Mobile Sources & Other Space Heating (Oil/Coal) Work Group – August 16 & 17, 2018

In Attendance:

Voting Members
Alicia Stevens
Angela Speight
Clark Milne
David Fish (Presenter)
Donna Gardino
Jackson Fox
Lee Hazen
Joseph Little (Presenter)
Jingqiu Mao
Ron Johnson
Ross Adkins

Guest
Noelle Graham, UAF

Non-Voting Members
Bob Dulla, Sierra Research
Brittany Smart, FNSB
Cindy Heil, ADEC
Nick Czarnecki, FNSB

Facilitation Team
Brian Rogers
Jana Peirce

Thursday, August 16

Presentation by Dr. Joseph Little, UAF: Measures of Price Sensitivity and the ULSD Assessment

The presentation is available on the AQ Stakeholders Group web page.

- Price elasticity of demand ("price sensitivity") measures how sensitive quantity demanded is to a change in price.
- Cross Price Elasticity of Demand: when consumers may substitute goods (e.g. wood for oil) when the price of one good changes. Depends on the availability of substitutes.
- We assume homes with wood stoves present are more elastic. If elastic, when price goes up, expenditure goes down. If inelastic, price and expenditure go in the same direction.
- Lots of caveats/limitations to the study and questions to answer (e.g. Model assumes wood is purchased, not cut. Question: How much time do people spend cutting wood? Need to calculate the value of time spend harvesting own wood supply.)
- How much will wood consumption change when a change in oil-price occurs? Important because an increase in wood-burning could diminish the effectiveness of a hypothetical switch to ULSD.
- Model results: Cross price elasticity of wood: -0.2 to -0.7. At -0.2, if oil costs $0.34 more per gallon, wood burners may burn .09 more cords of wood and oil consumption decreases by 136 gallons.
- Need to factor in household appliance characteristics and efficiency and evaluate more price differentials between wood and oil.

Presentation by David Fish, Aurora Energy: District Heating

The presentation is available on the AQ Stakeholders Group web page.

- Aurora provides steam heat in the core downtown area and hot water heat systems to Lathrop High School, Shoppers Forum, Chief Andrew Isaac Heather Center, the Alaska RR industrial area, and from Nobel street to the Federal building on the east side of downtown.
- Adding Back Pressure Turbine (3 MW) is the more efficient way to increase district heat (95% efficiency). It's not currently hooked up.
- Past study estimated cost for expanding district heat: $120K per household if you had to construct new trunk line. $10-20K to hook up new customers to existing main line.
- Remaining capacity: 100,000 mmBtu/hr (under ideal conditions). Could hook up 2,000 new households OR about 10 large users to existing lines. Could expand by 1/3 with existing capacity.

- Potential customers: Carlson Center, Fish Hatchery. (Some potential large customers not interested. May already be on natural gas.)
- Adding new users would increase burning of coal, but those emissions released higher up in air shed. District heating expansion requires 60% more coal burning. 40% of heat would come from existing operations. The SO_2 per mmBtu emitted from the stack is in the BACT analysis.
- The 2:1 offset impact for emissions would limit sizing of what Aurora can do.
- Aurora prices district heat to be competitive with oil (79% of the cost of oil)
- Need to find customers near existing trunk line that are currently using wood or oil. (Not natural gas.) Potential for Borough building(s)?
- Wood Change Out program will reimburse costs for switching to district heat. Up to max of $14K (going from hydronic heater to district heat).

Other Discussion

- Request electronic copy of 2015 ULSD analysis for legislature directly from PDC Engineering (to look at supply side costs of ULSD)? (Participants have hard copies only.)

Friday, August 17

Discussion of Control Measure 51: Ultra-low Sulfur Heating Oil

General agreement by the work group on following plans to address sulfur-related control measures:

- Implement with Fairbanks modifications: Adopt a phased approach. Switch now from #2 to #1 heating oil in nonattainment area, with conversion to ULSD on the books as a contingency measure.
- When implemented: By end of 2019 (ULSD by 2024 if triggered)
- Who implements: FNSB, suppliers
- Cost to public: Assume a cost difference to consumers of ~10 cents a gallon (current PetroStar rack price) + a decrease in BTU value + an increase in boiler efficiency + a decrease in boiler maintenance costs
- Challenges: For suppliers? Would they have to distinguish addresses to know who they can deliver #2 to?
- Questions:
    - Only allow sale of #1 in Borough?
    - Restrict seasonally fall-spring or year-round? People can fill their tanks in summer and burn #2 in winter.
    - How many customers buy and pick up their heating oil vs. have it delivered? (Angela Speight can find out)
    - What will the shift do to pricing? Price has to do with the state's "Quality Bank," not just supply and demand. Very complex.
    - Does Andeaver produce #1? (Ask Casey Sullivan)
- Education:
    - Moral responsibility to commit to do the right thing, consider everyone
    - Health impacts for SO_2
    - Economic costs
    - Benefits for boiler efficiency and maintenance (Brookhaven has pictures online of difference in residential boilers burning ULSD)
- Discussion:
    - Going from #2 to #1 is easier on public. (Jackson Fox)

    - Get 2/3 of the benefit by going from #2 to #1. Only 18% of $PM_{2.5}$. Not much additional gain from going to ULSD. (Jingqui Mao)
    - People don't clean their boilers. The difference in efficiency between #2 and #1 (from how clean the fuel burns) will make up for the difference in BTUs. (Ross Adkins)
    - #2 puts out 2-3% more BTUs than #1 (Ron Johnson)
    - Monitor impact of switch to #1 has on Herst Rd. and then go to ULSD based on the effect. (Ross Adkins)
- Other topics:
    - Tiger loop helps jelling problem. European boilers preheat oil. (Ross Adkins)
    - GVEA uses NAPTHA in LM6000, #2 in back up units
    - Vehicle idling produces more chemical aerosols than when running the car. (Jingqiu Mao)