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Workgroup Recommendations and Other Potential Control Measures
Homes and Restaurants Workgroup

HR004 – Wood Stove and Fireplace Insert Change-out Programs

Description

Wood burning is estimated to be the largest segment (31%) of the direct $PM_{2.5}$ emissions in New Jersey's 2002 inventory with over 9,000 tons emitted. While some issues with the emission factors and activity data could change this estimate, the category will likely continue to rank as the number one source of directly emitted particles in the State's inventory.

The United States Environmental Protection Agency (USEPA) New Source Performance Standards (NSPS) for new wood burning stoves and fireplace inserts[1] have been in place since 1992. These standards are 7.5 grams per hour for non-catalytic controlled units and 4.1 grams per hour for catalytic controlled units. There are no controls for fireplace inserts or wood stoves built prior to 1992 and these units emit from 30 to 70 grams per hour.

A question not easily answered is the number of newer wood stoves and fireplace inserts (manufactured after 1992) compared to the number of older, dirtier wood stoves or fireplace inserts (manufactured before 1992) in the State. Estimates of the number of dirtier wood stoves and fireplace inserts range from 60 to 90 % of the total actively-used wood stoves and fireplace inserts in the State. Change-out of these older, dirtier wood stoves and fireplace inserts is slow with less than 1% of the older units changed to newer wood stoves each year. A voluntary, mandatory, or semi-mandatory wood-stove change-out program would greatly accelerate the rate of change-out.

Voluntary wood stove and fireplace insert change-out programs have been successfully conducted in many parts of the country, usually in conjunction with the USEPA. In these programs, the wood stove and fireplace insert manufacturing industry partners with government to offer consumers a discounted price, usually 10%, during the change-out period. New wood stoves, meeting or exceeding current USEPA standards, replace older, dirtier units manufactured before 1992. Distributors are responsible for ensuring that the older units are disposed by recycling and for providing tracking information to gauge the success of the program. This tracking information is usually provided to a trade organization like the Hearth, Barbecue and Patio Association (HPBA) and then turned

[1] A wood burning stove can be defined as a free standing enclosed wood-burning unit, vented to the atmosphere, and designed to provide heat to a home. A fireplace insert can be defined as a self-enclosed unit that sits within a masonry structure, vented to the atmosphere, that is not designed as a primary heating source for a home. The USEPA emission standards do not cover masonry constructed fireplaces without fireplace inserts that could be built in a home but these unique fireplaces are thought to account for a very small segment of the wood burning conducted in the State. Many older homes in New Jersey have masonry fireplaces that are not used and are there primarily for decorative purposes. They are not covered by this white paper or by USEPA's NSPS emission standards.

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over to the State once compiled. The State would be responsible for monitoring the program and, possibly helping to publicize its existence.

Implementation

Options for a Voluntary Program:

- Conduct a change-out program in New Jersey only,
- Conduct in conjunction with one or neighboring States, or
- Conduct throughout the MARAMA or NESCAUM region.

It is suggested that this program be implemented by media market (e.g., New York, Philadelphia, Delaware, etc.) with multiple state participation and coordinated through our Regional Planning Organizations. Target goals should be set for each State (e.g., 1,000 units changed out during the campaign) and the campaign run until the target is reached.

Options for a Mandatory or Semi-Mandatory Program:

- Homeowners with a wood stove or fireplace insert manufactured before 1992 would be required to change-out their units before the sale of the home could proceed, or
- Homeowners with a wood stove or fireplace insert manufactured before 1992 would be required to offer the option to change-out the unit at the time of sale to the buyer. The buyer could reject having the unit changed out at that time and sign a waiver of the change-out requirement.

It is recommended that legislation be written to give the buyer discretion to change-out the older units at the time of home sale. In all cases where an older unit exists, the buyer would have to make the decision to have the unit changed or "sign-off" on his right should he decide not to change the unit. Legislation would be needed to clarify the rights and responsibilities of the buyer and seller at the time of home sale.

Change-out at the time of home sale makes the most economic sense to the involved parties. Buyers, knowing that they would also be asked to change-out the unit when the time comes for them to sell their home, may be reluctant to quickly "sign-off" on the need to change-out the stove. Real estate agents could also provided material on why the change-out is needed, including the benefits of being a good neighbor by reducing the neighborhood exposure to their wood smoke emissions. Sellers would be in a better economic condition to have the unit changed as the appreciation on their home may cover the cost of a new unit. Or, sellers could negotiate a reduced cost for the home should the buyer wish to assume the cost of the change-out. (Note: the legislation should say that a

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buyer cannot get a reduced cost for the home should a change-out of the unit upon sale not occur. This would negate the effectiveness of the program.)
This program should also be conducted after the State sets lower than current USEPA Standards for new wood stoves and fireplace inserts (see HR-002) as to prevent replacement with a more polluting unit and ensure the lowest reductions possible are obtained. It should also be conducted to encourage the change-out of wood burning fireplaces (but not wood stoves) with natural gas fireplace inserts where the natural gas suppliers (see HR-011) also offer a rebate if a natural gas fireplace replaces a wood stove.

The workings of this program should then be cross-referenced in the State's Uniform Construction Code so that a local inspection, where applicable, would ensure the provisions of this new law are met. A local inspector would have to check that the unit was changed out, or that the necessary paperwork to not have the unit changed-out is present.

Cost

The cost to consumers for wood stoves and fireplace inserts that would meet the lower NSPS standards would be around $1,500. Also, new wood stoves and fireplace inserts are more thermally efficient than older units so a consumer would have a long-term cost saving by using less wood to get the same amount of heat.

In a voluntary program, at least a 10% discount is expected. If this program becomes mandatory, manufacturers can be required to offer discounted prices (e.g., 10% off retail) to homeowners changing out their units at the time of home sale.

Effectiveness

It is estimated that over 300,000 homes in New Jersey may have an active wood stove, fireplace, or fireplace insert with varying degrees of usage. Older masonry fireplaces exist in many homes and many are not used. They would not be covered by this white paper. Implementation of this program will greatly accelerate the change-out of older units and reduce the less than 1% change-out per year to more than 5% per year (assuming a home is sold once every 20 years). Currently a 1% per year change-out of older to newer units results in an annual reduction of about 29 tons per year of directly emitted particulate at the USEPA standards for new units. If 5% of the units were changed each year, the annual reduction would be 144 tons per year.

The effectiveness of the program will also be increased if we first adopt new State standards for wood burning stoves and fireplace inserts lower than the current federal

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standards. If new State Standards were adopted and 5% of the units were changed each year, then the annual expected reduction would be 190 tons per year of directly emitted particulates.

A voluntary change-out program is not the entire solution to the wood-burning emissions. It will only reach a small segment of the existing population of wood stoves and fireplaces existing in New Jersey. With an estimated 300,000 homes in New Jersey having an active wood stove, fireplace or fireplace insert, changing out 1,000 of these units[2] then may not appreciably lower the overall emissions (i.e., only 1 in 300 units would be changed). But it may lower the emissions from homes that regularly burn wood and gather a disproportionate percentage of reductions.

Increased effectiveness may also occur if we obtain greater percent sale prices (e.g., 25 to 35%) from the manufacturers. Or, retailers / distributors can be asked to offer other combined incentives like free installation, free chimney cleaning, or free ducting. If there were an added incentive for people of lower economic means, such as an additional rebate or the offer of a free fireplace, then the effectiveness of the program may also increase.

Pros of a Change-out Program

- Industry could provide enthusiastic support and participation in the costs. In return for the additional volume of sales, industry can be asked (or required) to offer discounted prices.
- Quickens the lowering of emissions from the largest segment of directly emitted particulate where the benefit is maintained over time.
- Gives continual steady reductions over time.
- Lowers exposure and possibly prevents neighbor-to-neighbor exposure to high particulate wood-burning emissions from older units.
- Homeowners with newer units (or masonry fireplaces) are not affected and having a newer unit may be a selling point for the home.
- Regional Planning Organization (RPO) involvement would lower the administrative burden on the State.
- If done throughout the northeast region, this would lower the amount of emissions transported to New Jersey as well.
- In a completely voluntary program, consumers who are able to afford a new unit benefit from the discount.

[2] Note: this would be the largest voluntary change-out program ever conducted in the nation.

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- In the semi-mandatory scenario, leaves the ability of the buyers to "sign-off" on the change-out and enables them to keep older, well-maintained fireplaces or wood stoves of historic or intrinsic value.

Cons of a Mandatory or Semi-Mandatory Program

- Public acceptance of the program can only be gathered through a well-conducted public education campaign and some may resent having to make a "choice" at the time of home sale.
- Real estate agents may not like to be the mediator in the choice to change-out the units and not like having a new issue to address at the time of home sale.
- Legislation would be needed for any mandatory or semi-mandatory program.
- Does not ensure that the dirtiest units are removed as participation is not guaranteed.
- Implementation issues between the buyer and seller, the Real Estate Agent, the Department of Consumer Affairs, the Department of Environmental Protection, and local governments would need to be resolved with the roles and responsibilities of each clearly defined in Legislation.
- Could delay the sale of a home until issues of change-out are resolved.

Related White Papers

- HR002 – Urge the USEPA to Set More Stringent New Source Performance Standards (NSPS) for Wood Stoves And Fireplace Inserts
- HR011 – Require Owners of Wood Burning Fireplaces to Change-over to Natural Gas Fireplaces and Allow Only Natural Gas Fireplaces in New Construction

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