Stoves & Hydronic Heaters • Air Quality Episode/Wood Heat 		<u>State</u> <ul style="list-style-type: none"> • New Wood Stoves & Hydronic Heaters • Air Quality Episode/Wood Heat • Natural Gas
			<u>Borough & State</u> <ul style="list-style-type: none"> • Voluntary Measures 		<u>Borough & State</u> <ul style="list-style-type: none"> • Voluntary Measures
w/ 2015 Programs		39.1			
	35.0		24-hour PM_{2.5} Standard		
w/2019 Programs				30.7	

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.

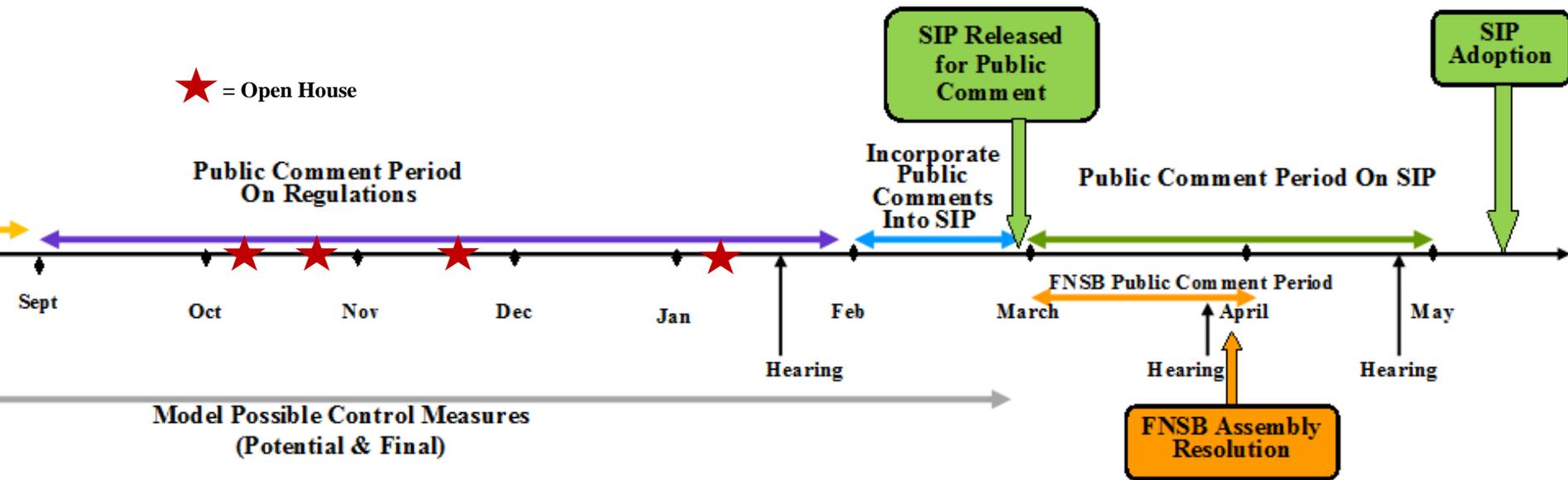
SIP Composition

- 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 PM_{2.5}

Current SIP Completion Schedule



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