

Alaska Department of Environmental Conservation



Amendments to: State Air Quality Control Plan

Vol. III: Appendix III.D.7.02

**{Appendix to Volume II. Analysis of Problems, Control Actions;
Section III. Area-wide Pollutant Control Program; D. Particulate
Matter; 7. Fairbanks North Star Borough PM2.5 Control Plan,
Serious Requirements}**

Adopted

November 19, 2019

**Michael J. Dunleavy
Governor**

**Jason W. Brune
Commissioner**

(This page serves as a placeholder for two-sided copying)

Appendix III.D.7.02

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AIR QUALITY STAKEHOLDERS GROUP

VOTING STAKEHOLDER SEATS				
Group	Stakeholder Seat	Prospective Organization	# of Seats	Criteria
Community Member	Wood Heating Community		2	Reside in the Fairbanks or North Pole Air Quality Control Zone (AQCZ). Rely on wood or pellet as a sole source of heat, use as primary heat source, or supplement on a regular basis. Previously demonstrated interest in the topic. Ability to represent the interests of the wood burning community.
	Electrostatic Precipitator (ESP)		1	Reside in the Fairbanks or North Pole AQCZ. Possess working knowledge of ESPs in residential applications. Previously demonstrated interest in the topic. Ability to represent the interests of ESP installation and use on residential solid fuel burning appliances.
	Coal Heating Community		1	Reside in the Fairbanks or North Pole AQCZ. Rely on coal as primary heat source. Previously demonstrated interest in the topic. Ability to represent the interests of coal heating in a residential or light industrial setting.
	Low-Income Representative		1	Represent low income households. Member of Fairbanks Housing Homeless Coalition. Ability to represent the interests of low income residents.
	Fairbanks Regional Rep.		1	Reside in the Fairbanks AQCZ. Preference given to residents located in a hot spot within the Fairbanks AQCZ, e.g. Dale Road or Hamilton Acres area. Previously demonstrated interest in the topic. Ability to represent the interests of effected residents in Fairbanks.
	North Pole Regional Rep.		1	Reside in the North Pole AQCZ. Previously demonstrated interest in the topic. Ability to represent the interests of effected residents in North Pole.
	Senior Representative		1	A resident over the age of 65 within the Fairbanks or North Pole AQCZ. Previously demonstrated interest in the topic. Ability to represent the interests of the senior community.
Refiner	Refinery	Andeavor	1	Employee or board of Andeavor. Authorized to represent interests of Andeavor.
	Refinery	Petro Star Inc.	1	Employee or board of Petro Star Inc. Authorized to represent interests of Petro Star Inc.
Military	Army	Fort Wainwright US Army Garrison	1	Representative of Ft. Wainwright. Authorized to represent the interests of Ft. Wainwright.
	Air Force	Eielson Air Force Base	1	Representative of Eielson Air Force Base. Authorized to represent interests of Eielson Air Force Base.
Point Source	Point Source	University of Alaska Fairbanks (UAF) Power Plant	1	Employee or board of UAF. Authorized to represent the interests of UAF Power Plant.
	Point Source	Golden Valley Electric Association (GVEA) Zehnder Facility	1	Employee or board of GVEA. Authorized to represent the interests of GVEA Zehnder.
	Point Source	GVEA North Pole Power Plant	1	Employee or board of GVEA. Authorized to represent the interests of GVEA North Pole.
	Point Source	Doyon Utilities	1	Employee or board of Doyon Utilities. Authorized to represent the interests of Doyon Utilities.
	Point Source	Aurora Energy, LLC.	1	Employee or board of Aurora Energy LLC. Authorized to represent the interests of Aurora Energy LLC.
Industry	Business Community	Greater Fairbanks Chamber of Commerce	1	Member of the Greater Fairbanks Chamber of Commerce. Authorized to represent the interests of the Greater Fairbanks Chamber of Commerce.
	Real Estate Community	Greater Fairbanks Board of Realtors	1	Member of the Greater Fairbanks Board of Realtors. Authorized to represent interests of the Greater Fairbanks Board of Realtors.
	Business Community	Downtown Association Fairbanks	1	Member of the Downtown Association Fairbanks. Authorized to represent the interests of Downtown Association Fairbanks.
	Business Community	Fairbanks Economic Development Corporation (FEDC)	1	Member of FEDC. Authorized to represent the interests of FEDC.
	Natural Gas Industry	Interior Gas Utility (IGU)	1	Employee or board of IGU. Authorized to represent the interests of IGU.

VOTING STAKEHOLDER SEATS				
Group	Stakeholder Seat	Prospective Organization	# of Seats	Criteria
Industry Cont.	Tourism Industry	Explore Fairbanks	1	Employee or board of Explore Fairbanks. Authorized to represent the interests of Expore Fairbanks.
	Banking Community		1	Employee or board of banking industry. Ability to represent interest of banking industry.
	Wood Supplier		1	Employee or board of cordwood supply industry. Ability to represent interest of cordwood supply industry.
	Union	Central Labor Union	1	Member or representative of Central Labor Union. Authorized to represent the interest of the Central Labor Union.
	Retail Community		1	Employee or board of local retail company. Ability to represent the interests of retailers. Previously demonstrated interest in the topic.
Academia	Science		1	Documented professional experience in applied sciences relating to chemistry, atmospheric science, or related field. Previously demonstrated interest in the topic.
	Economist		1	Documented professional experience in economics. Previously demonstrated interest in the topic.
Transportation	Transportation	Fairbanks Metropolitan Area Transportation System (FMATS)	1	Employee or board of FMATS. Authorized to represent the interests of FMATS
NGO	Environmental	Citizens for Clean Air (CCA), Fairbanks	1	Member of CCA. Authorized to represent the interests of CCA.
	Environmental	Northern Alaska Environmental Center	1	Employee or board member of Northern Alaska Environmental Center. Authorized to represent the interests of the Northern Alaska Environmental Center.
	Health	American Lung Association (ALA), Fairbanks	1	Member of ALA Fairbanks. Authorized to represent the interests of ALA Fairbanks.

Total Voting Members	33
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Non voting Members	
Group	Stakeholder
Government	ADEC
	FNSB
	FNSB Assembly
	APCC
	EPA

Media	
Group	Stakeholder
Media	Print
	Radio
	TV



AIR QUALITY STAKEHOLDERS GROUP



May 9, 2018

FOR IMMEDIATE RELEASE

Contact: Hannah Cooper, Project Manager

Phone: (907) 452-2185

Email: airquality@investfairbanks.com

CALL FOR APPLICATIONS OPEN FOR THE COMMUNITY AIR QUALITY STAKEHOLDERS GROUP

Fairbanks, AK: A coalition of community partners is requesting applications for an Air Quality Stakeholders Group. The purpose of the Air Quality Stakeholders Group is 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}). In finding solutions to meet these standards, there are a variety of factors to be considered, such as health, economic, and personal property rights that must be addressed. The hope is that the Air Quality Stakeholders Group will represent a cross section of our community and will be professionally facilitated by a third party. Interests identified for representation include community members, industry, businesses, and organizations.

“It is important that the AQ Stakeholders Group represents as broad a cross section of our community as possible to achieve a balanced and viable plan,” said Mayor Kassel. “This group will serve as the community voice to DEC and the EPA on a reasonable path forward towards attainment for our community.”

Fairbanks was designated as a serious nonattainment area for fine particulates (PM_{2.5}) by the EPA in 2017. This designation triggered additional regulations and requirements, which require progressively more stringent controls for our community. Many of these, such as the curtailment of wood burning,

present a unique challenge for our community. The stakeholder process represents the public's opportunity for input in a flexible plan to bring the area into attainment.

Applications for nominations can be found online at fnsb.us, aqfairbanks.com, or investfairbanks.com. Hard copies can be picked up in person at the Fairbanks North Star Borough (FNSB) Mayor's Office, the FNSB Air Quality office, or at Fairbanks Economic Development Corporation (FEDC). Applications are due by Wednesday May 16. They can be submitted via email to airquality@investfairbanks.com or in person at the FNSB Mayor's Office, FNSB Air Quality office, or at FEDC. Applications will be screened to ensure they meet minimum criteria for the seats identified, then sent to the selection committee for consideration. Candidates will be selected on May 18 by a panel consisting of Jim Dodson (FEDC), Mayor Kassel, Mayor Matherly, and Mayor Ward.

For more information, please contact Hannah Cooper at airquality@investfairbanks.com.

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Attached:

- AQ Stakeholders Group Mission Statement
- AQ Stakeholders Application Form
- AQ Stakeholders Selection Process
- AQ Stakeholders List of Available Seats
- AQ Stakeholders Group Proposed Meeting Schedule



AIR QUALITY STAKEHOLDERS GROUP

May 22, 2018

FOR IMMEDIATE RELEASE

Contact: Hannah Cooper, Project Manager
 Phone: (907) 452-2185
 Email: airquality@investfairbanks.com

COMMUNITY AIR QUALITY STAKEHOLDERS GROUP STAKEHOLDER SEAT ANNOUNCEMENT

Fairbanks, AK: A coalition of community partners is assembling an Air Quality Stakeholders 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}). An open call for applications to participate in an Air Quality Stakeholders Group ran from May 9 through May 16. Applications received were reviewed to ensure applicants met applicable criteria for the specific seat they were seeking, and then passed to the selection committee for consideration on May 18. The selection committee consisted of Jim Dodson (FEDC), FNSB Mayor Kassel, Fairbanks Mayor Matherly and North Pole Mayor Ward.

Based on comments received the selection committee added five additional seats bringing the total seats to 38. The selection committee made determinations for 29 seats. The application period for the following seats has been extended until Tuesday May 29 at noon:

- a pellet wood user community member
- North Pole community representative
- cord wood solid fuel supplier
- financial industry representative
- real estate industry representative
- retail industry representative
- Fort Wainwright representative
- Eielson Air Force Base representative
- Interior Gas Utility representative

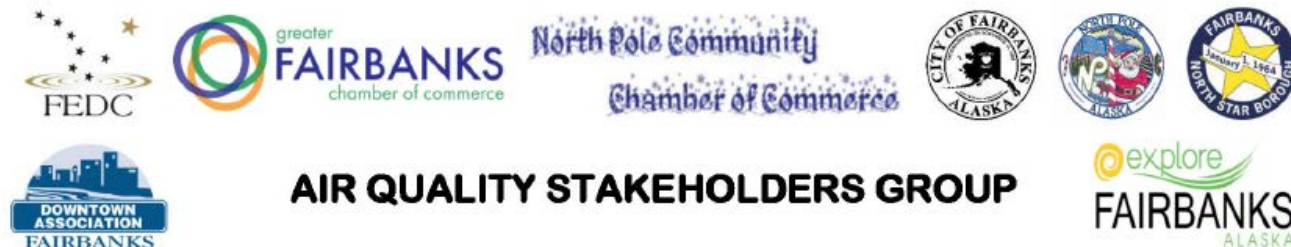
Applications can be picked up at the Fairbanks North Star Borough (FNSB) Mayor's Office, the FNSB Air Quality office, or at Fairbanks Economic Development Corporation (FEDC). Applications may also be found online at AQFairbanks.com. Completed applications can be submitted via email to airquality@investfairbanks.com or in person at the FNSB Mayor's Office, FNSB Air Quality office, or at FEDC. Applications will be screened to ensure they meet minimum criteria for the seats identified, then sent to the selection committee for consideration. Candidates will be selected on or before June 1 by the selection committee.

For more information, please contact Hannah Cooper at airquality@investfairbanks.com.

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Attached:

AQ Stakeholders Group Selection Results
 AQ Stakeholders Group Application



AIR QUALITY STAKEHOLDERS GROUP

May 22, 2018

FOR IMMEDIATE RELEASE

Contact: Hannah Cooper, Project Manager
 Phone: (907) 452-2185
 Email: airquality@investfairbanks.com

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- real estate industry representative
- retail industry representative
- Fort Wainwright representative
- Eielson Air Force Base representative
- Interior Gas Utility representative

Applications can be picked up at the Fairbanks North Star Borough (FNSB) Mayor's Office, the FNSB Air Quality office, or at Fairbanks Economic Development Corporation (FEDC). Applications may also be found online at AQFairbanks.com. Completed applications can be submitted via email to airquality@investfairbanks.com or in person at the FNSB Mayor's Office, FNSB Air Quality office, or at FEDC. Applications will be screened to ensure they meet minimum criteria for the seats identified, then sent to the selection committee for consideration. Candidates will be selected on or before June 1 by the selection committee.

For more information, please contact Hannah Cooper at airquality@investfairbanks.com.

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Attached:

AQ Stakeholders Group Selection Results
 AQ Stakeholders Group Application



AIR QUALITY STAKEHOLDERS GROUP



Stakeholder Selection Process

BACKGROUND

The Clean Air Act established the National Ambient Air Quality Standards (NAAQS) to provide protections to human health and public welfare from air pollution. The Fairbanks area has not met the fine particulate (PM_{2.5}) standard since 2006 and has recorded the highest PM_{2.5} pollution in the country with concentrations up to three times the health based standards. In 2017, the area was designated as a Serious Nonattainment Area. As a result, the community is facing progressively more stringent pollution controls to clean the air in and around Fairbanks, which comes at a significant economic burden to the community.

DETERMINATION OF STAKEHOLDER SEATS

Potential control measures affect a wide range of citizens and entities, such as restricting the use of residential wood heating and requiring utility companies to invest millions of dollars in add-on control technologies. The attached list identifies 33 voting Stakeholder seats to represent a cross section of the community.

FNSB, DEC, and EPA employees directly involved with any aspect of the air quality program are precluded from participating in a voting capacity, as are elected officials and members of the Air Pollution Control Commission. Instead, these individuals will participate as non-voting members to provide technical expertise, administrative support, and actively participate in discussions. Members of the media will not actively participate in group discussions, but will observe and disseminate information to a wider audience.

If any voices from the community are missing from the list and should be considered, or you have comments on the makeup of the group as presented, please contact Hannah Cooper at (907) 452-2185 or email AirQuality@InvestFairbanks.com.

CALL FOR APPLICATIONS

A public call for applications was formally released on May 9, 2018. Applications will be accepted through 5:00 pm on May 16. Extensions to the application process may be considered on a case by case basis. Applications can be found at the following locations:

- Fairbanks Economic Development Corporation (FEDC):
 - 330 Wendell Ave. Ste E, Fairbanks, AK 99701
 - Online at InvestFairbanks.com
- Fairbanks North Star Borough (FNSB) Mayor's office
 - 907 Terminal St. (3rd Floor), Fairbanks, AK 99701
 - Online at fnbs.us
- FNSB Air Quality Office
 - 3175 Peger Rd Fairbanks, AK 99707
 - Online at AQFairbanks.com

Completed applications may be submitted to FEDC, FNSB Mayor's office, FNSB Air Quality office, or by e-mail to AirQuality@InvestFairbanks.com.

Military installations, businesses, associations, boards, and non-profit organizations will receive letters requesting their participation. Community representation will rely on submitted applications. Individuals are only allowed to apply for one stakeholder seat. Please choose the seat that best aligns with your interests and concerns.

SELECTION OF STAKEHOLDER

Applications will be screened to ensure they meet the criteria for the stakeholder seat identified, then will be passed to the selection committee for consideration. The selection committee consists of Jim Dodson (FEDC), FNSB Mayor Kassel, Fairbanks Mayor Matherly and North Pole Mayor Ward, and will convene on May 18. Selected stakeholders will be notified on May 21. For stakeholder seats that require authorization to represent an entity, written authorization by the entity is required to fill the seat. In the event that there are no qualified applicants for a stakeholder seat, the seat will be dropped from the process.

SELECTION OF PROXY

A proxy will be identified by the selection committee from the pool of applicants for the seat. The stakeholder will be able to approve or deny the proxy. If denied, another proxy from the applicant pool will be identified by the selection committee for approval of the stakeholder. In the case that no applicants remain, the stakeholder will submit a proxy for the selection committee to confirm.



AIR QUALITY STAKEHOLDERS GROUP



Mission Statement and Responsibilities

MISSION STATEMENT

The Stakeholder Group's objective is 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}).

RESPONSIBILITIES OF INDIVIDUAL STAKEHOLDERS

- Address the problem and consider possible solutions;
- Speak as one voice for the people or interest you represent;
- Communicate with those you represent between meetings – taking information to them, and bringing their concerns and information back to the Stakeholder Group;
- Consider the broad interests of all Fairbanks North Star Borough residents who may be affected by poor air quality and the range of possible solutions;
- Listen respectfully to all views; and
- Work to find compromises among the Stakeholders Group members.

DEVELOPING AN UNDERSTANDING OF THE ISSUE

This will require members to review and digest information about:

- The conditions producing elevated PM_{2.5} concentrations;
- The emission sources located within the community and their relative contributions;
- The contributions from precursor emissions to elevated concentrations; and
- The control measures available to reduce emissions and their collective impact on concentrations throughout the nonattainment area (i.e., not just at the monitors).

EVALUATION OF SOLUTIONS

The Stakeholder Group is encouraged to request information addressing these issues and to consider controls/solutions that have been identified in ADEC's Best Available Control Measure (BACM) analyses, along with controls/solutions that have not been

identified in the BACM analysis. The Stakeholder Group will be required to develop and adopt a set of ground rules to guide their discussion and decision-making process.

RECOMMENDATIONS

The findings of the Stakeholder Group will 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. Control measures will be prioritized by overall support and effectiveness, i.e. the controls listed first would have the most support from the Stakeholder Group and show the highest relative contribution towards attainment of the ambient PM_{2.5} standards. The Stakeholder Group should operate with the goal of reaching consensus, meaning that all members could support or live with the Stakeholder Group recommendations.

Draft rules for consideration and adoption at the first meeting:

- Official consensus will be defined as the total number of individual voting stakeholders in attendance minus 1.
- In the event the Stakeholder Group cannot meet official consensus, a two thirds majority of stakeholders in attendance will be required and the dissenting opinion(s) will be noted and included as part of the Stakeholder Group's final recommendations.

COMMITMENTS

The Stakeholder Group is expected to initiate meetings the week of June 3, 2018. The meeting schedule will consist of five to six full meetings which will run from 8:00 am to 5:00 pm. Meeting dates are provided on the attached schedule. Working groups will be established at the first full meeting and will convene between the full meetings. Regular meetings of the Stakeholder Group will cease after the recommendations are made. Stakeholders will be required to have a proxy and between the two will be allowed up to one (1) excused absence from the full meetings, after which an alternate stakeholder will be identified. Teleconferencing and videoconferencing will be available to accommodate stakeholder's schedules.

Fairbanks Air Quality Stakeholders Group Meeting Summary – June 5, 2018

The first meeting of the Air Quality Stakeholders Group was held on June 5, 2018, in the BP Design Theater at the University of Alaska Fairbanks. The meeting was attended by about 55 stakeholders, including primary and proxy members.

Mission and Ground Rules

Following the introduction of members, facilitator Brian Rogers reviewed the mission and ground rules for the group.

The mission of the Stakeholders Group is:

...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}).

The rules for participants were summarized as follows:

Be present. Put cell phones on silent or turn them off and put them away. If you must take a call, please leave the room.

Be respectful. One person at a time will be recognized to speak. Let the person speaking be heard; please don't interrupt or hold side conversations in the room. We expect disagreements; when you disagree, please do so without being disagreeable.

Be efficient. When you are the speaker, please minimize repetition of points already made by yourself or others. Use the microphone so all can hear you.

Stakeholders may have a proxy and between the two will be allowed up to one excused absence from the full meetings, after which an alternate stakeholder will be identified. Proxies are welcome to attend meetings as observers but can only participate when the primary participant is absent.

Voting will be using the *Instant Insights* response units to ensure that all participants who want to vote can do so and be counted.

- Official consensus will be defined as the total number of individual voting stakeholders in attendance minus 1.
- In the event the Stakeholders Group cannot meet official consensus, a two thirds super-majority of stakeholders in attendance will be required and the dissenting opinion(s) will be noted and included as part of the Stakeholders Group final recommendations.
- If neither consensus nor super-majority are reached, individual control measure recommendations and votes in favor/against will be provided to ADEC and EPA without a Stakeholders Group recommendation.

Knowledge Assessment

Stakeholders took an interactive knowledge assessment to assess the group's understanding of the PM_{2.5} air quality issues facing the community, including the timeline and next steps in the EPA's regulatory process triggered by Fairbanks' designation as a serious nonattainment area. Questions were based on the draft *Possible Concepts and Potential Approaches for development of the Fairbanks North Star Borough Nonattainment Area Serious State Implementation Plan*, released in March by Alaska Department of Environmental Conservation (ADEC). Overall, the level of understanding was high. Questions and results of the knowledge assessment are available on the

Stakeholders Group web page (<http://fnsb.us/transportation/Pages/stakeholders.aspx>).

One of just two questions missed by the majority of participants was whether increased availability of natural gas could help the community reach attainment by 2019. While natural gas will help reduce PM2.5 emissions, it will not be widely available soon enough to meet the EPA deadline for attainment. The other question missed by a slim majority of stakeholders was the number of households in the nonattainment area with a wood device as the sole heating source. The correct answer is 0 to 5% based on Fairbanks Home Heating surveys from 2011-2015.

Overview of EPA Regulatory Process

Following the assessment, Cindy Heil of ADEC provided a presentation that covered the EPA regulatory process, how we got here, technical information, overview of “best available control measures”, next steps, recommended approaches, and consequences of not meeting attainment. Slides are available on the Stakeholders Group web page.

Questions and Suggestions from Stakeholders

After lunch, stakeholders had an opportunity to ask questions and suggest ideas for alternative control measures to be considered by the group. Stakeholder questions and comments covered a wide variety of topics, including:

- Is there an ability to offer “trade offs” between control measures (Response: no formal process for offering trade offs; we have to provide justification. Quantitative data helps. DEC will try to work with whatever Stakeholders Group gives them.)
- Has DEC looked at what measures have been implemented elsewhere in the circumpolar artic? (Response: No, will look into it.)
- Energy efficiency is low hanging fruit. (Comment: We need to provide data to show contribution to attainment.)
- What are the constraints on funding these control measures? (Response: Funding is challenging. Options include device tax, surcharge, which can go to fund program efforts. There is no funding from the state. There may be measures that are eligible for grants in the future, but we must show data to be competitive)
- How did other communities get to attainment? Are there online sources of information? What are the differences in Fairbanks? (Response: The SIP has a lot of that type of information in it and data we can share.)
- Are there some measures approved by EPA already? (Response: Not exactly. We need to look at all 71 control measures with fresh eyes.)
- What are the strategies we are looking at; it’s important to look at what motivates people to change how they do things. How has the burn ban been working? What has helped it work? Or why is it not working? How can it be enforced? (Answers: Just as in the IM program, some people will comply, and some will put energy into how to evade the program. We may need different messaging. We are, working with Duke university at SIP workshop. We need to identify key behaviors, remove road blocks to make it easier for people to comply, and figure out what messaging works with the community.
- How do we do enforcement? What do you know about the problem causers? We need to target the outliers: ~100 devices/burners that are not complying with the burn bans. What is the number? (Response: We don’t know because we can only look at houses that are visible from a public driving way. We don’t know if that is a representative sample. We don’t know who has a wood stove and who doesn’t. We can’t answer that because we don’t have registration program. We can know exactly about point sources, because there are just a few of them, and they are regulated, but not the community sources. We know that some people are not honest in their responses to the home heating surveys. We don’t know if

June 5, 2018 Meeting Summary

- saturation is an issue. To be blunt: [DEC is] being asked for data, results, information that we don't have and don't have a way to get.)
- Comment: This is a community-based group; part of our solution should be a part of continuing this community effort to increase success.
 - What happened with the task force a few years ago separating Fairbanks and North Pole so funds could be more directed to North Pole? Fairbanks should reach attainment soon. It doesn't make sense if Fairbanks doesn't need [more control measures] and the real problem is North Pole. (Response: DEC pushed hard and filed formally requesting the split, but they are now working on letter to EPA to halt (not withdraw) the request to split the nonattainment area. The state office building site in Fairbanks is not a representative or maximum site. We must move the monitor, or come up with new one, which is very expensive and takes time. The State doesn't have the money and resources to put in a new monitor. DEC thinks the area will eventually be split, but it can't be split in time to meet the deadline. It will take one year to site the monitor and then you will need three years of data from the new monitor to get a new design value. In the meantime, grants can be targeted to North Pole. It is also likely for Fairbanks to come into attainment based on the new design value, since it will be in an area with higher emissions.)
 - In regard to 2:1 emissions, is that applied to small points? (Response: Only majors.)
 - Tax assessors are known to look in windows to find out more about a property. Can you do the same to determine who has a wood stove? (Response: [Air Quality program personnel] can't speak for assessments. They only look from public rights-of-way.)
 - The problem in North Pole is the 5-mile area at the bottom of the freezer. Is there any special attention there? Can we look at areas like that and propose special measures for it? (Response: Yes. The sniffer program/saturation study: see where boundaries are. The saturation study and all data are online on the DEC website. We can also address through things like the change out program and enforcement.)
 - How can we be confident that we are getting closer to the goal? Looking at trending HDD and price of heating oil, along with 3-year average, I am not certain we are moving toward attainment. (Response: The monitor is impacted by weather which we have no control over. That is why we have contingency measures. When we try to control for weather in the data, emissions appear to go down. The science is not perfect. We can only look at what is monitored and at models and trends.)
 - [Question about special purpose monitors...] Some areas of Fairbanks are still a serious problem. (Response: All monitoring data is posted online. Special purpose monitors are showing higher results. The saturation study showed the issues in North Pole were a mosaic or patchwork. New technologies coming out regarding low cost monitoring. We don't know how these fits with EPA regulations.)
 - Scientists at UAF using drones, working on circumpolar air quality project. What is the possibility of using drones to test air quality, compartmentalize areas, focus on smaller areas, sub-communities. (Response from DEC: Everything is on the table. Response from academic stakeholder: Drones are not used a lot because of flight regulations. UAF is hoping to get flight permission.)
 - What happens if federal PM_{2.5} limit changes to 25 ppm. Does our SIP lock us in at 35ppm? Do we think they would go to 25 ppm? (Response: If regulations change to 25, we do 25. This would make a lot of other places have violations. We don't know if they will go there. At the [recent] air quality conference, Cindy from DEC was "blown away" by the number of studies on PM_{2.5}. It is the major pollutant of interest right now. The original scientific recommendation was lower than 35, but EPA is still at 35 ppm.)

June 5, 2018 Meeting Summary

- Please clarify process for this group to succeed. A 2/3 vote on control measures? What tools do we have to look at technical and economic feasibility? Do we have data on what is behind numbers for community economic costs? Those numbers are large, but maybe they are low. (Response from facilitator: Use other stakeholders as a resource. For example, get cost estimates from those who would be affected in the room. Response from DEC: For BACT costs, those are from a case-by-case review of point sources. We prefer specific vendor cost quotes, but we didn't get them. Best we could come up with based on data and tools we have.)
- How do we weigh public cost of private sector burdens? (Response from facilitator: Discuss in working groups. Some control measures have 2 and 3 order impacts, e.g. ULSD price inelasticity. Response from stakeholder: Cross pollination in working groups is good. E.g. Use of UAV drones to find outliers – biggest emitters.)
- Walk us through MSM and BACT some more. Initial cost estimate for BACT was \$54 million between all the point sources. The feedback is that that could be low. So, we have work there to do, but also I heard for the serious SIP we need to do the MSM through the end of the year. For precursors, could they go beyond SO₂? (Responses: We will have to look at same data that we did for the BACT for the MSM for all point sources and will get comments from EPA. Precursors need to be reevaluated.)
- No matter what you burn, energy efficiency helps everyone. Using less energy period. We should consider having an energy efficiency working group. (Response from stakeholder: One of EPA recommendations was weatherization. We don't know how energy efficient homes are. Look at data from Home Energy Rebate program and Interior Weatherization. Can help with economic drivers (of burning wood): less money spent regardless of what fuel source if energy efficiency is increased. Cold Climate ARIS database has a lot of data.)
- We should also have an education working group.
- What is the strategy for funding? What is our plan? Maybe a working group on funding, or discussion from panel on funding options or resources. (Responses: The costs [to the point sources] may be passed onto consumers. It's difficult to get money from the legislature due to the current fiscal crisis. There are targeted air shed grants available.)
- Are there models from other communities? What is the maximum number of wood stoves we can have to stay below the emissions threshold? Second question: We've seen an increase in people burning. Is it likely the boundaries of the nonattainment area will change in the near future in response to people moving outside the area to burn? (Response from EPA: We need better survey data to say who has wood stoves [and what the saturation limit is]. Our building codes are not strong in Fairbanks. We need to make [] mandatory. Response from stakeholder: We have building codes in city, but not outside the city. The Cold Climate Housing Research Center has been working on statewide energy efficiency code. Most builders are following AHFC codes to be eligible for AHFC funding. Borough has zoning powers. In the borough you need to have ten acres to install new wood stove/burner.)
- We have talked about enforcement, but what about the incentive approach? (Responses: Look at "behavioral economics." Wood stove change out is an incentive program that has been successful. Homeowner gets more money for replacing a dirtier system. We can't ignore enforcement, but we are willing to try more ideas for incentives.)
- We may have passed the incentive stage. [Measures] cannot be voluntary [if we are going to solve this]. (Responses: This group is not excluded from thinking about incentives. Also, if you don't know how well something will work, making a measure voluntary could be a good first step or stage. That doesn't mean we can't consider it. Example: Having a program to

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- inspect wood stoves and give homeowners who pass a sign they can put in their window or yard saying they are doing everything right. It could have an impact.)
- We are focusing on what we're losing - our lifestyle, ways to heat our home, etc. I want to challenge us to think as a community about what are we gaining. Why do we live here? Every community has costs, some costs go up. We also get benefits. Focus on the reality of why we are choosing to live here in Fairbanks, what we want and what we are here for; discussion involves grief work, strategies to affirm values.
 - Could we get more funding for weatherization, through Interior Weatherization? (Response: We have limited resources, so it's great to partner with other organizations, team up. It takes additional resources to actually make that happen, so the borough will try to take a look.)
 - What counts in the SIP: programs with permanent aspects (like wood stove change out)? (Responses: Yes, deed restrictions, quantify reductions, things that can be accounted for in modeling and SIP. New reductions can't just offset another measure; can't be voluntary if we are going to count it, even though voluntary measures are still important. With 2013, we have a new baseline year, so change outs before that are part of the baseline. Can't count them.)

Stakeholders had 17 suggestions for potential new or alternative control measures. Each suggestion as well as those emailed by the public to airquality@investfairbanks.com will be reviewed by one of the work groups for possible inclusion in the SIP. Stakeholder suggestions:

- GVEA Emergency Tariff for electric heat during air quality exceedances
- Only sell dry firewood (Similar to 32)
- Require Electrostatic Precipitators
- Energy efficiency rebuild Incentive
- Limited Operating Schedules for Manufacturers
- Diesel Awareness around Monitors
- Tax Credits for Device Maintenance
- Clean Air Neighborhood Program
- C-PACE for Alaska
- Renewable energy loan on property tax
- Third party group between community and agencies
- Create Energy Policy for Alaska
- Dry for Wet Wood Exchange Program
- Increasing access year-round for wood cutting permit areas
- Easing home loan process for nine (?) star efficient homes
- Increasing disbursement of moisture meters
- Borrowing money on high energy center

Work Groups

Stakeholders broke into work groups for the remainder of the afternoon, choosing among: Point Sources, Wood Smoke Curtailment and Wood Space Heating Devices, Other Heating (Oil, Gas, Coal), Energy Efficiency, Education, Funding, Regulatory and Monitoring Process. Members of each group reported back to the full group with a summary of the discussion.

Adjourn

The meeting adjourned by 5:00 p.m.

Fairbanks Air Quality Stakeholders Group Meeting Summary – July 20, 2018

The second meeting of the Air Quality Stakeholders Group was held on July 20, 2018, in the BP Design Theater at the University of Alaska Fairbanks.

Summary of Work Groups & Emerging Themes

The meeting opened with an overview by facilitator Brian Rogers of the three work group meetings that took place from July 13 to 19 (Point Sources, Wood Smoke Curtailment, and Wood Devices). Notes from the work group meetings will be available on the Stakeholders Group web page (<http://fnsb.us/transportation/Pages/stakeholders.aspx>). Two of the work groups (Wood Smoke Curtailment and Wood Devices) used Instant Insights polling to provide feedback on the control measures they considered. The polling was used to get a sense of which control measures implemented in other nonattainment areas need modification to work in Fairbanks and which new ideas proposed by stakeholders or the public have the most promise or support. Polling results will be used to prioritize control measures for further discussion and analysis. The polling results are included with the work group meeting notes.

A few main points or themes that came up in one or more work groups:

- EPA may be open to emission offset/remediation program instead of BACT
- Need for registration program to know the number and type of devices in use
- Means of targeting wood burning devices that do not have waivers (the 97% of stoves we don't know anything about)
- ULSD concerns over price elasticity: if price of heating oil rises will more people switch to burning wood?
- Interest in a new or expanded change out program
- Lack of building code promoting energy efficiency
- Recognition program for good responsible wood burners

Presentation: FNSB Air Quality programs

Nick Czarnecki from FNSB gave a presentation on the borough's Air Quality Program – what initiatives they have implemented and how they have worked. A copy of the presentation is available on the Stakeholders Group web page. Some highlights:

- Sierra Research phone survey data provides an initial inventory
- Wood stove change out program: \$8.8 million spent to date (device change out only, not including staff time) \$5.5 million left from two different grants.
- Cut cost effectiveness almost in half in the first two quarters of 2018
- Emission reductions of 96.36 tons per year, 0.43 winter season emissions (tons/day)
- Wood stove change outs alone are not going to get us to the 80% reduction we need in North Pole.
- Looked at compliance rate: 50-89%, but data based on change out program participants, so not representative
- Staff would need to be greatly increased for full coverage
- Outreach efforts have been broad. FNSB spends significant amount on outreach.
- When we remove meteorology from the data, we see a decrease in emissions at the North Pole

July 20, 2018 Meeting Summary

Work Group Session 1

Four of the work groups met in break out sessions from 10:00 am to 11:50 am. For three groups (Point Sources, Wood Devices, and Wood Smoke Curtailment) it was their second meeting. The Mobile Sources & Other (Oil/Coal) Space Heating met for the first time and completed the prioritization polling that other groups did at their first meetings.

Governor Walker

Governor Walker addressed the stakeholders over lunch. He thanked them for their participation and expressed support for people talking to each other rather than about each other in an attempt to find local solutions to a local problem. He pledged to take a close look at anything that results from this collaborative process.

Update from Alaska DEC

After lunch, Cindy Heil of ADEC provided an update on control measures

- Commercial sector analysis completed and draft sent to EPA. It includes measures for coffee roasting, char broiling, and garbage incinerations
- Regarding MSM, have found out we need to look at all serious SIPs for all pollutants (not just PM_{2.5}).

Work Group Session 2

The remaining four work groups met in breakout sessions during the afternoon (Education, Energy Efficiency, Funding, Regulatory Process/Monitoring). Discussion notes will be posted on the Stakeholders Group page.

Plenary: Recap and Next Steps

In response to the home heating ballot initiative, which came up in discussion during two of the afternoon work groups (Education and Regulatory Process/Monitoring), some members asked the full group to consider taking a position in opposition to the referendum, which would greatly limit the Borough's ability to seek local solutions to the PM_{2.5} air quality issue if it passes. After discussion, the question was put up for a vote using the electronic keypads. The results were 71% yes, 11% no 18% abstain. After clarification on what an abstention means and what a no vote means, a revote was taken and the final vote was 73% yes, 4% no, 23% abstain, so with only 1 no vote, the measure passed. [This effort is currently on hold pending a legal opinion on whether taking a position would violate Alaska Public Offices Commission (APOC) rules.]

Before adjourning, plans for upcoming meetings and presentations were reviewed. These include an Energy Efficiency Brown Bag Lunch at Cold Climate Housing Research Center (CCHRC). The FNSB Air Quality Conference in September, and a presentation on UAF's drone program.

Adjourn

The meeting adjourned at 4:00 p.m.

Fairbanks Air Quality Stakeholders Group Meeting Summary – August 17, 2018

The third meeting of the Air Quality Stakeholders Group was held on July 20, 2018, in the BP Design Theater at the University of Alaska Fairbanks.

Presentation: Quantification of Emission Reductions from “Top 14” Control Measures

Nick Czarnecki, the FNSB Air Quality Manager, gave a presentation on the results of a PM_{2.5} emission reduction model by Sierra Research that looked at 14 control measures stakeholders had prioritized for discussion. A copy of the presentation is available on the Stakeholders Group web page. The results are based on a set of assumptions outlined in the presentation, which are “biased high.” The model results also do not account for overlap, meaning emission reductions that would be captured by more than one control measure are double counted. For this reason, it is not possible to add up to add up the potential reductions from different control measures to get an overall total. The overlap could reduce the overall benefits being modeled by as much as 50%. Modeling was based on values from the emission inventory. Actual emissions reductions will depend on how control measures are implemented and what the compliance rate is. For most control measures a compliance rate of 50 percent was assumed.

With those caveats, the model shows the following potential emission reductions from the 14 control measures it looked at. Again, it is not possible to add these numbers together to get an overall reduction total due to double counting. (The reductions shown below in PM_{2.5} tons per episode day, except where noted.)

- Curtailment: 0.45 (20% compliance) or 1.14 (50% compliance)
Control measures modeled: Registration (M22, M19), GVEA Tariff (S1)
- Future Restrictions: 0.01
Control measures modeled: Permits (M3), Installation Restrictions (MR5, MR8)
- Sulfur Dioxide: 3.55 tons reduction in sulfur dioxide per episode day AND 0.03 tons increase in PM_{2.5} per episode day (due to people switching to wood because of ULSD price sensitivity). Sulfur dioxide is converted to PM_{2.5} at a rate of 5 or 6 to 1, so PM_{2.5} reductions should be 1/5 to 1/6 the number of tons of sulfur dioxide emissions.
Control measures modeled: ULSD (M51) (100% compliance), Boiler Upgrades (E3)
- Removal of Sold Fuel Burning Appliances (SFBA): 0.69
Control measures modeled (Registration (M22), Removal (M16, P9), Prohibit Use (M49)
- Dry Wood: 0.32
Control measures modeled: Required Sales (M31), Exchange (S13)
- Retrofit Control Devices: 0.62
Control measures modeled: Require ESP (S3)

To come into compliance, we need to reduce PM_{2.5} by 80% -- or about 2.1 tons per day. After correcting for double counting (by reducing reductions by 50%) and implementation (25%), the reductions above would get us about 40% of the way to attainment.

Stakeholder questions and comments:

- Could get a 30% reduction in heating demand from weatherization which would reduce emissions. (Response: We don't have numbers but are working on it. Some key numbers are how that program is defined and implemented. If we target weatherization to only those that

- heat with solid fuel devices, the reduction would be greater than a broad program that includes every household in the borough.)
- Why is ULSD compliance modeled at 100%? (Response: It can be done on the supply side by restricting what is sold.)
 - No sales allowed of #1 and #2? What about outside the nonattainment area? (Response: That hasn't been determined.)
 - How much is ULSD going to cost? Could that money be used for something else? (Response: Cost of ULSD could range from 3 cents to 1 dollar a gallon more than heating oil, depending on market conditions. It's currently in the 30 to 40 cent range.)
 - Re. removal of SFBA: Did you assume it was straight removal with no replacement? (Response: Date certain removal. Have to check with Tom from Sierra Research. Think they assumed some would replace with EPA certified stoves but some won't replace with another SFBA. Tom: Measure 16, we modeled as people moving from wood stoves to heating oil. Benefits would be less if they moved to certified stoves)
 - Volatile Organic Compounds (VOC) numbers are pretty large. Should we include it in Stakeholder Group recommendations? (Response: We recommend not focusing on other pollutants when we have to focus on PM2.5 issues, even though there are plenty of issues with VOCs.)
 - Will addressing PM2.5 help VOC numbers? (Response: Yes)
 - If using ULSD is mandated, it will factor into everybody's budget, might make some people use more wood. (Response: Yes. Joe Little from UAF has looked at cross-price elasticity. He gave a presentation to the Mobile Sources group on it. We included his assumptions in the model, using 0.2 as a coefficient of price sensitivity. Dr. Little's presentation is on the Stakeholder's Group page.)
 - If this group is only looking at PM2.5, why would we consider ULSD if it doesn't move the needle on PM2.5? (Response: PM2.5 is not just a primary pollutant from the stack; when it hits the monitors, it is comprised of secondary PM2.5 which includes NOX, SOX, ammonia, and what other precursors contribute to the problem.)
 - 20-50% compliance numbers are depressing. Seeing other people doing it helps, and you are now more likely to. Are there any other resources or other communities who can help us?
 - With ULSD, it also has price sensitivity, electrical consumption, and also has lower BTUs. You have to burn more to get same heat output. (Response: Model included price sensitivity of ULSD: small "negative reduction" (i.e. increase) in PM2.5. Re. efficiency of stoves: More efficient burn, saves on maintenance because it puts out less emissions than #1 or #2 heating oil. PM2.5 price elasticity effect was very small. We call it a wash. Re. electrical consumption: We did not factor it in.)

Presentation: Consequences of failure, Alaska DEC

Cindy Heil of ADEC provided an overview and timeline for federal sanctions that will be imposed on the community if a complete and approvable State Implementation Plan (SIP) is not submitted pm time. Some highlights:

Sanctions

- Sanction Clock starts when EPA determines there has been failure to submit a SIP
 - A SIP was submitted and found to be incomplete
 - A SIP has been found complete but is disapproved or partially disapproved
 - A failure to implement a committed measure in an approved SIP
- Three Sanction Clocks
 - 18-months –until first sanction –likely 2:1 offsets
 - 24-months –until second sanction –likely federal highway funds

- 24-months-until Federal Implementation Plan
- Clocks may reset or pause depending on issue and remedy
- These sanctions are in the Clean Air Act

Impacts

- 2:1 offsets
 - Automatically goes into effect 18 months after the effective date of EPA finding.
 - Affects any air quality permitting action within the nonattainment area.
 - Any new emissions would have to remove twice the amount of existing emissions. This is very difficult to achieve and likely stymie any new growth or make upgrades more difficult and expensive.
- Federal Highway funds
 - Over the past 4 years, the average annual investment of federal highway funds into road projects within the Non-attainment Area boundary has been \$37 million. This number includes both DOT and FMATS projects, and excludes projects funded with CMAQ and HSIP funds.
- Potential Military impacts
 - If solution is not found for attainment, difficult to impossible to add new grown to base.
 - Ft. Wainwright is entering into a “zero growth posture” which could have implications for the future.
- Federal Implementation Plan (FIP)
 - EPA promulgates FIPs to help a states or tribes attain NAAQS.
 - FIPs correct all or a portion of any deficiencies in a SIP.
 - FIPs consists of enforceable control measures or emission limitations.
 - The control measures or techniques could include economic incentives such as auctions, emission allowances or marketable permits (EPA, 2017).
 - FIP likely to be less flexible than a SIP.

Timeline Scenarios –Worst Case Estimates for first Sanction

Reason	Start Date	Effective Date	Remedy
Failure to Submit	Jan/Feb 2019	June 2020	Submit SIP
SIP Incomplete	July 2019	December 2020	Submit Deficiencies
SIP Un-approvable (assuming SIP submitted complete)	January 2021 (assumes 6 months+ 18 months review)	July 2022	Submit Deficiencies

Stakeholder questions and comments:

- Re. 2:1 offsets: Where can companies get the offsets? (Response: They could buy them, but right now there is no program to do that.)
- Re. Federal highway fund sanctions: Does it apply to 100 percent of funds? (Response: It only applies to projects in the non-attainment and does not apply to safety projects. Hard to project which projects. Currently we get about \$37 million per year. They will cut off funds for projects even if you have started project already.
- There is an indirect impact (from cut in Federal highway dollars) from companies that can’t do their work. It trickles down.
- Cindy Heil (EPA): The Federal Highway money comes into state and they allocate it. They are going to spend it somewhere else if they can’t spend it on projects in the nonattainment area. Fairbanks may not get it back.

- Jackson Fox (FMATS): Alaska gets \$500 million every year for the state. How much of that is being spent in nonattainment area? Over the last four years it has been \$37 million on average. Under the sanctions clock, we could see cuts in mid-2021.
- [Something about sanctions in Montana.] Is it an empty threat? (Response: It is real. It has been done. Remember the Dowling Road project in Anchorage. Conformity was not met, and funding was cut quickly.)
- Ft. Wainwright has already adopted a “zero growth” posture.
- Cindy Heil (EPA): Incompleteness is our biggest worry. Not having sulfur reductions, could make us a target for an incomplete SIP. We have to have a sulfur strategy. BACM needs a strong argument if we don’t use ULSD.
- Re. sulfur: How do you define completeness? (Response: Under moderate SIP, DEC submitted a complete but not approvable SIP. Did not have curtailment in it -- had elements but did not have curtailment plan. We talk to EPA a lot, but they are not going to tell us what the answer is that they are looking for. They are pushing very hard on ULSD. In their minds it should be put in period. We don’t necessarily agree with that. Lots of creative ways we could include ULSD down the road for it to be there and meet the requirements. In 2024, we could have natural gas. There are creative solutions: look at timelines, phasing in controls, tiers.)
- Brian Rogers (Facilitator): We could move from #2 to #1 for point sources and home heating, which would reduce sulfur by 2/3, and include ULSD by 2024 as contingency. It would have much smaller economic impact compared to ULSD.
- Cindy Heil (EPA): A contingency measure should be more painful than a BACM or MSM. It has to be put into regulations and in place and ready to turn on should you fail to attain or show progress.
- Members of the wood burning community brought up that in Mat-Su, they (DEC?) had a memorandum of agreement with EPA. The wood burning community felt supported. (Response: Their issue is different. It was tabled. MOU might come back up in fall.)
- We have much to learn from other people solutions. Is it our size is that a factor in implementing some things? (Response: Size and climate, revenue, population, all are challenges with certain control measures.)
- Population size impacts economic feasibility. (Response: That will have to be taken into account. We haven’t looked at that yet. We are looking at technological feasibility first. It is hard to do economic feasibility if you don’t know what [a control measure] looks like or what the timeline is. If you put it out further, it changes the feasibility.)
- How vulnerable is EPA to lawsuits? (Response: It happens all the time. Court orders change the timeline.)
- Question about splitting nonattainment area: The whole area will be affected by the sanctions but the area causing the problem is small and, from an engineering standpoint, you shouldn’t address the whole area the same way. Focus your resources. (Response: Some might disagree with you. Some areas in Fairbanks are hot spots. The monitor in downtown Fairbanks could show attainment, but the regulations say you must have a high-impact site. If we split the nonattainment area, we wouldn’t have a high-impact spot. We need to find one and collect 3 years of data to get a design value, then we could move on with the paused split request. If split, you would need two SIPs too. We are willing to do that. We’re trying to get a maximum impact site in Fairbanks, three years of data, and design value before split can be official.)
- Can EPA make sanctions retroactive? (Response: No. EPA must follow a formal process; issue a notice in Federal Register of their finding which identifies specifically this issue, how to correct the issues and an effective date. The sanction clock will only start upon that issued effective date.)
- Has the borough considered creating zones around hot spots for more targeted curtailment? (Response: They could try. We have three zones already in the moderate SIP: North Pole,

Fairbanks, and Goldstream. To go smaller would be interesting to document to show attainment and strategies, but we're open to discussion.

- We should focus money on criteria in targeted areas.
- Budget issues are a lot of the reason why we can't get a Fairbanks monitor, because we are focusing resources on SIP. There are not enough funds to do everything at the same time. (Response: Partly. We need a monitor, a saturation study in NP. It's \$400,000 for the study. We can't afford a study in Fairbanks. We are working with EPA to identify where a maximum impact site would go. We hope to put up something this winter. Funding is a challenge. The state general fund pays for zero monitoring. Grants pay for it.)
- Can we get an airshed grant for monitoring? (Response: No. Only available for top 5 areas in country. Once you qualify, it gets competitive. There are extreme restrictions on this money. We have to show emission reductions. Nick has to document everything to show emission reductions, not monitoring.)
- More data would help prove emission reductions. ULSD is equal to emissions of natural gas. If we got natural gas in tomorrow, we lack infrastructure and each individual would have to convert (airshed grant would pay), but it takes time.
- Could you model the emissions reduction for going from heating oil #2 to #1? (Response: Yes. We modeled #2 to ULSD. We could come back with those numbers.)
- What about ULSD to subset instead of entire borough. (Response: Endeavor thinks they have the capacity to cover all FNSB. ULSD could be targeted to a subset, however, that subset would then have the cost increase, and instead of the cost spread across the entire area. Petro-star can make it in Valdez. It appears one of the biggest costs is transportation.)
- If we split the nonattainment area, would the serious impacts only go to one area? (Response: It is too late to avoid 'serious' impacts as the area has already been reclassified as serious. However, splitting the area could avoid the next level of severity, which is if the area fails to meet the 2024 attainment year, then the area must develop a 5% plan. If there was a split and the Fairbanks portion attained the standard and the North Pole portion did not, only the North Pole portion would be subject to the 5% plan.
- Can you use an offset to fund the monitoring effort? (Response: No, they won't give you credit in a SIP, but it would give you long-term planning. It might be a worthwhile investment, especially if it could show attainment by 2024 to support a split.)
- Where would you put one? (Response: Hamilton acres area -- realistically mid-40 range of design value. We strongly encourage you to talk about the split, but don't get too far down into the details because we have the immediate timeline and sanctions. This would be a tool 5 years from now, but not what we need to decide now.)
- We don't want hot spots moving around. Things could get worse. We need to look long term. Don't want to chase some bad cloud for years. (Response: Once we reach attainment that is only the start, there will then need to be a maintenance plan developed that will demonstrate how the area will maintain its air quality even the hot spots.)
- If borough couldn't enforce curtailment measures, would curtailment be enforced by the state? What happens to measures in the SIP? (Response: If the borough can't, DEC will do it using the powers that it has. Chapter 11 of the SIP outlines borough program and state program.)
- Is education in the SIP? Since they are not enforceable, are they not in the SIP? (Response: Not exactly. Some of what the borough is doing is considered voluntary and can be in the SIP, but only gets a certain weight.)

Creative Solutions Discussion

- Should regulate stack height and take the caps off. That will extend emission height by ten feet. At the clinic on Peger road, the vents are too low. During an inversion that smoke comes out very close to the ground. (Ross Adkins)

- Moving electrical generation out of the attainment zone, especially for plants reaching the end of their life. (Karl Hough)
- Electrical subsidy for anyone that will turn off their stoves when the flag goes up. (Karl Hough)
- Low emission wood stove retrofit technology from New Zealand, IntensiFire (<http://intensifire.co.nz/>), endorsed by Brookhaven Laboratories. Fire burns hotter resulting in more complete combustion, greater transfer of heat to the home, and cleaner emissions. (Dan Givens)
- Presentation by Siemens next week to talk about what they could provide the community and Anchorage Combined Heat and Power project. Tuesday August 21st, 4pm, at the IGU board meeting in the City Council chambers and live streamed at city or borough site. (Patrice Lee)
- Retrofit devices on stack. (Jennifer Schmidt)
- Idea discussed at Energy Efficiency brown bag lunch: Targeted “home energy rebate”-like program would result in permanent reduction in energy consumption of around 30%. Cost for 300 homes in North Pole would be about \$2 million. Scott Waterman optimistic that if the borough provided the money, AHFC could gear up to help. (John Davies)
- Energy efficiency would decrease fuel bill and allow us to look at other heat sources that would not have been as economically competitive before. (Karl Hough)
- Wood kiln operated by steam from Aurora’s District Heat system. We can dry wood to under 20% in a day, at .32 tons per day. Aurora is considering this option. There are some logistical challenges, but they are open to discussion. (Dave Fish)
- Wood Burners Assistance Program: technical assistance to help people burn well, so many steps that are important in being efficient, hands on works best. (Dr. Owen Hanley)
- On bill financing for GVEA customers for energy improvements, and for NOASH to put in small electric heating for nonattainment days. (Donna Robertson)
- Woodway has wood burning classes. Make it mandatory to go through class. (Dan Givens)
- Look at behavioral economics: how can we nudge people to make decisions on their own, may help with compliance and enforcement. (Jimmy Fox)
- As part of any outreach or assistance program, help people figure out what other programs they are applicable for. Look at the whole picture, not just wood burning. (Jana Peirce)
- Need someone coordinating energy efforts at the community level like an energy policy manager. (Patrice Lee)
- Neighborhood watch system for burners instead of borough. May help to change people’s minds. (Clark Milne)
- Have incentives for road service areas. (Patrice Lee)
- Wood Burning Gold Star program. Could include an “I Care about Your Air” sign people could post in their yards. (Jennifer Schmidt)
- Look at other places with successful curtailment programs. (Ron Johnson) (Response: Sierra Research talked to every wood burning pm2.5 community. Curtailment is the most difficult to enforce, but also the most important. Oak Ridge, Oregon, had higher penalties, more enforcement, and higher compliance. How much flexibility we want is up to us.)
- Juneau has aggressive enforcement. They are more suburban than our rural area, and police are involved in citations. (John Davies)
- Have people wear masks to protect against health impacts on bad air quality days? Borough would be more effective if they were also giving out masks to focus on health outcomes. Could this be part of the SIP? (Dave Turbovsky) (Response: That could not be part of SIP. It’s not the way the clean air act works.)
- Curtailment is essential for this to work, on NOASH houses as well. It needs to be linked to a strong assistance program as well. (Dr. Owen Hanley)
- As a community, we also have to look outside the government for assistance, to nonprofits and in the hearts of people. We have to be able to help people affected by this. The Chamber of

Commerce is looking at the [Borough ESP] initiative. Is it 90% reduction in PM_{2.5} or 50%? (Rick Solie)

- 50% reduction in PM_{2.5} from ESP is a conservative estimate. Europe is using ESPs to take particulate out of the air. They are not expensive or energy intensive. But timing is important. Have to order them from Switzerland, and they only produce so many. (Patrice Lee) (Response from Nick Czarnecki: Get us the data on ESPs showing a 90% reduction. We haven't seen it. We need to be able to quantify the emissions to prove we would not be backsliding by allowing more exemptions. The testing we did last winter was a good first step, but we need more robust laboratory measures than handheld devices. We cannot relax any rules in the SIP or the EPA would consider it backsliding, which could trigger sanctions. We need to look at the long-term performance of these devices. Europe has strict regulations with annual or bi-annual inspections and more power to prohibit its use if a device doesn't pass inspection.)

Update on proposed response to Borough initiative, Nick Czarnecki

At the last meeting, this group decided to vote on the whether to oppose the voter initiative that would prohibit the Borough from doing anything to regulate home heating appliances and fuels. However, since this group is majority-funded by the Borough, and borough money cannot be used in any way to influence an election, it would be an APOC violation to take a formal position. Discussion of the initiative is OK, and other groups, not funded by the Borough, can voice an opinion.

Presentation: Health Impacts of Fairbanks Air Quality, Dr. Owen Hanley

Following lunch, Dr. Hanley gave a presentation on the health impacts of PM_{2.5}, which is available on the Stakeholders Group page. Highlights:

- What you breathe has a big connection to your health, lung is a filter
- Fairbank pm_{2.5} comes from wood smoke, incomplete combustion --> chemicals
- Safe amount? We have regulatory limits, not safety limits (USA=35 ppm, Australia=25 ppm, WHO=25 ppm, EU=20 ppm)
- Particle shape matters, size matters,
- Pm_{2.5} dangerous, 12x potential of 2nd hand cigarette smoke to cause lung cancer (cig combustion more complete compared to wood stove)
- Masonry stoves are better because they can burn hotter and have more complete combustion.
- Health care expensive in Alaska. One day in a hospital cost more than a years' worth of heating fuel.
- 1 day in the hospital costs more than a year's worth of heating fuel. 1 month of inhalers costs more than a month of heating oil. For every dollar spent decreasing air pollution you will save 12 dollars on health care (World Health Organization).

Work Group Session 1

Four of the work groups met in breakout sessions from 1:40 pm to 2:40 pm. The Wood Devices and Wood Smoke Curtailment groups had a joint session to discuss what a registration program might look like in the non-attainment area. The Mobile Sources & Other (Oil/Coal) Space Heating discussed a phased plan for sulfur emissions reductions, and the Point Sources group continued their discussions of an offset program and issues related to specific plants and producers. Meeting notes for work group discussions will be posted on the Stakeholders Group page

Work Group Session 2

The remaining four work groups Education, Energy Efficiency, Funding, Regulatory Process/Monitoring) met in separate breakout sessions from 2:45 pm to 3:45 pm. Discussion notes will be posted on the Stakeholders Group page.

Plenary: September FNSB Clean the Air Expo and Stakeholder Involvement

Nick Czarnecki announced that the Fairbanks North Star Borough is hosting the 3rd annual Clear the Air: Home Heating Forum & Expo on Friday September 21-22, 2018 at the Wedgewood Resort Hotel. FNSB would like to invite and encourage all stakeholders to attend the conference as their schedules allow. The final recommendations made by the Stakeholders Group are expected to heavily influence the rulemaking process. Due to that influence, the Borough plans to highlight the Stakeholder process on Saturday afternoon and is asking for at least one representative from each of the working groups to attend from 2:00 – 5:00 to discuss the stakeholder process and receive feedback from the public.

Adjourn

The meeting adjourned at 4:00 p.m.

Fairbanks Air Quality Stakeholders Group Meeting Summary – September 14, 2018

The fourth meeting of the Air Quality Stakeholders Group was held on September 14, 2018, in the Wood Center Ballroom at the University of Alaska Fairbanks.

Meeting Agenda

- 8:00 am Coffee & tea
- 8:15 am Control Measure Straw Polling and Discussion
- 10:00 am Break
- 10:30 am Control Measure Straw Polling and Discussion (continued)
- 11:45 am FNSB Air Quality Conference update
- 12:00 pm Deadline for questions for afternoon session
- 12:00 pm Lunch
- 1:00 pm Group Discussion of a Draft Control Measure and Attainment Measure package
- 1:45 pm Continue Straw Polling
- 2:30 pm Recap and Next Steps
- 2:45 pm Break
- 3:00 pm Presentation/Q&A: Electrostatic Precipitators [ESP] (Nick Czarnecki & Jeanne Olson)

Control Measure Straw Polling and Discussion (Brian Rogers & Jana Peirce)

Stakeholders used Instant Insight audience response technology (“clickers”) to vote on whether each of the 14 control measures that were modeled (to assess their combined impact on PM_{2.5} emissions) should be included in a final package of control and attainment measures that will be voted on at a future meeting. Additional polling questions were on measures and ideas advance by work groups.

Measures that received at least 50% support in the straw poll will be included in the package. For each control measure that passed, a follow up question was asked about when the measure should be implemented: ASAP, by end of 2019, 2021, 2023, or as a contingency measure.

Stakeholders had an opportunity to discuss each question before it was polled. The results are below, starting with those within each category that received the most support.

Heating Devices

- 97 % Implement a registration program by adding a home heating portion to the property tax bill with a tax credit for completing
- 93 % Require registration of all heating devices [71% ASAP]
- 90 % Request to Congress and State of Alaska to fund \$40 million 2-year wood stove changeout program. Federal funding to go for conversion to alternate fuels while state funds allowed for certified wood devices with catalytic, ESP or other reduction measures, with a priority given to persons with economic hardship. Once funding is achieved, mandatory removal of uncertified Outdoor Hydronic Heaters in one year, uncertified solid fuel devices in North Pole zone of NAA second year, uncertified solid fuel devices in Fairbanks zone of NAA third year.
- 83 % Change the Wood Stove Change Out Program to offer higher incentives for replacing SFBA's in small commercial and multi-family structures
- 83 % Require notice and proof of destruction or surrender or removed, uncertified devices [57% ASAP]

- 79 % Prohibit use and require removal of coal heaters from homes and small commercial sites [34% ASAP; 31% 2019]
- 73 % Create incentives for fuel oil boiler upgrades
- 41 % Not recommended: Reduce FNSB-certified stove from 2.5 to 1.5 g/hr standard for new construction and new changeouts

NOASH / Stage 1 Waivers

- 81 % Add an inspection for NOASH [50% ASAP]
- 66 % Add a renewal requirement for Stage 1 Waiver [50% ASAP]
- 66 % Add an inspection requirement for Stage 1 Waiver [50% ASAP]
- 55 % Implement a GVEA emergency tariff to reduce cost of electric heat for NOASH during air quality alerts (assumes a funding source other than GVEA customers) [61% ASAP]
- 40 % Not recommended: To qualify for NOASH renewal, provide proof of 5-star rating by 2025

Future Reductions

- 96 % Require permit for installation of SFBA and restrict types of devices allowed (includes new installations in existing structures, at time of property sales and in new construction; restricted device types not limited to pellet stoves – as in the Missoula, MT case) [69% ASAP]
- 81 % Solid Fuel Burning Devices are permitted only as secondary source in new construction; primary must have sufficient capacity to heat the building
- 57 % Ban non-certified hydronic heaters in new construction and when homes are sold [50% ASAP]
- 48 % Not recommended: In new installations, permit catalytic-equipped stoves only

Wood

- 100 % Public-private partnership for a regional kiln and distribution system for dry wood, prioritized for non-attainment area use
- 90 % Dry wood for wet wood exchange program
- 37 % Not recommended: Require sale of only dry wood during late summer to end of winter

Oil

- 87 % Prohibit sale of #2 fuel oil for heating; switch to ULSD only as a contingency measure [69% ASAP]
- 81 % Add surcharge to price of #2 heating oil with revenue dedicated to air quality controls [70% ASAP]
- 45 % Not recommended: Prohibit use, sale or exchange of used oil for fuel in non-attainment area
- 43 % Not recommended: Prohibit operation and sale of small used oil burners

Point Sources

- 90 % State of Alaska should establish Offset Banking Fund to allow Point Sources to place offset dollars to be used to fund PM_{2.5} control measures (Federal funding to go for conversion to alternate fuels while state funds allowed for certified wood devices with catalytic, ESP or other reduction measures of comparable nature, with a priority given to persons with economic hardship. Once funding achieved, mandatory removal of uncertified Outdoor Hydronic Heaters in one year, uncertified solid fuel devices in North Pole zone of NAA in second year, and uncertified solid fuel devices in Fairbanks zone of NAA third year.)
- 88 % FNSB and Point Sources should fund a speciation study to determine the level of contribution to the SO₂ problem

Compliance/Enforcement

- 83 % Point Sources to sponsor curtailment enforcement teams to supplement borough staff during Stage 1 and Stage 2 alerts

Funding

- 70 % Request Congressional delegation to amend Superfund law to allow federal funding of airshed cleanup efforts

Clear the Air Conference Participation (Nick Czarnecki & Jana Peirce)

Stakeholders were asked to attend the Clear the Air conference on Saturday, September 20 from 2-4 pm if possible. The borough would like a few stakeholders from each work group present to listen to public ideas or concerns and answer questions. Polling was used to gauge attendance. Twelve stakeholders said they planned to attend.

Group Discussion of a Draft Control Measure and Attainment Measure package

- Compliance and meaningful enforcement are lacking
- Report suggestions:
 - Show scale of impact on scale of little, medium, and big
 - Avoid use of abbreviations for greater accessibility
 - Preface why this is important (Preface/intro)
 - Address state vs borough ownership of measures and think about in terms of making measures enforceable
 - Highlight human-side of measures and cost of nonattainment: hospital and other medical costs, child with collapsed lung event, cost of asthma medicine, etc.
 - Mission: Group of Fairbanksans to improve community and find best local approach
- Recognize residents don't appreciate filling out forms every time (either for health care or compliance with curtailment program)
- Frustration with "moving bar" of regulations
- We tax alcohol, marijuana, other things that create tax problems; why not tax firewood?
- Need proposal to FNSB to promote research at UAF, Borough + DEC. Should solicit grants to speedily get data on SO₂ speciation

Presentation/Q&A: Electrostatic Precipitators [ESP] (Nick Czarnecki & Jeanne Olson)

Jeanne Olson of Citizens for Clean Air gave a detailed presentation on her Citizen Science Project to calibrate and test an electrostatic precipitator (ESP) on a wood stove and a pellet stove in North Pole. Nick Czarnecki, borough's air quality program manager, gave a presentation on Retrofit Control Devices from a regulatory perspective. Both presentations are available on the Stakeholders Group web page (<http://fnsb.us/transportation/Pages/stakeholders.aspx>).

Adjourn

The meeting adjourned at 4:00 p.m.

Fairbanks Air Quality Stakeholders Group Meeting Summary - October 17, 2018

The fifth meeting of the Air Quality Stakeholders Group was held on October 17, 2018, in the BP Design Theatre, 4th Floor UAF Engineering Building at the University of Alaska Fairbanks.

Meeting Agenda

- 8:00 am Coffee & tea
- 8:15 am Presentation/Q&A: Modeling of AQ Stakeholder recommendations
- 9:15 am Presentation/Q&A: Online survey straw poll results
- 10:00 am Break
- 10:15 am Discussion: Home Heating Initiative impacts
- 10:45 am Discussion: Lawsuit against EPA regarding SIP submission impact
- 11:00 am Straw polling: AQ control measures forwarded from:
 - Energy Efficiency Work Group
 - Point Sources Work Group
 - Compliance & Enforcement Work Group
- 12:00 pm Lunch
- 1:00 pm Straw polling (continued): AQ control measures
- 2:00 pm Discussion: Education and messaging regarding Fairbanks air quality
- 3:00 pm Break
- 3:15 pm Next steps
- 4:30 pm November meeting plan
- 5:00 pm Adjourn

Presentation/Q&A: Modeling of AQ Stakeholder recommendations (Tom Carlson & Deanna Huff)

Tom Carlson of Sierra Research/Trinity Consultants presented the results of a modeling run based on the control measures that received at least 50% approval in straw polling at the September Stakeholder Group meeting. Each control measure was evaluated for emission reduction potential based on assumptions about timing, implementation, and compliance. The run included 13 control measures. Compared with baseline (pre-control) PM_{2.5} inventory of 4.14 tons per day, reductions by 2024 were modeled to be 1.95 tons/day after accounting for overlap. Assumptions for each measure are included in the presentation.

Deanna Huff of the Alaska Department of Conservation gave a detailed presentation on the air quality modeling, the emissions inventory and the process behind the Stakeholder Group model run. The CMAQ (community multiscale air quality) Model is a tool used to show attainment by modeling the representative emissions and meteorology. Monitor locations are used to verify the model and known concentrations, but an attainment demonstration has to be the entire area or all the grid cells in the model. The Stakeholders Group Model Run demonstrated significant progress toward attainment in North Pole, and Fairbanks area monitors showing attainment concentrations. The next step in Fairbanks is to look at maximum impact sites, add additional control measures and model an extension year out to 2024. Both presentations are available on the Stakeholders Group web page (<http://fnsb.us/transportation/Pages/stakeholders.aspx>).

Monitor Location	Average Monitored PM2.5 (µg/m3)	Modeled Base Year	Preliminary Modeled Baseline	Stakeholder Group Model Run
	2011-2015	2013	2019	
State Office Building	38.9	38.93	33.08	24.88
FairbanksNCORE	38.0	37.96	32.19	24.03
North Pole Fire Station	131.6	131.6	112.15	65.11

Presentation/Q&A: Online survey straw poll results (Jana Peirce)

Jana Peirce presented the results of the online straw poll Stakeholders took between the September and October meetings on 8 additional control measures that Stakeholders had not been polled on by the full group. Survey results are available under the Meeting 5 heading on the Stakeholders Group web page.

Discussion: Home Heating Initiative impacts (DEC)

Denise Koch and Cindy Heil of Alaska DEC's Division of Air Quality provided an update and addressed stakeholder questions about changes in the curtailment and enforcement program in the FNSB PM_{2.5} nonattainment area following passage of Proposition 4, the Home Heating voter initiative in Fairbanks on Oct. 4, which transferred regulatory authority from the borough to the Alaska DEC. The agency has some short-term plans and vision, which is partially triage until more long-term planning can be done. Many impacts of the program will stay the same, including using the same modeling program. As of October 26 the local compliance piece is transferred to the state, but they will not have additional staff or resources. They will still have air alerts. The stakeholder process needs to continue with recommendations. The submission of the SIP (state implementation plan) is being held up for this process. The work the Stakeholder Group is doing is critical in formulating what controls DEC puts in our SIPP. It will be a complex process transferring from borough to the State but they knew this was a possibility and they will continue to move forward toward reaching attainment.

Control Measure Straw Polling and Discussion (Brian Rogers)

Stakeholders used Instant Insight audience response technology ("clickers") for preliminary straw polling on additional control measures suggested by the Energy Efficiency Work Group, Point Sources Work Group, and Compliance & Enforcement Work Group. Bound by the federal regulations in the Clean Air Act, the State must adopt or amend EVERY control measure implemented by another nonattainment area in the U.S. unless it can be proven to be economically or technically infeasible or the State can show that there are already measures in place that are equally stringent.

Because the bar to prove economic or technical infeasibility is very high, most of the group's work has been to look for ways to make measures less costly and onerous for the community than the versions adopted elsewhere (to Fairbanksize them), to add or preserve positive incentives to participate in the community's attainment efforts (carrots as well as sticks), and to recommend the measures most likely to help the borough reach attainment by 2024 so the community can be spared the much more expensive and onerous consequences of failing to do that. Polling results are included at the end of this summary.

Solid Fuel Survey

Everyone in the room was invited to take the solid fuel survey using the audience response keypads. The survey was developed for the Clear the Air conference in September in order to learn how people hear about and respond to alerts, how they would prefer to hear about them, as well as how they buy and harvest wood.

Discussion: Education and messaging regarding Fairbanks air quality

Stakeholders reviewed notes from the Education Work Group that met in July and August, then discussed additional ideas to encourage participation in community efforts to reach attainment and raise awareness of the health and regulatory consequences of failing to meet it. A range of ideas were suggested that can be polled at the next meeting for possible inclusion in the recommendations package.

- Develop a public relations strategy for communicating with media and the community about Fairbanks air quality issues that promotes a positive and proactive approach to public outreach and education
- Communicate the costs of PM2.5 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
- 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
- Seek additional venues and audiences for Dr. Owen Hanley's talk on health impacts of PM2.5
- Develop other high-impact presentations that make the science and consequences of PM2.5 pollution clear and compelling, such as the FNSB's demonstration of burning dry vs. wet wood
- Learn from behavioral economics and social marketing how to identify and address barriers to changing behaviors
- Partner with the Cooperative Extension to provide classes in responsible wood burning
- Coordinate with local schools to incorporate air quality messages and alerts in daily announcements
- Encourage teachers to include air quality science and health impacts in lesson plans
- Engage the public through events that are creative and entertaining, such as a contest for building the best modular dry wood storage

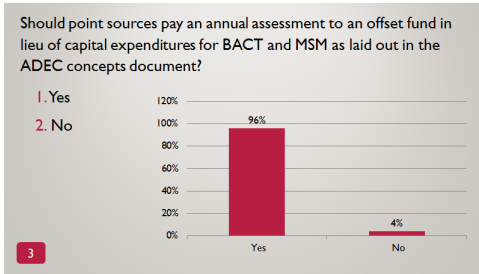
Next steps

All control and attainment measures that received preliminary support from at least two-thirds of Stakeholders present will be added to a final package of recommendations to be voted up or down at the November meeting. Additional modeling will be done to show how likely the package is to get the community to attainment, and a draft of the package will be sent to Stakeholders the week before the meeting. Stakeholders who think they will dissent should look up what they would like included. The State would like to have as much information and local input as possible. The group will either produce a consensus report or a two-thirds majority report based on their discussions, or no report if the group fails to advance any recommendations by a two-thirds majority. It was suggested that the interior delegation be invited to the group's final meeting.

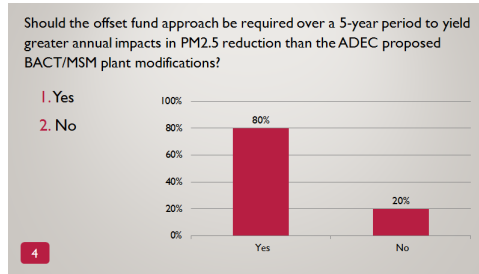
Adjourn

Air Quality Stakeholder Straw Polling Responses – October 17, 2018

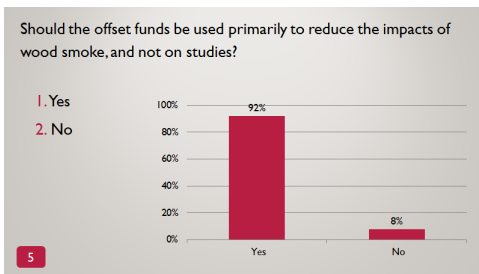
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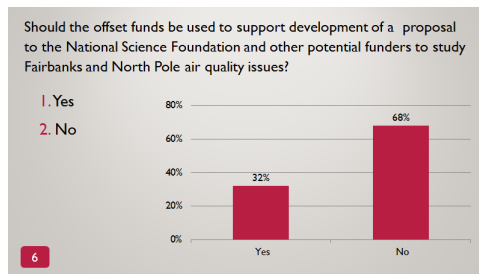
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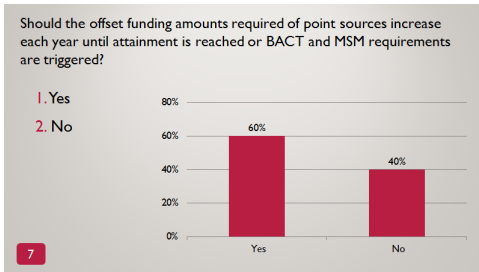
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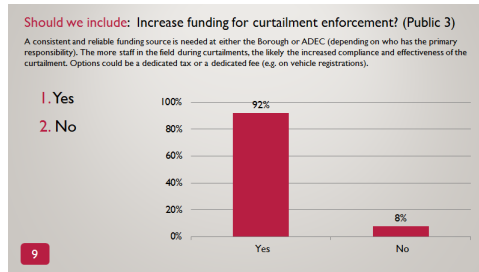
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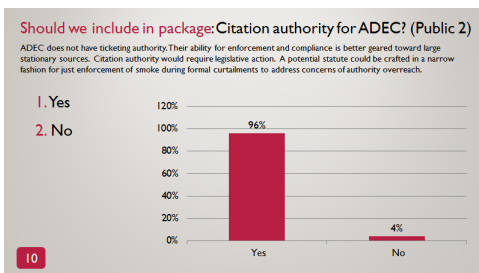
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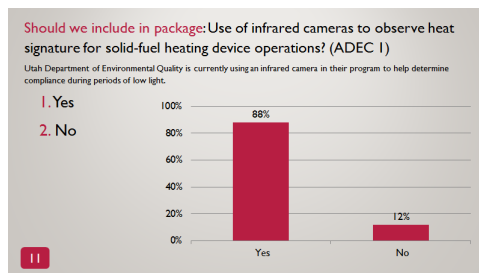
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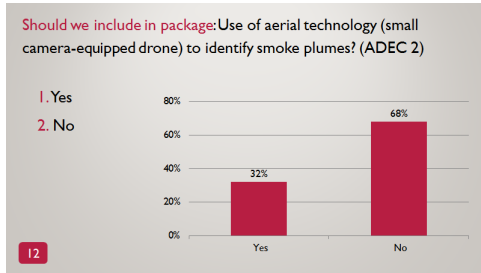
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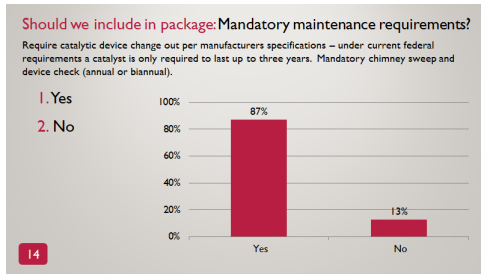
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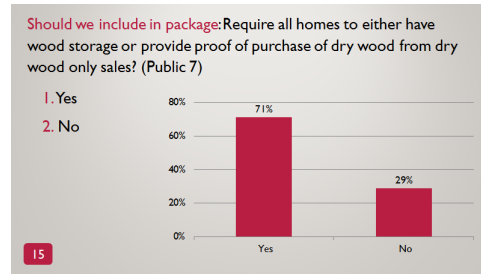
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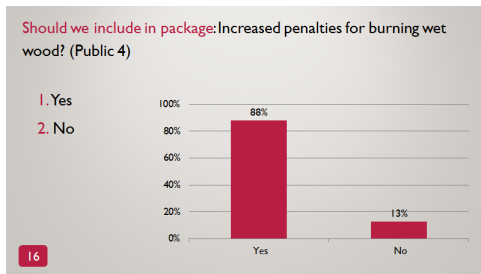
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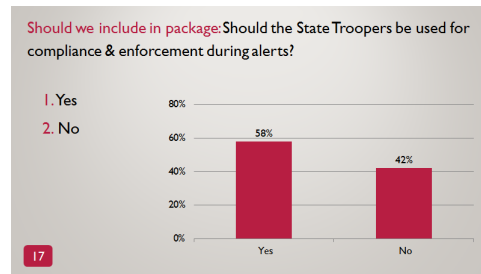
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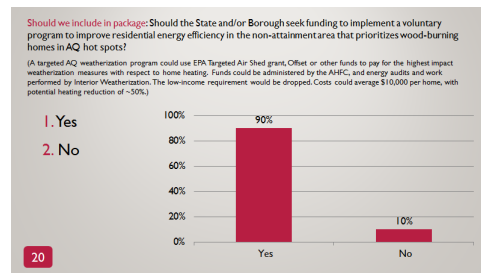
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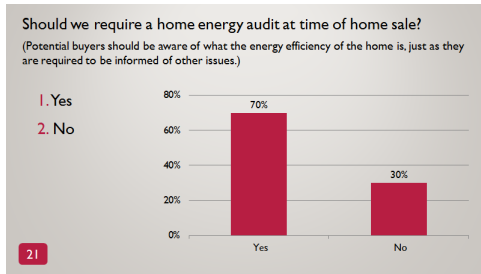
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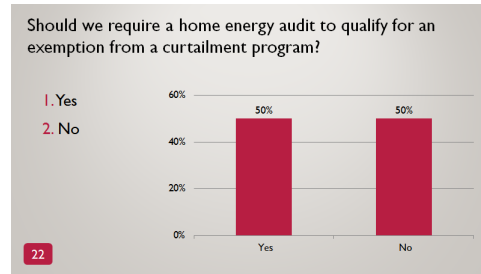
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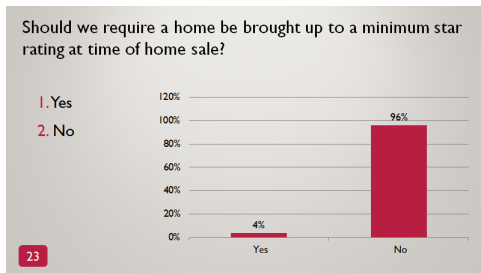
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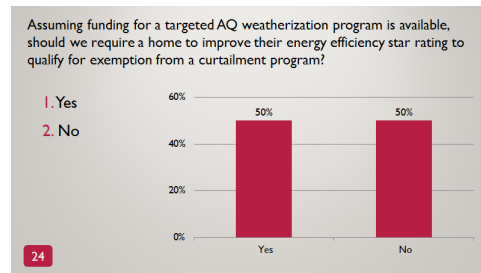
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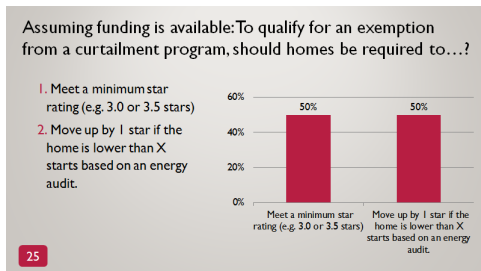
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Responses Received: 18



Fairbanks Air Quality Stakeholders Group Meeting Summary - November 15, 2018

The sixth and final meeting of the Air Quality Stakeholders Group was held on November 15, 2018, in the Carol Brown Ballroom, UAF Wood Center

Meeting Agenda

- 8:00 am Coffee & tea
- 8:15 am Roles of ADEC and FNSB
 - ADEC plan for this winter
 - FNSB role excluding home heating devices
- 9:00 am AQ Stakeholder control measures
 - Review of what's included in draft
 - Report on impact of these control measures
- 9:45 am Break
- 10:00 am Inclusion of actions underway – discussion & straw polling
- 11:00 am AQ open issues – discussion & straw polling
- 12:00 pm Lunch
- 1:00 pm AQ open issues – discussion & straw polling (continued)
- 2:15 pm Break
- 2:30 pm Final package – group voting on package (and amendments if necessary)
- 3:00 pm Next steps – follow-up and commitments
- 4:00 pm Report out and adjourn

ADEC plan for this winter (Cindy Heil, Alaska DEC)

Cindy Heil gave an overview of state plans for this winter, which will be a transition season that will see a continuation of many of the same monitoring and compliance methods and tools used by the Fairbanks North Star Borough (FNSB), while the state drafts the required State Implementation Plan for a serious nonattainment area. They envision:

- DEC has 4-6 staff members that will monitor compliance with PM2.5 alerts in teams of two
- Alerts will be called using a combination of monitored and forecasting data
- Letters have gone out to current and past NOASH households. DEC plans to also send letters to those with Stage 1 waivers.
- No decisions have been made for winter 2019-2020 on whether there will be one or two stages of alerts. If there are two stages in the SIP, stage one waiver holders would have to reapply.

Cindy provided a tour of information and resources available on the DEC Air Quality program website at <http://dec.alaska.gov/air.aspx>

A stakeholder asked suggested that if Stage 1 waivers are available next winter that a way be found to have the residents continue instead of reapplying because the process is cumbersome, and they have already done it and proven responsibility. **DEC response:** In order to incorporate items included in the Stakeholders recommendations, it will be necessary to have people to reapply. There may also be new items based on the recommendations. We have been waiting to see what comes out of this group to build on it.

Presentation: Borough Air Quality Program Changes (Nick Czarnecki, FNSB Air Quality Manager)

Nick Czarnecki provided a short presentation on changes to the Borough's Air Quality Division following the passage of Proposition 4.

Discontinued Programs

- Complaints & Compliance
- Curtailment Program (Stage Alerts)
- Mobile Monitoring Program (aka Hot Spot Guidance or Sniffer Program)
- Issuing Air Quality Alerts
- Layoff notices to 5 staff

Programs Continuing Forward

- Wood Stove Change Out Program
- Forecasting and posting AQI along with health statement on the website
- Neighborhood Monitoring Program

Presentation/Q&A: Revised Stakeholder Package Analysis (Tom Carlson, Trinity Consultants/Sierra Research)

Tom Carlson called in to present the results of a revised analysis based on the 49 control measures included in the Draft Recommendations Package (all those that received at least 66% approval in straw polling). Modeling results were scaled from the October package rather than doing a new CMAQ model run.

- Each measure was evaluated for emission reduction potential with assumptions/data to support quantitative analysis of episodic reductions
- To simplify analysis all measures were evaluated in 2024, the latest possible Serious SIP extension year
- Combined emission benefits were estimated (accounting for overlap)
- Two cases of control benefits were considered:
 - Optimistic: Assumes well-funded state effort for compliance and enforcement buttressed by 100% registration
 - Base: Reflects preliminary "starting point" estimate of state-based compliance and enforcement
- Measure benefits are significantly affected by assumed compliance and penetration levels. The October analysis ignored implications of Proposition 4 passage on compliance and enforcement authority and impacts, and so presented an optimistic outlook.
- Results: Nonattainment Area Emissions Before and After Stakeholder Controls
 - Home Heating represents about 2/3 of total PM_{2.5} emissions in nonattainment area. Under Optimistic compliance and enforcement assumptions, PM_{2.5} emissions fall by 82% after Stakeholder controls are implemented or by 64% under the Base case.
 - The largest reductions come from the curtailment program and removal of solid-fuel burning appliances (SFBA), followed by the requirement for alternative heat sources in rental housing.
 - SO₂ reductions are similar in both scenarios (reduction of 43% in Optimistic case and 44% in Base case), since they are driven by the switch from #2 to #1 fuel oil on the supply side and so compliance and enforcement matter less.
 - Ambient PM_{2.5} concentrations are not directly proportional to emission reductions due to differences in spatial distributions of emissions (horizontally and vertically) and the secondary formation of PM_{2.5} in the atmosphere from gaseous precursors

- and chemical reactions. The SIP modeling will examine impacts beyond monitor grid cells.
- The Optimistic case shows further progress towards attainment compared with the October model run estimating PM_{2.5} concentration levels at 23 ug/m³ at the Downtown Fairbanks monitor and 50 ug/m³ at the North Pole Fire Station. The numbers are 28 and 73 ug/m³ respectively for the Base case, which reflects a starting point the state will need to build upon within the SIP.

The presentation, which includes several tables not summarized here, is available on the Stakeholders Group web page (<http://fnsb.us/transportation/Pages/stakeholders.aspx>).

Discussion & Straw Polling: Inclusion of Actions Underway (Brian Rogers, Facilitator)

Stakeholders used Instant Insight audience response technology (“clickers”) for straw polling on continuing local efforts to “bring natural gas to Fairbanks to allow switch from SFBA or oil boiler to natural gas boiler.” The measure received support from 73% of Stakeholders present. Stakeholders also supported the continuation of other activities that can help bring the community closer to attainment: continued funding for highway signs; continuing the “Plug it in at +20” campaign; and continuing to evaluate retrofit control devices such as ESPs using currently appropriated FNSB funding. All polling results are included at the end of this summary.

Discussion & Straw Polling: AQ open issues

Stakeholders were polled on 11 education-related measures developed from the group discussion at the October meeting. All 11 were approved for inclusion in the final recommendations package by receiving support from at least 2/3 of Stakeholders present.

Stakeholders were polled on five potential control measures related to mobile and small stationary sources (including the question on continuing the “Plug It in at +20” campaign), since the group had not yet approved any control measures targeting these sources. All but the “Plug It in at +20” failed to gain 2/3 support and were not added to the final recommendations package.

The group was asked to revisit several measures where changes were needed to make them eligible for inclusion in the SIP, to address contradictions between measures, and to reflect the failure of Point Sources to come to agreement on an economic incentive (offset) program. With these votes stakeholders approved by 2/3 vote each point source negotiating separately with DEC their choice of Most Stringent Measure (MSM) requirements or an economic incentive program that allowed it to invest in actions that would reduce emissions more than the estimated reduction from MSM. They split measure #17 into two parts, allowing removal of uncertified devices (17a) to be included in the SIP and attainment models by removing the funding contingency (17b). They clarified that only NOASH households should be permitted to burn during Stage 2 curtailment periods (not all curtailment periods).

Discussion & Polling: Final package and amendments

Stakeholders were asked for an up or down vote on a recommendations package that included all control and attainment measures that had received support from at least two-thirds of Stakeholders present. The draft package sent to Stakeholders the week before the meeting was modified by the straw polling earlier in the day. The ground rules established at the beginning of the stakeholder process allowed consensus to be achieved if all but one stakeholder approved the package. A supermajority of 2/3 was required to forward recommendations to FNSB and Alaska DEC. Any Stakeholders who felt they were not able to support the package were asked to identify a change that would allow them to support it. Two control measures were removed through this process: #39 authorizing warrants for inspection of devices being operated during curtailment periods, and #38 recommending that point sources sponsor curtailment teams to supplement staffing during alerts.

Following these votes, the recommendations package was approved with a 93% vote.

Commitments and Appreciation

John Davies, the spokesperson for the Stakeholders Group, thanked members for their good faith effort in coming together to seek solutions for a very difficult problem.

Patrice Lee provided an update on the Interior Gas Utilities upcoming negotiations.

Dan Brown expressed EPA's gratitude and appreciation. He told stakeholders that the EPA thinks the problem *can* be solved.

Other stakeholders reflected on their experience being a member of a group representing many different points of view, where people nevertheless worked together effectively and treated each other with respect. Several stakeholders acknowledged the important input of the stakeholders representing North Pole and wood burning communities.

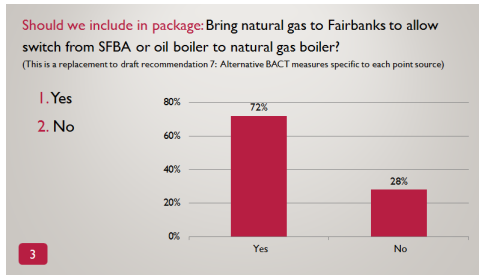
Jana Peirce commended stakeholders for staying at the table even knowing they won't agree on every point, and the commitment of the group to developing an approvable SIP that will move the community towards attainment so we can keep using wood into the future. She will be talking with stakeholders about an EPA Environmental justice small grant that can be used to fund a collaborative community approach to education and outreach.

Address from Mayor Ward (FNSB Mayor)

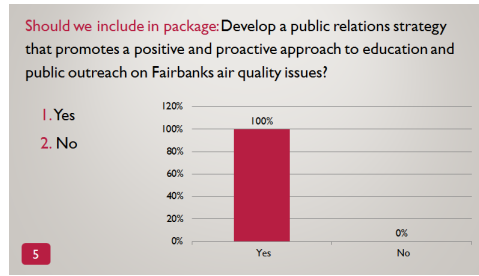
Mayor Ward addressed the group and read a proclamation commending the stakeholders for their work making critically needed community-based suggestions and thanking them for their time commitment.

Air Quality Stakeholder Polling Responses – November 15, 2018

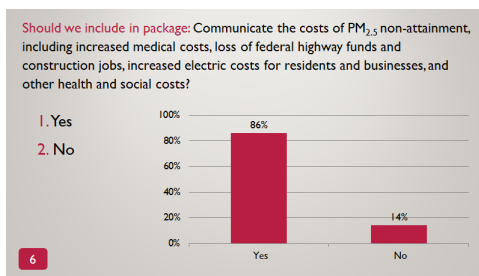
25 Responses



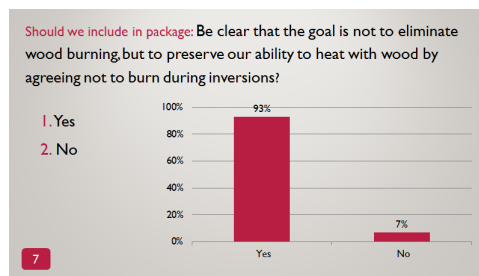
28 Responses



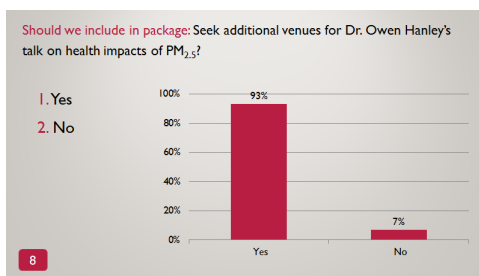
28 Responses



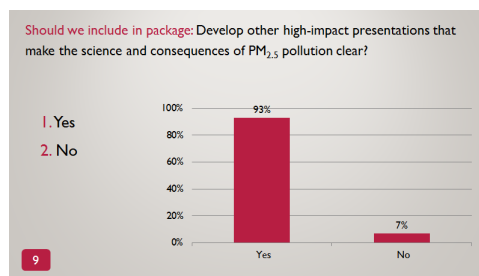
28 Responses



27 Responses



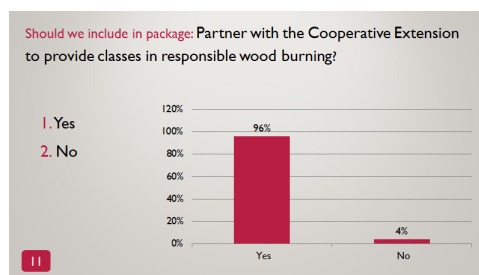
28 Responses



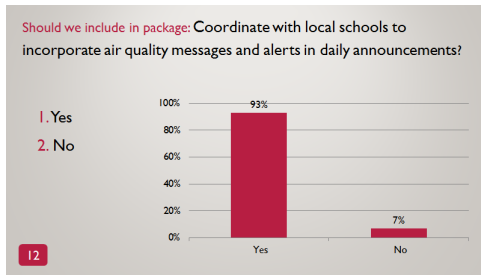
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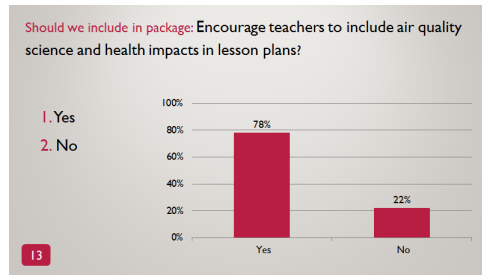
26 Responses



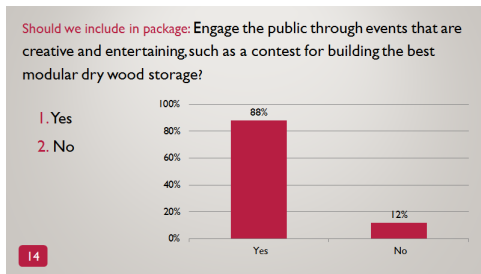
28 Responses



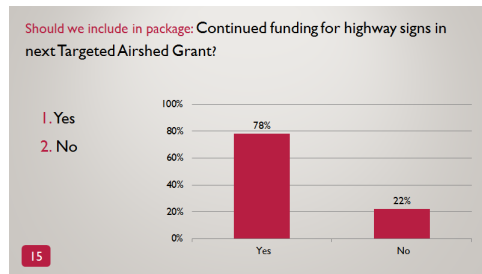
27 Responses



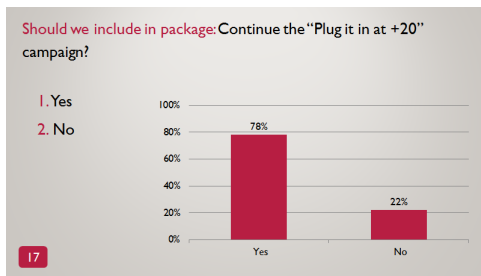
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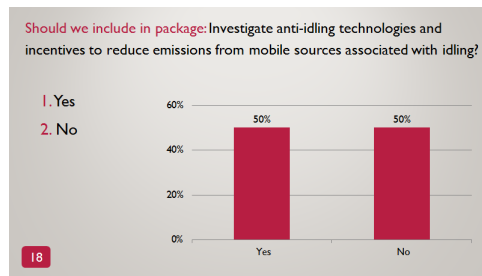
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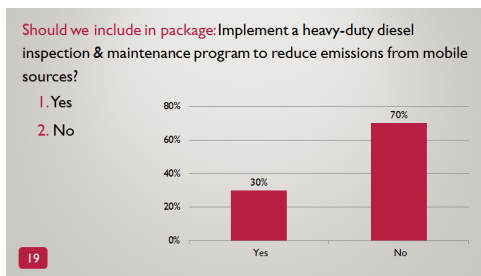
27 Responses



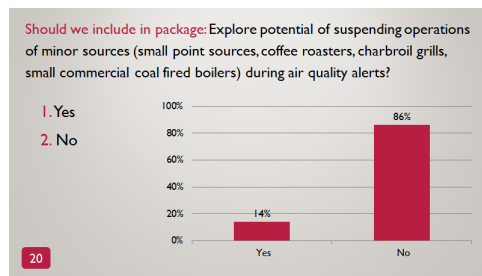
26 Responses



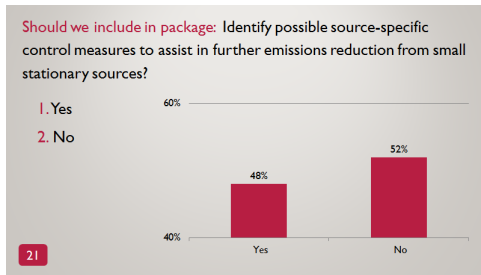
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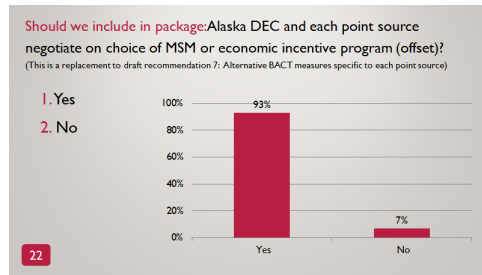
28 Responses



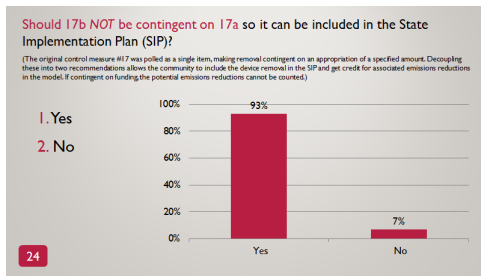
23 Responses



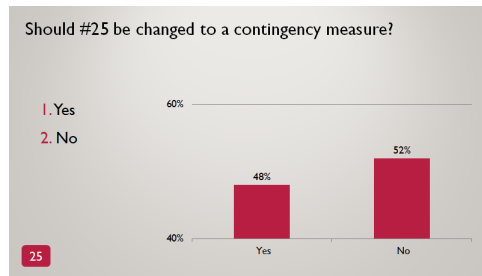
27 Responses



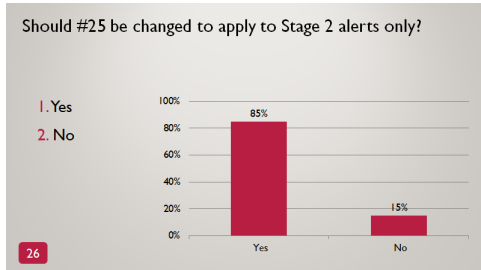
27 Responses ("outdoor hydronic heaters and" removed)



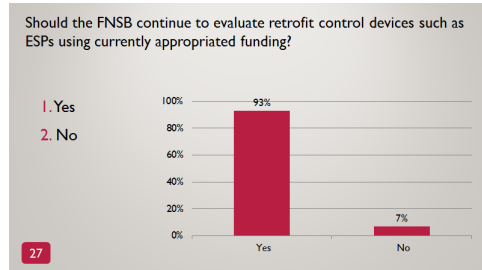
27 Responses



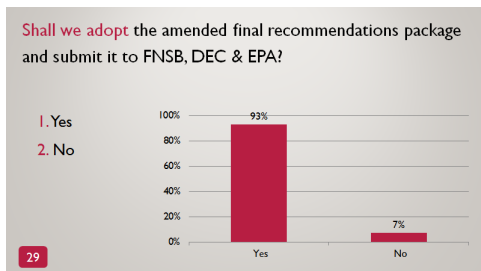
27 Responses



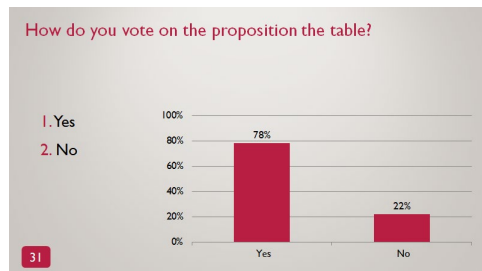
28 Responses (added "and DEC" after "Should the FNSB")



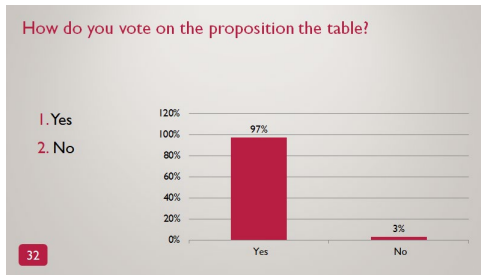
29 Responses



27 Responses. Prop: To remove measure #39



29 Responses. Prop: To remove measure #38:



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 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