

We are proud to introduce the CS-100 from ClearStak:
a revolutionary product that significantly reduces
visible emissions from Outdoor Wood Boilers.

Now You Can Breathe Easy

Our unique product retrofits to existing Outdoor Wood Boilers (OWB's), providing significant benefits to OWB owners and their communities:

- Drastically reduces visible emissions, easing strained relationships with neighboring residents and businesses
- Supports local renewable energy, providing a green solution for commercial, agricultural and consumer applications
- Economical, enabling consumers to retrofit existing devices that may otherwise be rendered unusable through federal, state, and local restrictions

If you already operate smaller wood boilers, EPA recommends you continue to consider technology retrofits and other strategies to reduce air pollution from the unit.

—EPA BRIEFING PAPER, JANUARY 2009

ClearStak

ClearStak, LLC

479 Tolland Turnpike | Willington, CT 06279-0152 | 860-237-8245

www.clearstak.com



CS-100 from ClearStak

ClearStak is proud to introduce the CS-100 for the reduction of visible emissions from Outdoor Wood Boilers.

The CS-100 is a pollution control device (PCD) which provides an economical, environmentally friendly solution to new and existing OWBs. The CS-100 uses a patented intelligent catalytic approach and attaches easily to new and existing OWBs. Once installed, the CS-100 virtually eliminates the nuisance of smoke generated by OWBs.

The CS-100 provides significant advantages to owners of OWBs:

- Low-cost alternative to OWB replacement
- Improved environmental quality
- Improved relations with neighbors
- Economical solution to federal, state, and/or local ordinances regarding OWB output

The ClearStak Difference:

- The CS-100 is designed specifically for OWBs
- The CS-100 utilizes an Intelligent Controller that manages performance
- The CS-100 is a proprietary stainless steel device

For more information, please visit our website at
www.clearstak.com

Proudly Developed and Manufactured in the USA
Patent Pending

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FOR IMMEDIATE RELEASE

**OUTDOOR WOOD BOILER POLLUTION CONTROL SOLUTION
UNVEILED BY CONNECTICUT COMPANY**

ClearStak, LLC's CS-100 virtually eliminates outdoor wood boiler visible emissions and nuisance smoke

Willington, Connecticut, October 14, 2010 – Users of Outdoor Wood Boilers (OWBs) now have a simple, cost-effective option to reduce visible emissions. ClearStak, LLC is now shipping Beta units of its CS-100, a proprietary, intelligent catalytic unit specifically designed to retrofit existing OWBs and yield improved environmental quality.

“Outdoor Wood Boilers are an excellent solution to help reduce our dependency on foreign energy sources, but their emissions have been cited as a health problem by the EPA,” says Jeff Hallowell, ClearStak President. “Our new CS-100 supports this vital, local renewable energy resource and answers the EPA’s recommendation to reduce smoke pollution. By utilizing a CS-100, OWB owners may no longer need to replace their environmentally unfriendly and/or legally restricted boilers. The use of a CS-100 provides an alternative for federal, state, and/or local ordinances or restrictions on OWB output and greatly improves relations with neighbors.”

The CS-100 from ClearStak is a proprietary stainless steel device that uses an Intelligent Controller to manage performance and reduce visible emissions. It also supports local renewable energy, providing a green solution for commercial, agricultural, and consumer applications, and is manufactured in the USA using North American components. Technical details on the CS-100 can be requested at www.clearstak.com.

“The EPA states that there is an association between exposure to particle pollution, such as that generated by OWBs, and significant health problems, including aggravated asthma, lung and heart disease, and increased frequency and severity of respiratory symptoms such as difficulty breathing and coughing,” says Jeff Hallowell. “The use of a CS-100 on the boiler is an excellent solution to help people to continue to use OWBs while greatly reducing particle pollution and the unwanted health side effects associated with OWB smoke.”

ClearStak started shipping Beta CS-100 units for the beginning of the 2010 heating season, and expects to ship production models by year-end. For more information about the CS-100 visit www.clearstak.com or call (860) 237-8245.

About ClearStak, LLC

ClearStak, LLC is a privately held environmental engineering company located in Willington, CT. ClearStak's mission is to design and build intelligent devices that reduce visible emissions from the combustion of biofuel, providing a renewable energy solution that is safe for the environment. The ClearStak vision is to provide economical biofuel pollution control devices for small-to-medium sized commercial, agricultural, and residential heating and power applications.

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February 7, 2011

State Senator Edward Meyer
Assistant Majority Leader
Chairman, Environment Committee
Connecticut Senate
Legislative Office Building
Room 3200
Hartford, CT 06106-1591
Delivered via email

Subject: Senate Bill 830

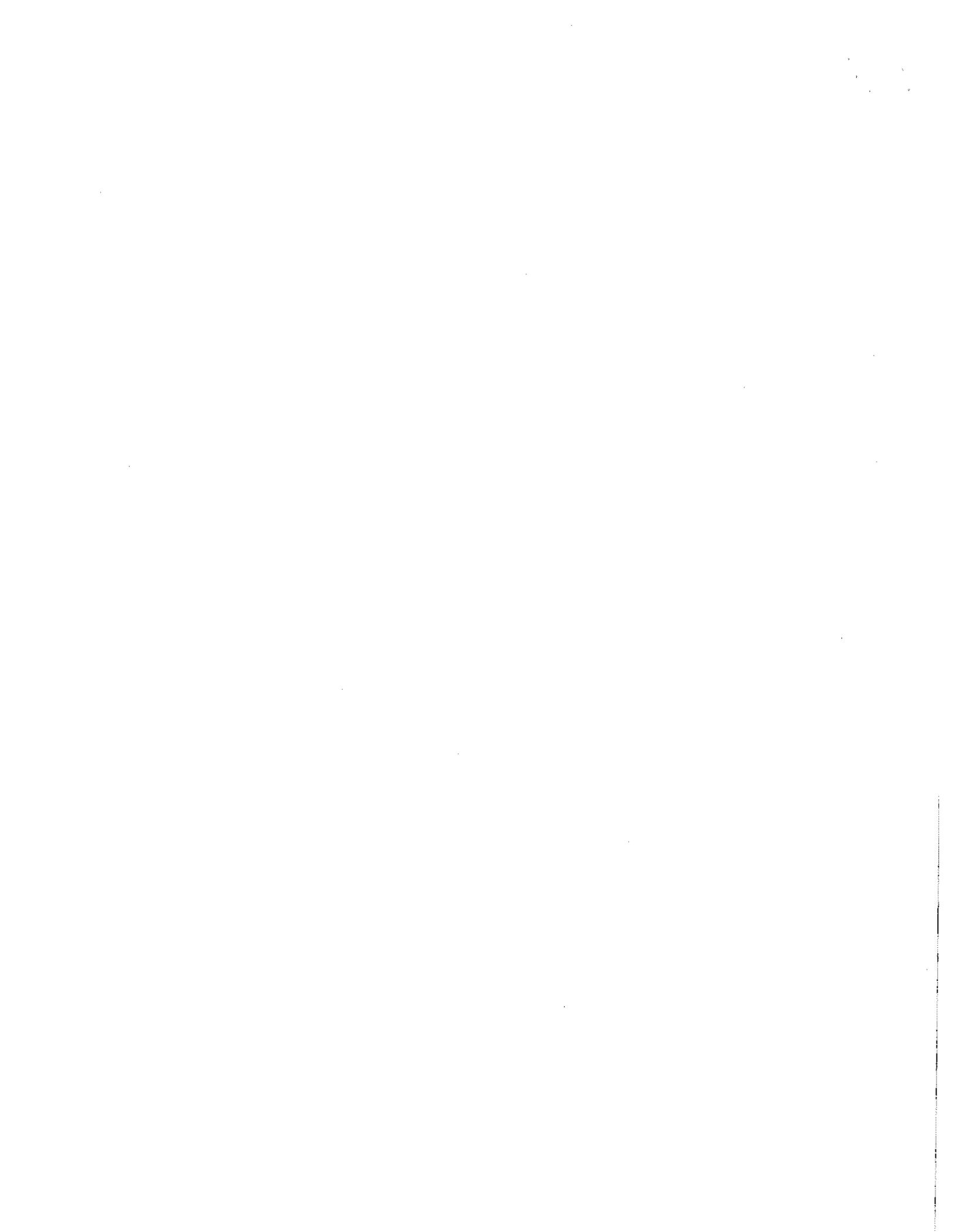
Dear Senator Meyer,

As a resident of Woodstock, Connecticut and President of ClearStak LLC of Willington, CT, I want you to know that I am against Bill No. 830 which proposes to ban OWFs after October 1, 2011.

I would like to thank you for the opportunity to introduce you to ClearStak and the recent progress we have made in clean energy technology. I would like to address three specific areas of the Bill beginning with Section B on the height of the chimney; next, Section D (b) on banning furnaces after October 1, 2011 and finally, the Statement of Purpose.

A catalyst is a substance that causes acceleration in a chemical reaction yet remains unaltered by the process. An enzyme is an example of a catalyst. Catalytic converter technology was invented¹ in the 1950's after the publication of a study on the negative effects of smog in Los Angeles, California. The Clean Air Act of 1970 helped support the adoption of the first automotive catalytic converter in 1973. Leaded gasoline was known to poison the precious metals in catalysts, reducing the life of the catalyst. Unleaded gasoline was introduced in 1975 when federal law required all new vehicles to have a catalytic converter.

¹ US patent 2,742,437 was filed on April 17, 1956 by E. J. Houdry.



In 1981, catalytic converters improved in performance as an O₂ sensor and on board computers were added to automobiles. In 2005, NESCAUM² published a paper proposing an emissions standard for hydronic heaters. In 2006, a group of environmental engineers began testing the use of catalyst technology to improve visible emissions from hydronic heaters. In July of 2008, NESCAUM published a report that tested the use of this new catalyst and concluded that “Control technologies can reduce PM emissions by ~ 10 times.”

In 2010, ClearStak was formed to commercialize an intelligent pollution control device for the biomass market. ClearStak chose hydronic heaters as the first appliance on which to adapt their technology. On October 14, 2010, ClearStak announced that they were shipping beta units of their CS-100, a patent pending proprietary intelligent catalytic unit specifically designed to retrofit hydronic heaters. Since 2010, ClearStak has installed 14 units in Connecticut, Vermont, Indiana, and Alaska, and expects to install more units in Maine, Massachusetts, Alaska, and Minnesota this month.

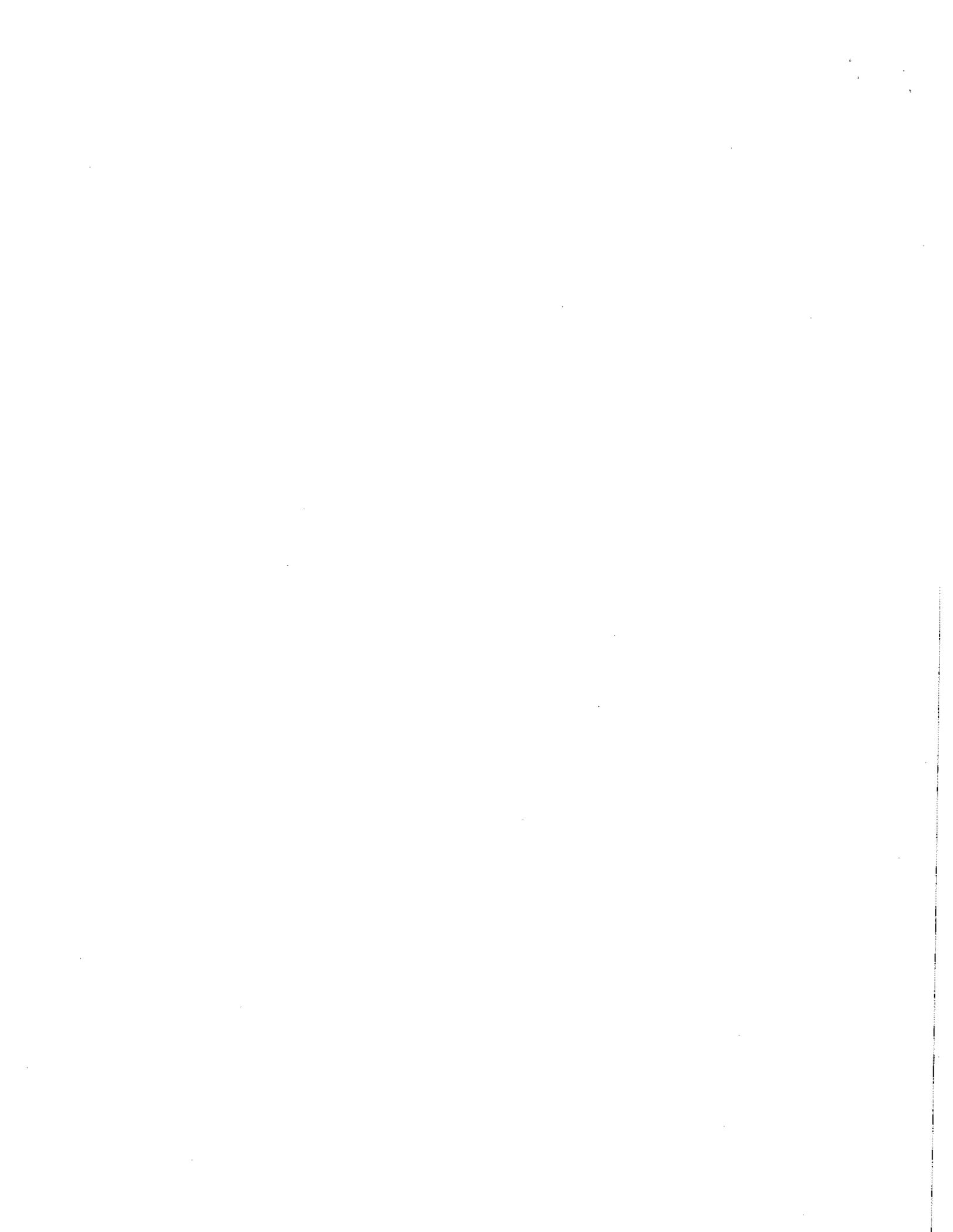
Over the past five years we at ClearStak have learned many particulars, and I would like to share that information with you as it relates to Bill 830. We have installed our product on several types of furnaces including traditional, gasification, EPA non-qualified, and EPA qualified units, and have encountered significant variables in fuel, climate, temperature, moisture, and oxygen. We have witnessed a variety of burn practices and experienced a wide range of product efficiency.

First I would like to address Section B and propose that the language be replaced by;

(B) Installation of the chimney of the outdoor wood-burning furnace is at a height that is necessary to meet the opacity regulations to property owners and residences not serviced by the OWF. This chimney will take into consideration factors such as furnace elevation and prevailing winds.

We know that a warm chimney helps improve the draft of a wood-burning appliance. We have seen many sites that have extended the height of their chimneys to over 50 feet. Many times the installation involves a combination of insulated and un-insulated pipes. The increased stack height combined with un-insulated pipes causes cooling of the stack, which reduces draft; increases creosote build up; and creates interior pipe condensation, which returns to the furnace causing corrosion. Seasoned wood in New England contains 18 to 25 percent moisture, and when this moisture exits the chimney, it condenses and becomes visible. This steam is often viewed as smoke by untrained individuals. Pollution control devices such as the ClearStak CS-100 improve the heat of the chimney and significantly reduce creosote; however, retrofits of very high chimneys with un-insulated pipes can potentially cause problems with moisture as the condensed steam runs back down the pipe into the catalyst. It is my opinion that increasing stack height is expensive, unsightly, causes dangerous creosote build up that is difficult to maintain, and does not reduce emissions.

2 Northeast States for Coordinated Air Use Management



Next , I would like to propose that Section D (b), the language that bans OWFs be deleted. I have two reasons for the removal. First, wood smoke is a very small contributor to fine particle pollution and second, green energy companies such as ClearStak would relocate out of state to continue research and development.

The EPA states on their website that “Residential wood smoke (from wood stoves, fireplaces, and outdoor wood-fired hydronic heaters) contributes 6 percent (420,000 tons) of the total amount of fine particle pollution (PM2.5) directly emitted in the United States each year.”³ If Connecticut adopts a policy that supports pollution control devices for wood smoke we could reduce this amount to 0.6%. This small amount of fine particle pollution does not warrant a ban.

Second, ClearStak is designing and testing technology that reduces visible emissions from the combustion of renewable energy including outdoor wood-fired hydronic heaters. If the ban was to pass, green companies like ClearStak would have to move out of state to continue our product development. Our current early product installation sites would have to be dismantled and our contractors working on these projects would have to be let go. The partners and investors of ClearStak would like to know that Connecticut supports local renewable energy and the businesses that are investing in this market. If this ban passes, ClearStak will not be able to sell any current CS-100 products in Connecticut and will have no choice but to move to a legislative climate that supports our investment.

Finally, I would like the Statement of Purpose to be replaced by;

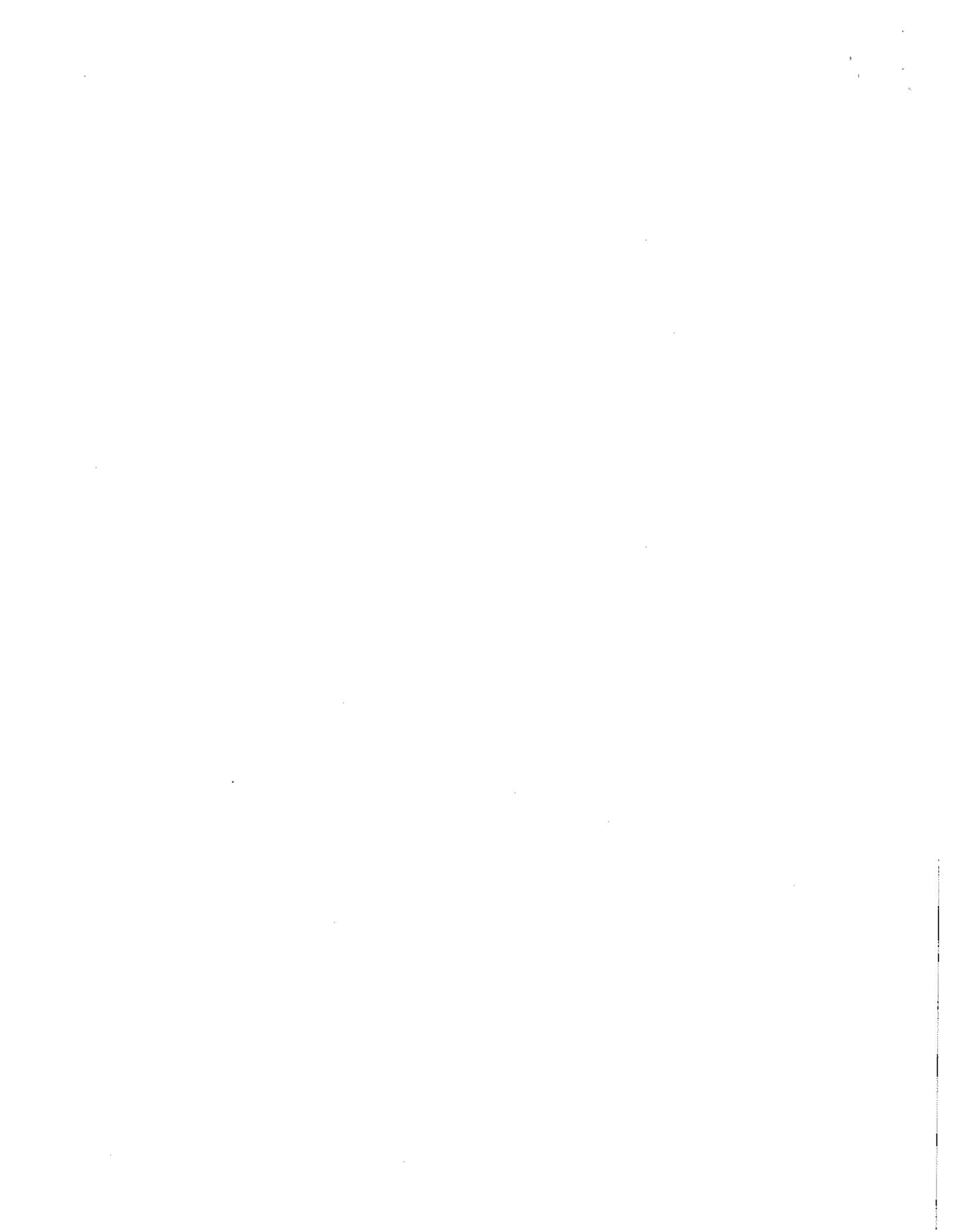
Statement of Purpose:

To promote the responsible use of outdoor wood-burning furnaces and technology that improves the quality of life of Connecticut residents while leveraging our renewable local bio-mass industry.

Pollution control has historically followed legislation that leveraged technology and provided incentives and mandates to consumers and manufacturers to improve the quality of our air. I do believe that as manufacturers improve product efficiency, and companies like ClearStak improve pollution control technology, the future of local renewable energy continues to be better for the environment. Many programs that promote renewable energy do not support pollution control technology for new or existing installations. If your committee also believes that pollution control devices such as the CS-100 are important to the future of Connecticut, please recommend legislation that supports incentives and mandates for pollution control technology for renewable energy.

Thank you again for the opportunity to share new information on technology in reducing visible emissions from bio-fuel. This is Connecticut's opportunity to promote green companies and green clean energy technology.

³ <http://www.epa.gov/air/peg/cleanup.html>



Sincerely,



Jeff Hallowell
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cc: Environment Committee

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Roy, Richard
Maynard, Andrew M.
Davis, Paul
Roraback, Andrew W.
Chapin, Clark J.
Backer, Terry
Camillo, Fred
Greene, Leonard C.
Hennessy, John (Jack) F.
Hurlburt, Bryan
Hwang, Tony
Luxenberg, Geoff
Megna, Robert W.
Miller, Lawrence G.
Miner, Craig A.
Moukawsher, Edward E.
Mushinsky, Mary M.
Piscopo, John E.
Rose, Kim
Ryan, Kevin
Shaban, John
Urban, Diana S.
Willis, Roberta B.
Wood, Terrie
Wright, Christopher A.
Wright, Elissa T.

