

Fairbanks Air Quality Stakeholders Group

Final Report

DECEMBER 2018

FRAMEWORK

In May 2018, the Mayors of the Fairbanks North Star Borough, City of Fairbanks and City of North Pole created the Fairbanks Air Quality Stakeholder Group “to identify, evaluate and recommend community-based solutions to bring the area into compliance with federal air quality standards for fine particulates (PM_{2.5}).”

They called for volunteers to apply to fill 33 designated seats representing a broad cross-section of the community including various interests in air quality, home heating and the economy. Selections of primary and proxy members were made by the mayors for the following categories of stakeholders:

- Community
 - Solid Fuel Heating Users
 - Electrostatic Precipitator (ESP) Knowledge
 - Low-income
 - Regional (Fairbanks and North Pole)
 - Seniors
 - Health
 - Academia
- Military
- Point Sources
- Solid Fuel Suppliers
- Industry
 - Business Community
 - Natural Gas
 - Real Estate
 - Refiner/Distributors
 - Retail
 - Tourism
 - Transportation
 - Union
- Non-Governmental Organizations
 - Environmental
 - Health

Non-voting representatives from Alaska Department of Environmental Conservation (ADEC, responsible for submitting a Serious Non-Attainment Plan to EPA), the Environmental Protection Agency (responsible for approving the plan), and the Fairbanks North Star Borough (originally responsible for implementing the plan) attended meetings and served as resources to the group. A list of stakeholder and non-voting representatives is in Appendix 1.

Fairbanks Economic Development Corporation took the role of lead organization, and John Davies was selected as chair of the group. FEDC hired Brian Rogers & Associates and Information Insights to facilitate the stakeholder process.

SCOPE AND PROCESS

The group was charged with developing recommendations for the Alaska State Implementation Plan (SIP) to address Fairbanks' serious nonattainment of PM_{2.5} air quality standards. Stakeholders were instructed that, with few exceptions, all measures adopted elsewhere must be identified and implemented regardless of their relative impact on attainment, under the regulations governing serious nonattainment in the Clean Air Act. Only measures that can be proved to be economically or technically infeasible could be omitted.

In reviewing control measures implemented elsewhere in the country, the group was asked to determine which would be appropriate as is or should be modified for the Fairbanks environment. Stakeholders were also encouraged to develop new control measures that could meet the SIP requirements of being enforceable, not voluntary, and leading to permanent emissions reductions. Additional requirements of the Clean Air Act required the group to look at control measures for all sources of PM_{2.5} (point, area, on-road, and off-road), and to address both direct PM_{2.5} and the most significant precursor pollutants (SO₂). The findings of the Stakeholder Group were to be in the form of recommendations to the FNSB Assembly and ADEC identifying the controls required to demonstrate continued progress toward attainment of the ambient PM_{2.5} standards.

Ground rules for the stakeholder process called for consensus if possible (defined as all but one member) or, if not possible, a 2/3 supermajority vote on the final package. The group agreed to work collaboratively and constructively and to listen to all viewpoints before making decisions. Stakeholders were responsible for communicating with their constituencies throughout the process while considering the broad interests of all Fairbanks North Star Borough residents who may be affected by poor air quality and the range of possible solutions.

The 6-month timeline for the process was dictated by the need for time between meetings for work groups to meet and, in later months, for modeling by ADEC and Sierra Research to estimate the impact of stakeholder-supported measures. A byproduct of the extended timeframe was the level of trust and respect that developed among Stakeholders, which greatly contributed to the effectiveness of the process. The use of audience response technology to allow Stakeholders to vote on measures anonymously also helped mitigate potential animosity. The quality of dialog was consistently high in both work group and full group meetings. Stakeholders generally listened to other perspectives without interruption and responded thoughtfully and constructively. In a poll at the first meeting, nearly all (97%) agreed that Fairbanks has an air pollution problem. They said they were motivated to participate primarily to find a solution (66%), ensure their interests are protected (26%), and understand the issues better (9%). All indicated a willingness to keep an open mind and find compromises to developing control measures.

Meetings. Stakeholders met monthly from June through November. All meetings of the Stakeholder Group and work groups were publicly noticed and teleconferenced or web streamed. Copies of meeting summaries, work group notes, presentations and background materials are available on the Fairbanks North Star Borough Air Quality website at: <http://fnsb.us/transportation/Pages/stakeholders.aspx>

June. Background materials including the March 2018 ADEC Preliminary Draft document detailing possible control measures considered by the state were sent to all Stakeholders in advance of the first meeting in June. Also included were the EPA comments on the ADEC draft measures. Stakeholders approved the mission and ground rules, took a baseline knowledge assessment, heard presentations on the EPA regulatory process, and created a list of questions, and suggested alternative control measures to be considered by the group. Eight work groups were created to delve into further detail on issues and make recommendations to the full group. A ninth group (Compliance and Enforcement) was added after the September meeting.

- Wood Devices Work Group
- Wood Smoke Curtailment Work Group
- Point Sources Work Group
- Mobile Sources and Other Work Group
- Compliance and Enforcement Work Group
- Energy Efficiency Work Group
- Regulatory and Monitoring Work Group
- Funding Work Group
- Education Work Group

July. In the July meeting, Stakeholders heard reports from several of the Work Groups, had a presentation from FNSB regarding current air quality programs, and broke into work groups to discuss possible control measures for full group consideration. The Stakeholder Group asked that the borough to quantify the impact of control measures discussed to date, and consultants with Sierra Research and Trinity Consultants were engaged to develop a report.

August. The August meeting focused on responses to issues raised in the first two meetings. The FNSB reported on the Sierra/Trinity calculation of impact on air quality of the top 14 control measures identified for consideration by work groups. ADEC presented the process governing sanctions and other impacts if the SIP is unsuccessful. The group received an update on the Fairbanks Home Heating Initiative, a presentation on health impacts of PM_{2.5} pollution, and information on the fall FNSB Clean the Air Expo. Work groups met to continue discussion of control measures and attainment measures.

September. At the September meeting, Stakeholders were polled on potential control measures and attainment measures after extensive discussion of each possible measure. The group discussed the draft control measure and attainment measure package and heard a presentation on electrostatic precipitators. Following the meeting an online survey was conducted concerning additional potential control measures. Consultants were engaged to model the impact of control measures that had received support from at least 50% of Stakeholders in the straw polling to date.

October. In October, Sierra/Trinity presented the modeling of stakeholder recommendations. ADEC presented its work on air quality modeling, the emissions inventory and the process behind the Stakeholder Group model run. The group received the results of the online straw poll, conducted additional control measure polling, and considered the impact to the FNSB and ADEC of the Fairbanks Home Heating Initiative. The group discussed how to raise awareness of the air quality and regulatory issues and suggested a list of potential recommendations for education and outreach.

November. At the final meeting in November, the Stakeholder Group received the modeling results from Sierra/Trinity for the control measures that had at least a 2/3 vote in straw polling. The FNSB presented the changes to its Air Quality program mandated by the Fairbanks Home Heating Initiative, and the ADEC discussed changes in their activities based on the transfer of responsibilities from the borough to the state. Additional straw polling was conducted to add education control measures to the

package and to modify a few measures that had previously been polled. Stakeholders who felt they were not able to support the final recommendations package were asked to identify a change that would allow them to support it. Two control measures were repolled and removed through this process. A formal vote was then taken on all control measures and attainment measures, passing by 93 percent of those present and voting.

RECOMMENDATIONS

The final package of recommended control measures and attainment measures approved by Stakeholders appears as Appendix 2. A list of rejected control measures and attainment measures appears as Appendix 3.

Potential Impact. The Sierra Research/Trinity Consultants model of the draft recommendations estimated PM_{2.5} emissions reductions of 64-82% by 2024, depending on public compliance with wood smoke curtailment measures, and 43-44% reduction in SO₂ emissions. Ambient PM_{2.5} concentrations are not directly proportional to emission reductions. The model shows further progress towards attainment with concentration levels at 23 ug/m³ at the Downtown Fairbanks monitor and 50 ug/m³ at the North Pole Fire Station based on optimistic compliance assumptions (75% compliance), or 28 and 73 ug/m³ respectively for the base case (35% compliance).

Next Steps. The recommendations have been submitted to FNSB and ADEC, where they will inform the development of the Serious PM_{2.5} SIP currently being drafted by the State for the FNSB air quality nonattainment area. The timeline and next steps in the SIP process are outlined on the ADEC Division Air Quality website at: <http://dec.alaska.gov/air/anpms/communities/fbks-pm2-5-sip-development>

Appendix 1: AQ Stakeholders Group Members and Non-voting Participants
After resignations & substitutions

Group	Stakeholder Seat	Organization	Primary	Proxy
Community	Solid Fuel Heating	Cord Wood	Dave Turbovsky	Ilya Benesch
		Coal	Jesse Shadley	Jennifer Willeford
	ESP	Sun Air Sheet Metal	Donna Robertson	
	Low Income	Fairbanks Housing & Homeless Coalition	<i>Resigned</i>	
	Regional	Fairbanks	Clark Milne	Ron Johnson
		North Pole	Mark Oppe	Pete Daley
	Senior		Ross Adkins	Lee Hazen
	Health		Jennifer Schmidt	Sharon Baring
	Academia	Economics	Dr. Joseph Little	H. Charles Sparks
		Scientific	Dr. William Simpson	Jingqiu Mao
Military	Army	Ft. Wainwright	Eric Dick	Kristina Smith
	Air Force	Eielson Air Force Base	Kathy Stringham	Dave Martinson
Point Source	UAF	Power Plant	Frances Isgrigg	Scott Bell
	GVEA	North Pole Power Plant	Naomi Morton Knight	Gary Betsill
		Zehnder Facility	John Burns	John Kelly
	Ft. Wainwright	Doyon Utilities	Tim Jones	Shayne Coiley
Fairbanks	Aurora Energy	David Fish	Buki Wright	
Solid Fuel Suppliers	Cord Wood	Alaska Forest Products	Kendall Brehm	
	Pellet Wood	Superior Pellets	Chad Schumacher	
	Coal	Usibelli Coal Mine	Lisa Herbert	Robert Brown
Industry	Business Community	Chamber of Commerce	Rick Solie	Marisa Sharrah
		Downtown Association	Donna Gardino	David van den Berg
		Fairbanks Economic Development Corp	John Davies	Jim Dodson
	Natural Gas	Interior Gas Utility	Patrice Lee	
	Real Estate		Angie Tallant	
	Refiner / Distributor (fuel)	Andeavor	Casey Sullivan	
		Petro Star	Angela Speight	Catherine Bollinger
	Retail	Stone Castle Masonry	Dan Givens	Karl Hough
	Tourism	Explore Fairbanks	Deb Hickok	Andy Anger
	Transportation	FMATS	Jackson Fox	Alicia Stevens
Union	Central Labor Council	Arthur (AJ) Sutton	Mindy O'Neall	
	Fairbanks Building Trades	Scott Eickholt	Jacob Howdeshell	
NGO	Environmental	Citizens for Clean Air	Jimmy Fox	
		Northern Alaska Environmental Center	Elisabeth Balster Dabney	Lisa Baraff
	Health	American Lung Association	Rick Hinkey	Dr. Owen Hanley

Non-voting Participants

Government	EPA	Region 10	Dan Brown
			Tim Hamlin
			Rob Elleman
			Justin Spenillo
	State of Alaska	ADEC	Cindy Heil
			Denise Koch
	FNSB	Administration	Nick Czarnecki
			Brittany Smart
		Assembly	Angela Major
	APCC	Kathleen Hook	
Media	Print	Fairbanks Daily News Miner	Amanda Bowman
	Radio	KUAC	Tim Ellis
	TV	Channel 11	Sara Tewksbury
Staff Support	Facilitator	Brian Rogers & Associates	Brian Rogers
		Information Insights	Jana Peirce
			Kuba Grzeda
	FEDC	Project Managers	Hannah Cooper (June-July)
			Michelle Ohnesorge (Aug-Nov)

Appendix 2: Air Quality Stakeholders Group Control Package Recommendations

Approved by 93% vote

Control Measure Category	No.	Description	Identified/Proposed
Registration	1a.	Require registration of all residential and small commercial heating devices	BACM** #19 & 22
	1b.	FNSB should include registration of all residential and small commercial heating devices with property tax notice, with tax credit for response	AQ Stakeholder group
	1c.	Registration of heating devices should include renewal and inspection requirements	BACM #19
Point Sources	2.	Alternative BACT Banking Fund established by State of Alaska to allow Point Sources to place offset dollars to be used to fund PM _{2.5} control measures	Point Source WG*
	3.	Point Sources pay an annual assessment to the Alternative BACT Offset Fund in lieu of capital expenditures for BACT and MSM (Point Sources WG)	Point Source WG
	4.	Offset funds used primarily to reduce impacts of wood smoke, and not on studies	Point Source WG
	5.	Eligibility for Point Sources to pay offsets requires that offsets yield greater annual impacts in PM _{2.5} reduction than ADEC proposed BACT/MSM plant modifications	Point Sources WG
	6.	Speciation study funded by FNSB and Point Sources to determine the level of contribution of point sources to the SO ₂ problem	Point Sources WG
	7.	ADEC and each point source negotiate on choice of MSM or economic incentive program (offset)	Point Sources WG
	Fuel Control	8.	Bring natural gas to Fairbanks to allow switch from SFBA or oil boiler to natural gas boiler
9.		Build and operate a public-private kiln for wood drying	Public Measure #6
10.		Establish a dry for wet wood exchange program	Stakeholder Measure #3
11.		Require all homes with SFBA's to have appropriate wood storage	Public Measure #7
12.		Mandate shift from #2 fuel oil to #1 fuel oil borough-wide; ULSD as contingency measure	BACM #51, Public #13, #14 & #16
13.		Require sale of only dry wood when it is commercially available, with exemption for 8-foot rounds	BACM #31, Public #5
14.		Add surcharge to price of #2 fuel oil	Stakeholders

Energy Efficiency	15.	State and/or Borough seek funding to implement a voluntary program to improve residential energy efficiency in the non-attainment area that prioritizes wood-burning homes in AQ hot spots	Energy efficiency WG
	16.	Require home energy audit at the time of home sale	Energy efficiency WG
Device Removal	17a	Request to Congress and State of Alaska to fund \$40-million 2-year WSCOP	Wood devices & smoke curtailment WGs
	17b	Mandatory removal of uncertified devices over 3-year period	Wood devices & smoke curtailment WGs
	18.	Require notice and proof of destruction or surrender of removed, uncertified devices	BACM measure 16, Public measure 9
	19.	Offer higher incentives for replacing SFBA's in multi-family structures under WSCOP	AQ Stakeholders
	20.	Prohibit use and require removal of coal-only heaters from homes and small commercial sites	BACM #48, #49
	21.	Create incentives for fuel oil boiler upgrades	EPA Measure #3
Device Control – existing devices	22.	Require permanent installed alternative heating method in rental units, with exemption for current NOASH permit holders	BACM #24
	23.	Require catalytic device change out per manufacturer's specifications, with mandatory chimney sweep and device check on annual or biennial basis	Wood Devices WG
	24.	Require inspection for NOASH renewals	BACM #25
	25.	Allow only NOASH households to burn during curtailment periods	BACM #29
	26.	Require renewal of Stage 1 permits	BACM #27
	27.	Require inspection for Stage 1 eligibility	BACM #27
	Device Control – new devices	28.	Require installation permit for all new SFBA's and restrict the types of devices allowed to borough (state) list of approved devices
29.		Require installation of device that meets state emission standards whenever a fireplace or chimney is remodeled	BACM #10
30.		Prohibit sales of SFBA's that don't meet state standards	Public Measure #10
31.		Allow SFBA in new construction as secondary heat only; primary heating system must have sufficient capacity to heat the building	BACM #3
32.		Require all aftermarket controls on SFBA's to be professionally installed, with exemption for existing devices	Public Measure #8
33.		Require all SFBA's to be properly sized and professionally installed, with exemptions for existing devices	Public Measure #8

Compliance and Enforcement	34.	Adopt legislation giving ADEC citation authority	Public Measure #2
	35.	Increase funding for curtailment enforcement	Compliance & Enforcement WG
	36.	Use infrared cameras to observe heat signature for solid-fuel heating device operations	ADEC Measure #1
	37.	Increase penalties for burning wet wood	Public Measure #4
	38-39.	<i>Removed</i>	
Education	40.	Develop a public relations strategy that promotes a positive and proactive approach to public outreach on Fairbanks air quality issues	Meeting 5 Discussion
	41.	Communicate the costs of PM _{2.5} non-attainment, including increased medical costs, loss of federal highway funds and construction jobs, increased electric costs for residents and businesses, and other health and societal costs	Meeting 5 Discussion
	42.	Be clear that the goal is not to eliminate wood burning, but to preserve our ability to heat with wood by agreeing not to burn during inversions	Meeting 5 Discussion
	43.	Seek additional venues and audiences for Dr. Owen Hanley's talk on the health impacts of PM _{2.5}	Meeting 5 Discussion
	44.	Develop other high-impact presentations that make the science and consequences of PM _{2.5} pollution clear	Meeting 5 Discussion
	45.	Learn from behavioral economics and social marketing how to identify and address barriers to changing behaviors	Meeting 5 Discussion
	46.	Partner with the Cooperative Extension to provide classes in responsible wood burning	Meeting 5 Discussion
	47.	Coordinate with local schools to incorporate air quality messages and alerts in daily announcements	Meeting 5 Discussion
	48.	Encourage teachers to include air quality science and health impacts in lesson plans	Meeting 5 Discussion
	49.	Engage the public through events that are creative and entertaining, such as a contest for building the best modular dry wood storage	Meeting 5 Discussion
	50.	Include continued funding for highway signs in next Targeted Airshed Grant proposal	FNSB underway
Mobile & Small Stationary Sources	51.	Continue the "Plug it in at +20" campaign	FNSB underway
	52 - 55.	<i>Removed</i>	
Research	56.	FNSB and ADEC should continue to evaluate retrofit control devices such as ESPs using currently appropriated funding	

Appendix 3: Control Measures Rejected by AQ Stakeholders

The following control measures and attainment measures were considered by the Air Quality Stakeholders Group, but not included in the final package.

- A. Measures with majority support that did not reach the 2/3 threshold for inclusion in the report
 - a. Offset funding amounts increase each year until attainment is reached or BACT and MSM requirements are triggered
 - b. State troopers used for compliance and enforcement during alerts
 - c. Ban hydronic heaters in new construction and when homes are sold
 - d. Implement GVEA emergency tariff to reduce cost of electric heat for NOASH during air quality alerts
 - e. Mandatory requirement under WSCOP that participants with noncompliant SFBA replace with heating device that does not burn solid fuel

- B. Measures considered but not receiving a majority vote
 - a. Require a home energy audit to qualify for an exemption from a curtailment program
 - b. Require a home to improve their energy efficiency star rating to qualify for exemption from a curtailment program
 - c. In new installations, permit catalytic-equipped stoves only
 - d. Prohibit use, sale or exchange of used oil for fuel in the non-attainment area
 - e. Prohibit operation and sale of small used oil burners
 - f. Reduce FNSB-certified stove from 2.5 to 1.5 g/hr standard
 - g. To qualify for NOASH, provide proof of 5-star rating by 2025
 - h. Require sale of only dry wood from late summer to end of winter
 - i. Use aerial technology (small camera-equipped drone) to identify smoke plumes
 - j. Offset funds support development of proposal to NSF and other funders to study Fairbanks and North Pole Air Quality issues
 - k. Require electrostatic precipitators (ESP) for new installation or changeout
 - l. Require home to be brought up to minimum star rating at time of home sale

- C. Items considered in work groups but not forwarded to or recorded vote by full group
 - a. Reduce density of SFBAs
 - b. Limitation of wood fired heating device sales
 - c. Only allow NOASH burn exemptions during Stage 1 alerts
 - d. Increase access to wood cutting permit areas year-round
 - e. Increase disbursement of moisture meters
 - f. Recreational fire exemptions
 - g. Increase coverage of district heating system
 - h. Fuel oil boiler O&M programs
 - i. State use of royalty gas
 - j. Vehicle idling measures
 - k. Start ULSD production in Borough
 - l. Diesel awareness around monitors
 - m. Requirement to use ULSD for oil boilers (group picked #1 instead)
 - n. Expanded incentives for conversion to natural gas
 - o. Expanded incentives to offset ULSD transition

- D. Items amended or rejected in final package
 - a. CM #7: amended to ADEC and point source negotiation
 - b. CM #17b: reference to outdoor hydronic heaters deleted
 - c. CM #25: amended to refer only to Stage 2 curtailment periods
 - d. CM #38: rejected: Point Sources sponsor curtailment enforcement teams to supplement staffing during Stage 1 and 2 alerts
 - e. CM #39: rejected: Authorize warrants for inspection of devices being operated during curtailment periods
 - f. CM #52: rejected: Explore potential of suspending operations of minor sources (small point sources, coffee roasters, charbroil grills, small commercial coal fired boilers) during air quality alerts
 - g. CM #53: rejected: Identify possible source-specific control measures to assist in further emissions reduction from small stationary sources
 - h. CM #54: rejected: Implement a heavy-duty diesel inspection and maintenance program to reduce emissions from mobile sources
 - i. CM #55: rejected: Investigate anti-idling technologies and incentives to reduce emissions from mobile sources associated with idling