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WRITTEN TESTIMONY OF STATE REPRESENTATIVE TIM LARSON, 11TH DISTRICT

In support of Raised Bill 5467 - An Act Creating a Workforce to Make Improvements around Connecticut's Public Airports

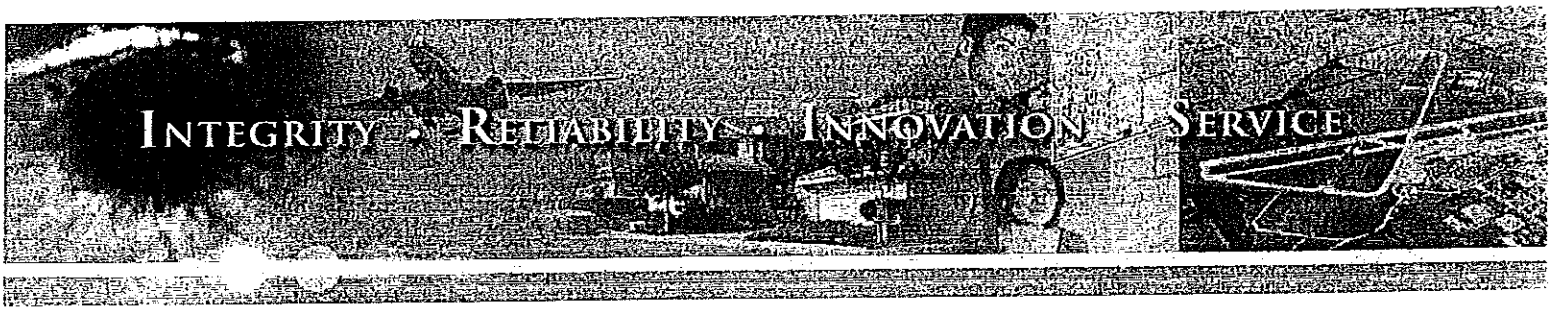
Senator LeBeau, State Representative Berger and members of the Commerce Committee, thank you for raising this bill for a public hearing and for the opportunity to submit written testimony in support of ***Raised Bill 5467, An Act Creating Workforce to Make Improvements around Connecticut's Public Airports.***

The genesis of this bill is to accomplish many things. First of all make homes more quiet and energy efficient and the neighborhoods around our airports more livable as well as providing a job program for our veterans.

Jawad Rahim, Consultant from Wyle Laboratories wrote a very interesting letter that peeked my interest regarding this subject (see attached) and the idea is simple. The Federal Aviation Administration currently provides funding for noise abatement systems for certain airports that have conducted a Part 150 study to reduce the noise level at these identified properties. The Department of Energy also has funding available for home Energy Star efficiencies, but unlike the FAA there is no specific criteria for qualifications for the Energy Star program. The intent of this amended legislation is to coordinate both of these programs simultaneously (if we are going to put in new windows in someone's home we should also be updating their HVAC equipment as well).

We are currently in discussion with DEEP Commissioner Esty and Senator Blumenthal on trying to coordinate a pilot program with the FAA and DOE to incorporate these two programs. This new language will provide an incentive for the FAA and the DOE to work with the state to develop this program. By connecting these two programs and identifying the area around airports we gain tremendous value. This additional language relies on Federal Funding and encourages the DOE and the FAA to combine their programs into one effort.

As we are currently aware, the new home construction industry is flat and we have many training programs for our veterans. This program will provide the home remodeling industry a platform to make these installations. It would be our intention to require those companies that do this type of work to hire veterans. The retro fitting of these homes with American made products such as new energy efficiency HVAC will reduce the energy cost to the homeowner and create great opportunity for jobs and make the homes around the airports much more livable.



A Synergistic Green Approach to Conducting Federal Aviation Administration (FAA) and Department of Energy (DOE) Residential Retrofit Programs

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I. Introduction

The objective of this paper is to outline the merits of a synergistic "Green" approach combining the benefits of FAA Residential Sound Insulation Programs (RSIP) and the joint DOE/EPA Home Performance with Energy Star® initiative. The proposed approach can lead to a mutually certifiable *Green* end-state, which would (a) contribute to key national goals on environmental sustainability and energy efficiency, and (b) produce enhanced value on ongoing government investments.

There are natural synergies between noise mitigation and energy efficiency due to the common techniques and materials used to prevent noise penetrations and air leaks. Another common thread between the programs is the importance of public outreach and homeowner satisfaction to their successful implementation. On one hand, residential sound insulation programs have provided quality of life improvements for affected communities by improving indoor noise levels by a perceptible margin. On the other hand, Home Performance with Energy Star® has typically delivered home energy savings of 20-30% of total energy use and even savings of up to 40-50% "with some degree of regularity" (NREL, 2007). Furthermore, energy performance retrofits, including insulation, have a direct and matching impact on reducing residential GHG emissions, which account for about 17% of the total U.S. emissions by end-user (DOE, 2006).

Both RSIP and Home Performance with Energy Star® recommend employing similar insulation techniques and materials for house envelope retrofits, but more can be done to combine their respective benefits for a whole-house approach. As such, we believe that a synergistic *Green* approach would greatly enhance the efficacy and reach of the referenced FAA and DOE/EPA programs and deliver key improvements to the comfort, health, safety and economy of treated residences. For example:

- Improved indoor acoustics;
- Healthier indoor air quality;
- Reduced GHG emissions and carbon footprint;
- Safer Hazmat treatment and disposal;
- More household utility and cash flow savings; and

1.1 FAA Sound Insulation Programs:

Through its voluntary noise compatibility program, the Federal Aviation Administration (FAA) continues to provide vital guidance and material support to the sound insulation of residential communities and public buildings affected by aircraft noise exposure.

The FAA has funded a large number of Sound Insulation Programs through Airport Improvement Program (AIP) grants and Passenger Facility Charge (PFC) authorizations. In fact, FAA residential sound insulation programs across the country have received about $1.9 Billion in AIP funds since 1982 and approximately $1.1 Billion in PFC funds since 1992 for a combined investment of more than $3 Billion.

The two primary goals of a sound insulation project are the mitigation of noise exposure—based on set criteria—and the promotion of better relations between the airport and its neighbors. Wyle has authored the federal guidelines for the implementation of airport sound insulation for residences located near airports and military air installations. Typical retrofit measures for these programs include the installation of acoustic windows and doors, wall and attic insulation, and HVAC system installation or modification.

1.2 DOE & EPA Home Performance Programs:

a. Home Performance with ENERGY STAR® is a joint national program by the Environmental Protection Agency (EPA) and the Department of Energy (DOE). The objective of this program is to offer a whole-house approach to improving the energy efficiency and the comfort of residences, while promoting the sustainability of the environment. The program is available in 22 states where it partners with local utilities to promote the evaluation and installation of residential energy retrofits such as high performance air conditioning and heating systems.

b. Building America is a DOE Energy Efficiency and Renewable Energy (EERE) initiative, which partners with private and public organizations to develop energy solutions for new and existing homes. The Building America project has been responsible for building approximately 40,730 homes leveraging the research knowledge and resources of industry partners and the technical capabilities of DOE staff. Building America is a valuable resource of information on emerging concepts and technology in residential energy performance.

1.3 Potential Energy & GHG Reduction Benefits

Data on residential energy expenditures from the Energy Information Administration (EIA) coupled with data from Home Performance with Energy Star® shows that an average energy savings rate ranging between 20% and 50% can result in average annual cash flow savings of about $300 to $750 per household. In addition, according to the DOE's 2007 Buildings Energy Data Book, the energy consumption of a single-family home is responsible for an average of 25,000 lbs of CO_2 emissions or 3.1 Metric Tons of Carbon Equivalent (MTCE) emissions annually (DOE, 2007). The residential sector is responsible for 17 percent of end-user GHG emissions in the US.

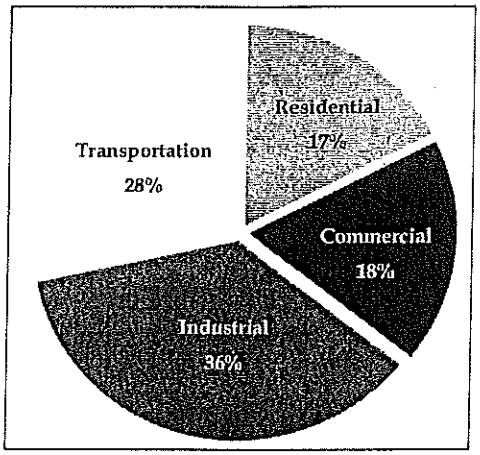


Figure 1. GHG Emission Contributions in the U.S. by End-User

FAA Sound Insulation, on average, treats about 200 to 2,000 homes in a single program depending on the geographical scope of program eligibility. These programs when coupled with Home Performance at an average energy savings rate of 30 percent can result in notable reductions in both utility expenditures and Greenhouse gas emissions as shown in Table 1 below. These reductions can be more noteworthy for very large programs such as those in Chicago and Los Angeles where more than 22,000 homes have been treated under FAA-sponsored sound insulation programs.

Table 1. Average Cash Flow & GHG Reductions at 30 % Energy Savings under Home Performance

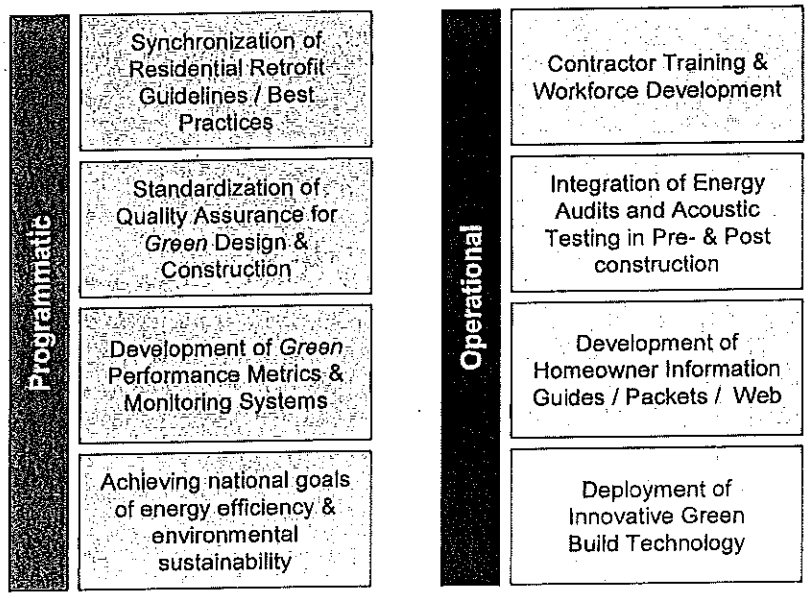
Sound Insulation Program Size	Avg. Number of Homes	Annual Community Cash Flow Savings	Annual Community Carbon Reduction (in MTCE)	Annual Community CO_2 Reduction (in lbs)
Large	2,000	$895,800	1,860	15,000,000
Medium	750	$335,925	698	5,625,000
Small	200	$89,580	186	1,500,000

Source: Author's calculations based on data derived from DOE EIA, DOE EERE, and NREL.

II. Preliminary Assessment of Synergies & Gaps

Wyle has conducted a preliminary evaluation of existing guidelines for Energy Performance under the Energy Star® initiative and the Home Efficiency Best Practices recommended by the DOE's *Building America* program. Furthermore, we reviewed the Re-Green Residential Remodeling Guidelines promulgated by US Green Building Council (USGBC). As stated earlier, Wyle has authored and recently updated the federal guidelines for the implementation of FAA-sponsored sound insulation programs.

This preliminary review reinforced by consultations with program staff at DOE and FAA, the Building Performance Institute (BPI), and *Building America* team members has produced the initial assessment that there is a high degree of complimentarity among the programs at both operational and programmatic levels.



Possibilities under a Synergistic Green Approach between FAA RSIP and DOE/EPA Home Performance

At the operational level, we found that many of the practices recommended by the sound insulation program are also valued as energy performance practices—and vice versa. For instance, the energy efficiency ratings of acoustic windows and doors and the air-sealing techniques employed in the installation of insulation in livable spaces are considered by DOE to be highly desirable for energy efficiency.

However, we also conducted an initial gap analysis that identified a few practices that would enhance the combined goal of improving the comfort, health, safety, and economy of the treated residences for both programs.

These gaps are due to the topical emphasis of the performance metrics used (noise transmission loss vs. air leaks and utility usage). For example, FAA programs do not treat bathrooms when the indoor acoustic criteria could be met with retrofits to other parts of the residence, whereas an energy program recommends their treatment for potential air leaks. Also, energy efficiency programs recommend HVAC systems with a 15 SEER rating, while FAA programs limit such systems to 13 SEER.

At the programmatic level, we have found that both programs can benefit greatly from a common approach to Quality Assurance and Workforce Development. For example, we found that the lack of effective QA and contractor training procedures has the potential of downgrading the performance of HVAC systems due to faulty and/or incomplete installation procedures. Under such circumstances, the government would derive a lower return on its investment and the homeowner would not gain the energy performance advertized by the installed products.

A synergistic approach would also provide expanded reach to the referenced programs. FAA programs provide an opportunity for DOE/EPA programs to reach into a few segments of existing residential communities in order to promote best practice in energy performance. DOE/EPA programs, on the other hand, provide an opportunity for FAA to integrate its established indoor acoustics practices into energy programs. In addition, all agencies would receive the benefit of enhanced community relations and the ability to team up in a meaningful way on pursuing national goals on energy efficiency and environmental sustainability.

III. Conclusions & Recommendations

Our analysis and contacts with FAA and DOE program staff has produced a general assessment that a combined Green approach to FAA/DOE/EPA programs would be of great benefit to the agencies involved, the project sponsors, the homeowners, as well as industry. The proposed approach would, among other benefits:

- Enhance return on government investment;
- Improve community relations performance;
- Strengthen Quality Assurance practices;
- Streamline Green home remodeling guidelines and processes;
- Expand reach for Green training and workforce development efforts; and
- Supplement the government's efforts to deploy innovative energy efficient products and materials.

Therefore, we recommend that a planning effort be initiated to develop an action plan for the proposed Green approach. A first step would be a meeting of DOE, EPA, and FAA to be briefed on the operational and programmatic synergies outlined in this paper and to forge an initial understanding of *how* the proposed concept can be implemented.

Early steps that could be taken in a cost-effective and expeditious manner include the synchronization of program guidelines and joint participation in QA development. Immediate operational improvements can include integration of energy audits with acoustic testing and the dissemination of available energy performance information and best practices to homeowners undergoing sound insulation. As these and other elements are defined, we would recommend that pilot programs be developed to demonstrate the effectiveness of the proposed concept and refine the operational details of a final approach.

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