AUTHENTICATED
U.S. GOVERNMENT
INFORMATION
GPO

S. HRG. 112–814

# TAX REFORM AND FEDERAL ENERGY POLICY: INCENTIVES TO PROMOTE ENERGY EFFICIENCY

## HEARING

BEFORE THE

SUBCOMMITTEE ON ENERGY, NATURAL RESOURCES, AND INFRASTRUCTURE

OF THE

COMMITTEE ON FINANCE
UNITED STATES SENATE

ONE HUNDRED TWELFTH CONGRESS

SECOND SESSION

DECEMBER 12, 2012

Printed for the use of the Committee on Finance

U.S. GOVERNMENT PRINTING OFFICE

82–738—PDF WASHINGTON : 2012

For sale by the Superintendent of Documents, U.S. Government Printing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512–1800; DC area (202) 512–1800
Fax: (202) 512–2104 Mail: Stop IDCC, Washington, DC 20402–0001

## COMMITTEE ON FINANCE

MAX BAUCUS, Montana, *Chairman*

JOHN D. ROCKEFELLER IV, West Virginia
KENT CONRAD, North Dakota
JEFF BINGAMAN, New Mexico
JOHN F. KERRY, Massachusetts
RON WYDEN, Oregon
CHARLES E. SCHUMER, New York
DEBBIE STABENOW, Michigan
MARIA CANTWELL, Washington
BILL NELSON, Florida
ROBERT MENENDEZ, New Jersey
THOMAS R. CARPER, Delaware
BENJAMIN L. CARDIN, Maryland

ORRIN G. HATCH, Utah
CHUCK GRASSLEY, Iowa
OLYMPIA J. SNOWE, Maine
JON KYL, Arizona
MIKE CRAPO, Idaho
PAT ROBERTS, Kansas
MICHAEL B. ENZI, Wyoming
JOHN CORNYN, Texas
TOM COBURN, Oklahoma
JOHN THUNE, South Dakota
RICHARD BURR, North Carolina

RUSSELL SULLIVAN, *Staff Director*
CHRIS CAMPBELL, *Republican Staff Director*

---

## SUBCOMMITTEE ON ENERGY, NATURAL RESOURCES, AND INFRASTRUCTURE

JEFF BINGAMAN, New Mexico, *Chairman*

JOHN D. ROCKEFELLER IV, West Virginia
KENT CONRAD, North Dakota
JOHN F. KERRY, Massachusetts
MARIA CANTWELL, Washington
BILL NELSON, Florida
THOMAS R. CARPER, Delaware

JOHN CORNYN, Texas
CHUCK GRASSLEY, Iowa
PAT ROBERTS, Kansas
MICHAEL B. ENZI, Wyoming
JOHN THUNE, South Dakota
RICHARD BURR, North Carolina

# CONTENTS

## OPENING STATEMENTS


| | Page |
|---|---|
| Bingaman, Hon. Jeff, a U.S. Senator from New Mexico, chairman, Subcommittee on Energy, Natural Resources, and Infrastructure, Committee on Finance | 1 |
| Wyden, Hon. Ron, a U.S. Senator from Oregon | 2 |


## WITNESSES


| | |
|---|---|
| Arvizu, Dr. Dan, Director, National Renewable Energy Laboratory, Golden, CO | 3 |
| Nadel, Steve, executive director, American Council for an Energy-Efficient Economy, Washington, DC | 5 |
| Wagner, Mark F., vice president, government relations, Johnson Controls, Inc., Washington, DC | 8 |
| Golden, Matt, principal, Efficiency.org, and policy chair, Efficiency First, San Francisco, CA | 9 |


## ALPHABETICAL LISTING AND APPENDIX MATERIAL


| | |
|---|---|
| Arvizu, Dr. Dan: | |
| Testimony | 3 |
| Prepared statement | 27 |
| Responses to questions from subcommittee members | 35 |
| Bingaman, Hon. Jeff: | |
| Opening statement | 1 |
| Prepared statement | 38 |
| Golden, Matt: | |
| Testimony | 9 |
| Prepared statement | 40 |
| Responses to questions from subcommittee members | 50 |
| Nadel, Steve: | |
| Testimony | 5 |
| Prepared statement | 61 |
| Responses to questions from subcommittee members, with attachment | 77 |
| Wagner, Mark F.: | |
| Testimony | 8 |
| Prepared statement | 92 |
| Response to a question from Senator Bingaman | 97 |
| Wyden, Hon. Ron: | |
| Opening statement | 2 |


## COMMUNICATIONS


| | |
|---|---|
| Ace Electric, Inc. | 99 |
| alliantgroup | 102 |
| ASHRAE, et al. | 107 |
| Bedford Strategies and Solutions | 113 |
| Cambridge Engineering, Inc. | 118 |
| Center for Fiscal Equity | 121 |
| Concord Engineering | 126 |
| Council of the North American Insulation Manufacturers Association | 129 |
| Energy Concepts and Solutions, Inc. | 132 |
| Energy Tax Savers, Inc. | 136 |
| Ernst and Morris Consulting Group, Inc. | 140 |

Page

Federal Business Centers ..... 143
Green Light National ..... 146
Grundfos Pumps Corporation ..... 151
Hauppauge Industrial Association (HIA) ..... 155
International Association of Heat and Frost Insulators and Allied Workers ..... 157
National Association of Home Builders ..... 159
National Multi Housing Council and National Apartment Association ..... 166
National Propane Gas Association (NPGA) ..... 170
National Roofing Contractors Association (NRCA) ..... 174
Polyisocyanurate Insulation Manufacturers Association (PIMA) ..... 179
Sheet Metal and Air Conditioning Contractors' National Association ..... 187
Solis Partners, Inc. ..... 190
Trio Electric and Trio Energy ..... 194
Walker Parking Consultants ..... 198
Worldwide Energy ..... 202
ZDS Design/Consulting Services ..... 205

# TAX REFORM AND FEDERAL ENERGY POLICY: INCENTIVES TO PROMOTE ENERGY EFFICIENCY

**WEDNESDAY, DECEMBER 12, 2012**

U.S. SENATE,
SUBCOMMITTEE ON ENERGY, NATURAL RESOURCES, AND INFRASTRUCTURE,
COMMITTEE ON FINANCE,
*Washington, DC.*

The hearing was convened, pursuant to notice, at 10:03 a.m., in room SD–215, Dirksen Senate Office Building, Hon. Jeff Bingaman (chairman of the subcommittee) presiding.

Present: Senators Wyden, Carper, Cardin, and Thune.

Also present: Ryan Martel, Staff Director, Finance Subcommittee on Energy, Natural Resources, and Infrastructure.

## OPENING STATEMENT OF HON. JEFF BINGAMAN, A U.S. SENATOR FROM NEW MEXICO, CHAIRMAN, SUBCOMMITTEE ON ENERGY, NATURAL RESOURCES, AND INFRASTRUCTURE, COMMITTEE ON FINANCE

Senator BINGAMAN. Why don't we go ahead and get started, if everybody could find a chair. Good morning. Today's hearing examines tax reform and Federal energy policy and considers some proposals to promote efficient use of energy resources.

The tax code has long served as a way to promote energy policy goals. For most of this time, the code only offered incentives for the production of energy, first from mineral resources and then from oil and gas. Recent years have brought important incentives for renewable energy resources, though unfortunately many of those still remain temporary and uncertain.

Even more recently, Congress has decided to reintroduce certain tax incentives that promote the efficient use of energy, recognizing the value in preserving our domestic resources by developing technologies that use less energy to accomplish the same task.

However, with the possibility of comprehensive tax reform in the next Congress, and within the context of a contentious debate on how to close the Federal deficit, we need to assess the existing policies to determine if their goals are worth the cost to the taxpayer, and, if they are—and I believe that energy efficiency is a worthy policy goal—then we need to examine the best, least-cost ways of achieving that goal.

At today's hearing we have a panel of expert witnesses who will help us consider these three issues: first, to understand the oppor-

tunities that are presented to our economy, our energy infrastructure, and to the environment that can result from the more efficient use of our resources; second, to consider if creating incentives through the tax code is a sensible and efficient way of promoting energy efficiency investments; and, if so, then the third question is to examine how we can improve our existing incentives and make them more effective, easier to use, and less expensive to the Federal Government.

Over the past two Congresses, Senator Snowe and I, along with Senator Feinstein and others—Senator Cardin has been very involved—have worked to develop reforms to our existing efficiency incentives. Whenever possible, we have adhered to general principles that we believe to be consistent with the goals of tax reform. We have striven to provide technology-neutral structures that offer incentives based on performance and not just the cost of putting in the particular energy-saving technology. We have worked to ensure that the efficiency savings are able to be measured and verified and that fraud is minimized to the greatest extent possible.

Finally, we have sought to ensure that innovative, new efficiency technologies can utilize existing policies. The results of this work is three bills that have been introduced in this Congress: one focusing on the commercial buildings deduction; one focusing on tax credits for homeowners; and one that promotes efficiency in the industrial sector. I hope we can examine how these bills fit into the discussion that I have outlined above. I welcome an honest assessment of the bills and encourage any thoughts on how they can be improved.

[The prepared statement of Senator Bingaman appears in the appendix.]

Senator BINGAMAN. This morning's hearing will consist of one panel of very distinguished witnesses. Let me just introduce them briefly. Dr. Dan Arvizu is Director of the National Renewable Energy Laboratory, of course in Golden, CO. We claim him in New Mexico since he used to be at Sandia. Next is Steve Nadel, who is the executive director of the American Council for an Energy-Efficient Economy. Then we have Mark Wagner, who is the vice president for government relations with Johnson Controls. Finally, we welcome Mr. Matt Golden, who is a principle at Efficiency.org, and the policy chair at Efficiency First.

Before I call on our witnesses, my colleague Ron Wyden, who is soon to be the chair of the Energy Committee as well as a distinguished member of this Finance Committee and who has been very interested in these issues, let me defer to him and thank him for being here.

## OPENING STATEMENT OF HON. RON WYDEN, A U.S. SENATOR FROM OREGON

Senator WYDEN. Thank you very much, Mr. Chairman. Mr. Chairman, as you know, there is not a whole lot certain about what goes on here in the U.S. Senate, including when in fact the Senate session may wrap up for this year. But I just want to note that there is one certainty for everybody who works in the energy field, and that is these debates are going to be less thoughtful and they

are going to be less informed because you will not be part of these debates.

I think people are going to understand, when voices get raised and the debate gets shrill, just how valuable those particular attributes were, the fact that you always brought us back to policy and sort of Planet Reality when the debates seemed to move in a different direction.

I just want to note that, while this may be the last energy hearing for the year—and maybe that remains to be seen as well, given the schedule—there are a lot of us who are going to make sure that the cell phone connections between Washington, DC and New Mexico are operating so that we can continue to have your wise counsel and your thoughtful approach on these issues. Thank you for giving me a chance to say that.

If the crowd wants to break into a big round of applause, I will not have any particular problem. [Laughter.]

Senator BINGAMAN. Thank you. Well, thanks for your very kind words. I am sure, as soon as I get out of town, you can solve all these problems. [Laughter.]

So I am trying to hasten that day. But thank you very much for your kind comments.

Why don't we start and just go across the table. We will have everybody take 5 or 6 minutes, or however long you think is necessary, to make the comments you think we ought to be aware of on these subjects, and we will try to shed some light on the issue of using the tax code to achieve some of these objectives.

Dr. Arvizu, go right ahead.

## STATEMENT OF DR. DAN ARVIZU, DIRECTOR, NATIONAL RENEWABLE ENERGY LABORATORY, GOLDEN, CO

Dr. ARVIZU. Thank you, Chairman Bingaman, Senator Wyden, and other members of the committee. Thank you for this opportunity to discuss how energy efficiency concepts and technologies can strengthen our energy security, our environment, and our economic growth. I will submit, with your approval, my written testimony for the record.

Senator BINGAMAN. Yes. We will include everyone's written testimony as if it were read.

[The prepared statement of Dr. Arvizu appears in the appendix.]

Dr. ARVIZU. So I am Dan Arvizu, the Director of the National Renewable Laboratory, the Department of Energy's primary laboratory for research and development of energy efficiency and other clean energy technologies. Research into new, more efficient ways to construct, modernize, and operate our homes and commercial buildings and businesses is an important part of our mission.

While we do not take positions on legislation and policy, I will speak this morning about the advancements that have been achieved from Federal investments in energy efficiency and the proven benefits that these bring to our Nation.

I also serve on the Alliance to Save Energy's Commission on National Energy Efficiency Policy, and, when released next year, the Commission's recommendations will be comprehensive and a road map to meet our Nation's energy future.

At NREL we have learned that energy efficiency is fundamental. The megawatts that are not used are just as important as the megawatts that are. That realization has been confirmed repeatedly on the national scale. Three years ago, McKinsey produced a landmark analysis that showed that, by 2020, the U.S. could reduce non-transport energy consumption by a quarter.

That would cost $520 billion but would pay back $1.2 trillion in energy cost savings. In 2010, the National Academy of Engineering and Science's report also found that the Nation could save money by cutting energy consumption by 30 percent and produce the same amount of goods and services.

At our institution, NREL, we have calculated that hundreds of peer-reviewed energy-saving measures that are currently available could reduce energy consumption by one-half by 2030, and the cost savings would be twice the dollar amount invested. These reports all imply and suggest that, to realize this potential, public policy is still necessary.

A leading example of the R&D successes achieved in recent years is the Commercial Building Partnership, sponsored by the Department of Energy. It partners with building owners and operators on a number of new buildings and retrofits, with compelling results. One project we participated in with Target stores in Colorado cut energy consumption by 35 percent, and they are now busy replicating that enterprise-wide.

The Research Support Facility at NREL—where I currently have my office—is another example of how much can be accomplished when energy efficiency is a fundamental attribute in building design. At the RSF, which is the world's largest net-zero-energy office building, energy consumption is one-half of a building built to code in our region, and it is cost-competitive, including the solar panels on the roof. I invite you to come out and take a look for yourself.

Private residences, which comprise a little more than half of the energy used by buildings in the U.S., provide equally large opportunities for savings. The DOE's Building America program has demonstrated that homes can have a 40-percent energy reduction at no additional cost in almost every U.S. climate zone. A Habitat for Humanity home built under this program likewise proved that ambitious energy efficiency targets and goals can be accomplished with very tight cost constraints.

Simulation tools like DOE's Energy Plus package and the building optimization program are continually being refined so that businesses, consumers, utilities, government agencies, and policymakers have the most accurate energy insights and can make the best efficiency decisions possible.

Industrial energy efficiency is one area where our new technology can dramatically improve performance. An example is the fast-growing data center industry. Set to open next year, NREL's new peta-scale high-performance computing system is the leading edge, both in computing and also in energy efficiency. A comparable existing standard data center today would be 13 times more energy-consuming than the NREL system.

So recently I have been reminded of just how susceptible our buildings and energy systems are to natural disasters. As a member of New York Governor Cuomo's NYS2100 Infrastructure Com-

mission, we will consider the related advantages and energy initiatives and how these can strengthen residential commercial building resiliency against all types of peril.

In conclusion, I commend the committee for considering initiatives for improving energy productivity in our Nation. My many years in energy research convince me that few solutions could be as fruitful. Putting these great strides that we have made in energy efficiency to productive use on a national scale is admirable. So, thank you very much for this opportunity to share our insights. I look forward to answering your questions.

Senator BINGAMAN. Thank you very much.

Mr. Nadel, go right ahead.

**STATEMENT OF STEVE NADEL, EXECUTIVE DIRECTOR, AMERICAN COUNCIL FOR AN ENERGY-EFFICIENT ECONOMY, WASHINGTON, DC**

Mr. NADEL. Thank you, Mr. Chairman, and other members of the committee. First, I wanted to second Senator Wyden's comments. Thank you very much, Senator Bingaman, for your many years of service in the Senate. You have really been a real leader for the Energy and Finance Committees, and we very much appreciate all that you have done for energy efficiency over your many years here.

I also wanted to briefly acknowledge Senator Snowe, who is also retiring. I see her aide here. She was not able to make it, but she has also worked tirelessly, often with you, Senator Bingaman, in introducing energy efficiency legislation. We appreciate both of your efforts.

Now, in your opening remarks, Senator, you talked about three questions. Dr. Arvizu basically addressed your first question, and I will concentrate on the next two. You asked if the tax code is an appropriate vehicle for promoting energy efficiency investments. You also asked us to discuss the best structures for tax incentives that could generate the greatest efficiency gains.

Regarding the first question, based on our research and analysis, we concluded that the tax code can be an appropriate vehicle for promoting energy efficiency investments. I say "can" because it depends on how the tax incentives are structured.

In our research we have found that the tax incentives that were enacted in the 1980s were not very effective in spurring substantial energy savings, as these credits promoted tried-and-true energy efficiency measures that many consumers and businesses were installing on their own. Most of the participants were what we call "free riders." They took the money but would have taken the same actions even without the incentives. Furthermore, the amount of the tax credit in the 1980s was too small to spur many additional investments.

On the other hand, tax incentives enacted in 2005 were more targeted. They emphasized advanced technologies and paid higher incentives. Our review of the experience with these has found that the tax incentives for new homes and appliances, in particular, were very effective in growing the market for qualifying homes and appliances and that the incentives for residential heating and cooling equipment, and also hybrid heavy-duty vehicles, were also very

successful in encouraging development of new products and purchases of the most efficient products.

Based on these experiences—I am turning now to your second question—we concluded that the most useful tax incentives target long-term structural changes in the market using temporary Federal assistance to build the market for energy-efficient products so the tax incentives can be phased out.

At this point, the market can continue to grow, supported by other energy efficiency programs and policies such as EnergyStar, utility energy efficiency programs, building codes, and equipment efficiency standards.

We have labeled this process the "Market Transformation" approach. We use tax incentives to help establish a sustained long-term market. Using such an approach, we should target advanced technologies and practices that currently have a low market share, but with Federal support over a defined period of time, maybe 5 years or so, that market share can grow and they can better prosper on their own after the tax incentives end.

Advanced products and services should be specified in terms of performance, leaving it to manufacturers and service providers to decide which technologies to use to reach the specified performance levels. By focusing on products with efficiency levels that currently have a very small market share, we can keep costs down and minimize the number of free riders.

A Federal role is particularly useful in the early stages of market development, because the Federal Government can provide a national market with uniform qualifying criteria and incentives, making it more likely that manufacturers and contractors will make the investments to develop market-qualifying energy-saving technologies and service. It will be much harder to transform markets without Federal involvement.

I would note that the same market transformation approach can be used for other advanced energy technologies, not just energy efficiency. You could do market transformation for modular nuclear power plants, advanced renewable energy sources, and new oil and gas drilling and exploration techniques. But once these technologies become established in the market, Federal incentives can be phased out.

Returning to energy efficiency, our organization has analyzed the cost and savings of 5-year Federal tax incentives for several high-efficiency products and services. We found that all of the products that we analyzed were highly cost-effective. Our analysis is summarized in my written testimony.

The average cost to the Treasury for all of these credits was only 28 cents per million Btu saved. This is less than a tenth of what the average energy cost is, making them highly cost-effective. We found that the most cost-effective options include tax incentives for commercial buildings, energy-efficient new homes, heating and cooling equipment and appliances, and combined heat and power systems. We also found that whole-house energy-saving retrofits and replacing old chillers were also very cost-effective.

The next two witnesses will be talking about commercial buildings and residential buildings, so I will not talk further about those. I will, therefore, concentrate on some of the other provisions.

First, incentives for energy-efficient new homes, heating and cooling equipment, and appliances were among the most cost-effective in our analysis. These products are subject to recently expired Federal tax incentives. We recommend that the energy efficiency requirements in these provisions be updated.

The market has moved. The levels need to be strengthened, but, with that strengthening, we believe it is appropriate to reinstate these provisions and continue to offer them for the next 5 years or so, based on these updated qualification levels.

I would also note that combined heat and power (CHP) systems are poised to make substantial strides, as utilities and their customers look to replace old, dirty power plants that are now being retired. A tax incentive will spur more combined heat and power systems during this critical period.

The provision in the bill that you have introduced, Senator, with others, modestly expands an existing CHP incentive now on the books to address some issues with the previous incentive that will help make it more workable. We did find this to be one of the most cost-effective provisions we examined.

I also wanted to briefly note that the chiller provision in S. 3352 is also very timely. It will provide a credit to encourage replacing old, inefficient chillers that contain CFC refrigerants. CFCs, as you probably all know, harm the ozone layer and have not been permitted in new chillers for many years. However, some of the old chillers remain, leaking CFCs and using excessive amounts of energy.

Building owners are reluctant to replace these chillers due to the up-front costs. The proposed incentive will cover part of these costs but would be available for only 3 years. Therefore, building owners would have a limited window to take advantage of the incentive. That provision also contains some innovative provisions to reduce chiller loads and encourage smaller chillers, increasing the amount of energy saved. Those chiller down-sizing techniques will be very useful from a market transformation perspective.

Finally, I wanted to note that in my written testimony—I will not go into it here—I discuss some problems with depreciation periods, particularly for commercial and CHP systems. We recommend that, as part of tax reform, Congress should revise these depreciation periods so they are based on the average service life of this equipment as opposed to the current, more political hodgepodge.

So, in conclusion, we recognize that, with tax reform, the number of incentives and their costs need to be substantially reduced. Based on our analysis, as part of any tax reform legislation, we recommend that limited funding be set aside for provisions with the largest energy savings per Federal dollar invested.

These are provisions that have a large multiplier effect and where incentives can be ended or revised after about 5 years. We would be happy to work with you and the committee going forward to help design incentives with the most bang per buck. Thank you.

Senator BINGAMAN. Thank you very much.

[The prepared statement of Mr. Nadel appears in the appendix.]

Senator BINGAMAN. Mr. Wagner, go right ahead.

**STATEMENT OF MARK F. WAGNER, VICE PRESIDENT, GOVERNMENT RELATIONS, JOHNSON CONTROLS, INC., WASHINGTON, DC**

Mr. WAGNER. Thank you, Mr. Chairman and members of the committee. My name is Mark Wagner, from Johnson Controls. We are an energy services company. For years, companies like ours have been in the business of saving energy for our customers by renovating and upgrading their buildings with energy-efficient equipment. This includes public sector buildings for the Federal, State, and local government, as well as private-sector commercial buildings.

The 179D Federal tax deduction for commercial buildings has been a valuable tool to help finance these types of energy efficiency upgrades, particularly in the public sector where we have done a large number of projects.

Let me give you two examples where projects have been certified for the tax deduction. In Maryland, seven Caroline County Public Schools and the Kent County Courthouse and Government Center are more efficient with the help of this tax credit. In San Antonio, TX, we made energy efficiency upgrades at the convention center, airport, and The Alamo Dome.

But the use of 179D for private-sector buildings lags behind. Despite the large potential market opportunity for commercial buildings, shopping malls, and multi-family housing, the tax deduction is significantly under-utilized.

There are a number of basic reasons why. Let me touch upon a couple. First, many private-sector buildings change ownerships frequently, unlike public-sector buildings, which limits the time in which an energy efficiency investment can pay back. Second, many private buildings have debt or are individually incorporated and have no credit rating, making it more difficult to finance projects. Thirdly, there is often misalignment between owner and tenant in commercial buildings between who has to make the investment and who gets the benefit.

Let me mention that every year Johnson Controls conducts a survey of executives, executive decision-makers who are responsible for making investments in energy efficiency. In our 2012 survey of over 1,100 U.S. executives, we have had three findings that are significant to our discussion today. First, we found a 20-percent increase from the year before from those executives who saw energy management as "significant" or "very significant" to their operations. Second, they listed access to capital as the largest barrier to financing energy efficiency projects. Third, tax incentives were deemed by far the most important tool. Forty-two percent of the executives found them to be the highest priority for public policy action.

S. 3591, which you sponsored, the Commercial Building Modernization Act, addresses many of the unique challenges facing financing energy-efficient projects for the commercial building sector.

First, it is technology-neutral. It gives building owners and contractors the flexibility and freedom to install traditional, as well as state-of-the-art, technologies to meet a variety of operational and tenant needs.

Second, it is performance-based and rewards the building owner: the deeper the retrofit, the larger the deduction per square foot.

Third, it provides verification of energy savings by giving 60 percent of the deduction for the design and 40 percent after calculation of actual savings.

Fourth, it changes and improves the measuring stick. Current law requires a retrofit of 50-percent savings against American Society of Heating, Refrigerating, and Air-conditioning Engineeers, or ASHRAE, code. This would be changed to a sliding scale of options for energy savings benchmarked against the building's actual energy consumption for the previous years.

Now, let me explain why this one is important. Mr. Chairman, you are very familiar with the energy efficiency upgrades Johnson Controls recently completed at the Empire State Building. Well, under current law that project does not qualify for a 179D tax deduction, even though we are projecting a 38-percent energy savings as compared to the building's previous performance.

But under S. 3591, the Empire State Building project would qualify because savings are compared to the building's own energy consumption. Finally, the legislation provides a better incentive for real estate investment trusts and certain limited liability partnerships to participate.

In conclusion, 179D will expire at the end of 2013. We joined with 47 other organizations from the real estate, construction, lending, manufacturing, supply, and efficiency communities in supporting the extension of 179D and the modifications that you have proposed in S. 3591.

As we look to the new Congress, we hope the Senate considers a combination of policies and programs that create market demand and provide commercial building owners with enhanced incentives, standardized processes, and financial models that attract private-sector funding. We can make a large impact with only a modest investment.

Mr. Chairman, thank you for the opportunity to testify, and, more importantly, thank you for your years of leadership in the Senate, particularly with respect to energy efficiency.

Senator BINGAMAN. Well, thank you very much.

[The prepared statement of Mr. Wagner appears in the appendix.]

Senator BINGAMAN. Mr. Golden, go right ahead.

## STATEMENT OF MATT GOLDEN, PRINCIPAL, EFFICIENCY.ORG, AND POLICY CHAIR, EFFICIENCY FIRST, SAN FRANCISCO, CA

Mr. GOLDEN. Thank you, Chairman Bingaman and the distinguished members of the subcommittee, for this opportunity to offer my perspective on the role of tax incentives to promote energy efficiency. I come to this committee as both an advocate working to bring investors and the capital to the energy efficiency market, and as a licensed contractor and board member of Efficiency First, a trade association that represents over 1,000 small businesses in all 50 States.

Efficiency First is a strong supporter of Senate bill 1914, the Cut Energy Bills at Home Act, also known as 25E, which puts in place the first performance-based tax incentives for existing homes. We

thank Senators Bingaman, Snowe, and Feinstein for their leadership on this issue.

Energy efficiency incentives remain smart tax policy that will stimulate private investment and job creation while driving savings directly to American homeowners. The average American family spends over $1,800 per year on energy for their homes, which equates to a $200-billion drain on household budgets every single year. This represents 22 percent of all U.S. energy consumption, which is a third more energy than used in passenger trucks and cars combined.

Retrofitting these inefficient homes will create thousands of U.S. jobs in some of the hardest-hit industries, including construction and manufacturing. These are jobs on Main Street and small businesses that cannot be outsourced, using materials that are 90 percent made in the USA. We are putting energy savings back into the wallets of American families and into our communities.

Energy efficiency is unique in that it creates its own cash flow. Simply put: it pays for itself. However, there are significant market barriers that prevent this vital resource from being harvested more effectively. One of the key steps towards a solution is to begin to account for energy savings as a resource. Reducing demand on the grid through energy efficiency is akin to building power plants, only cheaper, 100-percent domestic, and completely clean. We know how to finance power plants.

Power plants supply predictable amounts of energy into established markets, and utilities can easily raise capital to make these investments in energy supply. However, we lack the same capital sources and markets for energy efficiency, even though it is widely understood to be the most cost-effective resource for meeting our energy needs.

In fact, the energy we have saved through energy efficiency efforts in the last 40 years equates to a resource that is greater than any other single energy source in the country: greater than nuclear, natural gas, or coal.

S. 1914 is a great example of tax policy that can help move the market towards valuing energy savings as a resource. This legislation provides a financial incentive to homeowners to increase the energy performance of their homes: the greater the savings, the higher the incentive.

Transitioning to a performance-based incentive allows for technology and business model neutrality and creates a system that is flexible and rewards innovation. The good news is that the marketing systems we need to make this industry economically sustainable over the long haul are already here, just not yet to scale.

The contracting industry is actively moving towards performance-based models, with dedicated home performance companies growing in markets across the country and leading HVAC contractors, national manufacturers, and trade associations beginning to invest heavily in training and resources to move from single measures to whole-house solutions.

In addition, investments in energy efficiency have dramatically increased at the State level. This includes Recovery Act investments in workforce training, quality assurance, and program infra-

structure that have resulted in home performance projects increasing by 300 percent over the last 3 years.

Utility investments have also increased dramatically, averaging nearly a 20-percent year-over-year growth since 2005, substantially faster than the economy at large. We are also seeing private investment beginning to ramp up. Private capital markets are on the verge of the first-ever securitization for residential energy efficiency lending. This step forward promises access to senior capital markets and eventually much lower cost to capital.

Homeowners will soon be able to access loans designed specifically for residential energy efficiency at lower rates and better terms. Simply put, we now know that energy efficiency loans are more likely to get paid off. We believe that tax incentives play a critical role in helping scale this early-stage market. Tax credits directly benefit homeowners without adding layers of bureaucracy and will create consistent national markets that will make getting to scale vastly easier for all involved.

We believe that, with a combination of smart national tax policy and local infrastructure, we can enable a transformation in residential energy efficiency that will engage markets and drive private capital. Senate bill 1914, combined with an improved 25C, is a first critical step in this direction.

Creating markets is important, but let us all remember the small businesses, construction workers, and homeowners that we will be helping through these incentives. The energy efficiency industry puts people to work in ways that are both positive for their communities and the environment, and perhaps most importantly helps American homeowners make ends meet in homes that are more comfortable, healthier, and longer-lasting.

This is truly a unique opportunity to support small businesses in America and homeowners, all while helping the country meet its climate and energy goals. We appreciate the ongoing efforts of this subcommittee and look forward to continuing to support your important work advancing energy efficiency through smart tax credits.

Thank you for this opportunity to share our views, and I look forward to questions.

[The prepared statement of Mr. Golden appears in the appendix.]

Senator BINGAMAN. Thank you very much. Thanks to all of you for your statements. Let me start with a few questions and then defer to Senator Wyden and Senator Cardin.

One obvious issue, Mr. Nadel: let me ask you about this market transformation approach. You are talking about a 5-year kind of putting in place of incentives that phase out at the end of 5 years. If in fact we have all of these benefits to be realized in the area of residential and commercial buildings, why does it not make sense to look at longer-term incentives in the tax code for construction and retrofit of commercial and residential buildings in an energy efficiency way?

Mr. NADEL. Thank you. Yes. We advocate initial incentives for 5 years, but then taking stock of the market and how it is doing. Has the market sufficiently transformed? Does the program need to be tuned or modified? Is it working well in certain areas and not working well in other areas as opposed to just something blanket?

We think too many of the tax incentives have been on the books and have never been really reviewed.

But some of the incentives, we think, should continue afterwards, but you should make that judgment call afterwards, just like some of the existing incentives such as the appliance credit. We have revised the qualification levels twice as we have extended it, so there probably would be some refinements that would be needed.

In my written testimony I also suggest the option of repayable tax incentives in order to support certain retrofits, for example. If the cost starts getting too high, repayable tax incentives provide a way to continue to support the market even without as much cost to the Federal Government. So I am not saying end it absolutely, but let us look carefully at it after 5 years.

Senator BINGAMAN. Let me ask Mr. Wagner, and any of the rest of you who want to comment, about, in the last several years we have talked seriously about trying to adopt something like the HOME STAR proposal around here as another way to get more investment in energy efficiency. That is a different avenue. But how does it compare with the kinds of tax incentives that we are talking about here? Would it make more sense to be trying to do this through that kind of a program, through HOME STAR, or should we do both; should we do neither?

Mr. WAGNER. Well, I think you have a couple of different approaches. One is certainly a HOME STAR and a Building STAR approach where that was more a rebate on a specific type of equipment out there, and a lot of that was being talked about to try to stimulate that type of approach.

I think the benefit of the tax incentive is one in which it really helps—because of the level you have to reach in terms of the efficiency, it helps really drive larger projects that reach a deeper energy efficiency goal. That is the beauty of the tax incentive, I think.

You are looking at that yardstick and saying, can I meet this goal on this project, so you are striving to make more efficient projects, if you will, that drive more energy savings. So that is, I think, the true benefit of doing it from the tax side.

Senator BINGAMAN. Let me just ask about—I think what I understood you to say, Mr. Wagner, in your testimony, is that property owned by real estate investment trusts—which is a lot of property, obviously; a lot of the commercial property in the country—those properties are not eligible to qualify for the existing commercial building incentive. Could you elaborate on that, if I am understanding that correctly, and why that is the case? Obviously that is a major problem in the current law.

Mr. WAGNER. Yes, and it is one that certainly is addressed by the proposed legislation. Currently, many of these commercial buildings belong to the large real estate owners with legal ownership structured as an LLC, as you pointed out. Many of them are non-credit rated, meaning there is no credit history that they have and no assets which can be held as security against the mortgage. So this fact kind of makes banks wary of making energy-efficiency loans in this area, so that is why I think it is an important provision that is in the proposed legislation to address this.

Senator BINGAMAN. My time is up.

Senator Wyden?

Senator WYDEN. Thank you. Thank you very much.

This has been an excellent panel. Let me get your sense with respect to where I think we are at this point in the debate. We are, of course, debating the intersection between energy policy and tax policy. The Senate Finance Committee, earlier this year, I think made the correct call in terms of trying to start this debate.

What we recognized is that you ought to extend the current tax provisions, at least for a relatively short period of time, a year or thereabouts, and that was what was done with respect to the production tax credit for renewable energy and for the 25C residential energy efficiency credit, so that we would not be pulling the rug out from under these important programs, and you all have touched on that.

The question is then, what happens from this point on? There are a number of us who sit on both this committee and the Energy Committee, and I think it is going to be important to try to lay out some principles early on with respect to what we ought to be working for.

I want to ask your reaction specifically to making a bedrock principle of fundamental tax reform a more level playing field between the various energy sources, because what we have seen over the years—and I have sat next to Senator Bingaman for more than a decade on both of these committees—is a lot of the programs that you all correctly identify as so important, the renewable programs, the energy efficiency programs, they are essentially on a temporary status. And a lot of the other programs, the more traditional programs, have been imbedded in the tax code for years, in effect have acquired a more permanent kind of status.

I do not see how we improve, number one, the investment climate for the kinds of important programs you are talking about if we do not have a more permanent and level kind of playing field, nor do I think you really get at the all-of-the-above kind of approach that every Senator says they are for. I often kid and say it is not an energy speech unless you say you are for all of the above three or four times. I do not see how you really can be for that without a more level playing field.

So I would just be interested in your reaction to that being a bedrock principle of tax reform as we start these more extensive discussions next year, and we can just go down the row.

Dr. ARVIZU. Senator Wyden, that is a great question and one that I think deserves a considerable amount of attention. This is a complex area, clearly. The one thing I would say is that we should be making decisions based on the best information and the best analytics that are available, and some of those are woefully inadequate.

So I would say that there is a lot of opportunity to do some analysis that allows there to be more thoughtful policy built on very quantifiable trends that we see in the marketplace. It is difficult to know what is going to happen 5 years from now. It is difficult to know even more so what is going to happen 10 years from now. We will miss some important market dynamics if we do not have good analytics.

So the first thing I would offer is that the tools and the simulation and modeling types of programs are getting more sophisti-

cated. They are not the end-all. They depend on the assumptions that you make in order to understand what the outcomes are. But those tools should be transparent.

One of the things that we should focus on is the true cost of energy and the true cost of all of the things that relate to the societal benefits that we expect out of our energy system. We are expecting a transformation to occur, and we are expecting it to occur over some period of time. As we make incremental improvements toward that end point, we need to measure, how well are we doing?

One of the things that I would offer is that the portfolio will shift in terms of mix, so as a practical matter I think it is great that we have natural gas and an expectation that the costs will be low for some period of time. But it is part of a portfolio. It is part of a portfolio in the future.

We will have a very different profile than the one we have today, and we need to be deliberate about what that end point needs to look like and move toward that end point again with strong understanding of what our policies are yielding in terms of change in that portfolio and at what pace.

Senator WYDEN. Level playing field. I think I have time for one more, and maybe I will ask you to do it in writing.

Go ahead, Mr. Nadel.

Mr. NADEL. Yes. I agree that we do need a level playing field as a bedrock principle. I agree with you that it is a problem that efficiency and renewable energy have temporary breaks, while some other energy sources have permanent ones. I would advocate that everybody should be put on this 5-year schedule, sort of like the farm bill.

I am not saying get rid of the incentives, but every 5 years we look at them and say, "What makes the most sense going forward?" But, if you have long-term permanent incentives, I think we get a lot more waste, where money is being spent on things where maybe it is not needed.

Senator WYDEN. Let us do this. My time is up. Mr. Wagner, if you and Mr. Golden would furnish your answer in writing on this point with respect to the level playing field. I would also ask just if you would, Mr. Golden, in writing, also give us your views with respect to how the whole-home credit being combined with the 25C proposal could advance this idea of the more level playing field.

Mr. GOLDEN. Absolutely. Thank you.

Senator WYDEN. My colleagues are all waiting to ask questions, so, if we could have those comments, I want you to know I am going to read them personally.

Mr. WAGNER. Thank you.

Mr. GOLDEN. Thank you.

Senator WYDEN. Mr. Chairman, thank you.

Senator BINGAMAN. Thank you.

The order here, based on arrival, would be: Senator Cardin, then Senator Thune, then Senator Carper.

So go right ahead. Senator Cardin has been a co-sponsor of this legislation that Senator Snowe and I have developed, and we would appreciate his strong support.

Senator CARDIN. Senator Bingaman, first of all, thank you for your leadership, not just on this committee but on the Energy Com-

mittee. You have really, I think, provided the directive for our country that a sound energy policy is critically important for our national security. It is important for our environment and, done right, will create more jobs in our communities.

So, I thank you for your leadership. You are going to be sorely missed, not just on this committee but in the U.S. Senate. We are going to try to follow in your footsteps, but it is going to be difficult. So, thank you very much for everything that you have done.

The reforms and extension of section 179D are very important. I particularly note the two provisions that would measure the performance based upon the existing building baseline. The example given by Mr. Wagner on the Empire State Building, I think, is well taken. The allocation to the tax-exempt entities to allow allocations to the designers of buildings, I think all that makes sense so that it becomes effectively used.

I might point out, there are other bills that are pending in this committee. I am working with Senator Crapo on the Cool Roofs bill that gives us a more realistic depreciation schedule in buildings and developers who use cool roofs, and then the Historic Tax Credit with Senator Snowe that gives a reward for using historic retrofits for energy efficiencies.

I think all of those are performance-based types of ways that we can improve our respect for energy consumption in our environment and our economy. I just want to follow up quickly on the chairman's point about the 5 years or longer, et cetera. I fully appreciate the need to evaluate programs.

There is no question that, as we have done that, we have been able to find ways to fine-tune or to reform or to eliminate those provisions that do not work, and we should always preserve that opportunity to do it. I am concerned, though, that we have gotten into a habit here on extenders that has very little to do with evaluating programs and has a lot to do with the uncertainty in the market on the use of these available tools, and we pay a price for that.

So I want to get the time limit right here, but I also want to understand the impact of congressional short-term extensions of credits as to how it would impact on the usefulness of these tax provisions. We get criticized that they do not do very much, but, if they are so short-term, we understand why they may not. Does anyone wish to comment on that, the short-term dangers here?

Mr. WAGNER. I will take a shot. I think it is critical. In our business, if you do a project on a commercial building, it may take quite some time to do. It may take a year or more to just design the effort even before the construction period. If you see the end of the tax period where it may have to be in place and working at that point, if you are not sure you can get there, there is that uncertainty to say, we do not know if we can factor this in to the economics of the project because we do not know if we can get there before this tax incentive, whichever it might be, expires out there, and then we are not sure whether it will be reinstated or not.

So I think that uncertainty for the business community, as well as the design and the construction of these long-term projects, really puts a kind of chilling effect on it if you are not at the beginning of the program.

Senator CARDIN. Well, that is certainly true in production tax credits. We have seen that now on solar. Even though the expiration date is several years out, it is already affecting decisions being made. So, Mr. Chairman, I would just point out, if we were to extend the program for 5 years, everybody thinks you are safe for 5 years. You are not. You might be safe for a few years, but then the uncertainty creeps in, and the planning process and all the hurdles you have to jump in order to get the project completed to meet the standards required by the code, may have a pretty chilling effect or a cost effect.

Could we just talk one minute about the job implication here? We all know we have high unemployment in the construction industry. Does anyone here have some help for us as to what impact this could have on our economy and getting people back to work?

Mr. NADEL. I can comment briefly on it, without getting into the exact analysis of these particular bills. But in general, energy efficiency is very labor-intensive and tends to create a lot more jobs than, say, investments in mining, drilling, new power plants, et cetera.

So we have always found that, for each $1 million you invest in energy efficiency, you typically create about—I think it is about seven net jobs, meaning seven more jobs than if you invested it in other energy resources. So these bills will be, I think, powerful job creators.

Senator CARDIN. Mr. Golden, very quickly?

Mr. GOLDEN. Yes. I just wanted to add that we also find that this goes to the whole supply chain. There has been a study that the Home Performance Resource Center conducted in the last couple of years that showed that over 90 percent of the materials used in the residential sector are domestically produced. These are big materials, and so it is not just construction jobs, but we are also seeing it reflected in the manufacturing community.

Senator CARDIN. I think that is very important.

Mr. WAGNER. If I could add, Senator. The Political Economy Research Institute, along with the U.S. Green Buildings Council, Real Estate Roundtable, and NRDC, did a report last year in June, and the proposed revision, just for 179D, would create over 77,000 new jobs according to the report.

Senator CARDIN. Thank you.

Thank you, Mr. Chairman.

Senator BINGAMAN. Thank you.

Senator Thune?

Senator THUNE. Thank you, Mr. Chairman. I want to congratulate you on your distinguished service in the U.S. Senate, and also for your great work over the years on energy issues. Your leadership is going to be missed around here. I am pleased that we have the opportunity to do one last energy-related hearing before you leave.

I agree with the assumption that has been made that comprehensive tax reform is going to be the opportunity to seriously examine how the Federal Government conducts energy policy through the tax code, and I am hopeful that any deal to address the fiscal cliff will at least include a pathway for us to get to comprehensive tax reform sometime next year.

You have all, I think, commented already to some degree on whether or not that is the way in which we ought to be doing this through the tax code, having IRS administer these policies as opposed to having them done through other agencies that would be more appropriate and more fitting.

But I also want to drill down a little bit on the question of the temporary nature of many of the tax incentives that we have, many of the energy tax incentives that we have in the code today.

A lot of these things get under-utilized, as has already been noted, by the sector that they are supposed to benefit, simply because they have this on-again/off-again nature. I am wondering what your thoughts are with regard to whether we would be better off, instead of having numerous targeted incentives that expire periodically, moving toward instead a limited number of longer-term technology-neutral incentives. I know, Mr. Wagner, you mentioned in your testimony the 179D tax deduction and how that falls in this category of being under-utilized because of this temporary nature.

But anyway, your thoughts about technology-neutral incentives applied over a longer period of time so you address the economic certainty issue that has been raised and gets raised so many times over and over again as opposed to these little niche, boutique-type approaches that we have in terms of policy today.

Mr. GOLDEN. I thank you for that question. I think that the duration and creating certainty for small businesses and projects is really a critical aspect of the effectiveness of any tax policy. In an industry like the home performance industry, where companies are also making investments and ramping up their own businesses, these are longer pay-back periods, and so uncertainty really plays a role as the business community is evaluating and making these investments to actually transition their businesses.

We also strongly support performance-based incentives that are technology- and business model-neutral so that we do not have to continually be revisiting the tax code and making adjustments to individual technologies. Quite frankly, none of us can really predict what technologies are going to emerge or what makes the most sense for any individual building, so it becomes the great equalizer.

Fundamentally, whether it is residential, commercial, or renewables for that matter, we are talking about valuing either the production or the savings as a resource, and fundamentally that is about what emerges at the meter, not the individual technologies that get us there.

Mr. NADEL. I would add that we need to be very careful. If we make the incentives too broad, they basically just tend to encourage free riders, people who are already going to do things anyway. If you were to try to make it very broad, you have to be very careful that you really are promoting the advanced technologies and not business as usual, and that can get very challenging.

It is probably a little easier in the residential and commercial sectors. We have two bills here that are performance-based, based on the baseline for the current home. But for investments in industry and heating and cooling equipment, the baselines regularly change, and you need to allow for that or else you are just going to get high cost, high free riders, without a lot of impact.

Senator THUNE. Anybody else?

Mr. WAGNER. The keys are to be technology-neutral, performance-based, and then having, particularly for commercial buildings, a process where you verify the savings. I think those are really key to show that the savings are real.

Dr. ARVIZU. I agree with my colleagues. The only thing I would add is, I think there is some merit in this discussion, and I would very much encourage that we fully understand what objectives we are trying to accomplish. More importantly, I think there is an opportunity to aggregate lots of what I would call distributed and smaller types of improvements that, when aggregated, allow the private sector to make investments that can ensure some reasonable returns on investment. Those would be then the ingredients for success. So it really is about unleashing the market capital in a way that can move that marketplace.

Senator THUNE. One more question, Mr. Chairman?

Senator BINGAMAN. Go right ahead.

Senator THUNE. If I could just, as sort of a follow-up to that, ask if you have any ideas about how Congress could better design incentives that could be phased out once they have helped to create a market. What we do right now is, we will do this. We will do an extension for 2 years, 3 years, maybe even 5 years. Although the analogy to writing a farm bill might make some sense, for somebody who serves on the Agriculture Committee and has to write a farm bill every 5 years, I am not sure you guys want to be in that kind of mess sometimes either.

But is there a way that, when you create these things, you could phase them down at the inception or creation of them as opposed to kind of going through this annual exercise that we do of having to do extensions and then just creating, really in a lot of ways, more uncertainty because you have such a short window? Does anybody want to take a stab at that?

Dr. ARVIZU. Well, I think we can take a lesson from maybe some of the things that other countries have done in a variety of things. Again, I think it comes back to, what does it take for the financial community to make those decisions in a positive manner?

On the general side, one of the important market mechanisms is the power purchase agreement. The power purchase agreement typically runs for 20 years. That allows enough certainty that I can make a serious investment and, even though my margins are going to be thin for a while, I can recoup that investment over some period of time. That is enough certainty to allow me to make an investment.

So I think whatever is designed needs to be fully cognizant of how the money flows and how the investors make decisions. To the degree that that instrument allows them to make a decision that they would not otherwise make because of uncertainty, then I think you have a successful mechanism.

Senator THUNE. All right.

Mr. NADEL. I would add 2 suggestions here. One, building on your first comment, when it comes to equipment, you could do a longer-term incentive but then delegate to the Department of Energy to periodically revise the qualification levels based on criteria that Congress has established so that it does not get out of date but it could continue long-term and still have a lot of impact.

The other thing you could do if you have 5-year incentives is, you have 5 years and then a 3-year phase-down. Yes, you can continue to modify and extend them further, but at least you know you have an orderly phase-out as opposed to a cliff if Congress does not act in a timely fashion.

Senator THUNE. Yes. Which is the normal experience.

My time has expired, Mr. Chairman. Thank you. Thank you all very much.

Senator BINGAMAN. Thank you.

Senator Carper?

Senator CARPER. Thanks. Before Senator Thune leaves, I just want to come back, if I could, to the question you just asked of the panel: how do we structure these tax incentives to make sure that we do not just have them expire and extend them endlessly?

One of the provisions that Senator Snowe and I have worked on is an investment tax credit for offshore wind. The production tax credit for offshore wind just does not help; we need an investment tax credit. If you only have a production tax credit, we will never build an offshore windmill farm.

What we have crafted as legislation says that, for the first 3,000 megawatts of generating capacity that is deployed off of our coasts, those would be eligible for a 30-percent tax credit, and, after that, it is gone. I actually think that is a pretty good approach. We will see if it passes muster in whatever we put together next year.

I also want to applaud our colleague and our chairman here, Senator Bingaman, for not just holding this hearing, but really for being our leader in so many ways on energy, and energy efficiency in particular. So, thank you. You know we are going to miss you. I will say it every day until you are gone, and we will just talk about you when you are gone.

I want to say to our panel, thanks. Thanks a whole lot for being with us today. I sometimes say that the cleanest, most affordable form of energy is the energy we never use. My first question is, who actually said that first? I think I did. [Laughter.]

Mr. GOLDEN. We all agree, sir.

Senator CARPER. As our Nation grapples with air quality concerns and higher energy product prices—although in some places energy prices are coming down. I bought some gas for about $3.30 per gallon, and natural gas being abundant has helped us on some other fronts. But still, we need to save energy and try to figure out how we can incentivize energy efficiencies in this country.

I often hear from a company back in Delaware that manufactures windows that the 25C energy efficiency tax credit has been, in this recession, a significant lifeline. I have heard that the credit has been easy for consumers to really get their heads around, too. Therefore, it has been pretty successful.

As we all know, 25C expired at the beginning of this year and has been extended in this committee's package of extenders that we passed back in August, but has languished since.

I realize that a number of you here would like to make some changes to 25C, but how important is continuing this tax credit for energy efficiency, at least in the near term as we move into talks next year about broader reforms? Mr. Golden?

Mr. GOLDEN. I can speak to that. Efficiency First supports 25C, but we do recommend some improvements. Without getting into the absolute specifics, at the current levels, as we understand it from our members, it is not driving a lot of new action, so there is a concern that, at the level that we are currently at, it is a lot of additionality where people would have already maybe perhaps taken these actions.

While that seems a little bit in juxtaposition with the fact that we need to control costs as well, we think that ties into some of the comments that Mr. Nadel brought to the table around standards, so making sure that we are in fact incentivizing higher efficiency equipment that is more likely to be an upgrade from what somebody might have done otherwise.

So we also believe that 25C should be coupled, just like for example in the HOME STAR legislation where we had a more prescriptive path that addresses where industry is today and where most consumer transactions are occurring today, coupled with what ends up being a much less expensive performance track that helps enable this transformation and brings in more private capital into the industry. But obviously it is a balance of these standards to make sure that this package makes sense from a fiscal standpoint in the context of tax reform.

Senator CARPER. All right. Would any of the other panelists agree with anything he said?

Mr. NADEL. Yes, I agree. Just to add one point: the qualification levels really need to be revised. You mentioned windows. Something like 85 percent of the windows now being sold qualify. This no longer differentiates the best from run-of-the-mill. But, if you really identify the very most efficient products, yes, we would support 25C. In our analysis, it does perform quite well if you have a performance tier that really differentiates.

Senator CARPER. Thank you.

Gentlemen, does anyone else want to comment?

Mr. WAGNER. I just want to agree with your statement earlier about efficiency. Taking another twist on it, I have often heard efficiency referred to as the fifth fuel. I always like to refer to it as the first option, because it is easier and more cost-effective to save a unit of energy than it is to produce a new one.

Senator CARPER. All right. Good. Thank you.

Dr. ARVIZU. And I just want to applaud your efforts on offshore wind. I think one of the things that is important is that it is an early-stage technology and it does need some help to get us back into a leadership position.

Senator CARPER. Good. Thanks so much.

Mr. Chairman, my time has expired. Would you like me to stop?

Senator BINGAMAN. Go right ahead.

Senator CARPER. All right. Thank you. You may regret that. [Laughter.]

I am going to just stick with this for just a moment. In some of our tax hearings earlier, we heard about the need to make the tax code simpler. In fact, that is one of the themes that we always come back to. We do not do a very good job at it, but we certainly talk a good game. But is there a way to consolidate residential and

business energy efficiency tax credits into one credit that would be as successful as maybe the separate credits? Anybody? Yes?

Mr. GOLDEN. I think personally that there is enough difference between the two sectors that they deserve separate tax credits. However, from a philosophical standpoint, from a design standpoint, I think there are a lot of parallels between the performance tax credit that occurs in the commercial sector and 25E-style performance tax credits for residential as well. I think the arbiter there, the common denominator, is performance rather than specifying specific materials and equipment that we continually have to update.

Senator CARPER. All right. Does anyone have a different view? [No response].

Could I ask one more? Thanks very much.

Mr. Nadel and Dr. Arvizu, let me focus, if I could for a minute, on industrial energy efficiency. Dr. Arvizu, I believe you mentioned in your testimony—I think it was you—that industry represents about 30 percent of energy consumption in this country.

There is a huge potential for energy savings in this sector. As we know, manufacturing has picked up considerably over the last 2 or 3 years in this country. Many companies are modernizing their plants and trying to keep up with demand, which is a good thing.

However, I have been told by industry that energy efficiency projects have a huge up-front cost, despite the long-range energy savings, which usually or oftentimes prevents industry from making the investments that are needed in efficiency.

At the same time, our utilities are modernizing our energy fleets to keep up with clean air regulations, to keep up with energy demand. However, utilities are much more focused on energy production rather than finding energy savings, for obvious reasons.

My question is, why are utilities not partnering with industry more to implement large-scale industrial efficiency projects for energy savings, and does it make sense to incentivize these partnerships?

Dr. ARVIZU. That is a very astute observation, and one I think that is one of the critical barriers. It really has to do more with what incentivizes utilities, and typically investor-owned utilities, have to focus more on the generation side than on the efficiency side. It typically is structural features of the business model.

To the degree that States have taken on some of that responsibility to just begin to change that business model so that they are incentivized to save energy as opposed to just generate energy, then I think you will see those wholesale changes.

Clearly that partnership between the consumer, the customer, in the case of the industry, as well as the generators, is an important aspect of helping change that business model. So these are what I call market structure barriers that do need, in fact, some serious attention. We have a whole host of regulatory dynamics that are driving that entire system.

So we need to really take a step back, understand what it is that we are incenting and why, and then, I think, move more expeditiously to get to the transformation we need. I think there is really great opportunity in the fact that we have essentially some new generation sources that offer us great economic benefit, but only if

done properly, only if structured in a way that the government's enabling of those market forces leads us to the ultimate objective of getting a much more sustainable energy system in the end-point.

Senator CARPER. All right.

Mr. Nadel, do you want to add or take away from that?

Mr. NADEL. Yes. I agree there are enormous opportunities to save energy in industry, and we can, and should, do a lot more to promote these opportunities. In some of the bills that Senator Bingaman has introduced, we have some targeted incentives, such as for CHP and chiller systems. Perhaps more could be done. Industry is very diverse, so what you do in a paper plant is going to be very different from a steel plant, from an aluminum plant, et cetera. It is hard to have a one-size-fits-all approach in industry.

That said, there may be some things that could be done. You mentioned utilities. Some utilities are doing a very good job of promoting industrial energy savings, primarily by getting involved with industrial processes. I would say most utility programs are not there yet. If they have an industrial program, they do a commercial program and then add "and I" at the end of it without making any other changes, and that does not work.

Is there something the Federal Government can do to encourage better utility programs? Utility programs are an area covered primarily by State and not Federal regulation. Perhaps the Federal Government could add a little extra bonus or something, that would be possible.

We are also investigating the idea of how to encourage increases in capital investment by industry. When industry invests capital, most of the time it is in more efficient processes, because they have to be competitive.

So how do you reward not just any investment, because there are trillions of dollars of investment annually, but how do you reward increases in that investment? If we can get more of that investment, we can get more jobs here and we can also get more energy savings. So we are looking at that now, trying to figure out what the cost would be, because we recognize that money will be tight here in Washington, and we are trying to come up with something that looks cost-effective.

Senator CARPER. All right. Thank you. Thank you all very much.

Senator Bingaman, just let the record show you have always been so generous with giving me all the time I want. No one else ever does that. [Laughter.]

Senator BINGAMAN. Well, if you would like to stay for another round of questions, we will be glad to oblige you with that, too.

Senator CARPER. That is great. Thanks so much.

Senator BINGAMAN. All right. Let me just ask a couple of questions that have occurred to me listening to other Senators asking questions here.

It seems to me we have sort of three different issues, and maybe more than three. This idea of putting a 5-year limit on these credits and all, I think the mind-set that leads to that, at least with regard to some of these incentives, is that we are trying to support new technologies or emerging technologies or early-stage technologies—and we want to support them—but we want them to be able to progress to a point where they can stand on their own after

a certain period of time and compete in the marketplace. So that makes sense, to have a tax credit or a tax provision to encourage the use of that technology for a period and then phase it out, so I think that is one thing.

It seems to me, though, that many of the other things we are talking about here really are not of that type. For example, Mr. Wagner, you talk about the idea of being sure that you have a tax incentive so that a person who owns a commercial building, like the Empire State Building, anytime they can do a retrofit of that building and save 38 percent of their energy from what they previously had been using, we ought to be encouraging that.

That should not be something that we just do for 3 years or 5 years. That could be a permanent part of the tax incentives, it seems to me. So I do not know that phasing that out makes a lot of sense.

Then also, if we could properly design a regime for improved efficiency in appliances and equipment and that sort of thing along the lines I think Mr. Nadel was talking about, where you have an ability to upgrade the standards or the qualification criteria periodically, there is no reason to my mind why that needs to expire either.

Now, one example is this Top Runner program that they have in Japan, which I became aware of a few years ago over there, where they basically, as I understand it—and maybe some of you know better than I do exactly how it works—basically, in a lot of the different appliances—heating equipment, cooling equipment, and all that they have in the market—they, every 3 years or so, will determine who is providing the most efficient equipment, and then they will set that as the standard and say, a few years down the road that is what we are going to be requiring of everyone, so everyone has to step up to that new achievable standard which this company, the front-runner, the top runner, has demonstrated is achievable. So it is another way of doing what Mr. Nadel is talking about.

He was suggesting that the Department of Energy be able to upgrade the qualifications, and that might be a way. But it seems to me that some of these incentives, it does not make sense to terminate after a short period of time. There are others that maybe are appropriate to terminate or phase out after a reasonably short period of time.

Do any of you have comments on that? Mr. Wagner?

Mr. WAGNER. Well, Senator, I think you are exactly right. You almost have to ask yourself, what is the goal here? If the goal is to retrofit a certain number of buildings, and that will take X number of years, then that is what you want to do. But I think there are a vast amount, a tremendous amount of commercial buildings and residential buildings out there that can be renovated under these programs. I guess I do not want to be trite, but my answer might be, let us phase out the tax credit when we are done.

Senator BINGAMAN. Once we got them all innovated?

Mr. WAGNER. That is right.

Senator BINGAMAN. Right.

Yes, Mr. Nadel?

Mr. NADEL. Right. As the proponent of a 5-year incentive, I would be fine to keep them going if the money is there, particularly

for both the residential and commercial building incentives. It will be a question of how much money is there available at one point in time. But if we can make them permanent, great, but we should continue to review them and revise them.

In terms of the products, such as appliances, I would say, rather than the absolute top runner, there probably should either be some flexibility in criteria or maybe some slightly different criteria, like the top 5 percent. I say that because, for some products, manufacturers have what are called trophy products.

Yes, they are out there, but they do it for bragging rights, not really to sell them. So, if you were to do it for air conditioners, I think the trophy products now have a SEER rating of 23. Virtually none of them are being sold. You would probably want to go a bit lower if you want to actually have an impact.

Senator BINGAMAN. All right.

Does anybody else have a comment? Dr. Arvizu?

Dr. ARVIZU. You have hit on something that I think is very important. That is to categorize the various types of incentives based on the objectives that you are trying to achieve.

If I think back to the Academy reports and the McKinsey studies, the things that I mentioned in my testimony, there is a tremendous amount of opportunity. The question is, how much of that do we want to capture and who will ultimately both provide the means for getting over the barriers, and also reap the benefits?

So I think all of these things have merit, primarily based on the fact that this is a very complicated system and we need to think about it from a systems perspective. I do think the opportunity for having a transformation of our energy system depends, for a large part, on how efficient we get. I have frequently said it makes no sense to shove a bunch of green electrons into a very inefficient system.

I think we really need to work on the inefficient system piece first, and then the portfolio will be optimized in a much better way. So we should have some additional priorities. I know it is not very glamorous to do some of the blocking and tackling that relates to efficiency, but it should not be underestimated how valuable it is to the ultimate goal of an energy system that has a lot of attributes that we all aspire to.

So, as we think through that, I think the objectives, such as grabbing all of that inefficiency in the system and squeezing that out, that needs to be thought through. I think the private sector does have the wherewithal to do that with government support and government enabling, and to essentially make the necessary investments. But it is not simple, and it may be that it is better done with targeted approaches rather than as some sort of uniform approach.

Senator BINGAMAN. Senator Carper, did you have additional questions?

Senator CARPER. I do have one.

Senator BINGAMAN. Go right ahead.

Senator CARPER. This is sort of a broad, general question. I want to just ask your parting advice as we prepare to move from this Congress into the next one, especially as we move into tax reform in the next Congress. Aside from cloning Senator Bingaman, what

other advice would you have for us as we look to the future, the near future? This can be fairly broad. Yes?

Mr. GOLDEN. I think, to be broad, and in the spirit of kind of the last conversation that we just had, we are asking consumers in the form of 25E, and also in the commercial sector as well, to make investments that obviously have benefits to themselves in terms of lower bills and healthier homes and the like, but they also have public benefits. They have benefits in terms of clean, green capacity that we are driving to the grid, and other environmental benefits and job creation, that are not currently being monetized in that equation.

So I think that, as we think about these incentives and how they change and evolve over time, there is a role for public investment in this space to make up kind of the gap between the private benefits and the public benefits, but I do think it is really important to focus on how private capital markets, capacity markets, can start to fill that space.

So, as we create data that makes energy efficiency a much more reliable resource that utilities can begin to count on to actually displace potentially new power plants, by creating tax credits that evolve over time and potentially on a consistent basis—and consistency is really the key from a private sector standpoint—tax incentives can begin to decrease as we start seeing these private investments increase over time to fill that gap. I think that is how we will create something that is economically sustainable and also drives the kind of transformation that we need to see in the industry.

Senator CARPER. All right. Thanks. Thanks, Mr. Golden.

Mr. WAGNER. I think one of the things that—we all know that efficiency projects can have a great return on the investment. I would hope that Congress would look at ways to stimulate, to unleash, a lot of private sector capital that is sitting on the sidelines right now. How do you do that? How can you prime that pump to really get the financing flowing in the private sector? What are the keys to doing that? Whether it is back-stopping, guaranteeing, doing things that may not cost a lot for the Federal Government, you do not have to pay for the whole project to say we have unlocked the door, we have primed the pump to really flow those private sector dollars that are, again, sitting out there on the sidelines.

Senator CARPER. All right. Thanks.

Mr. Nadel?

Mr. NADEL. I guess I would suggest you do some analysis. Use analysis to help guide these decisions, what approaches will give the most bang, if you will, per Federal buck, and not just have decisions rely on politics. There are all sorts of tax incentive ideas out there, so I would recommend establishing a budget and then challenging people to say, within this budget, what would you do that would give us the most bang?

Senator CARPER. Good. Thanks.

Dr. ARVIZU. I agree with my colleagues. Very thoughtful. I will be a bit more philosophical perhaps. The thing that I would say is, I would be heartened if the tone of the dialogue for energy efficiency and the things that relate to that was less political and more

in terms of, how do we move forward? I think this is not really a political issue from the perspective of partisanship.

I think it really is an opportunity to do something that is quite compelling for the country, so I know I speak for a lot of folks in the community who would think that some progress in this arena is long overdue, and we would welcome some sophisticated dialogue to move us in that direction.

Senator CARPER. As my mother would say, from your lips to God's ears. [Laughter.]

I do not know if it is just a coincidence or not, but, Dr. Arvizu, do you live in Golden, CO?

Dr. ARVIZU. I actually live in Littleton, but the laboratory is in Golden, yes.

Senator CARPER. All right. And we have a Mr. Golden here.

Mr. GOLDEN. It is not a coincidence. [Laughter.]

Senator CARPER. All right. So great of you guys to come by and share your thoughts with us. You do good work, and we appreciate you trying to help us do better work.

Mr. Chairman, thank you.

Senator BINGAMAN. Well, thank you very much, Senator Carper, for your involvement in this issue.

Thank you all very much. I think it has been useful testimony. We will adjourn the hearing.

[Whereupon, at 11:23 a.m., the hearing was adjourned.]

# APPENDIX

## ADDITIONAL MATERIAL SUBMITTED FOR THE RECORD

---

**Prepared Statement of**
**Dr. Dan Arvizu**
**Director, National Renewable Energy Laboratory**
***Senate Finance Subcommittee on Energy, Natural Resources, and Infrastructure***
**"Tax Reform and Federal Energy Policy: Incentives to Promote Energy Efficiency"**
**December 12, 2012**

Chairman Bingaman, Ranking Member Cornyn, and members of the Subcommittee, thank you for this opportunity to discuss the importance of energy efficiency to our nation now and in the future. Before I begin my opening statement, I want to commend Chairman Bingaman on his outstanding leadership, his valuable service to the nation, and his strong dedication to advancing science, technology, and energy policies to meet the challenges facing our nation.

I'm Director of the National Renewable Energy Laboratory, commonly known as NREL. We are the U.S. Department of Energy's (DOE) primary laboratory for research and development (R&D) of energy efficiency and renewable energy technologies. Although we do not take positions on legislation or policy, I will speak to how federal investments in energy efficiency initiatives and technologies can benefit our energy security and environment, and become a driver of economic growth for our nation.

NREL plays a significant role in developing and demonstrating new, more efficient ways to construct, modernize, and operate homes and commercial buildings, and we are leading by example. Our energy-efficient activities on our campus—such as new construction that maximizes energy efficiency, energy retrofits, and energy-management control systems—are helping us exceed the administration's goal for Federal buildings to reduce energy use by 3 percent each year or by a total of 30 percent by the end of Fiscal Year 2015 (relative to a Fiscal Year 2003 energy-use baseline). I should note that in a separate research area we additionally are working to increase the energy efficiency of our cars, trucks, and the rest of our nation's transportation system. Because this hearing is focusing on legislation related to tax incentives for homes, commercial buildings, and industry, I will limit my testimony today to those areas.

This year, I also have had the honor of serving as a member of the Alliance to Save Energy's Commission on National Energy Efficiency Policy. The Commission has been looking at a full range of energy efficiency issues, and I'm confident the release of the Commission's final recommendations early next year will be welcomed as a roadmap for future efforts to achieve our important energy efficiency goals.

Although NREL's research on solar, wind, biofuels, and other renewable energy technologies frequently gets more attention, we know well that energy efficiency is fundamental and essential to all else we do. The guiding strategy that we've evolved over the years emphasizes doing everything that can be done to reduce the overall need for energy before employing new energy production systems. We've learned that by cutting energy consumption first, you can maximize the efficiency and reduce the cost of whatever new clean energy option is chosen. The reality is that the "nega-watts" that aren't used can be just as important as the megawatts that are.

**Energy Efficiency Research Confirms Significant Savings**

Three years ago, McKinsey & Co. produced a landmark analysis of potential energy savings in economic sectors other than transportation. The magnitude of the energy efficiency potential found by the study was astounding. That report characterized energy efficiency as a "vast low-cost energy resource for the U.S. economy," and it showed the United States could reduce non-transportation energy consumption by nearly a quarter by the end of this decade. Although that would require an investment of $520 billion, it would yield $1.2 trillion in energy cost savings. Notably, the effort would also cut 1.1 gigatons of greenhouse gas emissions, an effect equal to eliminating the emissions from all passenger vehicles and light trucks in the United States.

A year later, the National Academies of Science and Engineering released another comprehensive assessment of energy efficiency potential in the United States. It found the nation could save money while producing the same amount of goods and services and still cut energy consumption by 30 percent.

And, in August of this year, my research institution, NREL, took the next step by assessing the impact that some 400 laboratory-tested and peer-reviewed energy efficiency measures could have if deployed in the United States ["A Tool to Prioritize Energy Efficiency Investments"; Philip Farese, Rachel Gelman, and Robert Hendron; NREL TP-6A20-54799]. This work showed there are multiple pathways for the nation to reduce energy use in buildings by one-half by 2030. And if we do so, the energy cost savings would equal twice the dollar amount invested.

**R&D Investments in Energy Efficiency Produce Economic Benefits**

Perhaps the most compelling evidence that energy efficiency measures can have dramatic effects in the future is the often overlooked fact that they already have produced so many benefits for our nation. The Alliance to Save Energy's National Energy Efficiency Policy Commission has shown that the nation would be using 50 percent more energy than we currently use today if we had not taken advantage of all the energy efficiency opportunities developed and deployed during the past three decades.

Even so, experts who have examined this issue most often conclude that our nation has seriously underinvested in energy efficiency during those same decades. Although that lapse has cost us in many ways, it also represents a huge opportunity for the nation today. There is much that can be done to improve the efficiency of our built environment, with positive returns on investment and spurring broader economic benefits.

The R&D achievements for high-performance buildings in recent years provide more evidence that energy efficiency initiatives can deliver significant results. Strategies that consider the performance of a building as a whole, rather than the performance of individual components, have proven to be most successful to maximize energy savings and encourage market adoption. We've found that this whole-building, integrated-systems approach minimizes the potential for unintended consequences when changes are made in one component that can influence performance in other areas. We've also learned that we can accelerate the market adoption and overall transformation of the building stock wherever we can clearly demonstrate that efficiency

upgrades are low risk, and deliver high performance and fit within existing building codes and energy incentive programs.

A leading example of R&D success is the Commercial Building Partnership (CBP), a public-private, cost-shared program. Sponsored by DOE, it partners building owners and operators, National Laboratories like NREL, and technical experts from the private sector. The CBP has examined scores of different energy efficiency measures spanning a full range of building components—from more efficient sales floor lighting to use of reflective roof coatings. Researchers used advanced modeling tools to find the right mix of concepts for whole-building design that maximizes energy efficiency gains at the lowest possible cost. Over time, the program has encompassed both new buildings and retrofits, and the real-world results have been impressive. For example, NREL worked with the retrofit of a SuperTarget store in Thornton, Colorado, resulting in savings of 35% compared to current energy codes. Based on NREL analyses of retrofit impacts across the nation, Target now intends to replicate this success across its entire portfolio.

CBP has developed purpose-specific models that capture the best strategies for five different commercial sectors: general merchandise, higher education, commercial lodging, offices, and restaurants. Each of the recommended strategies is paired with project-specific case studies that detail decision criteria and lessons learned from each of the field projects. Because each of the building pilot projects includes ongoing monitoring of performance, the building sector models are based on verified results—not projections—which makes them all the more valuable and relevant to the industry.

The partnership has included some of the biggest names in the retail business, including Wal-Mart, Target, Best Buy, JCPenny, Home Depot, and Kohl's. And by virtue of these players alone, the program can have impact: Total floor space operated by these retailers is 1.7 billion square feet.

Grocery stores comprise another key category. Because of the need for both large refrigeration systems and oftentimes commercial-scale bakeries and kitchens, the grocery segment has some of the highest per-square-foot energy costs of any retail business. Grocery represents 2 percent of the nation's commercial floor space, but consumes 5 percent of total commercial building energy consumption. The slim margins of a modern-day grocery chain—about 2 percent on average—on one hand demand that energy improvements be cost-efficient. On the other hand, the substantial energy needs of these stores means big opportunities for savings, and equally large returns on investment. One assessment showed that $1,000 saved in utility bills can have the same bottom-line impact as $50,000 in new grocery sales.

The CBP is providing important technical information that supports the DOEs Better Buildings Initiative, which works with leading private-sector organizations and cities across the country to implement energy efficiency at scale in buildings and communities.

Although the mix of specific design and operational concepts for each building category is what makes the program so effective, a number of broader, generic lessons have been gleaned. These lessons include making energy savings part of the corporate culture, setting quantifiable whole-

building energy goals, investing in expert resources and analysis, verifying and maintaining energy savings, and committing to continuous improvement. Taken individually or collectively, such strategies can help meet the nation's energy savings goals, and at the same time reduce expenses and improve profit margins of individual businesses.

One key lesson from the CBP is that energy efficiency and other retail priorities can go hand in hand. More efficient use of energy can work in tandem with other market drivers, including improved shopping experience for customers, greater employee productivity, lower equipment operations cost, as well as marketing and brand-building. By adopting energy efficiency as a corporate-wide value, companies can help solidify their broader image as a low-cost and high-value option for consumers. In short, our experience shows that for business, energy efficiency should be cast in an entirely new light—as a customer-friendly and profit-producing corporate strategy, free at last of the harsh and spartan image that has too often colored it in the past.

Progress is also being made on revolutionary energy efficiency technologies not yet in the marketplace. An example is a novel air-conditioning system invented by NREL that recently won an R&D 100 award. The Desiccant-Enhanced Evaporative air conditioner, or DEVAP as it's known, is a new technology that can deliver superior occupant comfort for commercial building applications, while cutting electricity use by as much as 90 percent, compared to conventional air-conditioning systems. Developed by NREL and two private-sector partners, AIL Research and Synapse Development, the DEVAP technology in coming years holds promise to revolutionize how the nation cools its buildings—a not inconsequential feat, as air conditioning uses 15 percent of the electricity generated in the United States.

**NREL's Research Support Facility**

Building sustainability programs, like the Green Building Council's LEED program for Leadership in Energy and Environmental Design, put a spotlight on energy savings. But energy considerations many times get short shrift when pitted against conventional design criteria, aesthetic concerns, and first-cost construction issues. At my own institution, NREL, our Research Support Facility (RSF) provides an example of how much can be accomplished when energy efficiency becomes a primary and essential priority of a building's design, and every practical energy-saving concept is given full consideration. The RSF is a LEED Platinum, 360,000-square-foot, 1,300-occupant, modern office building that also happens to be a showcase of and living laboratory for high-performance building technology. Coupled with adjacent solar photovoltaic systems and a renewable biofuels heating plant, the RSF is the world's largest net-zero-energy office building, and it has won numerous awards for its sustainability, innovative design, and energy-saving features.

Energy efficiency begins with how the building wings are oriented toward the sun, and also determined the 60-foot width of each wing, an interior breadth that enables thorough day-lighting and natural ventilation for all occupants. Windows are optimally sized, placed, and shaded to maximize daylight while minimizing unwanted heat losses and excessive gains. A below-building labyrinth of massive concrete structures stores thermal energy. Precast concrete insulated panels provide significant thermal mass to moderate the building's internal temperature.

The RSF's rating of 34.4 kBtu/square foot/year is fully 50 percent better than the industry standard, ASHRAE 90. And the RSF manages to achieve this feat in cost-competitive ways. The RSF's cost of $254/square foot compares favorably to the average cost of $335/square foot for newly constructed commercial buildings designed to LEED levels.

**State-of-the-Art Efficiency for Residential Buildings**

Private residences, which comprise a little more than half of energy use by buildings in the United States, provide equally large opportunities for energy savings. NREL's residential buildings research focuses on developing reliable, comprehensive system-based approaches to cost-effective residential energy savings, then validating and field-testing the improvements that are developed.

DOE's Building America program, www.buildingamerica.gov, works to develop market-ready solutions through partnerships with new building and remodeling industry leaders, building design professionals, and the National Laboratories, including NREL, while allowing for the considerable differences in regional climatic conditions and architectural vernacular seen across the nation.

For new homes, the Building America program has demonstrated that cost-neutral energy savings of 40 percent more than existing codes is possible at a production scale for new home builders in every climate zone in the United States. Building America has worked with nearly three dozen builders, constructing thousands of new homes, using a whole-house and trade-off analysis process developed by NREL to find the most cost-effective solutions. Each concept home reduced energy costs to the point where utility bill savings would more than make up for any initial cost increase. In every field study, new homeowners made a net profit in the first year alone.

Although energy improvements in new homes are critical, more than 70 percent of the U.S. housing stock was built before 1990, before the most energy-efficient building codes were put in place. For retrofits, NREL has worked with Building Performance Institute to develop four Home Energy Professional Certifications, including Quality Control Inspector. These certifications were developed in conjunction with industry, and we currently have a pilot program to certify individuals with a national rollout planned for the summer of 2013. We've worked with Habitat for Humanity affiliates in several cities. And in areas with constrained energy generation capacity, we've helped utilities develop market-based incentives that encourage builders to adopt measures that limit real-time peak energy demand, as well as the total energy used.

**Simulation Models and Other Tools**

In that the energy efficiency legislation under consideration by the committee would use simulation-based methods to design and qualify energy savings for its incentive programs, it is worth noting that NREL developed a computerized calculator for DOE to facilitate easy access to the commercial buildings 179D tax deduction. This allows owners, architects, and engineers to almost instantaneously determine the appropriate efficiency strategies for their buildings to

qualify for the incentive. Simple tools like this depend on the development of sophisticated simulation models. NREL has been working to improve the completeness and accuracy of such models for both commercial and residential buildings. Businesses, consumers, utilities, government agencies, and policy makers are most interested in location-specific recommendations for optimal new building and retrofit packages, with accurate energy- and cost-savings data. Today, we continue to learn from real-world experience and are improving the methodology we use in our simulation tools, and thus improving the overall accuracy of our whole-building analysis. A comprehensive clearinghouse, the Building America Solutions Center, documents research results, http://www1.eere.energy.gov/library. Key results are also incorporated into public analysis tools and databases, widely available and widely used by the building community. These include the National Residential Efficiency Measures Database and the BEopt optimization tool: http://www1.eere.energy.gov/buildings/residential/ba_retrofits.html and http://www1.eere.energy.gov/buildings/residential/ba_beopt.html, respectively.

We've researched and published the most cost-effective Energy Savings Measure Packages for existing homes, optimized for the local climate and prevalent building characteristics (i.e., foundation types). Energy savings are typically between 30 percent and 50 percent more than a local reference home.

Just as architecture and design software has progressed from seeing the world as flat to seeing it as a living, three-dimensional virtual space, energy software is becoming more complex, increasingly allowing design teams to assess dozens, even hundreds of different energy options for new buildings and retrofits. The advent of whole-building simulation and building information modeling (BIM) now allows for complete energy modeling of a structure, from computational fluid dynamics to daylight analysis—so everything from window glare to thermal comfort can be forecast and assessed, individually and collectively, with a bottom line estimate for a resulting building's overall energy savings. NREL has developed the Open Studio interface with DOE's EnergyPlus building Energy simulation package, making it quick and easy for architects and engineers to facilitate optimized energy efficiency decisions throughout the design or retrofit process. Modeling capability like this enabled NREL to design and build the RSF (the largest zero-energy office building in the world) at no additional cost.

DOE's EnergyPlus software additionally models a full range of building energy and sustainability issues, including water usage and carbon emissions, in an integrated evaluation of building energy flow. It allows architects and builders to research energy-smart design options before construction. The program includes many innovative simulation capabilities, such as multi-zone air flow, thermal comfort, natural ventilation, and photovoltaic systems, www.energyplus.gov .

Even though energy increasingly is a consideration in building design, it too often is relegated to the back end of the process. Our challenge going forward is to create new and better tools to ensure energy efficiency is accurately represented and gets the attention it deserves in the broader building design process.

**Industrial Energy Efficiency**

Industry represents 31 percent of U.S. energy consumption, and there exists huge potential for energy savings in the U.S. industrial and manufacturing sector. Industrial energy efficiency is an area where new equipment technology can dramatically improve performance. Let me cite two examples.

The burgeoning number of energy-intensive computer data centers in the United States is another business sector where opportunities abound for efficiency improvements. Set to open next year, NREL's new peta-scale high-performance computer system will be the fastest computer anywhere dedicated to clean energy technology development, and will add major new capabilities for researchers across the Laboratory. In partnership with HP and NREL, we're designing it to be the world's most energy-efficient high-performance computing center. Heat generated by the computer center will become the primary source for heating NREL's new Energy Systems Integration Facility (ESIF), the building in which the data center is housed. By comparison, an average data center today requires 13 times as much energy as the new NREL system will for the same computing power.

ESIF itself will help create important new strategies for integrating various energy systems in the most efficient ways possible. ESIF's megawatt-scale test facilities will allow manufacturers and system operators to maximize the efficiencies of a range of energy equipment, operating both individually and within a real-world energy system, with greater certainty and confidence than previously was possible. With its high-performance computing capabilities, the ESIF additionally will be able to mine real-time operating data to produce empirically grounded grid energy system modeling, and validate system interfaces and control algorithms that can significantly increase efficiencies in both new and existing energy systems. Specifically for buildings, research tools available within ESIF will help to develop energy management systems that will monitor building functions, and adjust heating and ventilation systems to increase efficiencies. Then, as these local systems can be integrated into the broader, grid-linked energy systems, the same local controls can be used to balance various types of generation sources on the grid, further increasing efficiencies and maximizing use of renewable wind and solar energy resources as well. In fact, our researchers foresee a day when smart energy systems—using the back-and-forth flow of energy information—may be just as critical to increasing overall system efficiency as any production or end-use technology is today.

One major ancillary benefit from energy efficiency initiatives by industry is the tendency of energy-inspired modernization investments to also yield improvements in equipment, processes, and operations, which in turn mean significant gains in overall plant productivity. The Alliance to Save Energy's Commission report concludes that "higher industrial energy productivity can lead to stronger businesses, with higher paying jobs in the U.S."

**Disaster Recovery and Energy Efficiency**

This year's devastating super-storm Sandy underscores the susceptibility of our residential and commercial buildings, and our energy delivery systems, like the electric transmission grid, to natural disasters. I was recently appointed to serve on New York Governor Cuomo's NYS2100

Infrastructure Commission, which will explore methods to strengthen the state's infrastructure in the face of natural disasters and other emergencies. Along with Ms. Patricia Hoffman, DOE Assistant Secretary in the Office of Electricity Delivery and Energy Reliability, I intend to draw upon the work we are doing at NREL to demonstrate how energy efficiency measures—such as doors, windows, structural systems and insulation—can strengthen a residential or commercial building's resiliency against violent storms. Additionally, rebuilding efforts following a disaster offer great opportunity to reconstruct damaged buildings to meet the highest energy efficiency standards, frequently, at little or no additional cost. And in the event of future storms that disrupt power supplies, energy-efficient buildings will need fewer or smaller generators. This both reduces the cost of backup generation and frees up their supply.

In conclusion, I commend the subcommittee for considering initiatives to promote and improve energy efficiency. NREL will continue to serve as a valuable asset to the nation and promises to build upon the thirty-five years of successful innovation from fundamental research through commercializing and deploying energy efficiency solutions. Our laboratory continues to pave the way toward a stronger clean energy economy, and I appreciate this opportunity to highlight the important work NREL and others are doing to advance these objectives.

Senate Finance Committee Hearing
"Tax Reform and Federal Energy Policy: Incentives to Promote Energy Efficiency"
December 12, 2012
Questions for Dr. Dan Arvizu

Questions from Senator Bingaman

1. *Dr. Arvizu, using your net-zero energy building as an example, can you discuss and weigh the importance of design against behavior when attempting to build and maintain a highly efficient building? Another way to put it is, couldn't even the best-designed building fail to achieve optimum efficiency if it is not managed well?*

Many of the bedrock ways to increase building efficiency – such as day-lighting and reduced-energy heating, cooling and ventilation systems – are remarkably effective independent of occupant behavior. At the same time, poor operation of a building can be as detrimental to achieving a building's highest energy performance, as poor maintenance and driving habits can be to the actual gas mileage of car that has a high EPA mileage rating. Of course, an energy efficient building at least has the potential to be energy efficient, whereas an energy-hog building can never be energy efficient – no matter how well it is operated and maintained.

At the NREL Research Support Facility we orient and educate occupants to the energy efficiency features of the building, and we provide convenient and regular communication between occupants and facilities staff to maximize efficiency and inform of operational issues. Integral to this is a computer dashboard that summarizes the building's energy performance with easy-to-understand format and metrics.

This has resulted in corrections of several issues that were causing unnecessary energy use in the building. Two examples are:

- When Dan Arvizu himself, upon checking the dashboard, noticed that the energy usage for a holiday wasn't achieving the expected energy savings compared with a normal workday that same week. Facilities staff discovered that the computerized control system failed to recognize that period's specific work schedule – an issue subsequently corrected.

- Another staff member noticed that the humidity seemed relatively higher in the NREL Library within the RSF. Upon notification, facilities engineers found that the control logic for an under-floor evaporative cooler had been incorrectly programmed – another issue easily corrected once detected.

  From an R&D perspective, we are now working on combining a model of how the building should perform with actual performance data, so that facilities staff will be automatically alerted when performance is less than optimal.

2. *Dr. Arvizu, in your testimony you discuss the work being done by NREL and the DOE Commercial Building Partnership. I believe it is important to examine our energy tax incentives in concert with the work of other branches of the federal government. Can you, or anyone else on the panel, discuss how or if the DOE work either overlaps with or complements the legislation we have before us today on commercial buildings? Is there a need for both programs? Do tax incentives address different areas than the DOE programs that you describe in your testimony?*

   In practice, the two programs are strongly complementary. Research and development under the Commercial Building Partnership (CBP) effectively finds ways to reduce energy use in existing and new buildings, which thereby makes it as cost effective as possible to qualify for the corresponding tax incentives. The CBP also disseminates pertinent concepts and efficiency findings via its published case studies, Energy Design Guides, computer programs such as Open Studio/EnergyPlus, and simplified design tools, including the 179D tax incentive tool.

3. *If Congress begins to design technology-neutral, performance-based incentives on a more regular basis, it will be important to accurately measure and verify energy savings achieved in commercial and residential buildings, and in the industrial sector. I wonder if each of you could speak to the measurement and verification systems and precautions*

*present in the legislation before us today, or the work that your organization does on these issues.*

NREL conducts R&D to improve and validate energy modeling tools. These improvements include increasing the number of technologies and combinations of technologies that can be modeled, increasing the accuracy of the models, and making the models quick and easy to use by practitioners. NREL is also conducting R&D to bring down the cost of sensors and controls, so that actual building performance is readily quantified, diagnosed, and corrected if necessary.

Regarding the retrofit of commercial buildings, our experience suggests the approach taken in the legislation, requiring the use of the EPA Building Energy Performance Benchmarking tool to compare before and after actual measured energy use, is a workable approach. Regarding new commercial buildings, we would concur with the approach taken in the legislation, that of requiring the reconciliation of realized savings with predicted savings. Our work in this area further suggests that the legislation would benefit from a provision that required building owners to disclose their utility bills, and predictive models, to an appropriate entity for verification of savings related to the tax incentives. Utility company privacy regulations currently can make it difficult for third parties to obtain such data.

**Statement of Chairman Jeff Bingaman**
**Senate Finance Subcommittee on Energy, Natural Resources & Infrastructure**
**December 12, 2012**
**"Tax Reform and Federal Energy Policy: Incentives to Promote Energy Efficiency"**

Good morning. Today's hearing examines tax reform and federal energy policy, and considers incentives to promote the efficient use of our energy resources.

The tax code has long served to promote energy policy goals. For most of this time, the Code offered only incentives for the production of energy – first from mineral resources and then from oil and gas. Recent years have brought important incentives for renewable energy resources, though they still remain temporary and uncertain.

Even more recently, however, Congress has decided to reintroduce certain tax incentives that promote the efficient use of energy – recognizing the value in preserving our domestic resources by developing technologies that use less energy to accomplish the same task.

However, with the possibility of comprehensive tax reform, and within the context of a contentious debate on how to close the federal deficit, we must assess existing policies to determine if their goals are worth the cost. If they are, and I believe energy efficiency is a worthy policy goal, then we must examine the best and least-cost ways to promote those policies.

At today's hearing, we have a panel of expert witnesses who will help us consider the following three issues:

- First, to understand the opportunities presented to our economy, our energy infrastructure, and to the environment that result from the efficient use of our resources;
- Second, to consider if creating incentives through the tax code is a sensible and efficient way of promoting energy efficiency investments, and if so, then;
- Third, to examine how we can improve our existing incentives to make them more effective, easier to use, and less expensive to the federal government.

Over the past two Congresses, Senator Snowe and I, along with Senator Feinstein and others, including Senator Cardin, have worked to develop reforms to our existing efficiency

incentives. Whenever possible, we have adhered to general principles that we believe to be consistent with the goals of tax reform. We have striven to provide technology-neutral structures that offer incentives based on performance, not cost. We have worked to ensure that the efficiency savings are able to be measured and verified, and that fraud, waste, and abuse are minimized to the greatest extent possible. Finally, we have sought to ensure that innovative new efficiency technologies can utilize existing policies.

The result of our work is three bills introduced in this Congress: one focusing on the commercial buildings deduction, one focusing on tax credits for homeowners, and one that promotes efficiency in the industrial sector.

I hope that we can examine how these bills fit into the discussion I outlined above. I welcome an honest assessment of these bills and encourage any thoughts on how to improve them.

This morning's hearing will consist of one panel. I would like to welcome the witnesses.

- First is Dr. Dan Arvizu, Director of the National Renewable Energy Laboratory in Golden, Colorado.
- Next is Mr. Steve Nadel, Executive Director of the American Council for an Energy-Efficient Economy.
- Then we have Mr. Mark Wagner, Vice President Government Relations, Johnson Controls, Inc.
- Finally, I would like to welcome Mr. Matt Golden, a principal at Efficiency Dot Org and the policy chair at Efficiency First.

I would like to ask our witnesses to limit their testimony to five minutes; your entire written statement will be included in the record.

**Testimony to the**

**United States Senate Committee on Finance**

**Subcommittee on Energy, Natural Resources, and Infrastructure**

**Hearing on**

**"Tax Reform and Federal Energy Policy:**

**Incentives to Promote Energy Efficiency"**

**Dirksen Senate Office Building**

**Room 215**

**Washington, DC**

**Wednesday, December 12, 2012, 10:00 AM**

**Statement of**

**Matt Golden**

**Principal, Efficiency.org**

**Policy Chair, Efficiency First**

Thank you, Mr. Chairman and distinguished members of this subcommittee, for this opportunity to offer my perspective on the role of tax incentives to promote energy efficiency. Residential energy efficiency incentives remain smart tax policy that will stimulate private investment and job creation, while driving savings directly to American households.

I come to this subcommittee both as an advocate working to bring investors and capital to the energy efficiency market, and as a licensed contractor and board member of Efficiency First. Efficiency First is a national nonprofit trade association of over 1000 members, with membership in all 50 states, that unites the Home Performance workforce, building product manufacturers and related businesses and organizations to forward policies that will support a sustainable and scalable home retrofit market.

Advancing energy efficiency is critical to the American economy. If we tried to run today's economy without the energy-efficiency improvements of the last 40 years, we would need nearly 50 percent more energy than we use now. This is more than the energy we get from oil, natural gas, coal, or nuclear power[i].

The average American family spends over $1,800 per year on energy, which equates to over $200 billion. This represents 22 percent of all US energy consumption[ii], 35 percent more energy than is used for passenger cars and trucks combined[iii].

Retrofitting inefficient homes will put energy savings back into the wallets of American families and communities. It will also create hundreds of thousands of US jobs in some of the hardest hit industries, including construction and manufacturing. These new jobs are primarily created by small businesses - jobs that cannot be outsourced, and the materials used in improving homes are on average 90% made in the USA[iv].

Energy efficiency is unique in that it creates its own cash flow - less money spent on energy means more money to purchase groceries and save for college. Simply put, saving energy pays for itself.

However, there are significant market barriers that prevent this vital resource from being harvested more effectively. Homeowners are being asked to make these investments not only because we want them to save money on their utility bills, but because this reduces costs across the energy system as a whole; helps to achieve broader goals such as energy independence; reduces pollution; and enables job creation. However, we are not properly valuing these very real public and resource benefits energy efficiency provides. Instead, we are asking homeowners to pay for the full burden and cost of these improvements, often upfront and out of pocket.

One of the key shifts to begin accounting for the multiple benefits of energy efficiency, is to move towards accounting for energy efficiency as a resource -- the demand reduction equivalent of supply-side energy production. Reducing demand on the grid through energy efficiency is akin to building power plants, only cheaper – and it's 100 percent domestic, and completely clean.

We know how to finance power plants. Due to the legislative, regulatory and market structures, protections, and oversight in place, power plants supply a stable and predictable amount of energy to

an established and reliable market. Utilities can raise capital to make investments in projects to increasing the nation's energy supply; however, we lack the same mature capital sources and markets for energy efficiency, even though it is widely understood to be the most cost effective resource for meeting our energy needs.

We need to begin to treat residential energy savings as a distributed demand-side power plants that will ultimately, at least in part, be paid for based on their ability to deliver an energy saving resource to the grid. To accomplish this, we must more rigorously measure and account for the performance of energy efficiency improvements.

Historically, energy efficiency incentives have largely been targeted at specific technologies and individual improvements. Enhancing existing incentives is needed to include a performance-based paradigm that links incentives to actual savings allows for technology and business model neutrality. Rather than attempting to maintain an exhaustive, up-to-date, and politicized list of equipment specifications, or picking winning technologies or special interests, offering incentives based on savings at the meter can free up the tax code from keeping pace with an ever-changing industry. Most importantly, it creates a system that is flexible and rewards innovation.

Senate Bill 1914, The Cut Energy Bills at Home Act, also known as 25E, is a great example of tax policy that can help move the market towards valuing energy savings as a resource. I would like to thank Chairman Bingaman and Senators Snowe and Feinstein for their leadership in introducing this groundbreaking legislation. Using models that are calibrated to actual bills, the tax incentive rewards results. This legislation provides a financial incentive for homeowners to maximize the energy performance of their home -- the greater the energy savings, the higher the incentive.

In addition to accelerating investment and innovation, we believe that adding 25E -- to an improved 25C tax credit -- will help build the dataset necessary for markets to treat energy efficiency as a reliable resource, which will ultimately open the doors to private investment. We are in a chicken and egg game, where markets need data in order to manage risk and determine establish value, however, the only way to get the data is by measuring actual transactions. In essence, public policy can step in as a buyer of savings enabling market forces to gain comfort and ratchet up investment. As this transition occurs, the need for tax credits can give way to private sources of capital.

This subcommittee is in a unique position to help fill this gap through performance-based tax incentives acting as a proxy for markets that are just now standing up. The major market players we need to make this industry economically sustainable over the long haul are already here, only not yet to scale.

A growing segment of the contracting industry is actively moving toward performance-based approaches. Dedicated home performance companies have grown in markets across the country, and we are seeing leading contractors in more traditional markets finding success moving to home performance. Major manufactures and contractor organizations are investing in initiatives to provide home performance training and resources to HVAC, Insulation, and other trade contractors. The concepts of home performance are beginning to take root beyond early adopters.

To support this transition, we have seen public investment in energy efficiency increasing dramatically in the States. This includes infrastructure for workforce training, quality assurance, and other necessary infrastructure to ensure quality service delivery. These systems, built in part through utility and Recovery Act investments, are in place across the country and provide a strong foundation for future growth.

Similarly, we see investments in energy efficiency in the utility sector ramping up beyond even some of the most optimistic projections. From 2005 to 2011 utility energy efficiency programs have increased by an average growth rate of 19.3 percent per year to $4.74 billion[v]. According to research being conducted by Lawrence Berkeley National Laboratory, utility sector investment is expected to continue to rise faster than inflation.

In addition, private capital markets are on the verge of engaging the residential energy efficiency market through the first ever aggregation and securitization of energy efficiency loans. This exciting step forward promises access to senior capital markets and eventually much lower cost capital. With the support and leadership of the Department of Energy, National Association of State Energy Officials, and in particular the State of Pennsylvania, homeowners will soon be able to access loans designed specifically for residential energy efficiency, based on an asset class that initial datasets show to be lower risk than traditional unsecured lending. Simply put, when energy efficiency loans are made, homeowners are more likely to pay them back and therefore deliver reduced interest rates and more inclusive underwriting.

Tax incentives, combined with private investment and growing State policies, can play a critical role in helping to scale this early stage market, and ensure that the momentum gained to date is leveraged. There are a number of reasons why the tax code makes particular sense as a place for this type of market-engaging policy.

First, tax credits directly benefit homeowners without adding layers of bureaucracy. This direct investment ensures that the benefits are accrued where they matter most, in the pockets of American families.

Additionally, while we see investment in energy efficiency ramping up, there is tremendous variation across the country in terms of program design and levels of investment. Tax policy will enable a more uniform national market that will encourage investment, enable national players to engage, make it much easier to communicate the benefit to consumers, and ensure that no States are left behind.

We believe that, while not a perfect analogy, the residential solar industry is a very encouraging example of how smart and coordinated public policy is leading to a growing and increasing sustainable market. The combination of the 25D tax credit and the California Solar Initiative has many parallels to the 25E home performance tax credit. Similar to the structure of The Cut Energy Bills at Home Act, the solar incentives in California are calculated based on a predictive model that accounts for factors such as shade and orientation to predict performance, which drives the amount of incentive.

This performance-based system developed that initial data that drove the development of solar leases and power purchase agreements, which are now leveraging private capital to drive over 75 percent of

the market. The 25D Solar Investment Tax Credit has stood up an industry that is helping predominantly middle class homeowner, and is employing a workforce of nearly 120,000 US workers at over 5,600 businesses nationwide, creating over 14,000 new American jobs in 2012 alone[vi], and is a demonstration of how smart tax policies can drive markets.

We believe that a combination of smart national tax policy driving the market toward performance, coordinated with local infrastructure, will enable a similar transformation in the residential energy efficiency market. This subcommittee can help set this process in motion by supporting the inclusion of The Cut Energy Bills at Home Act (25E), which will lead to a sustainable energy efficiency industry driven by consumer demand, private capital, and the value of energy savings as a resource.

I want to take to thank this subcommittee on behalf of the thousands of contractors who are working every day to help homeowners invest in and improve their homes -- all while growing their small business in these uncertain economic times. These small businesses were hit hard during the last recession, with unemployment levels that have hovered above 20 percent during the recession. Supporting jobs in this uniquely American industry drives investment directly into communities spread across all corners of the country, while supporting America small businesses.

The energy efficiency industry puts people to work doing something that is both positive for their communities and the environment, and perhaps most importantly provides a service that is helping families who are often struggling to make ends meet. While incentive may be focused on the energy savings, retrofitting provides families the opportunity to live in comfortable, healthier, and longer lasting homes.

The Cut Energy Bills at Home Act is truly a unique opportunity to give homeowners another option for making deep energy efficiency improvements to their home, build wealth in American households, support small contracting businesses and its US-centric manufacturing and supply chain, all while helping the country meet its climate and energy goals.

We appreciate the ongoing efforts of this subcommittee and look forward to continuing to support your important work advancing energy efficiency through sound tax incentive policy.

## SUPPLEMENTAL TESTIMONY

The following is additional comment of Efficiency First and is offered to give Subcommittee members some context of the environment in which many small business-contracting companies find themselves. While the below may be outside of the reach and scope of this subcommittee's focus, it should none-the-less be informative with respect to the role a performance tax credit could play in helping these small businesses grow and thrive.

### WHAT CONTRACTORS WANT

While the focus of this subcommittee hearing is on tax credits for energy efficiency, it's critically important to understand the context in which a performance tax credit would be used and the marketplace in which contractors that deliver goods and services to homeowners often operate. With an understanding of the marketplace dynamics, this subcommittee will have a better understanding of how a federal tax credit such as 25E would genuinely help the industry.

Though all well intended and very much appreciated, there is a great deal that is lacking in current local, State and federal energy efficiency retrofit programs for homes. Again, while Congress cannot affect many of these issues, it's important to have awareness of the current state of the marketplace. Here is what contractors want in energy efficiency home retrofit programs:

1. A Seat at the Table as Programs are Being Conceived, Developed, Deployed and Refined
2. Program Consistency & Stability
3. Lean and Waste Free Program Attributes and Requirements
4. Programs that are Free of Price Setting and other Anti-Free Market Barriers
5. Programs that Serve the Consumer's Interest and Not Driven by Fuel Types, Flawed Cost-Effectiveness Math, or Artificial Barriers or Drivers
6. Programs that Reward Performance and Actual Savings
7. A Level Playing Field Related to Contractor Qualifications
8. Programs that Allow Multiple Business Models to Compete
9. Programs with Meaningful Quality Assurance to Protect the Consumer and Investor/Tax Payer

**A Seat at the Table**

Programs fail when contractors are not embedded in the process from design to implementation and refinement. As a party that is "directly and materially affected" by programs, designers and sponsors needs to embrace a policy that ensures contractors have a seat at the table at all phases of program design, roll-out, and refinement.

One imperative that program champions and sponsors need to be anchored in, and acknowledge and understand, is that all federal, state, local and utility energy efficiency programs impacting existing homes generally flow down and end up in the lap of Efficiency First's core members – the contractors

and energy auditors. These are the individuals and companies that are charged with selling these programs in the living rooms or across the kitchen table of homeowners. These are the companies that deal with the myriad of program requirements related to energy modeling, eligible measures, completion of related forms and paperwork, and report generation back to the program sponsor or administrator. And in some cases, it's the home performance contractor that acts as a bank waiting for consumer or other rebates or other incentives to be processed and approved. Additionally, these are the companies that invest their precious resources in their own capacity with respect to training, certification, and required continuing education of their personnel so as to be eligible to participate in such programs. In short, these are the companies that experience the pain that may exist in programs and processes that are not lean, efficient, and contractor and market friendly.

**Program Stability & Consistency and Free From Complexity & Waste**

Currently, there is a patchwork of energy efficiency programs across the country – each with different program requirements, funding cycles and levels, applicability to fuel types used in homes (gas, electric, fuel oil, propane, etc.). In part this is due to statutory and regulatory preconditions that establish the baseline for what a program looks like. Regardless of the root cause, at the State and local levels, contractors feel like they are trapped in a game of "musical chairs" as program ground rules change, often annually. Additionally, the reporting requirements in many programs creates a ripple affect where contractors are forced to collect and report layers of data that they feel never gets looked at or used. Finally, available energy modeling software is so varied and divergent with respect to how each treats individual and combination of energy efficiency improvements that the contractors lose faith in their outputs. Currently, there is no nationally applicable program for contractor to embrace – there is just fragmentation.

This fragmentation, instability and lack of consistency, and complexity in programs results in a colossal economic waste in the market as contractors have to build and constantly refine internal processes to comply with these various programs. Equally important, the current situation is a motivation destroyer and forces some contractors to capitulate and leave these local programs. One of the benefits of a federal performance based tax credit would be the uniformity and consistency that it would offer contractors. Additionally, Efficiency First feels that new or existing local programs would embrace the architecture of a federal performance tax credit, thus helping to mainstreaming a single set of requirements across multiple programs or offerings. Standardization breeds efficiencies and the ability to scale efforts, thus a federal performance tax credit could positively affect the design of new and existing programs at the State and local levels.

**A Level Playing Field Related to Contractor Qualifications**

Nothing can do more damage to an industry than where there is a free for all with respect to who can enter and operate in a given space. If there is not a level playing field with respect to the qualifications and caliber of work done in homes by contractors, consumers and others could be harmed.

A regrettable but profoundly important lesson for contractors and program champions in the US relates to what happened in the failed Australian program in 2009-2010 under a stimulus-driven energy efficiency home retrofit program. In summary the program was halted prematurely in large

part due to the fact that there was little to no risk management practices applied to the work being done – which resulted in deaths of workers and claims of widespread fraud in the program. After the program was halted, the insulation industry had to be bailed out by the government as it had ramped up to meet the expected long-term demand for energy efficiency home improvements. The negative implications impacted the entire manufacturing and supply chain, not to mention insulation contractors large and small. As a result of a lack of focus on contractor qualifications and a minimum standard of care for the work done, and the unchecked rush to create "stimulus" jobs, the energy efficiency home retrofit industry in Australia may be set back a generation. Congress needs to bake into any performance based tax credit, credible contractor qualifications – to protect consumers, workers, contractors, and tax payers.

Generally, in the program in Australia, a minimum standard of care, built on a foundation of quality, was not prevalent and consistent at all levels. Our industry cannot afford to have a program go bad and set us back. As such, Efficiency First is supportive of programs that "do no harm" to occupants and workers and have consistency with respect to:

1. Qualified Auditors & Contractors (the right people)
2. Quality Standards & Specifications (doing the right work)
3. Qualified Software and other Tools (using the right tools), and
4. Oversight by a Credible and Robust Quality Assurance Infrastructure (verification)

**Allow Multiple Business Models to Compete**

Consumers vary in their preference with respect to using either contractors that are vertically integrated and can offer turn-key home performance services, or a group of professionals (auditor/HERS rater, insulation contractor, and HVAC contractor) that work collaboratively as a team to offer a similar solution. Other hybrid models exist in markets where a home performance contractor acts as a general contractor and works with trade allies to do a variety of work (air sealing, insulation, HVAC, windows). Additionally, each marketplace varies with respect to the level of contractor experience and know-how related to applied building science and health and safety issues that are inherent in home and building performance work. Efficiency First supports program architectures that do not choose winners with respect to business models, but instead rely on establishing a level playing field linked to credible standards. This will allow the consumer, and by default the marketplace, to choose which model or models are the best fit for them and their needs but get the same level of quality work done in the home. Additionally, this will allow individuals and companies following the BPI, RESNET, or other models to compete openly.

**Industry Standardization Needed**

*"By not standardizing, we pick losers – it's the contractor's that lose"*
– Mike Rogers, ABM Energy (GreenHomes America)

Generally speaking, Efficiency First is supportive of standardization through all the layers of our industry because we know this reduces waste and blows away barriers to growth and profitability. Just as the Board for the Coordination of the Model Codes in the 90's facilitated the alignment of the

building codes promulgated by the four model code organizations (CABO, ICBO, SBCCI, and BOCA), resulting in a single set of model codes – which eventually lead to the formation of a single model code organization (International Code Council), our members seek the mainstreaming and standardization of key elements impacting our industry. While code adoption and enforcement still remains a State and local matter, moving to one model code allowed the elimination of much of the waste created by competing and often redundant code requirements. This then allowed home builders, various trades, product manufacturers, suppliers and distributors, design professionals and governments to shift to a generally mainstreamed set of requirements, which over time became more uniformly and consistently applied and enforced. We need the same evolution to happen in our industry and we need competing standards to be mainstreamed and harmonized into a single suite of standards that all can draw from.

Efficiency First supports the development, adoption, and consistent application of credible standards for:

1. Workers and Companies,
2. Specifications for the Physical Improvements Done in Homes and Buildings,
3. Energy Modeling, Data Collection and Reporting (HP XML), and Related Protocols, and
4. Quality Assurance Infrastructure

When credible standards are in place and utilized, the by-product is the following:

1. Avoided program costs (administrative, training, etc.), resulting from the need to re-create the wheel each time a new program needs to be designed and launched, can flow to consumer incentives or education and awareness, and possibly make programs more "cost-effective" per certain utility cost tests.
2. Contractors are better able to expand into new markets without having to learn a new language, a new set of written or unwritten rules, yet another energy modeling tool, and take on new paperwork and back-office pain.
3. Individual workers may move freely between markets.
4. Contractors have a pool of workers to choose from that generally have the same qualifications and skill sets, thus avoiding substantial hard and soft costs of re-training.
5. Contractors can pick and choose which energy modeling software's to use, based on their needs and the interoperability of these tools with other operational tools, and have confidence that the required data transfer to the program will be pain-free and possibly instantaneous.
6. Consumers are hopefully exposed to the same general messages and value proposition regardless of market or program sponsor.

The good news is that the standardization effort has been underway in the industry and inside different groups at DOE, EPA, HUD and at the State level. Better coordination and alignment of those efforts would be productive and eliminate waste.

**TAX POLICY AS A CATALYST FOR CONSUMER ACTION ON ENERGY EFFICIENCY RETROFITS**

The members of Efficiency First believe that performance-based tax incentives do not need to be perpetual. Rather, they can run for a number of years to jump-start our industry and introduce a leveling element into the market. Over time, as our industry grows and other market actors begin to fill in critical gaps, these tax credits can eventually be allowed to sunset. Basically, as the market matures and consumers see and understand the value of making energy efficiency improvements to their homes, the need for a catalyst begins to diminish. In the meantime, the homeowners that our members work with everyday would see the 25E tax credit as a little tax relief for their much larger out-of-pocket investment in their most precious asset – their home.

---

[i] Alliance to Save Energy: Energy Efficiency: America's Greatest Energy Resource

[ii] US Energy Information Administration: Annual Energy Review 2011

[iii] US Energy Information Administration: Annual Energy Outlook 2010

[iv] Home Performance Resource Center: Manufacturing Shares of Common Energy Remodeling Products

[v] Consortium for Energy Efficiency: State of the Efficiency Program Industry: Budgets, Expenditures and Impacts, 2006, 2011

[vi] The Solar Foundation: National Solar Jobs Census 2012

January 22, 2013

To:
The Honorable Max Baucus, Chairman
The Honorable Orrin G. Hatch, Ranking Member
Committee on Finance
United States Senate
219 Dirksen Senate Office Building
Washington, D.C. 20510

Senate Finance Committee Hearing

"Tax Reform and Federal Energy Policy: Incentives to Promote Energy Efficiency"

December 12, 2012

Questions for Mr. Matt Golden

Questions from the Committee

1 **Mr. Golden, my home state of New Mexico has a significant amount of inefficient housing stock, as do other states with high poverty rates. You mentioned in your testimony improvements in residential energy efficiency can help improve a household's budget over the long-term, but can you also speak more specifically about how improved energy efficiency in low-income homes can contribute to poverty alleviation and possibly also to safety improvements?**

Energy Efficiency puts money back into the pockets of American families, putting billions of dollars spent currently being wasted through leaky ducts, old furnaces, and missing insulation, into energy efficiency projects that are installed by local contractors using materials that are primarily made in the USA. While the benefit of energy efficiency is clear across all sectors, low income homes represent some of the largest opportunity because so many homes are poorly insulated with ageing heating a cooling systems[1].

[1] http://www.opportunitystudies.org/repository/File/energy_affordability/Forecast_Bur_dens_08.pdf

Energy costs are regressive by nature, with lower income homeowners paying a substantially higher portion of their income towards energy costs. Helping these families reduce their expenses puts money directly into needed services and into local economies. Americans should never be put into a situation of having to decide to pay their utility bill going to the doctor and paying for their critically needed medication. By improving the energy efficiency in homes, Americans are then free to spend those savings on other critical needs.

According to the National Association for State Community Services Programs (NASCSP) Over 51,000 New Mexican households fall below 50% of the poverty level, paying around 52% of their annual income towards their energy bills alone. Another 70,000 New Mexican households fall between 50-100% of the poverty line, paying on average 18% of their annual income towards their energy bills. By comparison, the average middle-income family pays 3% of their annual income towards their energy bills. Since 2009, New Mexico has weatherized over 3,700 homes with Recovery Act funds alone, enabling these families to save between $250 to $400 annually on the energy bills depending on the type of dwelling and fuel.

Due to the inability of many lower income homeowners to maintain equipment such as HVAC and water heaters there is a resulting increase in dangerous indoor air quality issues that can lead to asthma and allergies. Simply stabilizing the temperature in a home or building may help reduce incidents of mold and reduce dust mites, which are both major triggers of respiratory health problems. Both home performance and weatherization apply building science principles that treat the house as a system, it is common to see significant improvements not just in energy, but also in air quality and comfort.

Low income weatherization saves energy and helps low income members of our community make ends meet, all while putting dollars into local businesses, creating jobs. A performance based tax credit for energy efficiency home improvements would have the effect over time of creating a larger and more experienced pool of contractors serving middle and upper-income families. These very same contractors would then be free to assist grantees and sub-grantees of federal weatherization funds in the delivery of improvements to low-income households,

reducing the administrative and operational burden on these grantees so that they can serve more of the constituency that Congress intended to help.

2 **Mr. Golden, can you outline the differences between the recently expired residential energy credit and the proposal contained in Senator Snowe's bill? I understand that it moves in the direction of a performance-based, technology neutral incentive structure, but I wonder if you see a place for retaining some prescriptive measures for certain highly-efficient items, such as boilers and furnaces.**

Efficiency First supports a combination of the 25C prescriptive tax credit with the 25E performance tax credit proposed by Senators Snowe, Bingman, and Feinstein in S. 1914. This combination will continue to encourage high efficiency equipment replacement, while simultaneously helping to support a burgeoning energy efficiency contracting industry.

The 25C residential energy efficiency tax credit that is currently part of the tax code, differs fundamentally from S. 1914. The current 25C tax credit incentivizes specific equipment as a fixed level incentive, while the S. 1914 uses a whole house model, calibrated to actual energy bills, to predict and incentivize performance of an overall system. Under S. 1914, the more savings a project produces the larger the incentive, independent of the specific equipment or measures that were undertaken.

Efficiency First's contractor and auditor members know that their customers, the homeowner and taxpayer, want flexibility and choice when it comes to paths to take when making improvements to their home. We find that prescriptive and performance based incentives generally apply to different types of projects and customers. Homeowners requiring emergency replacement of a heating system or water heater will likely utilize the 25C tax credit, and choose from a select set of specifications for such equipment. However, for homeowners who are making comprehensive improvements to major systems impacting energy consumption in their home, the 25C tax credit does not allow for enough flexibility. These consumers are making investments with the goal of

saving energy, or proactively improving comfort, and in these cases a performance based incentive will allow the homeowner to work with a qualified contractor to design a project that maximizes results for their specific home and its characteristics. By combining the prescriptive 25C tax credit, which is designed for equipment replacement, with the 25E performance tax credit that will help develop an industry focused on delivering energy savings, we can support increases in equipment efficiency and help scale the home performance industry.

There are a number of benefits from adding a performance-based energy efficiency credit to the tax code. Importantly, a performance approach is technology neutral -- aligning incentives with energy savings, rather than attempting to specify an exhaustive and static list of particular technologies. Using public dollars to align incentives with a public good makes sound public policy. This approach provides incentives for industry and markets to innovate and develop new and more efficient approaches that most effectively deliver energy savings. The performance approach proposed in S. 1914 removes the need to constantly update the tax code legislatively to keep pace with changes in technology and market adoption. Instead, following a performance approach, contractors and homeowners are free to choose the best performing option for any given house, allowing those solutions that find the right balance of benefit, cost, and savings, to win in the marketplace.

Efficiency First believes that the best solution for the market is a combined approach of offering both prescriptive 25C and performance 25E / S. 1914 incentives. This permits the homeowner, that already has a well-insulated and sealed home, to replace an existing furnace with a qualified highly energy efficient unit - utilizing the 25C incentive. Additionally, it permits the homeowner that needs a comprehensive set of improvements to hit deeper energy savings targets to use the 25E incentive without being boxed in and forced to use a limiting set of products or technologies to hit their savings goal. Having both paths available will enable consumer choice, and will create an incentive that will help move the industry towards a more economically sustainable performance-based model overtime.

3 **Mr. Nadel and Mr. Golden, as Congress contemplates comprehensive tax reform, one of the goals will be to simplify the code and remove ineffective deductions and credits. Can you discuss why you feel the tax code is an appropriate, and perhaps superior, place for incentives for energy efficiency improvements – as opposed to other methods for delivering incentives?**

Integrating energy efficiency incentives into the tax code brings national uniformity and consistency which are essential for businesses to succeed. National incentives create a level playing field in a way that no other policy can achieve, establishing common standards and requirements industry can count on.

Contractors, manufacturers, and consumers crave consistency across markets. The current patchwork of energy efficiency programs is highly fragmented and has created a barrier to growth of the industry, muffled the market signals to manufacturers, and remains a roadblock to scaling the home performance contracting industry.

Well-designed energy efficiency tax policy can be a simpler means of achieving energy reduction than other kinds of energy programs. Tax is an equitable and streamlined approach to driving the market, with a benefit that accrues where it counts: at the point of the transaction and in the pockets of American families. Promoting energy efficiency through the tax code would begin to establish a national set of voluntary standards that consumers and contractors can choose to embrace and which would complement existing energy efficiency programs where they may exist.

Efficiency First believes that tax code is uniquely positioned to influence the voluntary development of a national marketplace for energy efficiency. We also believe that performance-based tax credits are especially appropriate for the tax code, as they do not require constant updating and maintenance to stay current with innovation, and do not propose to specify what technologies are most appropriate given the vast array of climate zones and building types across the country (so less changes would be required in the tax code itself). Performance-based tax credits will align rewards with the public good, driving both economic development and the

creation of an industry that can achieve the massive energy savings potential in America's aging housing stock.

Energy efficiency retrofits create a near-permanent reduction in energy use by the building stock, reducing the risks of blackouts, preserving energy resources, improving air quality, and protecting national security. Achieving the public goods that are provided by energy efficiency makes for sound tax policy.

4 **If Congress begins to design technology-neutral, performance-based incentives on a more regular basis, it will be important to accurately measure and verify energy savings achieved in commercial and residential buildings, and in the industrial sector. I wonder if each of you could speak to the measurement and verification systems and precautions present in the legislation before us today, or the work that your organization does on these issues.**

Switching from paying for specific technologies to incentivizing savings at a whole building level, has the advantage of metered savings as the ultimate verification system. While it is hard to measure savings, which by definition is in fact the lack of something and cannot be directly metered, we do have established protocols for evaluating whole building savings that are both consistent and repeatable.

One of the key innovations of S.1914, is the use of energy bill data to calibrate all modeled savings. This connection between models and bill data helps contain estimated savings based on historical energy usage and dramatically improve predictive accuracy and prevents overprediction of results by constraining predictions to actual consumption. Additionally, similar to the 25C tax credit where homeowners keep as part of their personal records, evidence that a product or technology is eligible for the tax credit, 25E requires that evidence is maintained by each homeowner so that before conditions of the model can be verified based on the original conditions of their home.

The fact that under 25E, all predictions are made on a whole-house basis makes measurement and verification of savings much easier than when dealing with specific measures such as a

furnace or water heater whose as-installed performance may be negatively impacted by other systems and conditions in the home. Individual measures will have enormous variance in actual savings on an house by house basis. Replacing a furnace in a temperate climate zone on say a 1200 square foot house may yield some savings, while an upgrade in say Maine on a 2500 square foot house would likely result in many times more savings - however both receive the same incentive. Whole house models will substantially improve accuracy levels and reduce variance, helping to ensure that every homeowner is achieving the savings they are are expecting.

When conducting measurement and verification at a whole-house level, we benefit from our ability to leverage existing well established measurement protocols for comparing before and after bill data (after weather normalization). While there will always be a level of variance on any individual home, the performance of a pool of buildings can be very accurately accounted for. The International Performance Measurement and Verification Protocol (IPMVP), is used widely and provides a tested approach to comparing normalized predictions to actual results.

Performance-based approaches such as 179D and the proposed S.1914 will help us to vastly increase data on performance in the market which will be used to reduce variance levels, and enable private markets to step in to manage this risk. This approach can be seen in the commercial markets, in the form of Energy Service Companies that provide building owners with guaranteed results. In this sense, the tax code becomes a catalyst for free market initiatives to germinate and take root, spurring both new technologies and business and delivery models but also ways to educate and inform consumers about the savings opportunities and better, enabling the free market to find compelling reasons for consumers to take action and make the "buy decision."

Performance-based incentives can also be observed in the solar industry, where leasing and power purchase agreements are dominating the market, by providing building owners with guaranteed production and no equipment risk.

While not a perfect analogy, the residential solar industry is a very encouraging example of how smart and coordinated public policy is leading to a growing and increasing sustainable market.

The combination of the 25D tax credit and the California Solar Initiative has many parallels to S.1914. Similar to the structure of the The Cut Energy Bills at Home Act (S.1914), the solar incentives in California are calculated based on a predictive model that accounts for factors such as shade and orientation to predict performance, which drives the amount of incentive.

This performance-based system developed that initial data that drove the development of solar leases and power purchase agreements, which are now leveraging private capital to drive over 75 percent of the California solar market - up from only 9% in 2009. The 25D Solar Investment Tax Credit has stood up an industry that is helping predominantly middle class homeowner, and is employing a workforce of nearly 120,000 US workers at over 5,600 businesses nationwide, creating over 14,000 new American jobs in 2012 alone, and is a demonstration of how smart tax policies can drive markets.

The proposed S.1914 builds on efforts by DOE to collect a public dataset for both commercial and residential buildings that can be used widely by industry. This system, call the Building Performance Database is currently in deployment and is growing rapidly.

Beyond specifically residential, the energy efficiency industry is working collaboratively to develop standardized project definitions and measurement approaches. The Environmental Defense Fund, through the Investor Confidence Project, is working with a wide range of industry stakeholders and has developed Energy Efficiency Project Performance Protocols that begin to standardize the wide range of elements that define a retrofit project, so as to enable better quality data, and reduce transaction costs to building owners who seek financing for their projects. This infrastructure to manage performance risk is a result of market demand for business models that deliver reliable results to investors and building owners. S.1914 and the revised 179D tax credits create a need to manage performance risk and the market is developing the solution. The critical contribution of smart policy is to take some of the first steps towards a market for real savings, and help spur industry and markets who are looking for a way to engage. Taking the lead and setting the stage for markets to engage is an ideal role for federal policy.

Residential energy efficiency is already moving toward performance-based models, however federal policies such as S.1914 will send strong signal and accelerate the necessary actuarial data to enable markets to move from uncertainty to manageable risk. The S.1914 / 25E tax credit is a first major step in the right direction, and will help establish the foundation for a long term sustainable market for energy efficiency.

SENATOR WYDEN QUESTION (from hearing transcript):

> **Mr. Golden, in writing, also give us your views with respect to how the whole-home credit being combined with the 25(c) proposal could advance this idea of the more level playing field.**

Efficiency First strongly supports the need to extend the current tax provisions. We also believe that we have an opportunity for a thoughtful approach that both advances and improves the current credits, while laying a foundation for a more economically sustainable policy that is aligned with the public good.

The combination of an improved 25C prescriptive tax credit, with the S.1914 / 25E performance based tax credit can both serve the needs of the existing business model focused on equipment replacement, and an emerging market of performance contracting. As with any new market, the performance based industry that the 25E tax credit primarily supports is still in its early stages, and supporting this market will therefore cost only a small fraction as much as the well-established industries primarily supported by 25C. It is our belief that a gradual transition will occur toward performance based contracting as markets and capital begin to enter the market en masse. Facilitating a transition to a performance-based market to achieving energy efficiency that can attract sources of private capital is an absolute requirement for us to pay for the large investment necessary to achieve our long term goals.

Let's start by defining the attributes of a performance based approach. Rather than selecting specific technologies a performance approach sets up a system that incentivizes the result we are

trying to reach, without prescribing how we get there. In the case of residential energy efficiency, this is energy saved, rather than technologies installed.

This approach is a considerably easier than attempting to choose the perfect U-value for a window, especially when one tries to set one standard that works in Oregon and Maine. It also makes more sense for a tax code that will be applied nationwide on a huge array of building types and climate zones. Creating a one-size solution inevitably creates unintended consequences in the market.

The 25C tax credit is often referred to as a prescriptive incentive, in that it picks specific technologies at an assigned incentive level. This approach is simple and quick to deploy, though it is less aligned with the public good associated with driving energy savings, and perhaps most importantly may not engage the capital resources required to enable the industry to continue to scale into the future.

We believe the role of the tax credit is to act as a proxy for market forces in the energy industry that are still developing and often highly regulated and slow to adapt. In many ways this policy is a stand-in until we have the actuarial data necessary to manage their risk, at which time a performance-based credit can be replaced by functioning markets and private capital.

Market actors, such as utilities, banks, insurance companies, and of course homeowners and service providers, are all, in essence, making an investment in a prediction of future performance that will deliver an expected return in the form of lower bills, less need for expensive generation resource, and less carbon. In the current prescriptive model, we have turned the product of our efforts, the unit of energy saved, into something that is largely theoretical and only loosely related to what is the real value of the savings. Through a performance based approach, we can transform energy efficiency into a resource that can be mined and traded into existing and emerging energy markets.

Performance-based models create the reliability and certainty that is necessary for energy markets to begin valuing the unit of savings as a resource, which ultimately can replace the need for government incentives.

As we transition to performance, the Federal Government will be freed from the impossible task of picking winning technologies, regulating markets into existence, and of course, picking up the enormous cost. There will remain an important, manageable and somewhat traditional role for the public sector to ensure that the markets are fair and transparent, and to protect the health and safety of American homeowners.

Many of the core systems of the performance based approach have been established over the last three years based on investments made by the Recovery Act. This includes State infrastructure for training, quality assurance, and other necessary functions.

While a simple cost-based prescriptive system may be simpler and cheaper to deploy in the short-term, only a performance-based system can provide a foundation for a long-term market that will attract private investment and transition from requiring public subsidies. Analyzed with this long-term market-based vision in mind, it is clear that the transition to performance is more than just a new way to encourage investment in energy efficiency through tax credits; it is, in fact, an essential foundational step to engage markets and attract private capital to create an economically scalable system to achieve our energy and economic goals.

I appreciate the opportunity to testify in front of the Committee. Please contact me or Efficiency First with any questions.

Sincerely,

Matt Golden
Principal, Efficiency.org
Board Member, Efficiency First
matt@efficiency.org

ACEEE Testimony
American Council for an Energy-Efficient Economy

**Submission of Steven Nadel,**
**Executive Director**
**American Council for an Energy-Efficient Economy (ACEEE)**

**To the Senate Finance Committee**
**Subcommittee on Energy, Natural Resources and Infrastructure**

**Hearing on: Tax Reform and Federal Energy Policy:**
**Incentives to Promote Energy Efficiency**

**Date: December 12, 2012**

## Summary

Congress enacted energy efficiency tax incentives in 1978 and again in 2005. Some of these incentives have proven very effective, while others have not. In July of this year, the American Council for an Energy-Efficient Economy (ACEEE) published a paper on tax incentives that included a review of this experience. We found that the tax incentives of the 1980s were not very effective in spurring substantial energy savings as these credits promoted tried-and-true energy efficiency measures that many consumers and businesses were already installing on their own. Furthermore, the amount of the tax credit was too small to spur many additional installations.

Tax incentives enacted as part of the *Energy Policy Act of 2005* were more targeted, emphasizing advanced technologies and paying higher incentives. Our review found that the tax incentives for new homes and appliances were particularly effective in growing the market share for qualifying homes and appliances and that the incentives for residential heating and cooling equipment and hybrid heavy-duty vehicles were also successful in encouraging purchases of the most energy-efficient products. On the other hand, we found that the tax credit for energy-efficient windows suffered from the same problems as the 1980s credits with too many products qualifying for the incentive, increasing its cost while moderating its impact.

Based on these experiences, we have concluded that the most useful tax incentives target long-term structural changes in the market, using temporary federal assistance to build the market for energy-efficient products so tax incentives can be phased out. The market will continue to grow on its own, supported by other energy efficiency programs and policies. In this way, federal tax incentives can have a large "multiplier effect," helping to leverage future market growth. Using such a "market transformation" approach, we should target advanced technologies and practices that currently have a low market share, but with federal support over a defined period of time (e.g., five years), their market share can grow and they can better prosper on their own after the tax incentives end. By focusing on products with efficiency levels that currently have a very small market share, we can keep costs down and minimize the number of "free riders" (customers who would have installed the same equipment, even if there were no incentives).

Targeted federal tax incentives are needed because the federal government brings unique attributes that other market players (including states, utilities and product manufacturers) do not have. It will be much harder to transform markets without federal involvement. Specifically, the federal government can provide consistent incentives nationwide, rather than a patchwork where some states have incentives, others do not, and incentive levels vary from place to place. Furthermore, the federal government can set uniform national qualifying criteria, providing manufacturers a consistent target for their development efforts and increasing the likelihood that they will devote the necessary resources to develop qualifying products. Finally, the federal government has a long-term perspective and can therefore target advanced technologies that will take multiple years to develop. Other market actors, on the other hand, often tend to have a shorter-term perspective, e.g., "what can we do to meet next year's savings or profit goals?"

ACEEE analyzed the costs and savings of a five-year federal tax credit for several high-efficiency products and services. We found that all of the targeted energy efficiency tax incentives we analyzed are highly cost-effective.

The average cost to the Treasury of these credits over the 15 years analyzed is only $0.28 per million Btu saved[1]—more than an order of magnitude less than the cost of the energy resources they save. We found that the most cost-effective options include tax incentives for commercial buildings (both energy-efficient new construction and energy-saving retrofits), energy-efficient new homes, heating and cooling equipment, appliances, and combined heat and power systems. Whole-house energy-saving retrofits and replacing old chillers are also very cost-effective. Many of these items are in the bills before us today or in provisions now on the books. We recommend some changes and updates to many of these provisions.

Based on this analysis, as part of any tax reform legislation, we recommend that a limited amount of funding be set aside for the provisions with the largest energy savings per federal dollar invested. These are provisions that have a large multiplier effect and where incentives can be ended or revised after about five years. As a specific budget is established, we would be happy to work with you to develop a set of incentives that provides the most "bang per buck."

In my testimony I also discuss some problems with how equipment in commercial buildings and combined heat and power systems are depreciated. We recommend that Congress revise these depreciation periods so they are based on the average service life of this equipment.

Adoption of these recommendations will result in substantial energy savings, large energy bill reductions, and stronger U.S. manufacturers and businesses.

---

[1] A British Thermal Unit (BTU) is the standard unit of energy measurement in the United States. A 100 W light bulb burning for 2900 hours consumes about a million Btu's.

## Introduction

My name is Steven Nadel and I am the Executive Director of the American Council for an Energy-Efficient Economy (ACEEE). ACEEE is a nonprofit research organization founded in 1980 that focuses on technologies, programs, and policies to reduce energy waste and increase the energy efficiency of the U.S. economy. Further information on our organization can be found at www.aceee.org.

We appreciate this Subcommittee's interest in exploring how energy efficiency tax incentives fit into tax reform. The United States has improved its energy efficiency enormously in recent decades, but there are large remaining energy efficiency opportunities. For example, in an ACEEE study published earlier this year, we estimated that energy efficiency could reduce overall U.S. energy use by 42% to 59% by 2050.[2] We estimate that under the high-efficiency scenarios examined in this study, an additional 1.3 to 1.9 million jobs would be generated in 2050, relative to a business-as usual-scenario.[3]

The majority of the investment needed to capture these efficiency opportunities will come from the private market, since the private market has the most capital and because it is the market, in the form of consumers and businesses, that benefits from energy efficiency savings. Additional investments will be driven by utility energy efficiency incentives and a variety of federal, state, and local policies. But as I will discuss in a few minutes, federal tax incentives have an important role to play that cannot be filled by private capital or other policies. Limited federal incentives can have a catalyzing effect, spurring large energy and cost savings and thereby helping our economy to grow.

ACEEE is a pragmatic organization and we recognize that serious tax reform will include efforts to broaden the base by reducing or eliminating many tax expenditures. In my testimony today I will discuss how Congress can continue to promote energy efficiency improvements in the United States within the confines of a constrained budget for tax expenditures. We believe some tax incentives should be preserved as part of tax reform, but that they should be modest, targeted, of proven effectiveness, and have scheduled sunset dates. The very limited funds available for tax incentives should maximize the "bang per buck" of federal expenditures.

## Lessons from Prior Energy Efficiency Tax Incentives

Congress enacted energy efficiency tax incentives in 1978 and again in 2005. Some of these incentives have proven very effective, while others have not. In July of this year ACEEE published a paper on tax incentives that included a review of this experience.[4]

---

[2] These savings are estimated relative to a business-as-usual scenario based on an extrapolation of the Energy Information Administration's *Annual Energy Outlook* reference case.

[3] John A. "Skip" Laitner, Steven Nadel, R. Neal Elliott, Harvey Sachs, and A. Siddiq Khan. 2012. *The Long-Term Energy Efficiency Potential: What the Evidence Suggests.* http://aceee.org/research-report/e121. Washington, DC: American Council for an Energy-Efficient Economy.

[4] Nadel, Steven. 2012. *Energy Efficiency Tax Incentives in the Context of Tax Reform.* https://www.aceee.org/files/pdf/white-paper/energy-efficiency-tax-incentives.pdf. Washington, DC: American Council for an Energy-Efficient Economy.

The 1978 legislation provided a credit of 10% of the cost of a moderately long list of eligible consumer and business equipment. Evaluations in the 1980s found that these were not very effective in spurring substantial energy savings, as these credits promoted tried-and-true energy efficiency measures that many consumers and businesses were installing on their own. These credits primarily went to "free riders"—consumers and businesses who would have installed the efficiency measures even without a tax credit. Furthermore, these evaluations found that the value of the tax credit was too small to spur many additional installations.

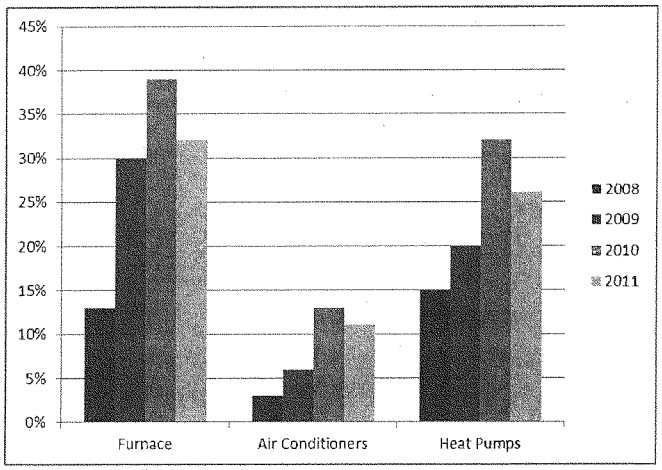
Tax incentives enacted as part of the *Energy Policy Act of 2005* were more targeted, emphasizing advanced technologies and paying higher incentives. Our review found that the new homes and appliance tax incentives were particularly effective in growing the market share for qualifying homes and appliances.

In the case of appliances, tax credits have permanently transformed the market, which is the ideal outcome. For example, for refrigerators, clothes washers, and dishwashers, the tax credits spurred manufacturers to develop, introduce, and broadly market new high-efficiency products. As these products gained in market share, the EPA/DOE ENERGY STAR® program adopted the same qualification levels, further growing the market for these products. Ultimately manufacturers agreed to make these levels the basis of new minimum-efficiency standards. At the same time, the energy efficiency levels needed to qualify for these tax incentives have been increased twice, so that the tax incentives only apply to the very highest energy-efficient products available in the market.

In the case of the new homes tax credit, qualifying homes accounted for less than 1% of new homes in 2006, but increased dramatically to about 11% in 2011, spurred by the availability of the credits.

Our review of the 2005 tax incentives also found that credits for furnaces, air conditioners, and heat pumps have been effective in spurring new product introductions and increased market share, as seen in the figure below. Likewise, the credit for heavy-duty hybrid vehicles had a significant impact on the products manufacturers brought to market, helping to establish a market for these products.

**Percentage of Air-Conditioner, Heat Pump, and Furnace Shipments Qualifying for Federal Tax Incentives by Year**




Note: Tax incentive was 10 percent of cost in 2008 and 2011 and 30 percent of cost in 2009 and 2010. This likely explains lower penetration in 2011.

On the other hand, we found that the energy-efficient windows tax credit had too many free riders, making its cost high and its impact less significant. Some of the other energy efficiency tax credits had low participation rates, resulting in lower than hoped market impacts, but also low costs.

From this analysis, we find that the most effective tax incentive strategy is one that effectively creates a market for more efficient products that can then be leveraged by other policies (such as utility efficiency programs, building codes, and product standards) to expand the savings. Based on these experiences, we recommend that future energy tax incentives:

- Target efficiency levels and new energy sources that currently have a very small market share, which keeps the cost of tax incentives down and minimizes the number of "free riders";
- Provide a substantial incentive to motivate significant additional sales;
- Be in place for long enough so manufacturers and other market players find it worth making investments to develop and market eligible products (e.g., about five years); and
- Should either be phased out or eligibility levels increased after that period, starting the transformation cycle again.

## The Market Transformation Approach to Tax Incentives

Building on the success of the appliance and new home tax incentives discussed above, we recommend that the most useful approach to tax incentives is to target long-term structural changes in the market, using temporary federal assistance to build the market so tax incentives can be phased out and the market will continue to grow on its own, supported by other energy efficiency programs and policies. In this way, federal tax incentives can have a large "multiplier effect," helping to leverage future market growth.

While we focus on the market transformation approach to energy efficiency, this approach may apply to other energy incentives as well. An example might be the wind energy production tax credit, which helped to establish a major U.S. wind energy industry. There is now general agreement that this credit can now be phased out, although disagreement exists on the period of the phase-out. Similarly, the market transformation approach could be used to support the development of new modular nuclear power plants or the development of new advanced drilling techniques rather than using limited federal funds to support well-established technologies and practices.

Not all technologies and practices lend themselves to a market transformation approach. A market transformation approach makes sense where increased production and market share can lead to economies of scale in product development and production. This approach also applies to markets where a shortage of experienced contractors exists. In this latter case, the tax incentives can encourage additional contractors to get the training and skills needed to enter the market, helping to increase the availability of these skills and inducing more competition in these markets.

Since we assume that money for federal tax incentives will be very limited, we recommend only targeting measures where the market transformation approach can apply, in order to maximize the benefits achieved per federal dollar invested. For example, in the energy efficiency field, some useful targets for federal tax incentives include:

1. Continuing the current appliance tax credit, but updating the qualifying levels so only the most efficient products qualify. The current efficiency tiers were designed to run through 2013, so these qualifying levels will need updating for 2014 and beyond.

2. Continuing the current new home tax incentive, but introducing a new higher savings tier, phasing out the current savings tier in a few years.

3. Improving the current commercial buildings tax deduction for new buildings (specifics discussed below) so that the market share of complying new buildings can grow to sustainable levels and ultimately these levels can be considered for inclusion in state and local building codes.

4. Adding comprehensive retrofits for existing buildings to the commercial building tax deduction in order to increase the energy savings per building retrofit from today's modest levels, expand the number of experienced contractors who can serve this market, and provide more experience on the most cost-efficient methods for conducting comprehensive retrofits. By "comprehensive" we mean retrofits that combine lighting, space heating/cooling, and building shell measures, rather than just focusing on single components.

5. Promoting higher efficiency levels and practices for residential furnaces, boilers, stoves, water heaters, air conditioners, and heat pumps, building on the success of the recently expired incentives. However, relative to the recently expired incentives for these products, qualification levels should be tightened, including requiring furnaces to also contain high-efficiency supply-air fans, specifying a test procedure and increasing the efficiency levels for biomass heating equipment, and requiring installation in accordance with the Air Conditioning Contractors of America ACCA-QI quality installation specification (or equivalent specifications).

In summary, we suggest that ripe targets for market transformation be selected and incentives customized for those markets. Others might argue that incentives should be very broad, such as a specified payment per Btu saved, in order to encourage all potential technologies to compete, rather than "picking winners and losers." We do not think this alternative is a good idea, because the technologies that are likely to get most of the money will be tried and true technologies that are likely to be purchased without any tax incentives (e.g., "free riders"). Providing incentives in this way will primarily just pay some people and businesses for things they would do anyway, without contributing significantly to transforming markets. Instead, we should concentrate on market segments where a medium-term "nudge" can help long-term markets to prosper. We do, however, recommend that within specific tax incentives (e.g., commercial building retrofits), a technology-neutral approach be used that bases tax incentive eligibility on performance metrics. For example, for commercial building retrofits, we recommend a criterion of 20% energy savings relative to current consumption, leaving it to contractors to choose which measures to employ to reach 20% savings. Likewise, for appliances, efficiency levels should be chosen, as measured using standard test procedures, leaving it to manufacturers to decide which technologies to employ to reach these levels (e.g., insulation, controls, or better motors).

## The Unique Role Federal Tax Incentives Can Play

Using a market transformation approach, federal tax incentives can play a unique role, helping to complement energy efficiency efforts by states, utilities, and the private marketplace. It will be much harder to transform markets without federal involvement. The federal government brings unique attributes that other players do not have:

- The federal government can provide consistent incentives nationwide, rather than a patchwork where some states have incentives, others do not, and incentive levels vary from place to place.

- The federal government can set uniform national qualifying criteria, providing manufacturers a consistent target for their development efforts and increasing the likelihood that they will devote the necessary resources to develop qualifying products. A variety of utilities and states have set their own criteria, creating a challenging market for manufacturers.

- The federal government has a long-term perspective and can therefore target advanced technologies that will take multiple years to develop. Other market actors (such as utilities and equipment manufacturers) often have a shorter-term perspective, e.g., "what can we do to meet next year's savings or profit goals?" Furthermore, some firms prefer to be "followers" rather than "leaders," learning from the successes and failures of the leaders. But if incentives are provided to the leaders for just a few years, then more firms will be encouraged to lead.

## Maximizing Benefits per Dollar of Federal Investment

ACEEE's July 2012 white paper [5] analyzed the costs and savings of a five-year federal tax credit for several high-efficiency products and services to help guide targeting of energy efficiency tax incentives. We analyzed the costs and savings of a five-year federal tax credit for high-efficiency products and services, including estimated effects on the market for these products and services over the following decade. Results of this analysis are summarized in the table below:

| | Five-Year Cost to | Electricity Savings | | | Fuel Savings | | | Federal $/ | |
|---|---|---|---|---|---|---|---|---|---|
| | Treasury | 5th Year | 15th Year | Lifetime | 5th Year | 15th Year | Lifetime | Lifetime | |
| Item | ($millions) | (GWh) | (GWh) | (GWh) | (TBtu) | (TBtu) | (TBtu) | mBtu | Rank |
| Increasing commercial building deduction to $3/sf | $52 | 552 | 2,636 | 158,139 | 2 | 10 | 599 | $0.02 | 1 |
| New homes – extend current credit | 1,076 | 2,590 | 14,608 | 876,505 | 10 | 96 | 5,785 | 0.07 | 2 |
| Commercial building retrofits (20%+ savings) | 843 | 14,349 | 34,678 | 520,164 | 40 | 106 | 1,596 | 0.12 | 3 |
| Water heaters – heat pump and advanced gas | 1,308 | 3,841 | 32,035 | 416,459 | 7 | 95 | 1,229 | 0.24 | 4 |
| CHP – remove size cap but limit to 25 MW/system | 270 | 0 | 0 | 0 | 38 | 64 | 956 | 0.28 | 5 |
| A/C & HP SEER 16 installed per ACCA-QI | 2,426 | 8,152 | 35,262 | 634,707 | 13 | 94 | 1,698 | 0.30 | 6 |
| Residential appliances – extend and update | 1,148 | 2,624 | 18,371 | 275,562 | 3 | 41 | 612 | 0.34 | 7 |
| Furnaces (95% AFUE + efficient fan) | 901 | 897 | 3,545 | 63,808 | 13 | 105 | 1,886 | 0.36 | 8 |
| Advanced windows (DOE U .22 spec) | 504 | 538 | 2,984 | 59,674 | 3 | 16 | 328 | 0.54 | 9 |
| New homes – 50% whole home savings | 646 | 1,203 | 3,488 | 69,758 | 7 | 21 | 411 | 0.58 | 10 |
| Whole house retrofits (20%+ savings) | 1,875 | 1,269 | 3,808 | 68,544 | 13 | 40 | 722 | 1.33 | 11 |
| Replace CFC industrial & commercial chillers | 236 | 1,665 | 0 | 16,646 | 0 | 0 | 0 | 1.42 | 12 |
| Insulation and sealing for homes per 25C | 2,022 | 1,540 | 1,586 | 31,717 | 22 | 27 | 549 | 2.33 | 13 |
| Totals | $13,300 | 39,200 | 153,000 | 3,191,700 | 170 | 720 | 16,400 | $0.28 | |

Note: "Lifetime" means cumulative energy savings over the 15-year period analyzed.

Two key points emerge from this analysis:

- All of the energy efficiency tax incentives analyzed are highly cost-effective. The average cost to the Treasury of these credits over the 15 years analyzed is only $0.28 per million Btu saved—more than an order of magnitude less than the cost of the energy resources they save.[6] All of the options analyzed had lifetime costs under $2.50 per million Btu.

- The most cost-effective options analyzed include commercial buildings (both energy-efficient new construction and energy-saving retrofits), energy-efficient new homes, heating and cooling equipment, appliances, and combined heat and power systems. Whole-house energy-saving retrofits and replacing old chillers are also very cost-effective. Many of these items are in the bills before us today.

---

[5] See Footnote #4.

[6] For example, the Energy Information Administration, in their just-released *2013 Annual Energy Outlook*, estimates that natural gas will average $7.83 per Btu over the 2012-2040 period. See http://www.eia.gov/forecasts/aeo/er/pdf/0383er%282013%29.pdf.

## The Bills Before Us Today

Three bills are before us today:

- S. 3591, Commercial Building Modernization Act
- S. 1914, Cut Energy Bills at Home Act
- S. 3352, Expanding Industrial Energy and Water Efficiency Incentives Act

I discuss each in turn.

### *Commercial Building Modernization Act*

This bill will make the Section 179D commercial building tax deduction now on the books more workable and adds a new Section 179F to specifically promote retrofits to existing commercial buildings. We support this bill.

The current 179D provision has had limited participation because the incentives are low relative to the costs involved, qualifying for envelope and heating/cooling incentives is very difficult, and some property owners are effectively not eligible. This bill corrects these problems. Another problem not addressed by this bill is that the energy modeling requirements to qualify for incentives can be difficult and hence expensive. We recommend that a provision be added to direct the Treasury and Energy Departments to research this issue and to develop simplified approaches within one year of enactment.

The current 179D provision rarely addresses building retrofits since it is very difficult to meet the 50% savings threshold in an existing building. This bill addresses this issue by adding a new incentive for savings of 20% or more in existing buildings, with the incentive increasing as savings increase.

This market is ripe for development but there are contractors qualified to do these retrofits in only a few regions at present. An incentive like this will help contractors become established to perform comprehensive building retrofits. Also, many retrofits today focus on single systems (e.g., lighting) and as a result have only modest savings. By promoting retrofits that address multiple systems simultaneously and in synergistic ways, we can increase savings substantially.

I would note that in our analysis of prospective tax incentives discussed previously, the 179D and 179F provisions were the first and third most cost-effective, making this bill a very high priority.

### *Cut Energy Bills at Home Act*

This bill would provide a performance incentive for reducing energy use in existing homes by 20% or more. This bill will promote comprehensive retrofits to homes—retrofits that combine multiple measures such as insulation, improved heating and cooling systems, and sealing homes and ducts to reduce air leaks. This bill builds on the EPA/DOE Home Performance with Energy Star program that has helped to develop whole-home retrofit procedures and train and certify contractors in these procedures, working with the Building Performance Institute and others.

Whole-home retrofits save more energy than individual weatherization measures. Furthermore, with a whole-home retrofit, measures can be designed as a complementary package, reducing costs relative to individual

measures. For example, if insulation is installed and home and duct sealing performed, often a smaller heating and cooling system can be installed, reducing the cost of a new system.

The intent of this bill is to help grow this nascent home performance industry. Since not many whole home retrofits are currently performed, costs should be modest and free rider levels low. This bill will be much lower cost than the window and insulation credits that it replaces. In our analysis we estimate an average cost of about $375 million per year (lower in the early years, higher in years four and five). By comparison, the prior home weatherization incentive, the 25C program, was found by GAO to cost the Treasury $5.3 billion in 2009, the last year for which data are available.[7]

Many states started home performance programs under ARRA, but these were short-term efforts that have now generally ended. This bill would build on these prior efforts and help bring the home performance industry to the next level. Our analysis found that this bill would save energy at an average federal cost of $1.33 per million Btu saved. We support this bill due to this low cost, and to the fact that it will support development of the home performance industry so it can better prosper and serve homeowners in the future.

### *Expanding Industrial Energy and Water Efficiency Incentives Act*

This bill includes four provisions addressing water reuse, advanced motors, replacement of old inefficient chillers, and expanding existing incentives for combined heat and power (CHP). In our analysis we examined both the CHP and chiller provisions.

The CHP provision expands the incentive that Congress enacted in 2008 to include larger equipment, but in ways that keeps the cost to the Treasury modest. CHP systems generate both heat and electricity together, substantially reducing energy use relative to using a generating plant to produce electricity and a separate boiler to produce heat. CHP systems often make sense in facilities with significant heat loads such as factories, universities, and hospitals. Under the current credit, incentives are available for systems up to 25 MW in size, but the incentive only covers the first 15 MW. S. 3352 eliminates the cap on overall system size, allowing large systems to qualify, but caps the incentive at 25 MW per system, helping to keep costs in check. CHP systems tend to become more cost-effective as their size increases, so the change provides the greatest incentive to smaller systems without eliminating some incentive for systems above 25 MW. By providing some incentive for larger systems we eliminate the current distortion that a system of 25 MW qualifies for a credit while a 26 MW system receives none. With this new provision, both of these systems, as well as a 100 MW system, would receive the same incentive. This incentive will spur greater use of CHP systems, providing more examples of installations that others can learn from. In our analysis this provision was highly cost-effective, with a federal cost of only $0.28 per million Btu saved.

The chiller provision would provide a credit to encourage replacement of old inefficient chillers with CFC refrigerants. CFCs harm the ozone layer and have not been permitted in new chillers for many years. However, some of the old chillers remain, leaking CFCs and using excessive amounts of energy. Building owners are reluctant to replace these chillers due to the upfront costs. The proposed incentive would cover part of these costs,

---

[7] U.S. General Accounting Office. 2012. *Factors to Consider in the Design of the Nonbusiness Energy Property Credit.* GAO-12-318. Washington, DC: U.S. General Accounting Office.

but would be available for only three years. Building owners would have a limited window to take advantage of the incentive. The bill also includes innovative provisions to require an energy audit to look for opportunities to reduce cooling loads and provides further incentives if the chiller is downsized. These provisions will encourage engineers to develop expertise in system downsizing, which will be useful after the incentives expire. Qualifying chillers are required to meet chiller efficiency levels established by the American Society of Heating, Refrigerating and Air-conditioning Engineers (ASHRAE) in 2007. ASHRAE is now finalizing an update to its chiller efficiency standards and we recommend that this bill be updated to refer to the revised ASHRAE standard. We estimate this incentive will have a federal cost of $1.42 per million Btu saved.

We did not examine the water reuse and advanced motor provisions in our analysis due to difficulties in obtaining data. We support both provisions, but as lower priorities than the CHP and chiller provisions. In the case of the advanced motor provision, the major barrier to including these motors in equipment is the cost to reengineer and retool the equipment to accommodate the advanced motor. The credit goes to the equipment manufacturer to offset this non-recurring cost of redesigning their product, so that once the redesigned product is introduced the manufacturer will be motivated to continue to offer the equipment without the need for incentives.

Regarding water reuse, U.S. manufacturers are facing increasing challenges due to limited water resources in many locations. If these firms are to remain competitive, they will need to deploy new technologies that reduce the sourcing of water from public resources. Deploying technologies that require less water or are able to reuse water are critical. These technologies are not in common use today, so the tax credit is intended to build awareness and experience deploying them, reducing the perceived risk to manufacturers.

## Additional Energy Efficiency Issues to Consider as Part of Tax Reform

I want to raise two additional issues for the Committee's consideration relating to depreciation periods and the option of repayable tax incentives.

**Depreciation Periods**

Under current law, the depreciation period for many types of equipment is written into the law, and some of these depreciation periods bear little relationship to typical service lives in the field. Particularly egregious are the depreciation periods for equipment in commercial buildings, including heating and cooling systems, lighting fixtures and controls, and roofing systems. Currently, this equipment is depreciated over 39 years, the same depreciation period as is used for a new commercial building. However, lighting, cooling and heating equipment, and roof systems typically have lives of 15-25 years, not 39 years. The 39-year depreciation period acts as a barrier to energy efficiency as many businesses will choose to repair equipment when it fails so as to avoid having to write-off the un-depreciated value. Since equipment has been steadily increasing in efficiency, encouraging equipment replacement will save energy and also create sales and jobs for equipment manufacturers.

Our preferred choice is to delegate the choice of depreciation period to the IRS, with instructions to use depreciation periods that match the average service life of equipment. In this way Congress gets out of the weeds and also allows for the fact that technology changes much more quickly than the law can change. If this is not possible, we suggest resetting depreciation periods based on the best data on service lives currently available. For example, the table below provides average service lives from an ongoing study by ASHRAE.

**Service Life Estimates for Some Commercial HVAC Equipment**

| Equipment Type | Median Service Life, Years |
|---|---|
| Chillers, air-cooled rotary & screw | 23 |
| Cooling tower, metal | 17.5 |
| Controls, electronic | 18 |
| Boilers, hot-water, steel forced draft | 25 |
| Packaged DX unit, air-cooled | 22 |
| Split DX system | 17 |
| Domestic hot water heater, electric | 12 |
| Domestic hot water heater, gas | 15 |

Source: ASHRAE[8]

Likewise, in the case of CHP systems, the depreciation period varies as a function of who owns the equipment and how it is used, even though often the same equipment is used by a variety of owners and for a variety of applications. This variation is illustrated in the table below. We recommend that a single service life be selected for all owners, perhaps 15 years.

[8] ASHRAE. 2012. "Owning and Operating Cost Database." http://xp20.ashrae.org/publicdatabase/service_life.asp. Accessed March 1. Atlanta, Ga.: ASHRAE.

**Summary of Current Federal Depreciation Treatment for CHP Assets**

| Asset Category | MACRS Tax Life (years) |
|---|---|
| *Utility* | |
| Steam production or distribution | 20 |
| Steam turbine power plant | 20 |
| Combined cycle power plant | 20 |
| Combustion turbine power plant | 15 |
| *Industrial* | |
| For power capacity > 500 kW or steam capacity > 12.5 Mlbs/hour: | |
| Steam production or distribution | 15 |
| Power generation | 15 |
| For power capacity < 500 kW or steam capacity < 12.5 Mlbs/hour: | |
| Steam production or distribution | 5–10 years depending on industry classification |
| Power generation | 5–10 years depending on industry classification |
| *Commercial* | 39 |
| *Residential* | 27.5 |

Note: Mlbs = thousand pounds. Source: Marc Spurr, Kattner FVB, 2001, personal communication.

**Repayable Tax Incentives**

For some energy efficiency measures that are expensive and for which quick market transformation is not possible, such as comprehensive home and commercial building energy efficiency retrofits, we recommend five-year tax incentives as discussed above, helping to grow these markets to levels that are more sustainable. Still, even after five years, we think additional support would be useful but recognize that the federal budget may not be able to support such an extension. In these cases Congress should consider transitioning to repayable incentives after the initial five-year incentive ends.

Repayable tax incentives are a way to limit long-term costs to the Treasury by requiring recipients to repay the incentive over time as benefits are realized. The initial credit helps reduce the upfront cost of the investment, and the latter payments reduce the cost to the Treasury. For example, if a business receives an initial tax credit of $100,000 on a combined heat and power system the year the system was placed into service, they might repay the federal credit at the rate of $20,000 per year over the next five years. The initial credit encourages the investment, and the subsequent repayments channel the value of some of the energy bill savings back to the federal government. The result is that the long-term cost to the federal government is very low—just defaults plus interest costs. Essentially this would be a zero-interest loan.

This idea has already begun to circulate in Congress. In 2011, Senator Shaheen (New Hampshire) circulated a draft bill that would provide a repayable tax incentive for CHP systems and industrial energy efficiency improvements. Under the proposal, an incentive is given to electric utilities that finance CHP systems. The amount of the incentive is then repaid to the Treasury through an annual installment payment paid by the customer who owns the CHP system equal to the amount of the subsidy divided by an installment period, specified in years. In the draft Shaheen bill, the installment period is three years (e.g., the customer repays the subsidy over three years) but payments don't begin until the third year after the subsidy is paid (i.e., the customer repays nothing for the first two years, then repays one-third of the subsidy each year for the next three years).

Such a repayable tax incentive would be easier to implement for businesses than for individuals, since businesses already depreciate capital investments over many years and thus need to track past investments and depreciation from year to year when compiling their annual taxes. Tracking repayments would be very similar. Likewise, this system could work well for individuals who use the federal long form as this form already includes such items as capital gains and losses relative to expenditures in previous years. Such a repayable incentive should probably be limited to fairly large investments, such as an individual credit of $1,000 or more. Having to go through the extra tracking and paperwork for small investments probably would not make sense. The incentives in S. 1914 are large enough to meet this threshold.

## Conclusion

ACEEE strongly feels that well-targeted energy efficiency tax incentives can help to transform markets so that efficiency markets prosper, even after incentives end. Such transformations result in large and long-term energy savings, creating jobs and otherwise benefiting our economy. Federal tax incentives play a unique role in that they apply across the country and have uniform qualification levels, complementing the patchwork of state and utility incentives. When this Committee considers tax reform legislation, we recommend it include:

1. Limited funds for energy efficiency tax incentives targeted at long-term market transformation in ways that maximize the savings per federal dollar invested. Such incentives should continue for about five years before they are sunset or revised. Particular provisions should address:

    a. New commercial buildings and commercial building retrofits, along the lines of S. 3591;

    b. Whole-home retrofits, along the lines of S. 1914;

    c. New homes, building on but updating the current section 45L;

    d. High-efficiency appliances, building on but updating the current section 45M;

    e. High-efficiency residential furnaces, boilers, stoves, air conditioners, heat pumps, and water heaters, updating provisions from the recently expired section 25C; and

    f. CHP, chillers, and other industrial opportunities, drawing from S. 3352.

2. Reforming tax depreciation schedules so they are based on the average service lives of covered equipment. Equipment installed in commercial buildings and CHP systems need particular attention.

In addition we recommend that the Committee consider including repayable tax incentives among the energy efficiency tax credits.

In recent years, targeted energy efficiency tax incentives have successfully helped to transform appliance, new home, heating/cooling equipment, and hybrid vehicle markets. We should continue such efforts at a modest level to spur development of advanced high-efficiency products and grow contractor expertise, providing a large multiplier effect on the federal investment. The end result will be substantial energy savings, large energy bill reductions, and stronger U.S. manufacturers and businesses.

Senate Finance Committee Hearing
"Tax Reform and Federal Energy Policy: Incentives to Promote Energy Efficiency"
December 12, 2012
Questions for Mr. Steve Nadel

Questions from Senator Bingaman

1. Mr. Nadel, as I mentioned in my opening statement, one of the goals of these reforms for energy efficiency is to provide technology neutral, performance-based incentives whenever possible. And yet, the legislation I have introduced with Senators Snowe and Feinstein on industrial efficiency contains incentives that do not meet those criteria. Is there a strong policy reason why industrial efficiency incentives should be different from incentives designed to improve building performance?

   Response: Yes, there are substantial differences between industry and buildings, differences that warrant using different approaches for tax incentives. In industry, most of the energy use is for process energy use, and individual processes vary widely. Melting steel has little in common with using electrolysis to produce high-grade aluminum, both of which have little in common with processes to make paper or specific chemicals. In the residential and commercial sectors we have national model building codes which tax incentives can use as a baseline for measuring energy savings. There is no similar baseline for industry. Therefore, industrial tax provisions have generally been more targeted at specific opportunities, but can apply to energy saving opportunities that cut across multiple industries. S. 3352 for example targets opportunities to improve chiller systems and to promote use of advanced motors, CHP systems and water reuse.

   Theoretically, a tax incentive could be designed to reward achieving savings of 20% in existing industrial facilities (analogous to the 20% savings thresholds in the residential S. 1914 and the commercial S. 3591), but given the diversity of industrial processes and the fact that industrial processes are constantly changing, coming up with appropriate procedures for determining savings through the tax code would be difficult, and would tend to provide an easy-to-meet threshold for some industries and a near-impossible target for other industries. Such an exercise would likely result in high costs to the Treasury and only modest energy-saving benefits since such a provision would benefit

primarily "free riders" (companies that were making the energy-saving investments anyway).

This said, a possible more generic option for industrial incentives is to provide rewards for increases in capital investment in industry, relative to a baseline period, such as average annual capital investments over the prior three years. Most capital investments in industry tend to result in higher efficiency since newer equipment and processes are generally more efficient than old equipment and processes. And by only rewarding increases in capital investment, we keep the number of "free riders" down. ACEEE released a working paper on this option on Dec. 19, 2012. A copy of this paper is attached for the record.

2. Mr. Nadel and Mr. Golden, as Congress contemplates comprehensive tax reform, one of the goals will be to simplify the code and remove ineffective deductions and credits. Can you discuss why you feel the tax code is an appropriate, and perhaps superior, place for incentives for energy efficiency improvements – as opposed to other methods for delivering incentives?

   Response: The tax code is a good vehicle for promoting energy efficiency investments for several reasons. Nearly all businesses and most individuals need to prepare tax returns, so such tax incentives are available to most businesses and individuals. Furthermore, by using the tax code we leverage existing activity, rather than require an entirely new process. Systems are already in place for handling credits, primarily by having the tax payer subtract the amount of any tax credit from the taxes due. There are also established procedures for processing tax returns and issuing refund checks, if refunds are earned. By contrast, setting up direct payments would require developing entirely new procedures, and hiring staff to implement them. Finally, I would note that politically it has generally been easier to enact tax incentives, rather than direct payment programs. For example, the Home Star residential retrofit incentive program failed to reach the Senate floor due to demands that any new spending be fully offset, and difficulties finding acceptable offsets.

3. If Congress begins to design technology-neutral, performance-based incentives on a more regular basis, it will be important to accurately measure and verify energy savings achieved in commercial and residential buildings, and in the industrial sector. I wonder if each of you could speak to the measurement and verification systems and precautions present in the legislation before us today, or the work that your organization does on these issues.

   Response: Measurement and verification systems should be an important part of any tax incentive. We need to regularly access the costs and benefits of particular incentives so that informed judgments can be made on which incentives to continue, which to modify (and how) and which to end. S. 3591 includes an important provision that holds back a portion of the tax incentive until energy savings have been demonstrated. This provides a strong incentive for investments that really save energy, and provides useful data for evaluating this incentive. Likewise, S. 1914 includes a specific provision [in subsection (g)] requiring the Secretaries of Treasury and Energy to conduct an evaluation of the credit and the energy usage reductions achieved, in order to help guide revisions to the program. It might be useful to add a similar provision to S. 3352.

   My organization, ACEEE, is also involved in evaluation of tax incentives, trying to locate the best data we can on program costs and impacts. For example, in 2011, we published an evaluation of the energy provisions in the Energy Policy Act of 2005, including the tax incentives. This evaluation can be found at: https://www.aceee.org/research-report/e113.

   More generally, in our work we often find it difficult to locate data on how much specific incentive provisions are costing the Treasury. We recommend that the IRS be directed to provide annual estimates of the actual cost of each tax incentive provision, which in turn will likely require them to review their tax forms to determine if the necessary data is collected. For example, there is no data on the cost of the current commercial building tax deduction as this deduction is combined with many other deductions in a single line on tax forms, with no identification of the deductions that are used (e.g. energy efficiency vs. a totally unrelated provision) and the amount of the deduction claimed for each purpose.

# Encouraging Modernization of the Industrial Sector and Other Energy-Saving Capital Investments through Tax Reform

Steven Nadel and R. Neal Elliott
December 2012
An ACEEE White Paper

© American Council for an Energy-Efficient Economy
529 14th Street NW, Suite 600, Washington, DC 20045
Phone: (202) 507-4000 • Twitter: @ACEEEDC
Facebook.com/myACEEE • www.aceee.org

## Contents

ACEEE Tax Reform Working Papers ..... ii

Acknowledgments ..... ii

Executive Summary ..... iii

Introduction ..... 1

Keeping Costs Down ..... 1

Acceptable Capital Investments ..... 2

Repatriation of Profits for Increased Capital Investments in Manufacturing ..... 3

Accelerated Depreciation for Increased Capital Investments in Manufacturing ..... 3

Repayable Tax Incentives ..... 4

Comparison of the Options for Manufacturing ..... 5

Accelerated Depreciation for Purchases of Energy-Efficient Equipment, Primarily in the Commercial Sector ..... 6

Next Steps ..... 7

References ..... 8

## ACEEE Tax Reform Working Papers

This is the fifth in a series of working papers on tax reform issues related to energy efficiency that ACEEE is preparing in 2012. We welcome feedback on this working paper. Send comments to taxreform@aceee.org. A report summarizing and revising these working papers will be published as an ACEEE report in early 2013.

## Acknowledgments

Funding for this work was provided by the Kresge Foundation, Energy Foundation, and a third foundation wishing to remain anonymous.

Thanks to Renee Nida for editing this paper.

## Executive Summary

Much of the equipment and production processes in America's factories are decades old and not as efficient as modern equipment and processes in use by many of our international competitors. While some factories have been modernized, many have not. Modernizing these factories will allow them to better compete in world markets by improving product quality and reducing product costs, including through reduced energy use. Modernization of our factories will build on several competitive advantages the U.S. now has—low electric and natural gas prices (relative to the rest of the world) and lower labor costs due to higher productivity.

As we emerge from the Great Recession, many industrial firms have capital to invest, but a nudge from the tax code could spur substantial additional investments here in the U.S. We suggest three possible tax policies that could spur investment. All are designed to be low cost in order not to add much to the federal budget deficit and to address a desire by many tax reform proponents to reduce tax rates by reducing tax expenditures. The three policies are:

1. Provide a low tax rate for repatriation of company profits *provided* these repatriated profits are used to increase a company's capital investments relative to their average capital investments in recent years. This provision would apply to multinational firms with substantial profits now parked abroad.

2. Allow accelerated depreciation on increased capital investments in production capacity, allowing companies to reduce their near-term taxes. If depreciation periods were cut in half, the amount of the incentive would be similar to the incentive on repatriated profits discussed above.

3. Provide repayable tax incentives for increased capital investments. The credit would be taken on taxes in the year the expenses were made, but then the credit would be paid back to the Treasury in subsequent years. A credit of 35% of the amount of the capital investment increase that is repaid over ten years would provide about the same incentive as the other two approaches.

We recommend that at least two of these approaches be enacted. The first approach would benefit only large multinational firms, while second and/or third approach should be included in order to benefit firms that primarily serve the domestic market. A firm would only be able to use one of the approaches.

For the commercial sector, a different approach is needed, since much of capital investment is for land and buildings and not for energy-consuming systems. We suggest an option to provide accelerated depreciation for purchases of high-efficiency equipment in the commercial sector, where "high efficiency" means equipment that meets energy efficiency specifications set by the Federal Energy Management Program (FEMP).

For all of these incentives, the costs to the Treasury are low, but the advantages in terms of energy savings and more competitive U.S. manufacturers would be substantial for years to come.

## Introduction

The energy efficiency of a nation's manufacturing base has been shown to be directly correlated with the vintage of the process equipment. Thus one of the policy strategies to increase the efficiency of the manufacturing sector is to modernize the manufacturing base (Laitner et al. 2012). The United States is poised to enter a period of major modernization that offers the promise of important improvements in the energy efficiency of our manufacturing base (Russell and Young 2012).

This opportunity results from a conjunction of market events that are making the U.S. an attractive global market for manufacturing. Changes in U.S. energy markets, particularly the emergence of bountiful natural gas from non-conventional production, have made our country a low-cost energy manufacturing destination. This attractive energy outlook combines with high levels of labor productivity and a history of innovation to create an attractive environment for investments in manufacturing capacity, both for domestic and export markets (Russell and Young 2012; BCG 2012). As the economy recovers, the existing manufacturing base, which has shrunken as a result of the recent economic downturn, will be stretched to meet expanding demand. This will put greater pressure on manufacturers to invest in additional production capacity. Projections for manufacturing sector investments are in the hundreds of billion dollars, with the potential in the chemical industry alone approaching $100 billion in 91 major projects (Krauss 2012).

Unfortunately there is no assurance that these investments will be made in the U.S. While market fundamentals appear strong, access to capital remains a challenge to many companies as a result of continuing weakness in the U.S. financial sector and uncertainty about the global economic outlook. While some point to the high level of cash holding by many companies, industrial leaders have indicated that they see these reserves as insurance against a return to economic difficulties.

Thus, policies that promote investments in modernization of the industrial capacity would appear timely. Our country faces a once-in-a-generation opportunity to revitalize our manufacturing sector with the employment and economic benefits that would result. Now is the time to consider implementing these policies.

While direct incentives for industrial modernization and other capital investment have been the policy response in the past (e.g., bonus depreciation provisions enacted over the past decade), given the large federal budget deficit the cost to the federal Treasury has largely taken this option off the table. As a result we need to explore alternative polices that minimize the cost to the Treasury.

This white paper will explore policies that could promote investment in modernization of the industrial sector and other energy-saving capital investments that do not involve direct investment incentives.

## Keeping Costs Down

Among the policy options to consider for promoting investments in modernization are tapping into non-tax-based sources of capital or involving some form of repayment to the Treasury of the funding so that costs to the Treasury are low. In the following sections we discuss three such options:

1. Allowing foreign profits to be repatriated without tax, or with low taxes, if the money is applied to acceptable capital investments;
2. Accelerated depreciation for such capital investments; and
3. Repayable tax incentives.

An example of the first option is to encourage multinational corporations with substantial overseas profits to repatriate these funds to invest in their domestic operations. The second and third options would benefit all companies. We recommend that companies be required to choose only one option—there should be no "double dipping" allowed. Before discussing these options, we first turn to a discussion of "acceptable" capital investments.

## Acceptable Capital Investments

Capital investments by U.S. are substantial, with investments by non-farm businesses totaling about $1.1 trillion in 2010. Over the prior decade, annual capital investments ranged from just under $1 trillion to not quite $1.4 trillion (Census 2012). If all capital investments were eligible for special treatment, the first trillion dollars of special treatment would go to investments that would happen anyway—a large cost to the Treasury without any significant benefits. Instead, special treatment should be limited to increases in capital investment relative to some base period. As a starting point for discussions, we suggest a rolling base period based on a firm's average capital investments over the previous three years, adjusted for mergers, acquisitions, and divestitures. Multiple years are needed to reduce sudden changes in the baseline but the baseline period should be short enough to make it easy to calculate and to reduce the impact of the Great Recession as a consideration. New firms would be able to credit all investments in their first year, and increases above their one-year and two-year averages for the next two years. Rules would be needed to handle subsidiaries, in order to discourage formation of new companies just to take advantage of the tax break. For example, subsidiaries should be credited to the firms that own them. Where there are multiple owners, ownership shares can be used to credit the various owners.

There are questions regarding whether all capital investments should receive encouragement, or just certain types of capital investments, or investments in certain sectors, such as industry. We recommend concentrating these incentives on manufacturing[1] because modernizing capital investments in industry have been shown to offer significant energy efficiency benefits, reducing the intensity of manufacturing while making these facilities more globally competitive (Laitner et al. 2012). However, later in this paper we do advance a specific, more targeted proposal for the commercial sector. We also recommend limiting special treatment to capital equipment and not real estate; buildings owned by industrial firms should be subject to the same treatment as buildings owned by commercial firms.

Another question is whether, from an energy efficiency point of view, should all capital investments be included or just ones that meet a specific definition of "energy efficient"? In industry, most capital investments will be for process equipment. The energy efficiency in processes results from the overall configuration of the process, not in the efficiencies of the individual components alone. When new capital is invested in industry, most of these systems will be more efficient than the systems they replace (due to steady improvements in equipment and system design in recent decades) and thus, at least in industry, allowing all capital

[1] While the primary focus of this provision is the manufacturing industry, we encourage looking at including other capital-intensive industries such as agriculture, mining and construction.

investments in process equipment to qualify makes sense. In the commercial sector, while efficient systems design is important, there is also a lot that can be done with more efficient equipment, as we discuss below.

## Repatriation of Profits for Increased Capital Investments in Manufacturing

According to a May 2011 JP Morgan Chase study, about $1.4 trillion in foreign profits are held overseas by U.S.-based firms (Hirsch 2011). A 2012 Bloomberg study estimates that about $1.2 trillion is held overseas by about 70 of the very largest firms (Rubin 2012). If these profits are repatriated to the U.S., they are subject to corporate income taxes, taxes that average about 25% for all U.S. businesses (Markle and Shackelford 2011). The tax rate for large multinationals is probably less since they generally have very sophisticated accounting departments that have figured out many ways to legally reduce their taxes.

These multinational firms and some economists have argued that we should eliminate or reduce taxes on repatriated profits in order to encourage U.S. firms to bring this money home and benefit the U.S. economy. In 2004. there was a one-year special program to allow overseas profits to be repatriated home and be subject to only a 5.25% tax rate. This experience was reviewed in a Congressional Research Service (CRS) report (Marples and Gravelle 2011). Citing a variety of sources, they found that some $312 billion was repatriated to the U.S. under the program. A total of 843 firms claimed the special treatment for repatriations, out of roughly 9,7000 eligible corporations. 32% of the repatriations were by the pharmaceutical industry. The top ten firms across all industries accounted for 42% of the repatriations.

Independent studies found small and statistically insignificant impacts on both domestic capital investments and employment. Rather, some empirical evidence suggests that the repatriations were used primarily to return money to shareholders through stock repurchase programs. Under the 2004 program, the repatriated money could be used for nearly any purpose. Marple and Gravelle end their study by noting that an option for future application is to tie any special tax benefits for repatriation to increases in desired activity such as domestic employment, wages, or investment.

Thus, repatriation could provide a source of capital needed for investments in the U.S., but building on the CRS suggestion, guidance should be provided on how the money must be used in order to earn a tax break. We suggest that one way to encourage increased domestic capital investment is to have a reduced tax rate (perhaps the same 5.25% used in 2004) for profits that are invested for increased capital investment in industry, relative to a base period. Such a provision would encourage U.S. firms to increase domestic investments. They will still invest overseas, but with lower tax rates for repatriated profits, they would be encouraged to invest more in the U.S.

## Accelerated Depreciation for Increased Capital Investments in Manufacturing

A provision giving special treatment for multinational firms would not provide any benefit for firms that only do business in the U.S.—another provision would be needed to encourage capital investments by these firms. However, as noted above, for any provision to move forward given the current budget situation, the cost to the Treasury needs to be kept very low.

Based on this consideration, we recommend that accelerated depreciation be considered for increases in capital investment relative to a base period. Accelerated depreciation allows firms to increase their depreciation expenses in the initial years after an investment, reducing their taxes. However, if more of an asset is depreciated in the early years after an investment, depreciation will be lower in later years, increasing taxes. Under federal budget scoring rules, the short-term costs and long-term income are added together, allowing accelerated depreciation to have a long-term cost of essentially zero.[2]

From 1981–1986, accelerated depreciation was part of the tax code, with assets assigned to 3-, 5-, 10-, and 15-year recovery periods. However, this system was ended in 1986 as part of the agreement for broading and simplifying the corporate tax code.

More recently, as part of economic stimulus legislation enacted in 2002 and extended several times, a portion of capital investment can be accelerated into the first year, with the rest depreciated over the normal lifetime. Such *bonus depreciation* originally covered 30% of the investment cost. It was increased to 100% in 2010 and reduced to 50% for 2012. Under current law, bonus depreciation ends Dec. 31, 2012. We could not find any studies on the impacts of accelerated depreciation in the 1980s or any studies on the bonus depreciation provisions that have been in effect for the past eight years. However, the Congressional Research Service reviewed two studies on bonus depreciation from the 2002–2004 period and found that "[t]akeup rates for those allowances were lower than expected and only 10% of firms taking them said that the allowances played a decisive role in their investment decisions." This limited impact is likely due in part to the temporary nature of the incentive and to the fact that only some investments were incented (Guenther 2012). The Tax Policy Center (a joint project of the Urban Institute and the Brookings Institution) elaborate a little on the short-term nature of the incentives, stating: "Businesses may have expected that Congress would extend the provisions, thus blunting their incentive to speed up investment. It takes time for businesses to make major investments, making it hard to fit them into specified time periods. Finally, many businesses may have had too little income to offset with these additional tax benefits, a problem that is especially acute during economic downturns" (Tax Policy Center undated).

Accelerated depreciation, including bonus depreciation, can be expensive. We are not proposing accelerated depreciation for all capital investments. Instead, to complement the repatriation provision discussed above, we are suggesting that accelerated depreciation cover increases in capital investment relative to the base period. To keep it simple, we suggest that normal depreciation periods be cut in half for such investments. Another option would be to use the 3–15 year depreciation periods that applied in the early 1980s.

## Repayable Tax Incentives

Repayable tax incentives represent another strategy to encourage investments while limiting the long-term costs to the Treasury by requiring recipients to repay the tax incentive over time as benefits are realized. The initial credit helps reduce the upfront cost of the investment, and the latter payments reduce the cost to the Treasury. For example, if a business receives an

[2] This statement applies to long-term analyses of federal spending. For some analyses, only spending and savings are considered for ten years and considerations beyond ten years ignored. Under such a short-term window, accelerated depreciation will have costs since a portion of the repayment will be outside of the ten-year "scoring window." However, many of the devices that can be used to decrease long-term deficits have large impacts beyond ten years—for example, raising the retirement age. We expect the ten-year window to be used less in the future than it has in the past.

initial tax credit of $100,000 on a combined heat and power (CHP) system the year the system was placed into service, they might repay the federal credit at the rate of $20,000 per year over the next five years. The initial credit encourages the investment, and the subsequent repayments channel the value of some of the energy bill savings back to the federal government, so that the long-term cost to the federal government is very low—just defaults plus interest costs. Essentially this would be a zero-interest loan.

In this context, we suggest that for increases in capital investment over the base period, a business receive an initial 35% investment tax credit. This percentage was chosen to have a value similar to the other provisions (our analysis is presented in the next section). Recipients of this credit would then repay the credit over the following ten years. Businesses already track past investments and depreciation from year to year when compiling their annual taxes. Tracking repayments would be very similar.

This idea has already begun to circulate in Congress. In 2011, Senator Shaheen from New Hampshire circulated a draft bill that would provide a repayable tax incentive for CHP systems. Under the proposal, an incentive would be given to electric utilities that finance CHP systems. The amount of the incentive would then be repaid to the Treasury through an annual installment payment paid by the customer who owns the CHP system equal to the amount of the subsidy divided by an installment period, specified in years. In the draft Shaheen bill, the installment period is 3 years (e.g., the customer repays the subsidy over 3 years) but payments don't begin until the third year after the subsidy is paid (i.e., the customer repays nothing for the first two years, then repays one-third of the subsidy each year for the next three years). However, this particular proposal is complicated by the fact that the electric utility would receive the tax incentive, but the business that hosted the CHP system would make the repayment, resulting in some tricky legal issues. These issues would be much more limited if the same firm received the credit and then made the repayments.

Under current federal procedures for "scoring" the cost of tax expenditures, costs and income are estimated for each year, as well as a simple total, without any discounting. Thus a $100,000 expense followed by five years of $20,000 repayments would be scored as zero over the life of the program. There would, however, be some small cost risk to the Treasury based on the potential for businesses or individuals to go bankrupt before they fully repaid their obligation.

## Comparison of the Options for Manufacturing

Each of these approaches attempts to achieve the same goal of increasing investments, but through different mechanisms. Repatriation taps into funds that are a new source of investment. Accelerated depreciation and repayable incentives both provide reductions in taxes for businesses that do not have overseas profits they could repatriate. Accelerated depreciation and repayable incentives are different ways of achieving essentially the same goal and we recommend that only one of these options be enacted to complement repatriation. A business eligible for both repatriation and either accelerated depreciation or a repayable incentive would need to pick just one—"double dipping" should not be allowed. A rough quick comparison of the choices is provided in Table 1, based on simple assumptions. This comparison indicates that the repatriation may be a little more generous than accelerated depreciation or the 35% refundable tax incentive, but all three are similar. However, specific businesses may have reasons to prefer one over the other.

Table 1. Comparison of Repatriation, Accelerated Depreciation, and a Repayable Tax Incentive for an Illustrative Firm and Investment

| | | | | |
|---|---|---|---|---|
| Investment (millions) | | $ 10.00 | | |
| Marginal tax rate | | 20% | | |
| Current depreciation period (years) | | 10 | | |
| Annual discount rate (nominal) | | 10% | | |
| | | | | |
| | Repatriation | Accel. Deprec. | Repay. Incent. | Notes |
| | | | | |
| Avoided taxes (million $) | $ 1.50 | | | Reduce rate from 20% to 5% |
| PV current deprec | | $6.14 | | |
| PV halving deprec | | $7.58 | | |
| Value of halving deprec. | | $1.44 | | PV current - PV halving |
| Credit | | | $ 3.50 | 35% |
| PV of repayments | | | $2.15 | PV of repayments over 10 yrs |
| Net value of credit | | | $1.35 | Credit - PV of repayments |

## Accelerated Depreciation for Purchases of Energy-Efficient Equipment, Primarily in the Commercial Sector

The discussion so far has focused on increasing capital investments in manufacturing. Promoting increased capital investments by industry is likely to improve energy efficiency as new industrial equipment and systems are generally more efficient than existing equipment. For the commercial sector, a different approach is needed.

The majority of capital investment is for "bricks and mortar," where energy efficiency is less of a consideration. As discussed previously, allowing accelerated depreciation or other special treatment for increased capital investments in the commercial sector would promote construction and perhaps real estate speculation, but have only a modest impact on energy efficiency. In order to better target accelerated depreciation for the commercial sector, we recommend that it apply only to energy-efficient equipment, where "energy efficient" is defined as meeting the energy-efficient specifications developed by the Federal Energy Management Program (FEMP) for federal facilities. Accelerated equipment should also be allowed for the same equipment in the industrial sector, even if total capital investment does not increase.

FEMP has been identifying efficient equipment for federal purchasers for more than a decade. They use ENERGY STAR specifications for some equipment, and for other equipment have developed their own specifications. In general, the aim of both FEMP and ENERGY STAR have been to identify the roughly top quartile of equipment as energy efficient. As of this writing FEMP has efficiency specifications for 67 types of equipment. These are listed in Figure 1. We recommend that the same accelerated depreciation periods be used for energy-efficient equipment—half of conventional depreciation periods. By offering more rapid depreciation for efficient equipment relative to standard efficiency equipment, more businesses will be encouraged to purchase efficient equipment when existing equipment needs to be replaced.

Figure 1. FEMP Guidelines for Procuring Energy-Efficient Products

## Procuring Energy-Efficient Products

Federal mandates require that Federal agencies purchase energy-efficient products. To help agency buyers meet these requirements, the Federal Energy Management Program (FEMP) maintains a list of FEMP-designated and ENERGY STAR®-qualified product categories found frequently in Federal facilities. Refer to the legend to see which program covers each product category. For more information on these products and requirements, visit *www.femp.energy.gov/coveredproducts*.

### Legend of Energy-Efficient Product Programs

- ENERGY STAR
- FEMP-Designated
- Low Standby Power
- Electronic Product Environmental Assessment Tool (EPEAT)

### Heating & Cooling (Space & Water)

**Commercial Space Heating and Cooling**
- Boilers
- Central Air Conditioners
- Chillers
  - Air-Cooled Electric
  - Water-Cooled Electric
- Air Source Heat Pumps

**Commercial Water Heating**
- Gas Water Heaters

**Residential Space Heating and Cooling**
- Room Air Conditioners
- Central Air Conditioners
- Boilers
- Fans
  - Ceiling
  - Ventilation
- Gas Furnaces
- Heat Pumps
  - Air Source
  - Ground-Source

**Residential Water Heating**
- Electric Resistance Storage
- Heat Pump
- Gas Condensing
- Storage
- Whole-Home Tankless (Instantaneous)
- Solar

### IT & Electronics

**Information Technology**
- Computers
  - Desktops and Workstations
  - Notebooks and Integrated Computers
- Displays and Monitors
- Enterprise Servers
- Imaging Equipment
  - Copiers
  - Digital Duplicators
  - Fax/Printer Machines
  - Mailing Machines
  - Multifunction Devices
  - Printers
  - Scanners

**Electronics**
- Audio/Video
- Televisions (TVs)
- Battery Chargers
- Cordless Phones
- Set-Top and Cable Boxes

### Lighting

- Exterior Lighting
- Fluorescent Ballasts
- LED Lighting (Commercial)
- Light Bulbs
  - Compact Fluorescent (CFL)
  - Light Emitting Diodes (LED)
- Luminaires
  - Fluorescent
  - Downlight (Commercial)
  - Industrial (High-Bay)
- Light Fixtures (Residential)
- Decorative Light Strings

### Commercial Food Service Equipment

- Dishwashers (Commercial)
- Fryers
- Griddles
- Hot Food Holding Cabinets
- Ice Machines
  - Air-Cooled
  - Water Cooled
- Ovens (Commercial)
- Refrigerators and Freezers (Commercial)
- Steam Cookers
- Pre-Rinse Spray Valves
- Beverage Vending Machines

### Appliances

- Clothes Washers (Commercial)
- Clothes Washers (Residential)
- Room Dehumidifiers
- Dishwashers (Residential)
- Refrigerators (Residential)
- Freezers (Residential)
- Room Air Cleaners and Purifiers

### Other

**Building Envelope**
- Cool Roofing Products
- Windows, Doors, and Skylights

**WaterSense Plumbing**
- Faucets, Showerheads, Toilets, and Urinals

**Miscellaneous**
- Water Coolers

**Additional Guidance**
- Centrifugal Pumping Systems
- Lighting Controls

**Suspended Categories**
- Electric Motors
- Distribution Transformers
- Fluorescent Tube Lamps

*Illustrations from iStock/470623, 936376, 1953402, 693927*

## Next Steps

This paper suggests several concepts to promote investment that would result in greater energy efficiency, but additional research and analysis are needed to determine how attractive these provisions would be for businesses. There is also the need to determine the distribution of costs and benefits to the federal Treasury. There will be near-term costs, with increased tax collections in later years after equipment is depreciated. But a focus on the role of investments as a strategy to improve the efficiency of the economy represents an important policy frontier.

## References

[BCG] Boston Consulting Group. 2012. "More Than a Third of Large Manufacturers Are Considering Reshoring from China to the U.S." Press release. http://www.bcg.com/media/PressReleaseDetails.aspx?id=tcm:12-104216. Boston Consulting Group.

[Census] U.S. Census Bureau. 2012. *Annual Capital Expenditures Survey.* http://www.census.gov/econ/aces/. Washington, DC: U.S. Census Bureau.

Guenther, Gary. 2012. *Section 179 and Bonus Depreciation Expensing Allowances: Current Law, Legislative Proposals in the 112th Congress and Economic Effects.* http://www.nationalaglawcenter.org/assets/crs/RL31852.pdf. Washington, DC: Congressional Research Service.

Hirsch, Michelle. 2011. "$1.4 Trillion Cash Stash Could Stoke Job Market." http://www.thefiscaltimes.com/Articles/2011/10/14/1-Point-4-Trillion-Cash-Stash-Could-Stoke-Job-Market.aspx#page1. *Fiscal Times.*

Krauss, C. 2012. "Bigger than Either of Them." *The New York Times.* Oct. 23.

Laitner, John A. "Skip," Steven Nadel, R. Neal Elliott, Harvey Sachs, and A. Siddiq Khan. 2012. *The Long-Term Energy Efficiency Potential: What the Evidence Suggests.* http://www.aceee.org/research-report/e121. Washington, DC: American Council for an Energy-Efficient Economy.

Markle, Kevin and Douglas Shackelford. 2011. "Cross-Country Comparisons for Corporate Income Taxes." Working Paper 16839. http://www.nber.org/papers/w16839. Cambridge, MA: National Bureau of Economic Research.

Marples, Donald and Jane Gravelle. 2011. *Tax Cuts on Repartriation Earnings as Economic Stimulus: An Economic Analysis.* http://www.fas.org/sgp/crs/misc/R40178.pdf. Washington, DC: Congressional Research Service.

Russell, Christopher and Rachel Young. 2012. Understanding Industrial Investment Decisions. http://www.aceee.org/research-report/ie124. Washington, DC: American Council for an Energy-Efficient Economy.

Rubin, Richard. 2012. "Cash Hoard Grows by $187 Billion in Untaxed Overseas Profits." http://www.bloomberg.com/news/2012-03-02/cash-horde-expands-by-187-billion-in-untaxed-offshore-accounts.html. *Bloomberg.*

Tax Policy Center. Undated. "Quick Facts: Bonus Depreciation and 100% Expensing." http://www.taxpolicycenter.org/taxtopics/Bonus-Depreciation-and-100-Percent-Expensing.cfm. Washington, DC: Tax Policy Center.

**Testimony of Mark Wagner**
**Vice President, Government Relations, Johnson Controls**

**Before the United States Senate Committee on Finance**
**Energy, Natural Resources, and Infrastructure Subcommittee**

**Hearing on Tax Reform and Federal Energy Policy: Incentives to Promote Energy Efficiency**

**December 12, 2012**

Chairman Bingaman and Ranking Member Cornyn, I appreciate the opportunity to testify today on tax incentives for energy efficient investments in commercial and multifamily buildings. My name is Mark Wagner, and I am Vice President of Government Relations at Johnson Controls.

Johnson Controls is a Fortune 100 company with 170,000 employees world-wide and $42 billion in sales. Our three business units focus on automotive interiors, automotive batteries, and building efficiency. Our building efficiency business has 1,300 branch offices in 148 countries. Our energy solutions have generated savings of over $7.5 billion since 2000 for our clients, and we are the largest energy services company in the world. We also manage over 1.8 billion sq feet of commercial real estate for some of the world's largest companies.

For decades, energy services companies like Johnson Controls have been in the business of saving energy for our customers. We save taxpayer dollars when federal, state and local government buildings are renovated and upgraded using private-sector financed energy savings performance contracts.

The 179D federal tax deduction has been a valuable tool that allows a private commercial, and multi-family, or public sector building owner to receive a $1.80 per square foot deduction for an energy efficiency upgrade. It is set to expire at the end of 2013. The current deduction also allows government buildings at the federal, state and local level to pass on this tax incentive to the designer of the efficiency project enabling lower overall project costs, since public entities themselves do not pay taxes.

**Public Sector Examples**

Johnson Controls has designed and carried out 85 government-owned projects nationwide that have been completely certified by a 3rd party certifier under the 179D deduction. Another 80 projects are waiting to be certified.

In Maryland, for example, we performed a guaranteed energy savings project in seven Caroline County public schools to save the school district $4.1 million over the next 15 years. And we upgraded the Kent County Courthouse/Government Center, Public Works building, and the detention center.

In Texas we performed efficiency upgrades in dozens of buildings in the City of El Paso, with a total measured cost avoidance of over $4.7 million in the first two years. In San Antonio we performed lighting, HVAC, and building envelope upgrades for the city's three largest facilities, the Convention Center, the Alamodome and the San Antonio International Airport, totaling 5.4 million square feet. This $9 million project is expected to generate savings of $15.6 million dollars within the first two years.

That is great news for the public sector, where our federal, state and local governments, schools, and hospitals are investing to become more energy efficient. Even though efficiency investments have upfront costs, they result in lower operating costs over time, freeing up our schools and hospitals to use their limited operating budgets on teaching, on health care excellence and other mission critical operations.

**Private Sector Challenges**

However, 179D has a different story in the private commercial building sector where it is significantly underutilized. President's budget for FY 12 estimated expenditures of $200 million for the program, and yet only a fraction has been used. Despite the large potential market opportunity, private sector commercial buildings such as office spaces, shopping malls, historical buildings, and multi-housing units lag behind the public sector in energy efficiency upgrades. Upgrading commercial buildings needs to be a national priority as the majority of these buildings will still be standing, and wasting significant energy resources, for decades to come.

In part, commercial sector retrofits lag behind due to structural challenges. Namely:

1. Unlike the public sector, private sector building owners seldom commits to owning their facilities for decades, which limits the time scale in which an energy efficiency investment must "pay-back" to 2-3 years.

2. Many commercial buildings belong to large real estate owners with the legal ownership structure as a Limited Liability Corporation (LLC). LLC's are non-credit rated, meaning that there is no credit history, and no assets which can be held as security against the mortgage. This fact makes banks wary of making energy efficiency loans.

3. Often there is no alignment between the owner and the tenant in a commercial building – the owner makes the investment, but it is the tenant who would like to see lower electricity bills.

**Feedback from Building Owners**

Johnson Controls conducts an annual survey of executive decision-makers responsible for making investments in energy efficiency. In 2012, we surveyed over 1100 Energy Efficiency US executives and found that in one year there was a 20% increase in those who saw energy management as significant or very significant to their organization. Funding was cited as the most significant barrier to energy efficiency investment followed by an inability to meet return on investment requirements.

Significantly, when asked to prioritize which government policies would drive greater investment in energy efficiency, tax incentives and rebates were deemed by far to be the most important, with 42 percent of the executives finding those to be the highest priority for public policy action. And yet, Section 179D is the only tax incentive for commercial building efficiency.

**The S. 3591 Solution**

In order to address the unique needs of the commercial building sector, financing structures and incentives need to be performance-based, technology-neutral and based on actual, verified performance.

These elements are all present in S. 3591, the Commercial Building Modernization Act ("CBMA") introduced by Senators Snowe, Bingaman, Feinstein and Cardin. Recently, Johnson Controls joined forty seven organizations from the real estate, construction, lending, manufacture and supply and efficiency communities in support of the extension of 179D and modifications proposed in S. 3591 *(see attached).*

CBMA improves upon the existing 179D deduction in several key ways:

1. It does not specify the technology, materials, or equipment to be used. Every building has a unique design and history of construction, operation and improvement. Building owners and contractors can determine which efficiency measures are most cost-effective for each individual building at each stage of its life. This gives building owners the freedom to install traditional as well as state-of-the-art technologies to meet a variety of operational and tenant needs.

2. It rewards building owners for deeper energy savings and implementation of more improvement measures. Consistent with a performance-based approach, the allowable deductions proposed by CBMA allows for a $1 per square foot deduction for 20-24

percent of source energy savings at the low end scaling up to $4 per square foot for 50% or more source energy savings.

3. It incentivizes verified energy savings, splitting the deduction into a "design deduction" of 60 percent, and a "realized deduction" of 40 percent after a professional engineer calculates actual energy consumption reductions against a baseline considering occupancy, climate, and other factors.

4. It changes the current law from a retrofit of 50 percent savings against ASHRAE code to a sliding scale of options for energy savings benchmarked against the individual building's energy consumption for the previous year. Under current law, for example, upgrades to the iconic Empire State Building that Johnson Controls recently completed does NOT qualify for the incentive, even though we are projecting 38 percent energy savings as compared to the building's previous performance, and guaranteeing our portion of the project. Under CBMA, the Empire State Building project would qualify, because savings are compared to the building's baseline energy consumption.

5. It restructures the deduction to give a better incentive to Real Estate Investment Trusts (REITs) and certain limited liability partnerships (LLPs) to participate. In current law, because REITs distribute all of their earnings, these earnings are taxed as a dividend and cannot be passed on to their shareholders as a benefit.

179D deduction will expire at the end 2013. We believe it is important to extend and improve the deduction. Extension and changes as outlined in CBMA are particularly important in light of the fact that there aren't many other financing mechanisms or incentives available that target commercial building efficiency.

**Other Policies and Programs**

I would also like to briefly mention a few other policies and programs which the 179D tax deduction can be packaged with to help create demand and stimulate further private sector investment in the commercial building sector. Several cities are making great progress in adopting policies to benchmark and disclose energy use in large commercial buildings. The Department of Energy has signed a Memorandum of Understanding with the real estate Appraisal Institute to create a "green appraisal" template which would provide credit in building valuations for energy efficiency improvements. Energy Star and the Energy Star Portfolio Manager are important government programs for assessing commercial building performance along with LEED® and other private-sector voluntary rating systems. The White House/DOE Better Buildings Initiative challenges building owners to retrofitting buildings across their portfolio or enterprise. Finally, the Green Button initiative defines standards for utilities to be able to easily provide energy use data to their customers securely over the Internet.

Also important are financial models and mechanisms that address the challenges of attracting third-party financing for commercial building upgrades. Standardization of the energy performance contracting procurement, measurement and verification methodology, as was done by the U.S. Federal Energy Management Program, had a very positive impact on scaling energy efficiency upgrades in government facilities. Similar standardization of energy services agreements, utility-bill based repayment approaches and Property Assessed Clean Energy (PACE) financing could have similar positive impacts in the commercial buildings sector. Johnson Controls and others in the industry are committed to working with government and the commercial building sector to increase energy efficiency investments in this underserved market.

A combination of policies and programs that create market demand and provide commercial building owners with enhanced incentives, standardized processes, and financial models that attract private-sector funding can make a large impact with only a modest public investment. Performance-based, technology neutral tax incentives that reward the achievement of actual, verified energy savings are a key component of the solution. We are glad to support CBMA as a very important step forward in that process.

Thank you for holding this important hearing and allowing me to testify before you today.

Senate Finance Committee Hearing
"Tax Reform and Federal Energy Policy: Incentives to Promote Energy Efficiency"
December 12, 2012
Question for Mr. Mark Wagner

Question from Senator Bingaman

1. If Congress begins to design technology-neutral, performance-based incentives on a more regular basis, it will be important to accurately measure and verify energy savings achieved in commercial and residential buildings, and in the industrial sector. I wonder if each of you could speak to the measurement and verification systems and precautions present in the legislation before us today, or the work that your organization does on these issues.

Answer from Mark Wagner:

The use of standard methods for energy savings Measurement and Verification (M&V) is a common practice and should be used to support 179D post-retrofit audit requirements. In 1995, an industry coalition, led by the U.S. Department of Energy developed a standard M&V methodology called the International Performance Measurement and Verification Protocol (IPMVP). IPMVP is the basis for measuring and verifying energy savings performance in almost all ESCO performance contracts with many industry practitioners knowledgeable and skilled in its use.

The IPMVP protocol includes four options for verification including retrofit isolation, appropriate for simple, non-interacting improvement measurements such as lighting retrofits, to whole building verification options using models based on historical utility bill data or calibrated energy simulations. Whole building M&V is especially applicable for projects with multiple, interacting improvement measures and projects with significant retro-commissioning or operational improvement components. After the retrofit, utility bill data is analyzed against the modeled baseline energy performance to determine actual savings. Johnson Controls has recently introduced advanced metering and analytics software that reduces the cost, and improves the effectiveness of whole building measurement and verification.

COMMUNICATIONS

---

# STATEMENT FOR THE RECORD

# OF

# ACE ELECTRIC, INC.

**FOR THE HEARING OF**

**"TAX REFORM AND FEDERAL ENERGY POLICY: INCENTIVES TO PROMOTE ENERGY EFFICIENCY"**

**BEFORE**

**THE U.S. SENATE COMMITTEE ON FINANCE**
**SUBCOMMITTEE ON ENERGY, NATURAL RESOURCES, AND INFRASTRUCTURE**

**DECEMBER 12, 2012**

SUBMITTED BY
Ace Electric, Inc.
4081 Inner Perimeter Road, Valdosta, GA 31602
(229) 244-9288 ■ www.aceelectric.net

Established in 1975, Ace Electric, Inc. is an electrical and communications contracting company headquartered in Georgia. Beginning as a small family-owned business dealing with residential and commercial contracting, Ace has greatly expanded over the years, developing divisions and branch offices.

Our success and expansion is due to competitive bid projects, negotiated projects, and teaming agreements with the help of modern electrical, utility, and instrumentation applications.

Ace Electric offers pre-construction services, hard bid, design build, fee based work, and negotiated contracts. We employ hundreds of electricians and also offer quality contracting to correctional institutions, public schools, universities, government buildings, commercial warehouses, and office buildings. Ace has experience in a wide range of advanced electrical, instrumentation, and utility applications.

Ace Electric has worked on major projects such as Paulding County Government Complex, Valdosta State University, Marriott City Center Hotel, Macon State College, Suwannee Correctional Institution, Embassy Suites, and Fort Bragg Army Base.

With regard to the current 179D Deduction for Energy Efficient Commercial Buildings, Ace Electric is extremely interested in; prospectively retrofitting many more facilities, the extension of 179D past 2013, increasing the maximum 179D deduction to $3.00 per square foot, expansion of the eligible building categories to include REITs and non-profits, and broadening the beneficiary base, particularly for capital providers.

With regard to the new Section 179F Deduction for Retrofits of Existing Commercial and Multifamily Buildings, with a maximum $4.00 per square foot tax deduction, Ace Electric is very interested in working on larger projects where 50% energy cost reduction can be achieved as compared to the current building energy state and not modern building energy codes (ASHRAE).

**New Technology Can Accomplish Major Building Energy Cost Reduction**

Continuing technology developments have resulted in new, typically more expensive products that can meet the aggressive energy reduction targets embodied in the currently proposed 179D extension.

For lighting, this includes greatly improved LED lighting products now available for virtually all building categories along with wireless controls and smart sensors.

**Building Retrofits Provide Large Employment Opportunities**

Ace Electric employs hundreds of electricians. Large numbers of existing building retrofits require enormous skilled and semi-skilled work forces.

Lighting retrofits require lighting designers, laborers to remove and dispose existing fixtures, distribution centers to store the new lighting material, laborers to stage the new material near the job site and electricians to install the new fixtures.

**The 179D Tax Incentive Actually Results in Increased Tax Revenues**

By providing a tax incentive for energy cost reduction, the U.S. Treasury is actually enabling larger future tax revenues. When a commercial property owner materially reduces their energy related operating tax costs, their taxable income increases by exactly the amount of the energy cost reduction. Although the 179D tax incentive is only for the first (one) year of project completion, the company's taxable income will be increased annually every year (perpetually).

**Not-for-Profits**

Major not-for-profit building categories include hospitals and universities. The hospital industry is rapidly consolidating into very large health care providers and the need to manage all costs including energy costs is a topic of national discussion. The hospital industry is recognized as a large, under-served building energy efficiency sector and emergence of these new, larger entities, coupled with good tax policy, can serve to achieve major energy cost reductions. Ever escalating costs of a university education is also a national discussion topic and energy cost reduction should help ameliorate the ever escalating costs.

**Conclusion**

Ace Electric greatly appreciates the opportunity to submit this statement for the record. During the recent difficult economic times, Ace Electric has placed importance on energy reduction and efficiency which has created and sustained business. The energy retrofit industry is an ever-growing market, which provides jobs and saves businesses of all sizes significant sums of money on energy consumption.

EPAct 179D has been very helpful in our business's growth and expansion and the new tax provisions would go even further and allow us to reach out to markets which were previously un-incentivized. With the extension and expansion of 179D and 179F businesses are now poised to bring our country to a much higher level of energy efficiency performance and the current proposals will greatly move us towards supporting that effort.

alliantgroup

Dean Zerbe
National Managing Director
alliantgroup
5400 Westheimer Court, Suite 800
Houston, TX
713 877 9600

Statement of Dean Zerbe of alliantgroup

"Tax Reform and Federal Energy Policy: Incentives to Promote Energy Efficiency"

United States Senate Committee on Finance
Subcommittee on Energy, Natural Resources, and Infrastructure
Wednesday, December 12, 2012, 10:00 AM
215 Dirksen Senate Office Building

Chairman Bingaman:

Thank you for holding this hearing and for your long-time commitment to provisions in the tax code that encourage energy efficiency and independence. My submitted testimony focuses on two important provisions of the tax code as it relates to energy efficiency – Section 179D "energy efficient commercial buildings deduction" and Section 41 (Research and Development (R&D) Tax Credit).

A. Section 179D

alliantgroup has worked with hundreds of architects, engineers and contractors – as well as federal, state and local governments -- to assist them in qualifying for the benefits provided by 179D. alliantgroup has seen first-hand that 179D has been a real difference maker -- providing significant encouragement and reward for government agencies that seek to build energy efficient buildings. The tax savings transferred by the government entity to the architects, engineers and contractors has been a tremendous assist to these professionals – many of whom are small and medium businesses – during these difficult economic times. There is no question that thousands of jobs have been created or maintained thanks to 179D.

As the Finance Committee reviews 179D, we would encourage the Committee to consider the following changes:

1) Increase the deduction per square foot from $1.80 per square foot to at least $3.00 per square foot. This change will encourage more building owners to look to greater energy efficiency. This is particularly the case for privately-owned buildings. The current benefit of $1.80 does not provide enough incentive to encourage the vast majority of private building owners to take advantage of the benefit. In our work, we see the strong majority of building owners taking advantage of 179D are from the government. Increasing the 179D deduction would encourage more commercial/private sector building owners to focus on creating new structures that are energy efficient. Further, an expansion of the deduction would also encourage energy efficiency in smaller buildings across-the-board – both commercial and government. In practice we find that it is only on rare occasions that 179D makes sense for a building smaller than 50,000 square feet. Increasing the deduction from $1.80 to $3.00 will provide a real incentive for smaller buildings to also strive for greater energy efficiency – a particular benefit for smaller school districts and local governments in rural areas.

   We also commend to you the recommendations in the testimony you received from Mr. Mark Wagner of Johnson Controls of other reforms to 179D that would encourage the commercial sector to benefit from 179D as included in S. 3591 – the Commercial Building Modernization Act.

2) Make 179D permanent. Section 179D is set to expire at the end of 2013. This expiration coupled with a requirement that the deduction is available only at the time that the building is placed in service adds significant uncertainty to planning and undermines the Congressional policy of encouraging energy efficient buildings.

3) Expand 179D to Indian Tribes and Tax-Exempt Organizations. In enacting 179D the Committee recognized the importance of encouraging energy efficiency for both commercial and government buildings. However, 179D does not do anything to encourage and incentive Indian tribes and tax-exempt organizations to create energy efficient buildings. Given the Congressional intent of encouraging energy efficiency buildings it is commonsense that this policy should be expanded to include buildings owned by Indian tribes and tax-exempt entities (and similar to buildings owned by the federal, state and local government – that the tax benefits may be transferred).

   Current law has created the anomaly from a tax policy viewpoint that a local government building benefits from 179D but an Indian tribe government building does not. Further, a state university can benefit from 179D but a tax-exempt private college cannot benefit from 179D. To better effectuate Congressional policy of energy

efficiency buildings and to have similar treatment of similar entities we encourage Congress to extend 179D benefits to Indian governments and tax-exempt organizations.

4) Remove limitations on S-Corporations from benefitting from 179D. In our practice we are seeing more and more situations where an S Corporation is limited in benefitting from 179D. Many architect and engineering (A&E) firms are organized as an S Corporation. The issue is that the deduction for 179D reduces the shareholder's basis in his/her S-Corp shares.

   It is common for A&E owners to have a low basis or zero basis in S-Corp shares because they are pulling most of the profit out of the company each year. This reality means that when it comes to 179D there are a great deal of suspended 179D deductions and the ultimate benefit of the 179D deduction is only the difference (20%) between the ordinary income rate (currently the top rate is 35%) and the capital gains rate (currently 15%) instead of the full ordinary income rate (35%) – given it is a distribution to the shareholder in excess of basis. To rectify this, we would encourage the Committee to consider changing the deduction to a credit (not subject to the limitations of Section 38 – as is also the case with Section 48 currently) or alternatively state that for architects and engineers who receive an allocation from 179D, the allocation does not reduce basis.

B. Research and Development Credit

The Committee heard testimony from the Director of the National Renewable Energy Laboratory at the Department of Energy on the importance of research and development when it comes to improving energy efficiency of commercial buildings. We agree.

Just as it is important to engage in *basic* research that will lead to energy efficiency in commercial buildings, it is vitally important that our nation support *applied* research and development that will bring to practice energy savings. The key means by which the federal government supports applied research and development of energy efficiency to commercial buildings is through the R&D tax credit.

alliantgroup assists hundreds of architect and engineering firms every year in qualifying for the federal and state R&D tax credit. We are pleased to have helped these architect and engineering firms in realizing hundreds of millions of dollars in tax savings. We see first-hand that architects and engineers are applying scientific and engineering principles to help bring greater energy savings and greener buildings for their clients.

The R&D tax credit has meant that these architect and engineering firms are encouraged to continue to find the best solution for their client and the environment and at the same time creating and keeping jobs. The dollars realized from the R&D credit is particularly important for architect and engineering firms as they hire or retain new college graduates.

1) Allow small and medium A&E firms to benefit from the R&D tax credit

While the R&D tax credit is vital for encouraging the application of energy efficiency to commercial buildings – too many small and medium architect and engineering firms are on the outside looking in – unable to take advantage of the R&D tax credit thanks to limitations in the statute.

In 2010 the Senate initiated efforts to change the law and ensure that small and medium businesses could take the R&D tax credit against the alternative minimum tax AMT (in short, turning off the AMT limitation of Section 38(c). This change – included in the 2010 Small Business Jobs Act – was a tremendous benefit to hundreds of architect and engineering firms that often for the first-time were able to benefit from the R&D tax credit. Unfortunately, this commonsense change in the law was good for only 2010. We strongly encourage the Committee to keep the AMT turnoff for the R&D tax credit in place in the extension of the R&D tax credit and in any changes to the R&D tax credit going forward.

2) IRS should work to support the Committee's policy of energy efficiency

While we commend the Committee for recognizing the importance of the R&D tax credit when it comes to encouraging greener, cleaner buildings – that has sometimes not been the case of a few examiners at the Internal Revenue Service (IRS). We find it frustrating that while the administration has been an advocate for energy efficiency – a few IRS field examiners haven't gotten on the same page – applying yesterday's thinking and yesterday's laws to block today's solutions.

We encourage the Committee to ensure that the IRS at all levels recognizes that the R&D tax credit is meant to encourage the application of green and clean technologies in the field of architecture and engineering. The IRS needs to be working with Congress' policy and priorities of energy efficient commercial buildings – not putting sand in the gears. We ask that the Committee consider report language – or a letter – to the IRS senior management on this matter to remind them of the intention of Congress that the R&D tax credit encompasses green and clean technology and ensuring that the IRS is working in a cooperative and reasonable manner with architecture and engineering firms on taking the R&D tax credits.

3) Expand the R&D tax credit for energy efficiency

Finally, we encourage the Committee to consider a more generous R&D tax credit in those instances where the R&D is intended to result in significant energy savings beyond current standards. Such incentives will do much to improve the outlook for energy efficiency in our nation's future.

Mr. Chairman, alliantgroup thanks you for your long-time efforts in this important area and the opportunity to submit remarks. We are happy to provide any further assistance as requested.

JOINT STATEMENT FOR THE RECORD

OF

**ASHRAE**
ASSOCIATED BUILDERS AND CONTRACTORS
THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA
THE AMERICAN COUNCIL OF ENGINEERING COMPANIES
THE AMERICAN INSTITUTE OF ARCHITECTS

FOR THE HEARING ON

"TAX REFORM AND FEDERAL ENERGY POLICY: INCENTIVES TO PROMOTE ENERGY EFFICIENCY"

BEFORE

THE U.S. SENATE COMMITTEE ON FINANCE
SUBCOMMITTEE ON ENERGY, NATURAL RESOURCES, AND INFRASTRUCTURE

DECEMBER 12, 2012

1735 New York Avenue., NW, Washington, DC 20006-5292
202-626-7300 ▪ www.aia.org

On behalf of the design and construction industry, we commend the Subcommittee's work on the critical issue of tax reform and federal energy-efficiency incentives and we appreciate the opportunity to submit this statement for the record.

Although there are numerous policies that incentivize energy efficiency in the built environment, our statement focuses on the Energy Efficient Commercial Building Deduction, which is contained in section 179D of the Internal Revenue Code (179D deduction). The 179D deduction, which is scheduled to expire in 2013, has had a significant effect on energy efficiency investment, domestic manufacturing, and design and construction industry jobs.

ASHRAE, Associated Builders and Contractors (ABC), The Associated General Contractors of America (AGC), The American Council of Engineering Companies (ACEC), and The American Institute of Architects (AIA) represent millions of design and construction professionals nationwide and around the world. As leaders in the design and construction industry, we support incentivizing energy efficiency in a myriad of ways, but particularly through provisions like the 179D deduction, which has proven successful.

The 179D deduction has leveraged billions of dollars in private capital, resulted in the energy-efficient construction and renovation of thousands of buildings, and created and preserved hundreds of thousands of jobs in the process. It is one of the best examples of the tremendous impact energy tax incentives can have on financing energy-efficient property.

In recognition of the benefits of the 179D deduction, there have been proposals offered in recent months aimed at further enhancing the important tax benefit. We applaud the work of Chairman Bingaman and Senators Snowe, Feinstein, and Cardin, and look forward to continued work with Congress to make the incentive more compatible with retrofits and tied to performance.

Most importantly, the industry supports the extension and reform of the 179D deduction consistent with the principles of tax reform, making it simpler and easier to access. As tax reform progresses, we strongly urge Congress to make permanent and enhance the 179D deduction to effectively encourage investments in energy efficiency, stimulating construction activity and jobs during this fragile time in the nation's economy.

**Background on Section 179D, the Energy Efficient Commercial Building Deduction**

The Energy Efficient Commercial Building Deduction was created by the Energy Policy Act of 2005,[1] in recognition of the fact that a substantial portion of U.S. energy consumption is attributable to commercial buildings and to provide a tax incentive to help offset the costs associated with enhancing their energy efficiency. Section 179D of the Internal Revenue Code provides a deduction for certain energy-efficient commercial building property expenditures.

Eligible expenditures are for property which is: (1) installed on or in any building that is within the scope of Standard 90.1-2001 of the American Society of Heating, Refrigerating, and Air Conditioning Engineers and the Illuminating Engineering Society of North America ("ASHRAE/IESNA"); (2) installed as part of the (i) interior lighting systems, (ii) heating,

[1] The Energy Policy Act of 2005, Pub. L. No. 109-58.

cooling, ventilation, and hot water systems, or (iii) building envelope; and (3) certified as being installed as part of a plan designed to reduce total annual energy and power costs by 50 percent or more. Critically, the deduction is effective only for property placed in service prior to January 1, 2014.

The maximum deduction is $1.80 per square foot. In the case that a building does not meet the 50 percent energy savings requirement, a partial deduction of $0.60 per square foot is allowed for each separate building system that comprises energy-efficient property and that is certified as meeting required savings targets. To encourage the public sector to utilize these same energy efficient enhancements, the 179D deduction also provides a federal, state, or local government owner of a commercial building an election to allocate the tax deduction to the primary person responsible for designing the energy efficient enhancements installed in the building.

In the short-term, the 179D deduction enables building owners to offset the often costly expenses associated with energy-efficiency enhancements. In the longer-term, building owners who take advantage of the179D deduction realize significantly lower energy costs, the benefits of leading edge design and construction that enhances the building's long term market value, and the benefits of a cleaner environment. Building owners utilize the deduction for both new construction projects and retrofits of existing buildings.

Moreover, in the case of a public entity, the allocation of the 179D deduction, in the short-term, results in savings by allowing the public entity to negotiate a better deal and, in the long-term, allows the public entity to realize ongoing energy savings. The average 179D project (typically $0.60/ sq. ft. for lighting upgrades) saves a public entity an average of 20 percent on their energy expenses. Even in cases where there are minimal upgrades that qualify for 179D, public entities have saved relatively large amounts.[2]

For example, a middle school initiated a project to retrofit its lighting system. An architect worked with the school to find 12 percent energy savings on a single lighting system. The project qualified for the 179D partial lighting deduction. The school saved $15,000 on its energy bill in the first year alone. Over ten years, that totals to over $150,000 for a single school. School districts utilizing the 179D deduction to finance energy-efficient enhancements for five, ten, or 20 schools can save millions of dollars over ten years. [3]

This example illustrates the impact of just 12 percent energy savings in a single school. There are hundreds of other examples of the deduction providing even greater benefits to school districts, army bases, civic structures, and other publicly-owned buildings across the nation.

**Proposals to Improve the 179D Deduction**

The design and construction industry supports commonsense efforts that make the 179D deduction more usable, effective, and simpler. As these discussions progress, we strongly urge Congress to consider three key improvements to 179D: (1) ensuring the ability of pass-through entities to capture the full value of an allocated deduction in the case of a public owner of a

[2] Julio Gonzalez, CEO, Engineered Tax Services
[3] Id.

building; (2) increasing the value of the 179D deduction; and (3) allowing non-profit owners of buildings, similar to public owners of buildings, to allocate the deduction.

***Allocating the Section 179D Deduction to a Pass-Thru Entity***
As discussed previously, the 179D deduction provides a federal, state, or local government owner of a commercial building an election to allocate the tax deduction to the primary person responsible for designing the energy efficient enhancements. In December 2010, the IRS released a memo that effectively prevents firms organized as partnerships or S corporations from fully realizing the benefit of a 179D allocated deduction.[4]

This is a critical problem, significantly undermining the intended effects of the 179D deduction. For example, the IRS reports that in 2007, nearly a third of architecture firms were organized as partnerships and S corporations and almost 80 percent of architectural firms have fewer than 10 employees.[5] It is often these small and mid-size firms that work on state and local government projects such as schools.

By way of background, an allocated 179D deduction is a tax deduction that does not reflect an economic cost to the recipient taxpayer, because, similar to a tax credit, the deduction provides an incentive. The technical tax rules nonetheless treat an allocated deduction as reflecting an economic cost to the taxpayer and accordingly reduce partnership and S corporation taxable income *and* the partners'/shareholders' basis in the partnership/S corporation (*i.e.*, "outside basis") by the amount of the allocated deduction. The reduced outside basis may force partners and S corporation shareholders to recognize taxable gain on the distribution of economic earnings that were excluded from tax by the allocated 179D deduction at the partnership and S corporation level. The IRS memo states that, in the absence of explicit statutory authority allowing for basis adjustments to preserve the benefit of the deduction at the partner or shareholder level, the technical tax rules govern. The result will be that, in the case of many partnerships and S corporations, the benefit of the 179D deduction will be lost or significantly diminished. This will harm not only these firms, but, more importantly, the school districts and other public entities who own the buildings.

In order for partnerships and S corporations to obtain the intended benefits, it is necessary for partners and S corporation shareholders to obtain a basis in their partnerships and S corporations that is not reduced by an allocated 179D deduction. This issue could be addressed by a simple statutory modification to expressly require Treasury to issue regulations that properly determine partnership or S corporation outside basis in the case where the 179D deduction is allocated. Such a clarification would provide certainty and address a widespread concern among many small businesses that design energy efficient buildings.

***Enhancing the Section 179D Deduction***
The maximum 179D deduction of $1.80 per square foot has not been increased since the deduction was put in place in 2005 and, as a result, has not kept pace with inflation. Consequently, the impact of the 179D deduction has become muted over time. Moreover, as the

[4] I.R.S. Chief Couns. Mem. AM2010-007 (Dec. 23, 2010).
[5] I.R.S. Audit Technique Guide. (August 2011). http://www.irs.gov/pub/irs-utl/architects_atg.pdf

economy and financial markets continue their fragile recovery, the amount of capital available for building design, construction, and renovation continues to be limited. A recent AIA survey of architecture firms shows that nearly two-thirds report that a lack of financing has slowed or stopped construction projects that would create jobs.[6] Owners are also less likely to invest the upfront capital costs associated with energy efficient systems, which often are somewhat more expensive to design, build, and install than their less efficient counterparts.

In 2010, a coalition of more than 80 organizations and companies called on Congress to increase the 179D deduction from the current maximum allowable amount of $1.80 per square foot to $3.00 per square foot.[7] In the case of individual subsystems, the maximum allowable deduction should be increased from $0.60 per square foot to $1.00 per square foot. Bipartisan legislation was introduced by Chairman Bingaman and Senators Snowe, Feinstein, and Cardin in the Senate in the 112th Congress to enhance the deduction in this way (S. 3591).

Enhancing the 179D deduction would provide an important source of additional capital to stimulate building design, construction, and renovation, driving the creation of well-paying jobs. Studies have shown that every $1 million invested in design and construction yields 28.5 full-time jobs.[8] An enhanced 179D deduction would further incentivize energy efficiency, improve the nation's commercial building stock, and increase energy independence.

***Allocating the Section 179D Deduction in the Case of a Non-Profit Owner of a Building***
The 179D deduction allocation provision, which allows a federal, state, or local government owner of a building to allocate the deduction to the designer, has been used to great effect to encourage their public sector clients to meet the energy targets of the deduction and then have the client assign them the tax deduction. The result has been more energy-efficient public buildings and lower energy costs for the building owners.

In many cases, non-profit entities, such as hospitals, universities, private schools, charities, and foundations, conduct functions similar to state and local governments. Currently, non-profit entities own thousands of properties across the country. Although retrofits to these properties could result in significant energy savings, the non-profit entities do not pay taxes and, consequently, cannot benefit from the 179D deduction.

The 179D allocation provision should be expanded to provide non-profit owners of buildings, similarly to public owners of buildings, with the ability to elect to allocate the deduction to the primary designer of the building. Such a provision would assist non-profits in financing energy efficiency upgrades and would reduce their energy costs in the longer-term. Chairman Bingaman and Senators Snowe, Feinstein, and Cardin recognized the importance of this expansion to nonprofits by including this provision in S. 3591.

---

[6] AIA Firm Survey 2010
[7] http://www.efficientbuildings.org/about_the_provision.html.
[8] Center for Regional Analysis Study. George Mason University, (2007).

**Conclusion**

The design and construction industry appreciates the opportunity to submit this statement for the record. As Congress considers tax reform, it is important to recognize the impact the 179D deduction has had in leveraging private capital and increasing energy-efficient construction and renovation. Making permanent and making modest improvements to the 179D deduction would increase the effectiveness and efficiency of this important tax policy. ASHRAE, ABC, AGC, ACEC, and the AIA, and our members, are ready to serve as a resource to and look forward to working with Congress and the Subcommittee on these and other issues.

**STATEMENT FOR THE RECORD**

**FOR THE HEARING ON**

**"TAX REFORM AND FEDERAL ENERGY POLICY: INCENTIVES TO PROMOTE ENERGY EFFICIENCY"**

**BEFORE**

**THE U.S. SENATE COMMITTEE ON FINANCE**
**SUBCOMMITTEE ON ENERGY, NATURAL RESOURCES, AND INFRASTRUCTURE**

**JANUARY 22, 2013**

**SUBMITTED BY**

**BRUCE A. JOHNSON, PARTNER**
**BEDFORD STRATEGIES & SOLUTIONS**
**101 WEST AVENUE, SUITE 301**
**JENKINTOWN, PENNSYLVANIA 19046**
**(215) 885-7510**
**BJOHNSON@BEDFORDTEAM.COM**

Bedford Strategies & Solutions is a boutique consulting firm that specializes in providing innovative and tax, finance, and energy solutions that focus on maximizing cash flow while minimizing tax liability. These services typically include cost segregation and EPAct 179D disciplines.

Our practice is designed to support commercial real estate developers, investors and operators and their CPA firms. Over the last 10 years, we have served clients from the Fortune 100 ranks to small business owners across the US. To date we have successfully supported over 7,500 studies.

In addition to providing the services to prepare EPAct 179D studies, Bedford has actively been presenting the merits and use of the EPAct 179D deduction benefit for the past five years. Most of our presentations are to the CPA profession and we provide CPE through our NASBA designation.

With regard to the current 179D Deduction for Energy efficient Commercial Buildings, our clients are extremely interested in; the extension of 179D past 2013, increasing the maximum 179d deduction to $3.00, expansion of the eligible building categories to include REITs and non-profits, and broadening of the beneficiary base, particularly for capital providers.

With regard to the proposed Section 179F Deduction for Retrofits of Existing Commercial and Multifamily Buildings, with a maximum $4.00 per square foot tax deduction, our clients are very interested on working on larger projects where 50% energy cost reduction can be achieved from the current building energy state but not as compared to modern building energy codes.

**Enhanced U.S. Economic Performance**

By lowering its building energy costs, the U.S. can be a much more effective global competitor. The marked reduction in U.S. natural gas costs has gone a long way toward making the U.S. once again a center for manufacturing. These same manufacturers, and all U.S. business operators with buildings, can also become much more globally competitive with substantially reduced building energy related operating costs. It is important to realize that the maximum Section 179D tax incentive requires a 50% energy cost reduction as compared to an ever-increasing building energy code standard. These are truly enormous building energy usage and cost reductions.

**New Technology Can Accomplish Major Building Energy Cost Reduction**

Continuing technology developments have resulted in new, typically more expensive products that can meet the aggressive energy reduction targets embodied in the currently proposed 179D extension.

For lighting, this includes greatly improved LED lighting products now available for virtually all building categories along with wireless controls and smart sensors.

For HVAC, this includes both extremely efficient technologies for commercial buildings such as frictionless bearing-less chillers and variable refrigerant volume (VRV) for apartment buildings. As the U.S. shifts to more apartment renters it is extremely important to offer tenants monthly cost reduction in this historically under-served energy efficiency market.

For building envelope, recent advances include better materials, cool roofs, better insulation, and improved glass and window systems.

**Building Retrofits Provide Large Employment Opportunities**

Large numbers of existing building retrofits require enormous skilled and semi-skilled work forces.

Lighting retrofits require lighting designers, laborers to remove and dispose existing fixtures, distribution centers to store the new lighting material, laborers to stage the new material near the job site and electricians to install the new fixtures.

HVAC retrofits require engineers for project system design, substantial U.S. manufacturing activity (most HVAC equipment is heavy and made in the U.S.), U.S. steel procurement and HVAC mechanics to install.

The building envelope involves a wide variety of manufactured and workshop materials including roofs, walls, windows, doors, foundations and insulation. In addition to the labor required to create these products, large numbers of roofers, carpenters, installers and laborers are needed to handle the material and incorporate it into a building.

**Stretching our current Utility Infrastructure**

The very nature of the EPAct 179D program is to incentivize investment in energy efficiency for commercial real estate. This translates into a reduced need for added utility infrastructure through the avoided increase in energy demands. The result frees up resources to focus on revitalizing existing networks, and investment into the next generation of technologies.

**Reduction in Carbon Emissions**

The increased efficiencies promoted and incentivized by EPAct 179D provide further benefit by supporting the national focus on environmental responsibility and natural resource management. The financial incentives in EPAct 179D assist tax payers in increasing the energy performance of their properties, and in turn work toward the goal of reducing target initiatives such as carbon emissions.

**The 179D Tax Incentive Actually Results in Increased Tax Revenues**

By providing a tax incentive for energy cost reduction, the U.S. Treasury is actually enabling larger future tax revenues. When a commercial property owner materially reduces their energy related operating tax costs, their taxable income increases by exactly the amount of the energy cost reduction. Although the 179D tax incentive is only for the first (one) year of project completion, the company's taxable income will be increased annually every year (perpetually). When a government organization materially reduces its energy costs, it can reduce its budget deficit which may be used to reduce tax levies, including real property taxes at local level or meet other more vital community needs.

**REITs**

It is particularly important to provide an incentive for REIT energy reductions service providers. REITs are the largest holders of large institutional grade real estate in the country. Major REIT categories include; 1. office buildings, 2. apartment buildings, 3. shopping centers, 4. Hotels, 5. warehouse/industrial and 6. data centers.

The REIT model is largely a tenant model and for the most part REIT's have not endeavored to materially reduce energy costs simply because they don't pay the energy bill. With REITs, the tenant bears the burden of the monthly energy bill. With America's large service-based economy, large service businesses operating from offices bear the burden of unnecessary energy bills. With apartment REITs, it is renters who bear the burden of unnecessary energy bills. With shopping centers, it is retailers and shoppers that bear the burden of unnecessary energy costs. With hotel REITs, it is nightly guests who bear the burden of unnecessary costs in their room rates. In the REIT warehouse and industrial sector, it is America's engines of commerce that bear the burden of unnecessary energy costs. Data Centers are huge consumers of electricity and hence directly responsible for large amounts of emissions. Accordingly with Data Center REITs, all of American society bears the burden of unnecessary energy costs.

**Not-for-Profits**

Major not-for-profit building categories include hospitals and universities. The hospital industry is rapidly consolidating into very large health care providers and the need to manage all costs including energy costs is a topic of national discussion. The hospital industry is recognized as a large, under-served building energy efficiency sector and emergence of these new, larger entities, coupled with good tax policy, can serve to achieve major energy cost reductions. Ever escalating costs of a university education is also a national discussion topic and energy cost reduction should help ameliorate the ever escalating costs.

**Public Private Partnerships (PPA's)**

The provision in the proposed extension of 179D to include energy project financiers in the beneficiary category is crucial to America's energy policy future.

It is common knowledge that finances of many of our country's state and local government costs are in dire financial straits. These government entities find themselves in the untenable position of not having the capital to act on large energy cost reduction projects, often for steadily deteriorating essential service government buildings. The addition of the 179D financing tax incentive will encourage private sector capitalized lenders to take the added risk related to financing these important projects. There are many excellent contractors and ESCOs who have the capacity and desire to work in today's depressed construction market but who don't have the tax capacity to benefit from energy cost related tax incentives. There are many cash-strong lenders interested in entering this market who to date haven't found an economically viable pathway for doing so.

**Conclusion**

Bedford Strategies & Solutions greatly appreciates the opportunity to submit this statement for the record. In the last seven years during very difficult economic times the lighting, HVAC and building envelope industry has made a large investment in educating their staff and customers on the type of holistic building energy usage knowledge required to understand the technical underpinnings of EPAct. The industry is now poised to bring our country to a much higher level of energy efficiency performance and the current 179D and 179F tax proposals will go a long way toward supporting that effort.

**STATEMENT FOR THE RECORD**

**OF**

**CAMBRIDGE ENGINEERING, INC.**

**FOR THE HEARING OF**

**"TAX REFORM AND FEDERAL ENERGY POLICY: INCENTIVES TO PROMOTE ENERGY EFFICIENCY"**

**BEFORE**

**THE U.S. SENATE COMMITTEE ON FINANCE**
**SUBCOMMITTEE ON ENERGY, NATURAL RESOURCES, AND INFRASTRUCTURE**

**DECEMBER 12, 2012**

SUBMITTED BY

Cambridge Engineering, Inc.
760 Long Road Crossing Dr.
Chesterfield, MO 63005
(636) 532-2233 • www.cambridge-eng.com

Established in 1963, Cambridge Engineering is a manufacturing company with strong R&D, engineering and customer oriented problem solving capabilities. Located in Chesterfield, MO, Cambridge pioneered the development and application of direct gas-fired space heating technology. We are now recognized as the leading manufacturer of high performance, energy efficient industrial heating/ventilating systems.

Being the best at saving energy, reducing operating costs and improving indoor air quality has made Cambridge technologies very popular with 30,000 installations and over one billion square feet heated. Typical applications include warehouses, distribution centers, manufacturing plants, spray paint booth areas, auto dealership service bays, car wash facilities, aircraft hangars, boat storage facilities, maintenance buildings, parking garages, retrofit/rehab projects, wastewater treatment plants, indoor sports facilities, and restaurants.

As a member of the U.S Green Building Council (USGBC) and an ENERGY STAR Partner, Cambridge is committed to energy conservation and continued support of the green building market. Our heating and ventilating projects have qualified for EPAct tax deductions on several occasions.

At Cambridge Engineering, we are committed to providing the energy efficient heating and ventilating solutions. Therefore, we are extremely interested in the extension of 179D Deduction for Energy Efficient Commercial Buildings past 2013. Also, we see great value in the proposals of increasing the maximum 179D deduction to $3.00 per square foot, expanding the eligible building categories to include REITs and non profits, and broadening the beneficiary base, particularly for capital providers.

With regard to the new Section 179F Deduction for Retrofits of Existing Commercial and Multifamily Buildings, with a maximum $4.00 per square foot tax deduction, Cambridge Engineering is very interested in working on larger projects where 50% energy cost reduction can be achieved from the current building energy state but not as compared to modern building energy codes.

**Reducing Operating Expenses**

Cambridge Engineering understands energy efficiency as a major savings opportunity, particularly in difficult economic times. That is why we are committed to providing the most energy efficient technology to heat large insulated buildings that require some form of ventilation. Impacts on operating costs have been significant: comparison building studies, utility bills and customer testimonials document 40% to 70% energy savings versus all other types of indirect and direct gas-fired heating systems.

Savings are bound to be even greater as the increase in natural gas supply in the U.S. will drive its costs down, making natural gas heaters an even more attractive investment opportunity. Large shale gas fields, such as Marcellus, Barnett and Utica, exemplify the recently uncovered natural gas abundance in national territory. In such a favorable context, we understand that

property owners can profit enormously from converting to efficient natural gas heaters. EPAct tax savings can play a major role in opening the way to this transition.

**New Technology Can Accomplish Major Building Energy Cost Reduction**

Continuing technology developments have resulted in new products that can meet the aggressive energy reduction targets embodied in the currently proposed 179D extension.

At Cambridge Engineering we have mobilized efforts to develop state-of-the-art heating/ventilating systems that combine high performance and energy efficiency. Energy efficient Cambridge Blow-Thru® Space Heaters and make-up air units, for instance, reduce operating cost and improve indoor air quality for a wide variety of commercial and industrial applications. On the other hand, Cambridge infrared radiant technology provides energy efficient heat for small buildings and focused spot heating in large facilities.

**Building Retrofits Provide Large Employment Opportunities**

At Cambridge Engineering, it is our experience that heating/ventilating projects require skilled and semi-skilled work forces. In addition to the professionals directly involved in the manufacturing and installation of our products, we have service representatives throughout the United States and Canada, which are trained to assist clients in heating and ventilating system design, building load analysis, and operating cost analysis.

**The 179D Tax Incentive Actually Results in Increased Tax Revenues**

By providing a tax incentive for energy cost reduction, the U.S. Treasury is actually enabling larger future tax revenues. When a commercial property owner materially reduces their energy related operating tax costs, their taxable income increases by exactly the amount of the energy cost reduction. Although the 179D tax incentive is only for the first (one) year of project completion, the company's taxable income will be increased annually every year (perpetually). When a government organization materially reduces its energy costs, it can reduce its budget deficit which may be used to reduce tax levies, including real property taxes at local level or meet other more vital community needs.

**Conclusion**

Cambridge Engineering greatly appreciates the opportunity to submit this statement for the record. The energy retrofit industry is an ever-growing market, which provides jobs and saves businesses of all sizes significant sums of money on energy consumption. EPAct 179D has been very helpful in our business's growth and expansion and the new tax provisions would go even further and allow us to reach out to markets which were previously un-incentivized. With the extension and expansion of 179D and 179F businesses are now poised to bring our country to a much higher level of energy efficiency performance and the current proposals will greatly move us towards supporting that effort.

**Comments for the Record**
**United States Senate**
**Committee on Finance**
**Tax Reform: Impact on U.S. Energy Policy**
December 12, 2012, 10:00 AM

By Michael G. Bindner
Center for Fiscal Equity
4 Canterbury Square, Suite 302
Alexandria, Virginia 22304

Chairmen Baucus and Ranking Member Hatch, thank you for the opportunity to submit comments for the record on these issues.

There are three aspects to consider regarding whether energy policy should be conducted through the tax code: energy taxes as transportation user fees; energy taxes as environmental sin taxes and energy tax policies as a subsidy for business. How to design provisions for a sustainable energy policy and tax reform will be discussed for each of these areas and we will address certain oversight questions on whether current tax provisions have been implemented efficiently and effectively.

**Energy Taxes as Transportation User Fees**

The most familiar energy tax is the excise tax on gasoline. It essentially functions as an automatic toll, but without the requirement for toll booths. As such, it has the advantage of charging greater tolls on less fuel efficient cars and lower tolls on more efficient cars, all without requiring purchase of a EZ Pass or counting axles.

It is a highly efficient tax in this regard, although its effectiveness is limited because it has not kept pace with inflation. This could be corrected by shifting it from a uniform excise to a uniform percentage tax – however because the price of fuel varies by location, there may be constitutional problems with doing so. The only other option to increase this tax in order to overcome the nation's infrastructure deficit – which is appropriately funded with this tax – is to have the courage to increase it.

In this time of high unemployment, such an increase would be a balm to economic growth, as it would put people back to work. Given the competitive nature of gas prices, there is some question as to whether such an increase would produce a penny for penny increase in gasoline prices. If the tax elasticity is more inelastic than elastic, the tax will be absorbed in the purchase price and be a levy on producers. If it is more elastic, it will be a levy on users and will impact congestion (and thus decrease air pollution and overall conservation). For many citizens, either prospect is a win-win, given concerns over both climate change and energy industry profits. The only real question is one of the political courage to do what is necessary for American jobs and infrastructure –and that seems to be a very open question.

Energy taxes are currently levied through the private sector, rather than through toll booth employees, which from the taxpayer point of view is a savings as it externalizes the pension and benefit requirements associated with hiring such workers.

In the event that gasoline cars were replaced with electric cars, given either improvements in battery charging technology or in providing continuous supply through overhead wires, much in the same way that electric trains and busses receive power, any excise per kilowatt for the maintenance of roads could be collected in the same way – or the road system could be made part of a consortium with energy providers, car makers and road construction and maintenance contractors – effectively taking the government out of the loop except when eminent domain issues arise (assuming you believe such a tool should be used for private development, we at the Center believe that it should not be).

The electric option provides an alternative means to using natural gas, besides creating a gas fuelling infrastructure, with natural gas power plants providing a more efficient conduit than millions of internal combustion engines. The electric option allows for the quick implementation of more futuristic fuels, like hydrogen, wind and even Helium3 fusion. Indeed, if private road companies become dominant under such a model, a very real demand for accelerated fusion research could arise, bypassing the current dependence on governmental funding.

In the event of comprehensive tax reform, the excise for fuel would be either a component of or an addition to any broad based Value Added or VAT-like Net Business Receipts Tax. The excise should not disappear into such a general tax, as doing so would have the effect of forcing all businesses to fund transportation on an equal percentage, regardless of their use of such infrastructure. Of course, like a VAT, any gasoline excise would be accounted for using the credit receipt method, so that cascading taxes would not occur, as they do now with this excise functioning as hidden levy.

**Energy Taxes as Environmental Sin Taxes**

Carbon Taxes, Cap and Trade and even the Gasoline Excise are effectively taxes on pollution or perceived pollution and as such, carry the flavor of sin taxes. As such, they put the government in the position of discouraging vice while at the same time trying to benefit from it. Our comments above as to whether the tax elasticity of the gasoline excise has an impact on congestion and pollution is applicable to this issue, although tax inelasticity will mute the effect of discouraging "sinful" behavior and instead force producers to internalize what would otherwise be considered externalities – provided of course that the proceeds from these taxes are used to ameliorate problems of both pollution (chest congestion) by paying for health care and traffic congestion in building more roads and making more public transit available – while funding energy research to ease the carbon footprint of modern civilization.

Oddly enough, this approach was once considered the conservative alternative to other more intrusive measures proposed by liberals, like imposing pollution controls on cars and factories or simply closing down source polluters. When those options are taken off the table, however, or are considered impractical, then the concept of environmental sin taxes becomes liberal and no action at all becomes the conservative position.

These use of environmental sin taxes is by nature much more efficient economically than pollution controls and probably also more efficient than allowing producers and consumers to benefit from externalities like pollution, congestion and asthma. As with transportation funding, such taxes are only effective if they actually provide adequate funding for amelioration or otherwise change consumer behavior. If the politics of the day prevent taxes from actually accomplishing these objectives, then their effectiveness is diminished.

The short term political win of keeping taxes too low can only work for so long. Reality has a way of intruding, either because infrastructure crumbles, congestion becomes too high, children become ill with asthma (for full disclosure purposes, I suffered from this after moving down-wind as a child from an Ohio Edison coal plant) and sea levels rise – destroying vacation homes and the homes of those who support them – and if Edgar Cayce is to be believed – the states that are the heart of the Republican base.

The role of energy taxes as sin taxes are preserved in comprehensive tax reform only if they are preserved in addition to value added and net business receipts taxes. If there is no separate tax or higher rate for these activities, there is no sin tax effect and the "sin" is effectively forgiven with any amelioration programs funded by the whole of society rather than energy users.

Oddly enough, because the Center does not mention carbon taxes or cap and trade in our standard proposal, liberal commentators on Daily Kos criticize its lack and assume we don't believe in them at all. This is far from the case, as our proposals say nothing about replacing such taxes with our proposed VAT and NBRT. Our proposal is to replace low and mid rate income taxes, corporate income taxes and non-OASI payroll taxes with these revenues. We simply don't touch the question of any other excise. This shows how much the fortunes of energy taxes have changed since Vice President Gore suggested their inclusion in President Clinton's tax proposals.

**Energy Tax Policies as a Subsidy for Business**

There are quite a few ways in which energy tax policy subsidizes business. The most basic way is the assessment of adequate energy taxes, or taxes generally, to pay for government procurement of infrastructure and research. If tax reform does not include adequate revenue, the businesses which fulfill these contracts will be forced to either reduce staff or go out of business. Government spending stimulates the economy when more money is spent because taxes are raised and dedicated (or even earmarked) for these uses. Eliminating specific energy taxes in tax reform forces this work into competition with other government needs.

Let me be clear that the Center does not propose such a move. Our approach actually favors more, not less, identification of revenues with expenditures, reducing their fungibility, with the expectation that taxes increase when needs are greater and decrease when they are met, either through building in advance of need or finding an alternative private means of providing government services.

The more relevant case to Committee's question is the existence of research and exploration subsidies as they exist inside of more general levies, such as the Corporate Income Tax. To the extent to which tax reform eliminates this tax and replaces it with reforms such as the Net Business Receipts Tax (which taxes both labor and profit), such subsidies are problematic, but not impossible to preserve.

This is one of the virtues of a separate Net Business Receipts Tax, rather than replacing the Corporate Income Tax with a VAT or a Fair Tax – which by their nature have no offsetting tax expenditures. The challenge arises, however, when the existence of such subsidies carry with them the very justified impression that less well connected industries must pay higher taxes in order to preserve these tax subsidies. Worse is the perception, which would arise with their use in a business receipts tax, that such subsidies effectively result in lower wages across the economy. Such a perception, which has some basis in reality, would be certain death for any subsidy.

One must look deeper into the nature of these activities to determine whether a subsidy is justified, or even possible. If subsidized activities are purchased from another firm, the nature of both a VAT and an NBRT alleviate the need for any subsidy at all, because the VAT paid implicit in the fees for research and exploration would simply be passed through to the next level on the supply chain and would be considered outside expenditures for NBRT calculation and therefore not taxable. If research and exploration is conducted in house, then the labor component of these activities would be taxed under both the VAT and the NBRT, as they are currently taxed under personal income and payroll taxes now.

The only real issue is whether the profits or losses from these activities receive special tax treatment. Because profit and loss are not separately calculated under such taxes, which are essentially consumption taxes, the answer must be no. The ability to socialize losses and privatize profits through the NBRT would cease to exist with the tax it is replacing.

If society continues to value such subsidies, they would have to come as an offset to a carbon tax or cap and trade regime, if at all, as the excise tax for energy is essentially a retail sales tax and the industrial model under which the energy industry operates insulates the gasoline excise from the application of any research and exploration credits. If the energy companies were to change their model to end independent sales and distribution networks and treat all such franchisees as employees (with the attendant risk of unionization), then the subject subsidies could be preserved – provided that the related energy tax is increased so that the subsidy could actually operate – favoring those who participate in research and development and penalizing those who do not.

In other words, if big oil wants to keep this subsidy when there are no corporate income tax, it must buy up all its franchisees and allow the government to double the gasoline tax with a deduction at payment for research and exploration.

Without taxes, there can be no subsidy.

The last subsidy issue involves the use of a Value Added Tax as an oil import fee. If the VAT replaces some percentage of current employee and investor income taxes, domestically produced energy products become more competitive on the world market, provided that the VAT is border adjustable, which it would be. For example, if Alaska crude is shipped to Japan for refining and use or western low-sulfur coal is shipped to China, it would be cheaper than the same product shipped under today's tax system.

The NBRT would not be border adjustable because it is designed to pay for entitlement costs which benefit employees and their families directly, so that it is appropriate for the foreign beneficiaries of their labor to fund these costs. Additionally, the ultimate goal of enacting the NBRT is to include tax expenditures to encourage employers to fund activities now provided by the government – from subsidies for children to retiree health care to education to support for adult literacy. Allowing this tax to be zero-rated at the border removes the incentive to use these subsidies, keeping government services in business and requiring higher taxation to support the governmental infrastructure to arrange these services – like the Committee on Ways and Means.

Thank you again for the opportunity to present our comments. We are always available to discuss them further with members, staff and the general public. If you wish an electronic version for distribution or incorporation into the record, you can find it on our web page at http://fiscalequity.blogspot.com or can request one via electronic mail at fiscalequity@verizon.net.

# STATEMENT FOR THE RECORD

## OF

## CONCORD ENGINEERING

**FOR THE HEARING OF**

**"TAX REFORM AND FEDERAL ENERGY POLICY: INCENTIVES TO PROMOTE ENERGY EFFICIENCY"**

**BEFORE**

**THE U.S. SENATE COMMITTEE ON FINANCE**
**SUBCOMMITTEE ON ENERGY, NATURAL RESOURCES, AND INFRASTRUCTURE**

**DECEMBER 12, 2012**

SUBMITTED BY
Concord Engineering
520 South Burnt Mill Road - Voorhees, NJ 08043
(856) 427-0200 ▪ www.concord-engineering.com

Concord Engineering is a full-service engineering, energy consulting, construction management and commissioning firm. Concord was established in 1989 by Michael Fischette and other investors. Headquartered in Voorhees, NJ with other offices in Atlantic City and New York City, Concord employs over 100 engineers and designers. They have established themselves as the leader in many regional and international markets.

- Public and Private Hospitals
- Commercial, State, and Municipal Office Buildings
- Public and Private Universities
- K-12 Schools
- Industrial Facilities

To date, Concord Engineering has utilized EPAct 179D on 15 buildings, and is intending on more utilization in the upcoming year.

With regard to the current 179D Deduction for Energy Efficient Commercial Buildings, Concord Engineering is extremely interested in: prospectively retrofitting many more of our facilities, the extension of 179D past 2013, increasing the maximum 179D deduction to $3.00 per square foot, expansion of the eligible building categories to include REITs and non profits, and broadening the beneficiary base, particularly for capital providers.

With regard to the new Section 179F Deduction for Retrofits of Existing Commercial and Multifamily Buildings, with a maximum $4.00 per square foot tax deduction, Concord Engineering is very interested in working on larger projects where 50% energy cost reduction can be achieved from the current building energy state but not as compared to modern building energy codes.

**Enhanced U.S. Economic Performance**

By lowering its building energy costs, the U.S. can be a much more effective global competitor. The marked reduction in U.S. natural gas costs has gone a long way toward making the U.S. once again a center for manufacturing. These same manufacturers, and all U.S. business operators with buildings, can also become much more globally competitive with substantially reduced energy related building operating costs. It is important to realize that the maximum Section 179D tax incentive requires a 50% energy cost reduction as compared to an ever-increasing building energy code standard. These are truly enormous building energy usage and cost reductions.

**Building Retrofits Provide Large Employment Opportunities**

Large numbers of existing building retrofits require enormous skilled and semi-skilled work forces.

Lighting retrofits require lighting designers, laborers to remove and dispose existing fixtures, distribution centers to store the new lighting material, laborers to stage the new material near the job site and electricians to install the new fixtures.

HVAC retrofits require engineers for project system design, substantial U.S. manufacturing activity (most HVAC equipment is heavy and made in the U.S.), U.S. steel procurement and HVAC mechanics to install.

The building envelope involves a wide variety of manufactured and workshop materials including roofs, walls, windows, doors, foundations and insulation. In addition to the labor required to create these products, large numbers of roofers, carpenters, installers and laborers are needed to handle the material and incorporate it into a building.

**The 179D Tax Incentive Actually Results in Increased Tax Revenues**

By providing a tax incentive for energy cost reduction, the U.S. Treasury is actually enabling larger future tax revenues. When a commercial property owner materially reduces their energy related operating tax costs, their taxable income increases by exactly the amount of the energy cost reduction. Although the 179D tax incentive is only for the first (one) year of project completion, the company's taxable income will be increased annually every year (perpetually).

**Conclusion**

Concord Engineering greatly appreciates the opportunity to submit this statement for the record. In recent years, during very difficult economic times, Concord Engineering has made a business out of and placed importance on energy reduction and efficiency. The energy design industry is a growing area, which provides jobs and saves businesses of all sizes significant sums of money on energy consumption. EPAct 179D has been very helpful in growing our business the new tax provisions would go even further and allow us to reach out to markets which previously un-incentivized. This extension and expansion of 179D and 179F are now poised to bring our country to a much higher level of energy efficiency performance and the current proposals will go a long way towards supporting that effort.

Michael T. Fischette
President

Statement of Kate Offringa
President & CEO
Council of the North American Insulation Manufacturers Association
44 Canal Center Plaza, Suite 310
Alexandria, VA 22314

Before

Subcommittee on Energy, Natural Resources, and Infrastructure;
Senate Finance Committee
On

Incentives to Promote Energy Efficiency
December 12, 2012

Thank you, Chairman Bingaman and members of the Subcommittee. My name is Kate Offringa and I am the President and CEO of the Council of the North American Insulation Manufacturers Association (Council of NAIMA). I would like to spend a few minutes describing the important role that tax incentives play for the insulation industry and advancing energy conservation.

The cleanest, least expensive, and most reliable energy comes from more efficiently using the energy we already produce. Nearly 50 million American homes are under insulated, and the level of insulation in many commercial buildings is woefully inadequate. Putting in proper levels of insulation would immediately lower energy bills, create jobs and decrease energy usage. If American homes were properly insulated, we could save 30 times the amount of energy lost in the 2010 Gulf oil spill.

Most importantly, we don't need to locate new reserves or develop new technologies: High quality insulation is available today and can be installed tomorrow. The challenge is incentivizing people to install and retrofit that insulation into new and existing homes and buildings.

One important way to achieve this goal is to expand and extend a tax credit that rewards homeowners for installing energy efficient products and equipment. First established in the 2005 Energy Policy Act, the provision known as "25C" - or technically known as the "nonbusiness energy tax credit" - has helped tens of thousands of homeowners across the country save substantial amounts of money on monthly energy bills. In 2011, it provided a tax credit of 10 percent – up to $500 – for insulation, heating, ventilation, and air conditioning equipment, energy-smart windows and other products designed to save energy.

25C has enjoyed deep bipartisan support on Capitol Hill and has been extended several times. The credit was also expanded to triple its current size in 2009 and 2010. As a result, the

number of homeowners taking advantage of 25C in these years increased substantially from previous years.

The insulation industry strongly supports extension of 25C at the highest levels the Congress can manage in light of budget constraints. In addition, 25C should be amended to allow homeowners to include the cost of labor necessary for the installation of insulation. Currently, labor costs, which can amount to half of the cost of installing insulation, are excluded without any sound public policy basis. Including labor will help put insulation on more equal footing with other products such as HVAC units, whose labor costs are already included in the credit. More importantly, it will put qualified contractors and installers—hard hit by the current economy—back to work.

In addition to 25C, there are several other important tax incentives aimed at boosting energy efficiency. The Energy Efficient New Homes Tax Credit - known as 45L - allows homebuilders to receive a $2,000 credit for every new home they build that is 50 percent more energy efficient than code in regard to heating and cooling.

Likewise, the Energy Efficient Commercial Building Tax Deduction, or 179D, provides an incentive for retrofitting existing commercial buildings through a tax deduction of $1.80 per square foot. Unfortunately, 179D is unduly complex and, as a result, little used. The Administration has recently taken steps to improve 179D through administrative actions, but legislation is required to completely address the shortcomings of this provision.

The construction and contractor sectors of the job market have been hit especially hard by the current economy and the continued slowdown of the housing market. Despite improvement in the economy, unemployment in the construction sector remains more than double the national average at 17.2 percent in March, and the industry is considerably smaller than it was before the recent recession. Likewise, our manufacturers are hiring fewer workers and producing fewer products. Energy efficiency incentives such as 25C, 45L, and 179D can help us attain a number of goals including putting Americans back to work, saving money on our utility bills, and making America more energy independent.

Unfortunately, both 25C and 45L expired at the end of 2011, which has caused uncertainty in the marketplace and undermined the cause of energy conservation. Particularly in a tight budgetary environment, competing priorities require difficult choices be made. But energy conservation and efficiency are still critical priorities. CNAIMA strongly urges the Congress to extend both 25C and 45L in 2012.

There are other policy initiatives on the horizon that can help incentivize energy efficiency and insulation outside of the tax code. For example, CNAIMA is working with a broad coalition of companies and interests, from the Chamber of Commerce to the Natural Resources Defense Council, to advance the Sensible Accounting to Value Energy Act. The SAVE Act attempts to properly value energy efficiency in the home appraisal process to allow buyers to understand the true cost of home ownership and allow the market to drive energy efficiency investments.

Someday policies like SAVE may drive energy efficiency forward. Tax incentives, however, continue to play a critical role now and into the future. It is possible that larger changes in our tax code may eventually move away from incentives, but until that time tax incentives play a critical role.

Installing insulation may not be as visually dramatic as a massive wind farm or a new oilfield, but it is cheaper, cleaner and can contribute even more significantly to creating jobs and creating a secure energy future for America.

Chairman Bingaman, I would also like to add in closing that CNAIMA deeply appreciates the efforts that you have made to advance the cause of energy efficiency during your career in the Senate. The insulation industry and the country as a whole owes you a great debt for your efforts.

Thank you again for the opportunity to testify today.

# STATEMENT FOR THE RECORD

# OF

# ENERGY CONCEPTS & SOLUTIONS, INC.

## FOR THE HEARING OF

## "TAX REFORM AND FEDERAL ENERGY POLICY: INCENTIVES TO PROMOTE ENERGY EFFICIENCY"

## BEFORE

## THE U.S. SENATE COMMITTEE ON FINANCE SUBCOMMITTEE ON ENERGY, NATURAL RESOURCES, AND INFRASTRUCTURE

## DECEMBER 12, 2012

SUBMITTED BY

Energy Concepts & Solutions, Inc.
4400 S. Lindbergh Blvd. Ste 5
St. Louis, Mo 63127
314-729-0800

Located in St. Louis, MO, Energy Concepts & Solutions is an accredited Energy Services Company (ESCO). With a wide variety of projects, we are committed to providing our clients with energy efficient solutions that are both environmentally friendly and economically responsible.

Since 2006, we have utilized EPAct 179D on numerous occasions. This legislation has greatly assisted us in our mission of designing and installing energy efficient systems. Our projects have included various school districts, colleges, medical centers, correctional centers, city halls, public garages, and state properties.

With regard to the current 179D Deduction for Energy Efficient Commercial Buildings, Energy Concepts & Solutions is extremely interested in the extension of 179D past 2013. Also, we see great value in increasing the maximum 179D deduction to $3.00 per square foot, expanding the eligible building categories to include REITs and non profits, and broadening the beneficiary base, particularly for capital providers.

With regard to the new Section 179F Deduction for Retrofits of Existing Commercial and Multifamily Buildings, with a maximum $4.00 per square foot tax deduction, Energy Concepts & Solutions is very interested in working on larger projects where 50% energy cost reduction can be achieved from the current building energy state but not as compared to modern building energy codes.

**Cost-Savings Opportunity**

In difficult economic times, cuts in energy costs represent a major savings opportunity. This is especially true for large buildings with long operating hours. Public institutions from municipal, state and federal levels can also benefit from low levels of electrical usage and consequent reduction of operating costs, as a strategy to ease budget pressures.

At Energy Concepts & Solutions, we have worked with numerous municipalities, which have been able to significantly reduce operating costs due to more efficient facilities. We gladly acknowledge that an important share of our EPAct projects have been elementary and high schools, where resources are often scarce. Fortunately, through energy efficient technology, we have helped school districts reduce operating costs, freeing up money to spend on school resources and the learning environment.

**New Technology Can Accomplish Major Building Energy Cost Reduction**

Continuing technology developments have resulted in new, typically more expensive products that can meet the aggressive energy reduction targets embodied in the currently proposed 179D extension.

For lighting, this includes greatly improved LED lighting products now available for virtually all building categories along with wireless controls and smart sensors.

For HVAC, this includes both extremely efficient technologies for commercial buildings such as frictionless bearing-less chillers and variable refrigerant volume (VRV) for apartment buildings. As the U.S. shifts to more apartment renters it is extremely important to offer tenants monthly cost reduction in this historically under-served energy efficiency market.

For building envelope, recent advances include better materials, cool roofs, better insulation, and improved glass and window systems.

**Building Retrofits Provide Large Employment Opportunities**

Large numbers of existing building retrofits require significant amounts of skilled and semi-skilled work forces.

Lighting retrofits require lighting designers, laborers to remove and dispose existing fixtures, distribution centers to store the new lighting material, laborers to stage the new material near the job site and electricians to install the new fixtures.

HVAC retrofits require engineers for project system design, substantial U.S. manufacturing activity (most HVAC equipment is heavy and made in the U.S.), U.S. steel procurement and HVAC mechanics to install.

The building envelope involves a wide variety of manufactured and workshop materials including roofs, walls, windows, doors, foundations and insulation. In addition to the labor required to create these products, large numbers of roofers, carpenters, installers and laborers are needed to handle the material and incorporate it into a building.

**The 179D Tax Incentive Actually Results in Increased Tax Revenues**

By providing a tax incentive for energy cost reduction, the U.S. Treasury is actually enabling larger future tax revenues. When a commercial property owner materially reduces their energy related operating tax costs, their taxable income increases by exactly the amount of the energy cost reduction. Although the 179D tax incentive is only for the first (one) year of project completion, the company's taxable income will be increased annually every year (perpetually). When a government organization materially reduces its energy costs, it can reduce its budget deficit which may be used to reduce tax levies, including real property taxes at local level or meet other more vital community needs.

**Not-for-Profits**

Major not-for-profit building categories include hospitals and universities. The hospital industry is rapidly consolidating into very large health care providers and the need to manage all costs including energy costs is a topic of national discussion. The hospital industry is recognized as a large, under-served building energy efficiency sector and emergence of these new, larger entities, coupled with good tax policy, can serve to achieve major energy cost reductions. Ever escalating costs of a university education is also a national discussion topic and energy cost reduction should help ameliorate the ever escalating costs.

**Conclusion**

Energy Concepts & Solutions greatly appreciates the opportunity to submit this statement for the record. In recent years, EPAct 179D has been very helpful in our effort to provide our clients with energy efficient solutions. We look forward to the new tax provisions, which will hopefully go even further and allow us to reach out to markets previously un-incentivized. The proposed extension and expansion of 179D and 179F are a unique opportunity to bring our country to a much higher energy efficiency performance.

# STATEMENT FOR THE RECORD

FOR THE HEARING ON

"TAX REFORM AND FEDERAL ENERGY POLICY: INCENTIVES TO PROMOTE ENERGY EFFICIENCY"

BEFORE

THE U.S. SENATE COMMITTEE ON FINANCE
SUBCOMMITTEE ON ENERGY, NATURAL RESOURCES,
AND INFRASTRUCTURE

DECEMBER 12, 2012

SUBMITTED BY

CHARLES GOULDING, PRESIDENT
ENERGY TAX SAVERS, INC.
144A JACKSON AVE.
SYOSSET, NY 11791
(516)364-2630
CHARLES.GOULDING@ENERGYTAXSAVERS.COM

Energy Tax Savers, Inc. is an interdisciplinary tax and engineering firm composed of multiple professional categories including legal, CPAs, engineers, LEED AP's and enrolled agents.

We represent numerous ESCO's, architects, engineering firms, lighting specifiers, HVAC specifiers, building envelope specifiers, numerous fortune 500 companies, office buildings, warehouse owners, national and regional retail chains, national restaurant chains, hotels and numerous other categories of building property owners.

Our professionals have published over 100 Commercial Building Section 179D articles in leading tax and industry publications.

With regard to the current 179D Deduction for Energy efficient Commercial Buildings, our clients are extremely interested in; the extension of 179D past 2013, increasing the maximum 179d deduction to $3.00, expansion of the eligible building categories to include REITs and non profits, and broadening of the beneficiary base, particularly for capital providers.

With regard to the proposed Section 179F Deduction for Retrofits of Existing Commercial and Multifamily Buildings, with a maximum $4.00 per square foot tax deduction, our clients are very interested on working on larger projects where 50% energy cost reduction can be achieved from the current building energy state but not as compared to modern building energy codes.

**Enhanced U.S. Economic Performance**

By lowering its building energy costs, the U.S. can be a mueh more effective global competitor. The marked reduction in U.S. natural gas costs has gone a long way toward making the U.S. once again a center for manufacturing. These same manufacturers, and all U.S. business operators with buildings, can also become much more globally competitive with substantially reduced building energy related operating costs. It is important to realize that the maximum Section 179D tax incentive requires a 50% energy cost reduction as compared to an ever-increasing building energy code standard. These are truly enormous building energy usage and cost reductions.

**New Technology Can Accomplish Major Building Energy Cost Reduction**

Continuing technology developments have resulted in new, typically more expensive products that can meet the aggressive energy reduction targets embodied in the currently proposed 179D extension.

For lighting, this includes greatly improved LED lighting products now available for virtually all building categories along with wireless controls and smart sensors.

For HVAC, this includes both extremely efficient technologies for commercial buildings such as frictionless bearing-less chillers and variable refrigerant volume (VRV) for apartment buildings. As the U.S. shifts to more apartment renters it is extremely important to offer tenants monthly cost reduction in this historically under-served energy efficiency market.

For building envelope, recent advances include better materials, cool roofs, better insulation, and improved glass and window systems.

**Building Retrofits Provide Large Employment Opportunities**

Large numbers of existing building retrofits require enormous skilled and semi-skilled work forces.

Lighting retrofits require lighting designers, laborers to remove and dispose existing fixtures, distribution centers to store the new lighting material, laborers to stage the new material near the job site and electricians to install the new fixtures.

HVAC retrofits require engineers for project system design, substantial U.S. manufacturing activity (most HVAC equipment is heavy and made in the U.S.), U.S. steel procurement and HVAC mechanics to install.

The building envelope involves a wide variety of manufactured and workshop materials including roofs, walls, windows, doors, foundations and insulation. In addition to the labor required to create these products, large numbers of roofers, carpenters, installers and laborers are needed to handle the material and incorporate it into a building.

**The 179D Tax Incentive Actually Results in Increased Tax Revenues**

By providing a tax incentive for energy cost reduction, the U.S. Treasury is actually enabling larger future tax revenues. When a commercial property owner materially reduces their energy related operating tax costs, their taxable income increases by exactly the amount of the energy cost reduction. Although the 179D tax incentive is only for the first (one) year of project completion, the company's taxable income will be increased annually every year (perpetually). When a government organization materially reduces its energy costs, it can reduce its budget deficit which may be used to reduce tax levies, including real property taxes at local level or meet other more vital community needs.

**REITs**

It is particularly important to provide an incentive for REIT energy reductions service providers. REITs are the largest holders of large institutional grade real estate in the country. Major REIT categories include; 1. office buildings, 2. apartment buildings, 3. shopping centers, 4. Hotels, 5. warehouse/industrial and 6. data centers.

The REIT model is largely a tenant model and for the most part REIT's have not endeavored to materially reduce energy costs simply because they don't pay the energy bill. With REITs, the tenant bears the burden of the monthly energy bill. With America's large service-based economy, large service businesses operating from offices bear the burden of unnecessary energy bills. With apartment REITs, it is renters who bear the burden of unnecessary energy bills. With shopping centers, it is retailers and shoppers that bear the burden of unnecessary energy costs. With hotel REITs, it is nightly guests who bear the burden of unnecessary costs in their room

rates. In the REIT warehouse and industrial sector, it is America's engines of commerce that bear the burden of unnecessary energy costs. Data Centers are huge consumers of electricity and hence directly responsible for large amounts of emissions. Accordingly with Data Center REITs, all of American society bears the burden of unnecessary energy costs.

**Not-for-Profits**

Major not-for-profit building categories include hospitals and universities. The hospital industry is rapidly consolidating into very large health care providers and the need to manage all costs including energy costs is a topic of national discussion. The hospital industry is recognized as a large, under-served building energy efficiency sector and emergence of these new, larger entities, coupled with good tax policy, can serve to achieve major energy cost reductions. Ever escalating costs of a university education is also a national discussion topic and energy cost reduction should help ameliorate the ever escalating costs.

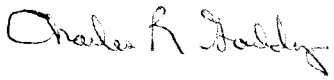
**Public Private Partnerships (PPA's)**

The provision in the proposed extension of 179D to include energy project financiers in the beneficiary category is crucial to America's energy policy future.

It is common knowledge that finances of many of our country's state and local government costs are in dire financial straits. These government entities find themselves in the untenable position of not having the capital to act on large energy cost reduction projects, often for steadily deteriorating essential service government buildings. The addition of the 179D financing tax incentive will encourage private sector capitalized lenders to take the added risk related to financing these important projects. There are many excellent contractors and ESCOs who have the capacity and desire to work in today's depressed construction market but who don't have the tax capacity to benefit from energy cost related tax incentives. There are many cash-strong lenders interested in entering this market who to date haven't found an economically viable pathway for doing so.

**Conclusion**

Energy Tax Savers, Inc. greatly appreciates the opportunity to submit this statement for the record. In the last seven years during very difficult economic times the lighting, HVAC and building envelope industry has made a large investment in educating their staff and customers on the type of holistic building energy usage knowledge required to understand the technical underpinnings of EPAct. The industry is now poised to bring our country to a much higher level of energy efficiency performance and the current 179D and 179F tax proposals will go a long way toward supporting that effort.



TOLL FREE——1.800. COSTSEG
OFFICE——770. 427. 4000
FAX——770. 427. 4004

2190 Dallas Highway · Marietta, Georgia 30064

**STATEMENT FOR THE RECORD**

**FOR THE HEARING ON**

**"TAX REFORM AND FEDERAL ENERGY POLICY: INCENTIVES TO PROMOTE ENERGY EFFICIENCY"**

**BEFORE**

**THE U.S. SENATE COMMITTEE ON FINANCE**
**SUBCOMMITTEE ON ENERGY, NATURAL RESOURCES, AND INFRASTRUCTURE**

**DECEMBER 12, 2012**

**SUBMITTED BY**

**MICHAEL P. MORRIS - MANAGING DIRECTOR**
**ERNST & MORRIS CONSULTING GROUP, INC.**
**2190 DALLAS HIGHWAY**
**MARIETTA, GEORGIA 30064**

Ernst & Morris Consulting Group, Inc., (Ernst & Morris) is an interdisciplinary firm of engineers and finance professionals. Ernst & Morris is the nation's oldest and largest firm dedicated to performing cost segregation studies in the United States. Located in Marietta, Georgia, Ernst & Morris has completed over 15,000 studies in all 50 states for both CPA firms and commercial property owners directly. Ernst & Morris currently works with hundreds of accounting firms nationwide and is the preferred provider of cost segregation services to CPAmerica International, Inc., The Leading Edge Alliance, PKF International, and The National Society of Accountants.

Ernst & Morris has spent the last seven years educating our client base about new buildings. In particular, we have educated our CPA firms - with clients who own and manage thousands of commercial buildings - on the advantages of constructing energy efficient buildings and the §179D incentives for doing so. It has taken a tremendous amount of time and effort but the message is finally being heeded.

With regard to the current §179D Deduction for Energy Efficient Commercial Buildings, our clients are extremely interested in: the extension of §179D past 2013, increasing the maximum §179D deduction to $3.00, expansion of the eligible building categories to include non - profits, and broadening of the beneficiary base, particularly for capital providers.

With regard to the proposed §179F Deduction for Retrofits of Existing Commercial and Multifamily Buildings, with a maximum $4.00 per square foot tax deduction, our clients are very interested in working on larger projects where 50% energy cost reduction can be achieved from the current building energy state, but not as compared to modern building energy codes.

**Enhanced U.S. Economic Performance**

By lowering its building energy costs, the U.S. can be a much more effective global competitor. The marked reduction in U.S. natural gas costs has gone a long way toward making the U.S. once again a center for manufacturing. These same manufacturers, and all U.S. business operators with buildings, can also become much more globally competitive with substantially reduced building energy related operating costs. It is important to realize that the maximum §179D tax incentive requires a 50% energy cost reduction as compared to an ever-increasing building energy code standard. These are truly enormous building energy usage and cost reductions.

**New Technology Can Accomplish Major Building Energy Cost Reduction**

Continuing technology developments have resulted in new, typically more expensive products, that can meet the aggressive energy reduction targets embodied in the currently proposed §179D extension.

For lighting, this includes greatly improved LED lighting products now available for virtually all building categories along with wireless controls and smart sensors.

For HVAC, this includes both extremely efficient technologies for commercial buildings such as frictionless bearing-less chillers and variable refrigerant volume (VRV) for apartment buildings. As the U.S. shifts to more apartment renters it is extremely important to offer tenants monthly cost reduction in this historically under-served energy efficiency market.

For the building envelope, recent advances include better materials, cool roofs, better insulation, and improved glass and window systems.

**Building Retrofits Provide Large Employment Opportunities**

Large numbers of existing building retrofits require enormous skilled and semi-skilled work forces.

Lighting retrofits require lighting designers, laborers to remove and dispose existing fixtures, distribution centers to store the new lighting material, laborers to stage the new material near the job site and electricians to install the new fixtures.

HVAC retrofits require engineers for project system design, substantial U.S. manufacturing activity (most HVAC equipment is heavy and made in the U.S.), U.S. steel procurement and HVAC mechanics to install.

The building envelope involves a wide variety of manufactured and workshop materials including roofs, walls, windows, doors, foundations and insulation. In addition to the labor required to create these products, large numbers of roofers, carpenters, installers and laborers are needed to handle the material and incorporate it into a building.

**The §179D Tax Incentive Actually Results in Increased Tax Revenues**

By providing a tax incentive for energy cost reduction, the U.S. Treasury is actually enabling larger future tax revenues. When a commercial property owner materially reduces their energy related operating tax costs, their taxable income increases by exactly the amount of the energy cost reduction. Although the §179D tax incentive is only for the first (one) year of project completion, the company's taxable income will be increased annually every year (perpetually). When a government organization materially reduces its energy costs, it can reduce its budget deficit which may be used to reduce tax levies, including real property taxes at local level or meet other more vital community needs.

**Conclusion**

Ernst & Morris greatly appreciates the opportunity to submit this statement for the record. In the last seven years, our firm has made a large investment in educating our staff and clients on the type of holistic building energy usage knowledge required to understand the technical underpinnings of EPAct. The energy industry is now poised to bring our country to a much higher level of energy efficiency performance and the current §179D and §179F tax proposals will contribute tremendously toward supporting that effort.

Federal
Business
Centers

Over 70 Years of Quality Service,
One Day at a Time.
We Care, and We Deliver.

# STATEMENT FOR THE RECORD

## OF

## FEDERAL BUSINESS CENTERS

**FOR THE HEARING OF**

**"TAX REFORM AND FEDERAL ENERGY POLICY: INCENTIVES TO PROMOTE ENERGY EFFICIENCY"**

**BEFORE**

**THE U.S. SENATE COMMITTEE ON FINANCE**
**SUBCOMMITTEE ON ENERGY, NATURAL RESOURCES,**
**AND INFRASTRUCTURE**

**DECEMBER 12, 2012**

SUBMITTED BY
Federal Business Centers
300 Raritan Center Parkway, Edison, NJ 08837
(732) 225-2200 ▪ www.federalbusinesscenters.com

Since 1938, Federal Business Centers has been a leading New Jersey property developer that owns and manages millions of square feet of business space.

Federal Business Centers' Raritan Center Business Park is one of New Jersey's most widely selected business parks, offering 15 million square feet of office space, flex space, and warehouse/distribution space for lease.

The business park is locally situated to serve major markets in the Northeast and is accessible by multiple major highways, by railway, and by sea.

This mixed-use business park covers more than 2,350 acres of land and houses hundreds of companies from many business sectors, including Fortune 500 companies and Global 500 companies such as FedEx, UPS, Chase Bank, BASF, Staples, Johnson Controls, Wells Fargo, Verizon, and Hilton Hotels.

To date, Federal Business Centers has utilized EPAct 179D as a way of easing the economic burden and reducing payback time on retrofits relating to 31 buildings.

With regard to the current 179D Deduction for Energy Efficient Commercial Buildings, Federal Business Centers is extremely interested in; prospectively retrofitting many more of our facilities, the extension of 179D past 2013, increasing the maximum 179D deduction to $3.00 per square foot, expansion of the eligible building categories to include REITs and non profits, and broadening the beneficiary base, particularly for capital providers.

With regard to the new Section 179F Deduction for Retrofits of Existing Commercial and Multifamily Buildings, with a maximum $4.00 per square foot tax deduction, Federal Business Centers is very interested in working on larger projects where 50% energy cost reduction can be achieved from the current building energy state but not as compared to modern building energy codes.

**Enhanced U.S. Economic Performance**

By lowering its building energy costs, the U.S. can be a much more effective global competitor. The marked reduction in U.S. natural gas costs has gone a long way toward making the U.S. once again a center for manufacturing. These same manufacturers, and all U.S. business operators with buildings, can also become much more globally competitive with substantially reduced energy related building operating costs. It is important to realize that the maximum Section 179D tax incentive requires a 50% energy cost reduction as compared to an ever-increasing building energy code standard. These are truly enormous building energy usage and cost reductions.

**Building Retrofits Provide Large Employment Opportunities**

Large numbers of existing building retrofits require enormous skilled and semi-skilled work forces.

Lighting retrofits require lighting designers, laborers to remove and dispose existing fixtures, distribution centers to store the new lighting material, laborers to stage the new material near the job site and electricians to install the new fixtures.

HVAC retrofits require engineers for project system design, substantial U.S. manufacturing activity (most HVAC equipment is heavy and made in the U.S.), U.S. steel procurement and HVAC mechanics to install.

The building envelope involves a wide variety of manufactured and workshop materials including roofs, walls, windows, doors, foundations and insulation. In addition to the labor required to create these products, large numbers of roofers, carpenters, installers and laborers are needed to handle the material and incorporate it into a building.

**The 179D Tax Incentive Actually Results in Increased Tax Revenues**

By providing a tax incentive for energy cost reduction, the U.S. Treasury is actually enabling larger future tax revenues. When a commercial property owner materially reduces their energy related operating tax costs, their taxable income increases by exactly the amount of the energy cost reduction. Although the 179D tax incentive is only for the first (one) year of project completion, the company's taxable income will be increased annually every year (perpetually).

**Conclusion**

Federal Business Centers greatly appreciates the opportunity to submit this statement for the record. In the last seven years, during very difficult economic times, Federal Business Centers has placed importance on energy reduction and efficiency. Business and industrial parks, such as Raritan Center, are now poised to bring our country to a much higher level of energy efficiency performance and the current 179D and 179F tax proposals will go a long way towards supporting that effort.

GREEN LIGHT
NATIONAL

STATEMENT FOR THE RECORD

FOR THE HEARING ON

"TAX REFORM AND FEDERAL ENERGY POLICY: INCENTIVES TO PROMOTE ENERGY EFFICIENCY"

BEFORE

THE U.S. SENATE COMMITTEE ON FINANCE
SUBCOMMITTEE ON ENERGY, NATURAL RESOURCES,
AND INFRASTRUCTURE

DECEMBER 18, 2012

SUBMITTED BY

MICHAEL MCALINDEN, PRESIDENT
GREEN LIGHT NATIONAL
1720 S. MICHIGAN, #3312
(312) 869-4161
MICHAEL.MCALINDEN@GREENLIGHTMIDWEST.COM

Green Light is a commercial Energy Services Company (ESCO) with offices in Chicago, Los Angeles, and New York. Green Light helps tenants and property owners reduce the operating expenses associated with energy consumption by taking advantage of the technological advances in efficient lighting, environmental controls, and building envelope efficiency while capitalizing on the financial savings incentives.

Green Light's investment team has created an option for our customers to have energy efficient lighting and equipment installed at no cost to users. By partnering with Green Light, companies can fund the upgrade to new equipment purely from the monthly savings realized from the new equipment. Customers will not pay any out of pocket costs throughout the course of the project.

With regard to the current 179D Deduction for Energy efficient Commercial Buildings, our clients are extremely interested in: the extension of 179D past 2013, increasing the maximum 179d deduction to $3.00, expansion of the eligible building categories to include REITs and non profits, and broadening of the beneficiary base, particularly for capital providers.

With regard to the proposed Section 179F Deduction for Retrofits of Existing Commercial and Multifamily Buildings, with a maximum $4.00 per square foot tax deduction, our clients are very interested on working on larger projects where 50% energy cost reduction can be achieved from the current building energy state but not as compared to modern building energy codes.

**The Chicago Market**

By lowering its building energy costs, the U.S. can be a much more effective global competitor. The marked reduction in U.S. natural gas costs has gone a long way toward making the U.S. once again a center for manufacturing. These same manufacturers, and all U.S. business operators with buildings, can also become much more globally competitive with substantially reduced building energy related operating costs. In Chicago we have a particular focus on reducing energy costs for food processing and packaging companies. It is important to realize that the maximum Section 179D tax incentive requires a 50% energy cost reduction as compared to an ever-increasing building energy code standard. These are truly enormous building energy usage and cost reductions.

**New Technology Can Accomplish Major Building Energy Cost Reduction**

Continuing technology developments have resulted in new, typically more expensive products that can meet the aggressive energy reduction targets embodied in the currently proposed 179D extension.

For lighting, this includes greatly improved LED lighting products now available for virtually all building categories along with wireless controls and smart sensors. Our firm has been a pioneer for large square footage LED industrial and warehouse installations.

For HVAC, this includes both extremely efficient technologies for commercial buildings such as energy efficient chillers and natural gas heaters. As the U.S. shifts to more apartment renters it is extremely important to offer tenants monthly cost reduction in this historically under-served energy efficiency market.

For building envelope, recent advances include better materials, cool roofs, better insulation, and improved glass and window systems.

**Building Retrofits Provide Large Employment Opportunities**

Large numbers of existing building retrofits require enormous skilled and semi-skilled work forces.

Lighting retrofits require lighting designers, laborers to remove and dispose existing fixtures, distribution centers to store the new lighting material, laborers to stage the new material near the job site and electricians to install the new fixtures.

HVAC retrofits require engineers for project system design, substantial U.S. manufacturing activity (most HVAC equipment is heavy and made in the U.S.), U.S. steel procurement and HVAC mechanics to install.

The building envelope involves a wide variety of manufactured and workshop materials including roofs, walls, windows, doors, foundations and insulation. In addition to the labor required to create these products, large numbers of roofers, carpenters, installers and laborers are needed to handle the material and incorporate it into a building.

**The 179D Tax Incentive Actually Results in Increased Tax Revenues**

By providing a tax incentive for energy cost reduction, the U.S. Treasury is actually enabling larger future tax revenues. When a commercial property owner materially reduces their energy related operating tax costs, their taxable income increases by exactly the amount of the energy cost reduction. Although the 179D tax incentive is only for the first (one) year of project completion, the company's taxable income will be increased annually every year (perpetually). When a government organization materially reduces its energy costs, it can reduce its budget deficit which may be used to reduce tax levies, including real property taxes at local level or meet other more vital community needs.

**REITs**

It is particularly important to provide an incentive for REIT energy reductions service providers. REITs are the largest holders of large institutional grade real estate in the country. REITSs are large property holders in Chicago, Los Angeles, and New York – the three main

markets we operate in. Major REIT categories include; 1. office buildings, 2. apartment buildings, 3. shopping centers, 4. Hotels, 5. warehouse/industrial and 6. data centers.

The REIT model is largely a tenant model and for the most part REIT's have not endeavored to materially reduce energy costs simply because they don't pay the energy bill. With REITs, the tenant bears the burden of the monthly energy bill. With America's large service-based economy, large service businesses operating from offices bear the burden of unnecessary energy bills. With apartment REITs, it is renters who bear the burden of unnecessary energy bills. With shopping centers, it is retailers and shoppers that bear the burden of unnecessary energy costs. With hotel REITs, it is nightly guests who bear the burden of unnecessary costs in their room rates. In the REIT warehouse and industrial sector, it is America's engines of commerce that bear the burden of unnecessary energy costs. Data Centers are huge consumers of electricity and hence directly responsible for large amounts of emissions. Accordingly with Data Center REITs, all of American society bears the burden of unnecessary energy costs.

**Not-for-Profits**

Major not-for-profit building categories include hospitals and universities. The hospital industry is rapidly consolidating into very large health care providers and the need to manage all costs including energy costs is a topic of national discussion. The hospital industry is recognized as a large, under-served building energy efficiency sector and emergence of these new, larger entities, coupled with good tax policy, can serve to achieve major energy cost reductions. Ever escalating costs of a university education is also a national discussion topic and energy cost reduction should help ameliorate the ever escalating costs.

**Public Private Partnerships (PPA's)**

The provision in the proposed extension of 179D to include energy project financiers in the beneficiary category is crucial to America's energy policy future.

It is common knowledge that finances of many of our country's state and local government costs are in dire financial straits. These government entities find themselves in the untenable position of not having the capital to act on large energy cost reduction projects, often for steadily deteriorating essential service government buildings. The addition of the 179D financing tax incentive will encourage private sector capitalized lenders to take the added risk related to financing these important projects. There are many excellent contractors and ESCOs who have the capacity and desire to work in today's depressed construction market but who don't have the tax capacity to benefit from energy cost related tax incentives. There are many cash-strong lenders interested in entering this market who to date haven't found an economically viable pathway for doing so.

**Conclusion**

Green Light National greatly appreciates the opportunity to submit this statement for the record. In the last seven years during very difficult economic times the lighting, HVAC and building envelope industry has made a large investment in educating their staff and customers on the type of holistic building energy usage knowledge required to understand the technical underpinnings of EPAct. The industry is now poised to bring our country to a much higher level of energy efficiency performance and the current 179D and 179F tax proposals will go a long way toward supporting that effort.

**GRUNDFOS PUMPS CORPORATION**
17100 West 118th Terrace
Olathe, KS 66061-6593

Telephone: 913 227 3400
Fax: 913 227 3500
www.grundfos.com

December 21, 2012

The Honorable Jeff Bingaman
Chairman, Subcommittee on Energy, Natural Resources and Infrastructure
U.S. Senate
219 Dirksen Senate Office Building
Washington, D.C. 20510

The Honorable John Cornyn
Ranking Member, Subcommittee on Energy, Natural Resources and Infrastructure
U.S. Senate
219 Dirksen Senate Office Building
Washington, D.C. 20510

Statement for the Record by Grundfos before the United States Senate Committee on Finance – Subcommittee on Energy, Natural Resources and Infrastructure

Dear Chairman Bingaman and Ranking Member Cornyn:

Grundfos is the world's leading pump manufacturer with annual revenues of $4 billion. Our products include circulator pumps for heating and air-conditioning as well as centrifugal pumps for rural and municipal water supply, wastewater treatment and industrial production. We employ more than 18,000 people worldwide, including 1,400 in our U.S. facilities in California, Illinois, Indiana, Kansas, Pennsylvania, and Texas.

As a global industry leader, Grundfos seeks growth through innovation. We invest 6 percent of annual revenue in research and development, and we are currently developing several new technology centers in the United States, including a Water Technology Center in Fresno, California and a Global Competency Center for Commercial Buildings in Brookshire, Texas.

Grundfos is pleased to submit the following statement for the record in connection with the subcommittee's hearing on "Tax Reform and Energy Policy: Incentives to Promote Energy Efficiency."

**Key recommendations**

- Include water efficiency as an integral part of policies to promote energy efficiency.
- Incentivize the adoption of cutting-edge water pump technology as a way to promote energy efficiency in buildings, industrial applications, and municipal water and wastewater systems.
- Set long-term energy efficiency targets for products and solutions and develop roadmaps with transparent milestones for improving energy efficiency.
- Support the creation of a product labeling system that ensures a transparent way for users to make educated purchases on high-efficiency pumps and equipment.

**Energy, water and pumps**

Pumps account for 10 percent of global electricity demand. With the latest available technology, we can cut this figure in half, assuming universal adoption of high-efficiency pump systems.

Upgrading pumps and pump systems in domestic and commercial buildings, industrial applications, and municipal water and wastewater systems can yield significant energy savings.

For example, Grundfos' AUTO*ADAPT* technology can save up to 60 percent of the energy consumed by pumps in commercial and residential buildings. Many of the pumps currently used in buildings were designed more than 50 years ago. These pumps are often highly inefficient, running continuously at top speed regardless of actual performance demand. AUTO*ADAPT* is a unique intelligent feature which adjusts pump speed according to actual flow requirements at any given time.

Another example of energy-saving technology is demand-driven distribution of water in municipal water systems. The existing water infrastructure is outdated in many parts of the United States, leading to leaking pipes and significant water loss.

A recent survey by the Chicago-based Center for Neighborhood Technology of 55 water utilities in the Great Lakes region showed annual leaks totaling 66.5 billion gallons of water. This number is equivalent to the annual water consumption of more than 500,000 households. Intelligent pump systems can reduce these kinds of leakages by up to 50 percent. Electricity consumption in the distribution system can also be reduced by up to 50 percent.

The problems with outdated water infrastructure and high levels of water loss illustrate the importance of looking at water efficiency as an integral part of policies to promote energy efficiency.

**Efficiency standards and tax incentives**
A major challenge in the adoption of intelligent pump technology is lack of commonly accepted efficiency standards and lack of awareness among users. While energy efficient light bulbs, windows and many other appliances are highly visible, pumps tend to be hidden in mechanical rooms. In this sense, pumps are among the last unexplored frontiers of energy efficiency.

Greater awareness about the energy efficiency of pumps and pump systems should be a part of any comprehensive strategy to boost energy efficiency in the US.

In Europe, the pump industry developed a voluntary measuring and labeling system for energy efficiency in 2005. In 2009, this action was followed by official EU minimum standards for energy efficiency in pumps. These standards are expected to save the equivalent of the residential electricity consumption of 14 million people in the EU. Here in the US, examples of success with labeling systems include the Energy Star and LEED labels. Engineers, investors and consumers alike seek out and consider these labels when they construct new facilities and buy new equipment.

There are currently no energy efficiency standards for pumps in the US, but important efforts are underway to establish such standards. The Department of Energy is exploring a rulemaking to establish a test procedure, an energy conservation standard, or a labeling requirement for pumps. In addition, the Environmental Protection Agency is developing a new product specification for pool pumps as part of the Energy Star program.

Grundfos is broadly supportive of these efforts, and we believe that new energy efficiency requirements for pumps should be as ambitious as possible.

Once commonly accepted energy efficiency standards for pumps are in place in the US, new tax incentives specifically tied to these standards would be an effective way to increase public awareness and encourage the adoption of new technology.

We appreciate the opportunity to submit this statement for the record, and we applaud the subcommittee for its work on this important issue.

Sincerely,

Jes Munk Hansen
CEO and President
Grundfos North America

December 13, 2012

Senate Committee on Finance
Attention: Editorial and Document Section
Room SD-219
Dirksen Senate Office Building
Washington, DC 20510-6200

**TO: THE U.S. SENATE COMMITTEE ON FINANCE SUBCOMMITTEE ON ENERGY, NATURAL RESOURCES, AND INFRASTRUCTURE**

The HIA-LI is one of the recognized voices for Long Island business and a powerful force and economic engine for regional development for more than 30 years. Our member companies represent tens of thousands of business professionals. Our activities include programs and events that promote strategic partnerships, targeted networking, information - sharing and business advocacy. Members benefit from our committees, educational programs, career resources, research capabilities, mentoring opportunities, business advisory services and frequent networking events. Our objective is to drive business innovation on Long Island, facilitate collaboration and support professional development.

The HIA-LI supports the Hauppauge Industrial Park (HIP), located in Long Island, NY, one of the largest industrial parks in the U.S. The HIP currently hosts 650 buildings, 1,300 companies, and 55,000 employees.

With the objective of fostering energy efficiency as a means of ensuring future viability and enhanced competitiveness, we have recently launched an Energy Conservation Initiative. The program establishes the goal of a 15% reduction in energy consumption for Hauppauge Industrial Park buildings. To this end, we planned a set of procedures which include benchmarking, conducted in partnership with Energy Star, and education, particularly concerning a comprehensive approach to energy retrofit financing.

Park members paid a combined $42 million to LIPA for electricity and National Grid for natural gas in 2009. By reducing park consumption by 15%, members will save at least $6.3 annually, money which can be used to grow their businesses and enhance their competitiveness. EPAct tax deductions are of great assistance when considering investments in energy efficiency. Further, roughly half the buildings in the park function as warehouses, manufacturing facilities or other building types favored by EPAct.

With regard to the current 179D Deduction for Energy Efficient Commercial Buildings, our member companies are extremely interested in the extension of 179D past 2013, increasing the maximum 179d deduction to $3.00, expansion of the eligible building categories to include REITs and non profits, and broadening of the beneficiary base, particularly for capital providers.

With regard to the proposed Section 179F Deduction for Retrofits of Existing Commercial and Multifamily Buildings, with a maximum $4.00 per square foot tax deduction, our member companies are very interested in working on larger projects where 50% energy cost reduction can be achieved.

225 Wireless Boulevard, Hauppauge, NY 11788 • (631) 543-5355 • Fax (631) 543-5380
E-mail: info@hia-li.org • Web Site: www.hia-li.org

**Enhancing Economic Performance and Competitiveness**

Long Island has a mature commercial building inventory, which has been subject to some of the highest energy costs in the United States. Thus Long Island provides one of the best opportunities in the nation for demonstrating the efficacy of energy-cost reduction supported by tax savings.

**Building Retrofits Provide Large Employment Opportunities**

Large numbers of existing building retrofits require enormous skilled and semi-skilled work forces.

Lighting retrofits require lighting designers, laborers to remove and dispose of existing fixtures, distribution centers to store the new lighting material, laborers to stage the new material near the job site and electricians to install the new fixtures.

HVAC retrofits require engineers for project system design, substantial U.S. manufacturing activity (most HVAC equipment is heavy and made in the U.S.), U.S. steel procurement and HVAC mechanics to install.

The building envelope involves a wide variety of manufactured and workshop materials including roofs, walls, windows, doors, foundations and insulation. In addition to the labor required to create these products, large numbers of roofers, carpenters, installers and laborers are needed to handle the material and incorporate it into a building.

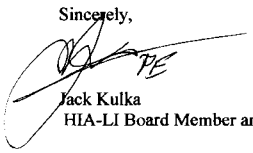
**The 179D Tax Incentive Actually Results in Increased Tax Revenues**

By providing a tax incentive for energy cost reduction, the U.S. Treasury is actually enabling larger future tax revenues. When a commercial property owner materially reduces energy related operating tax costs, taxable income increases by exactly the amount of the energy cost reduction. Although the 179D tax incentive is only for the first (one) year of project completion, the company's taxable income will be increased annually every year (perpetually). When a government organization materially reduces its energy costs, it can reduce its budget deficit which may be used to reduce tax levies, including real property taxes at local level or meet other more vital community needs.

**Conclusion**

The HIA-LI greatly appreciates the opportunity to submit this statement for the record. HIA-LI has actively engaged in the promotion of energy awareness and efficiency for some time, and we firmly believe that current 179D and 179F tax proposals, if extended, will substantially further our efforts.

Sincerely,



Jack Kulka
HIA-LI Board Member and Chairman HIA-LI Energy Utilities and Infrastructure Committee

**Written Statement for the Record of James A. Grogan, Jr.**
**General President,**
**International Association of Heat and Frost Insulators and Allied Workers**
**United States Senate Committee on Finance**
**Subcommittee on Energy, Natural Resources, and Infrastructure**
**Tax Reform and Federal Energy Policy: Incentives to Promote Energy Efficiency**
**December 12, 2012**

Thank you, Chairman Bingaman, Ranking Member Cornyn and members of the Subcommittee for your leadership to schedule this important hearing on tax incentives for energy efficiency, and I greatly appreciate this opportunity to share with you my statement for the hearing record.

My name is James A. Grogan, Jr., and I am the General President of the International Association of Heat and Frost Insulators and Allied Workers. On behalf of the more than 25,000 highly-trained craft professionals who install mechanical insulation in commercial, industrial and manufacturing facilities, I am delighted to see that the U.S. Senate is interested in receiving recommendations for tax incentives for energy efficiency.

I am pleased to share with you that our union strongly supports an important bipartisan legislative initiative that will promote energy efficiency, reduce carbon emissions, improve facility safety, and create thousands of green jobs for our members. Specifically, the "Mechanical Insulation Installation Incentive Act (S. 1526), introduced by Senator Gillibrand and cosponsored by Senator Johanns, Senator Rockefeller, Senator Moran, and Senator Sherrod Brown provides crucial incentives for facility owners to utilize effective and existing mechanical insulation technologies to achieve immediate energy savings.

Buildings are responsible for 40% of U.S. energy demand and 40% of all greenhouse gas emissions, making efficiency gains in this area crucial if we are to markedly reduce America's energy consumption and effectively combat climate change. The industrial sector is similar in energy efficiency opportunities. At the residential level, insulation is well publicized for its efficiency benefits. However, the same cannot be said in the commercial and industrial sectors, which together consume 2½ times more energy than homes, according to the Energy Information Administration. Commercial and industrial insulation—collectively known as mechanical insulation—can slash the energy demand for the building and industrial sector.

The Mechanical Insulation Installation Incentive Act creates the appropriate incentives to encourage commercial and industrial entities to go beyond the current minimum insulation requirements as defined by the American Society of Heating, Refrigerating , and Air Conditioning Engineers (ASHRAE) in new construction, and existing retrofit and maintenance projects. By providing facility owners with an incentive to increase or accelerate the depreciation deduction for added insulation above the minimum ASHRAE standards, S. 1526 would allow businesses to increase their maintenance deduction expense up to a maximum 30% of the energy saved.

By promoting incentives for mechanical insulation installation, Congress will both create jobs now and reduce carbon emissions. While the Joint Committee on Taxation scored a previous version of S. 1526 at $375 million over 5 years, this legislation is estimated to generate $35 billion in energy savings, reduce 170 million metric tons of carbon dioxide and other greenhouse gas emissions, and create and sustain 89,000 jobs annually.

Best of all, these jobs do not require additional research and development. Mechanical insulation opportunities can be easily identified, with potential energy savings and emissions reduction determined with proven DOE-utilized software technology, and in many applications, energy saving projects can be implemented in weeks,

For facility owners and operators, the savings are swift and sustainable; the return on investment from mechanical insulation is typically less than two years (and sometimes as little as six months). Mechanical insulation also improves infrastructure in the public, educational, and health-care sectors.

I know that the Finance Committee has a strong interest in ensuring that our energy tax policy creates a level-playing field. To that end, it should be noted that while there are current incentives for walls, roofing, windows, lighting and other energy efficiency options, there are no existing tax incentives for mechanical insulation. As the Senate Finance Committee works on comprehensive tax reform next year, our union is committed to working with you on this and other initiatives that will lead to greater energy efficiency that is critical to job creation, economic growth, energy savings, and emissions reductions.

Thank you for your consideration.

**Statement on behalf of the National Association of Home Builders**

**1201 15th St NW**

**Washington, DC 20010**

**Senate Committee on Finance Subcommittee on energy, Natural Resources, and Infrastructure**

**Hearing on Tax Reform and Federal Energy Policy: Incentives to Promote Energy Efficiency**

**December 12, 2012**

On behalf of the 140,000 members of the National Association of Home Builders (NAHB), we respectfully submit this statement discussing the significance and impact of several expired and expiring energy tax incentives.

In 2005, Congress passed the *Energy Policy Act* (P.L. 109-58) and established a number of important tax incentives to promote greater energy efficiency in the built environment – single family, multifamily and commercial homes and buildings. These incentives acted as the only federal-level programs to address energy efficiency in new and existing homes and buildings with the intent of moving the market towards greater efficiency and the delivery of innovation and technology transfer in building design and practice.

The deduction for tax code 179D, included in the Act and the subject of recent legislation, is set to expire at the end of 2013. While this hearing is focused on specific legislation, it is important to also draw attention to two additional tax credits that expired at the end of 2011: the credits for tax code Section 45L and Section 25C. While Congress has allowed the incentives to lapse before and has extended them retroactively, for consumers and businesses this uncertainty is extremely disruptive.

Retroactive extensions are particularly problematic for the consumer and small business-oriented tax provisions. In general, these taxpayers are more sensitive to tax uncertainty. Middle-class taxpayers, who are the primary beneficiaries for energy tax incentives, are particularly unlikely to purchase a more expensive, energy efficient product on the expectation that Congress will extend a tax credit retroactively. Likewise, manufacturers are unable to market those products as tax-credit eligible. As a result, when these types of credits are extended retroactively, the "winners" are more likely to have purchased the qualifying product anyway, while middle-class consumers will miss out.

179D - Energy Efficient Commercial Buildings Tax Deduction

The 179D tax incentive, which offers a $1,80 per square foot tax deduction to make commercial buildings, including multi-family residential, 50% more energy efficient (above code), has been somewhat successful in encouraging investment in green construction. Unfortunately the deduction is not being used to its full potential. Building industry professionals conclude that the market impact would be far greater with an increase in this benefit.

The "Commercial Building Modernization Act (S.3591)", introduced by Senators Jeff Bingaman (D-NM), Olympia Snowe (R-ME), Dianne Feinstein (D-CA) and Ben Cardin (D-MD), seeks to provide a more meaningful benefit by increasing the benefit to $3. NAHB believes that this will have a positive effect on the slowly recovering real estate industry and would ease the sticker shock from high initial costs of energy efficient features.

While new construction has benefited from this incentive, the market for renovations has been unable to take advantage of the deduction. Older buildings by default are less efficient than new properties and it is nearly impossible to bring these buildings up to the standards set forth by today's building codes, let alone make them 50% more efficient than the codes. Renovations, however, are incredibly important. 75-85% of existing buildings will still be in use in 2030. By ignoring them, we will never achieve significant energy reductions in the built environment. S. 3591 would expand the deduction to target these projects – setting realistic goals that use a performance based approach, comparing a building's performance to its past utility bills, and challenging building owners to push the envelope on energy savings. The bill establishes a sliding scale, which links the amount of the benefit to the amount of energy saved, thus providing motivation to surpass initial energy goals.

The 179D incentive is a very smart way to encourage efficiency. First, it does not choose winners and losers. It offers a product neutral incentive that provides builders and owners the flexibility to select materials and products that are the most cost effective and that best suit their collective needs.

Secondly, it corrects an unintended consequence of the existing tax code. Businesses currently deduct typical operating expenses from their taxes, including utility bills, so the higher the bill, the higher the deduction. In this way, businesses are offered a greater tax benefit for using more energy. The 179D deduction offsets these benefits. By qualifying for the deduction, not only would energy efficiency be incentivized, but these buildings would have lower utility bills, thus reducing the deduction taken for business expenses (energy use).

This particular bill also offers a technical fix that NAHB has long sought; to encourage projects developed using the low-income housing tax credit program (LIHTC) to incorporate energy efficiency measures. The 179D deduction requires a basis adjustment, which in turn reduces the amount of LIHTCs that can be used on the property. Because of this, developers have elected not to use the 179D deduction at all. This is unfortunate because those living in these buildings – low-income families – would benefit greatly from lower utility bills. S. 3591 provides that the basis of installed energy efficiency measures would not be reduced for homes financed with the low-income housing tax credits.

S. 3591 is direct, easy to understand and outcome based. NAHB believes that these changes will transform the incentive to ensure greater use and target the largest energy offenders in the built environment. As such, NAHB strongly encourages support for this legislation.

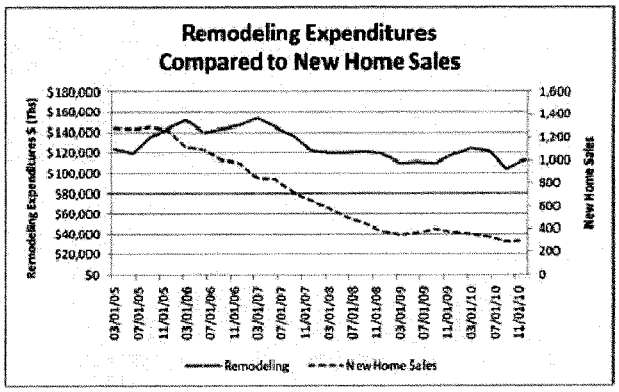
Section 25C – Qualified Energy Efficiency Improvements Tax Credit

The 25C tax credit began as a modest incentive for the purchase of qualified energy efficiency improvements for existing homes, such as windows, doors, roofs, and HVAC equipment. Originally, the 25C credit provided 10% of the cost of the product (not including installation and labor costs) not to exceed $500 but imposed various lower caps on specific energy efficient property, such as a maximum of $200 for window purchases. At the outset, the credit offered little appeal to existing homeowners because the specifications for the qualified improvements had price tags that far exceeded the tax credit. Further, the various caps caused confusion and added complexity. In 2009, the American Reinvestment and Recovery Act (ARRA) expanded the original 25C program and increased the credit to 30% with a $1,500 cap and included some labor and installation costs. All qualifying products now had the same cap, providing much needed simplicity. As a result, the appeal and popularity of this incentive soared and many retailers, manufacturers, and contractors advertised the newly-enhanced credit which encouraged business and fostered job growth in remodeling activity at the end of 2009 and 2010.

The success of the credit in those two years is unquestionable. IRS data for tax year 2009 also indicates that 25C was heavily used by middle-class homeowners. Of taxpayers claiming the credit, two-thirds had an adjusted gross income of $100,000 or less; 93% of taxpayers claiming the credit earned less than $200,000. Taxpayers in these income classes tend to be very price sensitive, and 25C arguably tipped the scales in favor of energy efficient equipment. Consider a simple window replacement: most homes have an average of twelve windows. Just installing basic windows is a substantial investment. As a result, middle-class homeowners undergoing window replacement today are less likely to install energy efficient windows based on a hope and prayer that Congress will retroactively extend the 25C tax credit later this year.

The lapse in the 25C tax credit will also impact overall economic activity in the remodeling sector. For example, for tax year 2009, over $5 billion of 25C tax credits were claimed. NAHB estimates that these tax credits were claimed in connection with over $25 billion in remodeling expenditures. Remodelers often leverage this tax credit when working with clients. These tax credits helped support the remodeling industry (see graph below) during a period in which new home sales experienced dramatic declines. NAHB estimates that the remodeling activity generated by this tax credit in 2009 was associated with over 278,000 full-time jobs. NAHB estimates that every $100,000 in remodeling expenditures creates enough work for 1.11 full-time equivalent jobs.[1] The programs supported approximately $13.2 billion in wages for these workers and $7.5 billion in net business income.

[1] THE DIRECT IMPACT OF HOME BUILDING AND REMODELING ON THE U.S. ECONOMY (HTTP://WWW.NAHB.ORG/GENERIC.ASPX?SECTIONID=734&GENERICCONTENTID=103543&CHANNELID=311), NAHB ECONOMICS PAPER.




NAHB strongly supports an extension of the Section 25C tax credit. To make it an effective incentive for 2013, action needs to be taken in the very near term. Long-term, NAHB would also urge Congress to simplify and modernize the new credit by increasing the $500 cap to $1,000; allow homeowners to claim installation costs for all eligible products; and remove the confusing lower caps. Adopting this 10% tax credit with a $1,000 cap will greatly simplify the current tax credit and provide an incentive that middle-class homeowners will continue to utilize to improve the efficiency of their homes. Ideally, NAHB believes this credit would be most effective as a permanent provision of the tax code.

Section 45L – New Energy Efficient Home Tax Credit

Also expired as of January 1, 2012, the Section 45L tax credit provided a $2,000 credit to builders of new homes that exceed a minimum energy code specification (2003 International Energy Conservation Code plus the 2004 supplement) by at least 50% in both heating and cooling efficiency. The efficiency performance must be independently verified by an authorized energy rater, and the credit is subject to both a basis adjustment and may not be claimed against alternative minimum tax (AMT) liability. Eligible homes include residences, single-family and multifamily, that are sold to owner-occupants or leased for rental purposes.

Although this credit has suffered from start-and-stop issues of short-term and retroactive extensions over the last five years, and has again expired at the end of 2011, the 45L program has managed to deliver the market transformation results that Congress intended to encourage. The chart below shows that from enactment the Section 45L credit went from 0.7% of the market in 2006 to 11% of the market for new homes in 2011.

| Year | Number of Homes Verified | % of New Homes Sold |
|---|---|---|
| 2006 | 7,110 | 0.7% |
| 2007 | 23,000 | 3% |
| 2008 | 22,000 | 5% |
| 2009 | 37,000 | 10% |
| 2010 | 21,000 | 7% |
| 2011 | 32,000 | 11% |

*Data provided by Residential Energy Services Network (www.natresnet.org)*[2]

In 2011, 11% of all the new homes sold met the energy thresholds of the Section 45L credit and were 50% or more energy efficient, with a nearly five-fold increase in total certified homes.

With the current lapse of this credit, builders who utilize this tax credit face the difficult decision of whether to continue to offer the benefits of this credit to their customers without knowing if the credit will be extended. This decision is made more difficult due to the ongoing housing depression and incredibly small margins most builders currently operate on. In fact, the impact of a retroactive extension can likely be linked in part to the drop in qualifying homes seen in 2010. In that tax year, all of the tax extenders, including 45L, lapsed for 11 ½ months before Congress extended them retroactively.

Home building is an industry driven by small, often family-owned businesses. According to NAHB's membership survey, 79% of home builders have fewer than 10 employees. Small business owners cannot afford to gamble on whether a tax credit will be extended retroactively. If a builder assumes the credit will not be extended, they may well lose a sale to another builder who assumes it will be and therefore quotes a lower price. The uncertainty created by the recent history of extending these tax provisions retroactively unfairly places small business owners between a rock and hard place. NAHB believes that Congress should not be placing businesses and consumers in the position of guessing the direction of tax policy. Congress has an obligation to create a degree of tax certainty rather than the current situation that leaves businesses to predict the future.

[2] This represents the actual number of homes certified by RESNET, which is the largest certifier. Some additional homes may have qualified through other eligible certifiers.

Role of the Tax Code in Energy Policy

Although some of these incentives would benefit from updates, nearly all of these tax incentives are performing exactly as Congress intended when establishing them back in 2005. Despite the unprecedented downturn in housing and the resultant recession, the increased amount of economic activity associated with the 179D tax deduction for energy efficient commercial buildings and retrofit incentives under 25C, combined with the stellar market penetration of new energy-efficient homes under 45L confirm that federal policies promoting building efficiency are effective, necessary, and accomplish broad conservation goals.

Some have argued for elimination of all energy and efficiency tax incentives in an effort to let the market determine the direction of costs and savings for consumers. Unfortunately, families that do not have the economic resources to undertake a meaningful energy upgrade will be sidelined in this process—as the data shows for Section 25C, taxpayers who used the credit are overwhelmingly middle-class families. And with or without these incentives, the Department of Energy is on a mission to federalize and mandate aggressive energy code requirements for new homes and buildings that will further deteriorate housing affordability. Some of these new and proposed requirements will prove to be very expensive to the consumer and will take decades to recover the investment, a payoff few homeowners will see as the average homeowner remains in their home for about ten years while the average home remains in the housing stock for 60 years or more. Further exacerbating the situation, appraisals often inappropriately or inaccurately value energy efficiency and energy-efficient features in homes, creating a regulatory disincentive for optional energy efficiency upgrades.

With an aging infrastructure and building stock, more American families are going to be relegated to living and working in less-efficient homes and buildings.[3] New construction is just now increasing from historic lows, and as the housing market begins to return to normal levels, consumers will be facing dramatically different mortgage qualification requirements and financing issues than before the downturn. The reality is that the oldest, least-efficient homes are the most affordable to families with lower and moderate incomes. Unfortunately, these families also bear the largest burden in energy costs, as a percentage of income.

Utilization of the tax code to promote energy efficiency and consumer savings is the most effective opportunity to truly shape an efficiency policy that is not punitive to the housing market as a whole, and creates jobs as a result. Many legislators have considered other incentives to stimulate this market – rebate programs, financing assistance, bond programs, etc. – and while these programs can be helpful, tax incentives are the most direct way to encourage energy efficiency. Consumers easily understand tax credits and deductions and because of this are more likely to take advantage of them. The use of the tax code to incentivize energy efficiency in buildings has a long history of bipartisan support. Much like other environmental rules and regulations, efficiency requirements are expensive, and ultimately the

[3] The average age of an owner-occupied home in the U.S. is now 35 years and climbing. See the following NAHB analysis for more detail ("An Aging Housing Stock," Eye on Housing blog, http://eyeonhousing.wordpress.com/2012/01/31/an-aging-housing-stock/ )

consumer bears the brunt of those costs. New home builders cannot absorb costly new mandates, and these costs will be passed onto new homebuyers. But to really improve home energy efficiency, we must look at the over 95 million rental and owner-occupied homes that were built before modern energy codes in 1991. Without effective tax incentives, those homes will continue to waste energy and cost the consumer money.

Testimony of

National Multi Housing Council
National Apartment Association

Hearing on

Tax Reform and Federal Energy Policy: Incentives to Promote Energy Efficiency

Before the

Subcommittee on Energy, Natural Resources, and Infrastructure
Committee on Finance

Submitted for the Record
December 18, 2012

1850 M Street, NW, Suite 540 ▪ Washington, DC 20036 ▪ 202.974.2300 ▪ FAX 202.775.0112 ▪ www.nmhc.org ▪ info@nmhc.org

Representing the nation's leading firms participating in the multifamily rental housing industry, the National Multi Housing Council and the National Apartment Association appreciate the opportunity to provide comments for the hearing record on *Tax Reform and Federal Energy Policy: Incentives to Promote Energy Efficiency*. The combined memberships of these organizations are engaged in all aspects of the apartment industry, including ownership, development, management, and finance. The National Multi Housing Council represents the principal officers of the apartment industry's largest and most prominent firms. The National Apartment Association is a federation of 170 state and local affiliates comprised of more than 55,000 multifamily housing companies representing more than 6.2 million apartment homes. NMHC and NAA jointly operate a federal legislative program and provide a unified voice for the private apartment industry.

In the 112th Congress, the Finance Committee compiled an extensive record on the topic of building energy efficiency and how the public policy goals of energy independence, environmental sustainability and job creation would be served by expanding opportunities to improve building performance. In particular, incentives promoting the improvement of existing buildings are a critical component of the measures under consideration. Advances in residential construction methods have improved the energy use profile of new buildings; however the majority of the Nation's building stock pre-dates the use of highly energy efficient products and techniques. The U.S. Department of Energy (DOE) reports that housing built after 2000 used 14 percent less energy per square foot than the housing built in the 1980's and 40 percent less than housing built before 1950.[1] As such, there is considerable room for improvement in energy performance even among well designed, constructed and maintained properties.

According to the American Housing Survey (2009) almost 81% of the Nation's stock of apartment properties (with 5 or more units) was constructed prior to 1990, which marks the decade in which the first building energy codes were implemented. This older stock of housing, which is an important source of affordable housing, represents a significant opportunity for achieving energy savings while at the same time adding to the available spending capacity of individuals who live in these apartment homes.

This is a significant consideration since in 2010, approximately 70 percent of renter households had incomes below the national median and more than 40 percent had incomes in the bottom quartile.[2] Furthermore, "energy costs as a share of gross rents rose from 10.8 percent to 15.0 percent between 2001 and 2009. Lowest income renters saw the largest increase in their utility share, a jump from 12.7 percent to 17.4 percent." Moreover, there is a direct relationship between the age of a residential building and energy expenditures. The per square foot energy costs of housing constructed between 1980 to 1989 is 16 percent higher than a building constructed after 2000. Those expenditures soar to a 28 percent increase in residential buildings built between 1970 and 1979 over post-2000 properties.[3] Energy efficiency in multifamily properties could be economically improved by 30 percent with a savings of $9 billion in averted energy costs not to mention the substantial savings in greenhouse gas emissions.[4]

NMHC/NAA believe that a sound national tax policy can be used to catalyze a market transformation marked by significant improvements in building energy performance. Various federal, state and local agencies have established programs with increasing levels of responsibility for property owners to measure and disclose their buildings' energy performance. DOE, for example, is piloting asset rating programs for both residential and commercial properties that are aimed at developing a numeric rating system for building design and performance. Several cities now require that property owners submit

---

[1] U.S. Department of Energy, 2011 Buildings Energy Data Book. March 2012. Chapter 2.
[2] Joint Center for Housing Studies of Harvard University. America's Rental Housing-Meeting Challenges, Building on Opportunities. 2011. p. 17 http://www.jchs.harvard.edu/sites/jchs.harvard.edu/files/americasrentalhousing-2011.pdf
[3] U.S. Department of Energy, *supra* note 1, at p. 2-20 derived from Table 2.3.12.
[4] Joint Center for Housing Studies of Harvard University, *supra* note 2, at p.33.

utility consumption data for their properties as a basis for establishing a rating program that would provide information to consumers regarding individual properties.

As energy performance programs shift from voluntary to mandatory participation, many existing properties will require significant capital investments in building systems in order to be considered favorably alongside buildings with newer systems and technological features. Indeed, DOE has endorsed commercial financing programs where by local governments create funds to be loaned to multifamily, commercial and industrial property owners to finance energy efficiency and renewable energy improvements that are paid back through property tax bills.

The current financial climate, while improving, still presents significant challenges for property owners who seek to layer additional debt on their properties. The combined forces of faltering job creation, loss of equity value across the real estate industry and the weak fundamentals in the commercial mortgage-backed securities market present real obstacles to re-financing efforts. If renovations on private property are seen as a public service that benefits society overall by reducing energy and water consumption, reducing pressures on infrastructure, lessening greenhouse gas emissions and contributing to national security, it will be necessary to develop additional financing tools to assist property owners in shouldering this responsibility.

A recent study conducted by CNT Energy and the American Council for an Energy-Efficient Economy finds that "[e]nergy efficiency upgrades provide a solution by improving the bottom line for multifamily building owners, decreasing pressure on rents, decreasing financial risk and improving tenant comfort. ... Building owners often need financial incentives to adopt new technologies or equipment with higher up-front costs. Despite this, studies have documented that affordable housing, often multifamily, receives a disproportionately small share of available energy efficiency funding." [5]

We believe that S. 3591, the Commercial Building Modernization Act will assist property owners in making meaningful improvement in the energy performance of their properties. The ability of many older properties to utilize the full measure of the current credit available through the Commercial Building Tax Credit (Sec. 179D of the Internal revenue Code of 1986) has been limited because these properties' have had difficulty in achieving the requisite 50% improvement in building energy performance over the level specified in the 2001 version of the in American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) 90.1 code. While S. 3591 includes updated energy code references against which whole building performance will be measured for many properties, it also includes a pathway for older properties to qualify for incentives that will assist property owners in making building system upgrades that will yield significant energy savings.

Older buildings generally have encountered technical limitations that prevent the structure from achieving the energy performance metrics specified by current code, let alone reaching the incremental "above-code" performance characteristics required to claim the tax credit. S. 3591 establishes a sliding scale of energy improvements, using the property's current energy performance as the baseline. This pathway of significant improvement in energy performance relative to the property's own baseline performance will provide a much needed financial tool for properties that want to make these types of investments but have not been able to do so.

A particular challenge for apartment properties comes in the fact that 80% of apartment residents pay their own utilities so any financial savings due to lowered utility consumption is largely unavailable to the property owner to offset the cost of investment in more efficient systems.[6] A predictable tax credit that would be available for at least 10 years would leverage private investment in qualified building retrofits and would have a positive effect on the economy as it would result in increased demand for

---

[5] CNT Energy and American Council for an Energy-Efficient Economy, Engaging as Partners in Energy Efficiency: Multifamily Housing and Utilities. January 2012. http://www.cntenergy.org/media/Engaging-as-Partners-in-Energy-Efficiency-MF-Housing-and-Utilities-Final-012512.pdf. p.4.

[6] Joint Center for Housing Studies of Harvard University, *supra* note 2, at 4.

construction services, materials and equipment. In order to maximize the drive to building performance upgrade, S. 3591 importantly permits certain property owners such as real estate investment trusts to allocate the credit to a third-party involved in the project.

NMHC/NAA appreciate the opportunity to submit comments for this hearing and look forward to working with the Committee on this matter in the 113th Congress. For additional information please contact Eileen Lee, Vice President of Energy and Environmental Policy, NMHC/NAA Joint Legislative staff (elee@nmhc.org).

NPGA
NATIONAL PROPANE GAS ASSOCIATION

Statement for the Record

**U.S. Senate Committee on Finance**

**Subcommittee on Energy, Natural Resources, and Infrastructure**

"Tax Reform and Federal Energy Policy: Incentives to Promote Energy Efficiency"

December 12, 2012

1899 L Street, NW | Suite 350 | Washington, DC 20036 TEL 202 466 7200 FAX 202 466 7205 WEB www.npga.org

NPGA
NATIONAL PROPANE GAS ASSOCIATION

December 20, 2012

The Honorable Max Baucus
Chairman
Committee on Finance
United States Senate
219 Dirksen Senate Office Building
Washington, D.C. 20510

The Honorable Orrin G. Hatch
Ranking Member
Committee on Finance
United States Senate
219 Dirksen Senate Office Building
Washington, D.C. 20510

Chairman Baucus and Ranking Member Hatch:

The National Propane Gas Association (NPGA) is the national voice for the odorized propane gas industry. NPGA's 3,000 member companies – the majority of which are small family-owned businesses – fuel homes, businesses and vehicles in all fifty states, and employ approximately 40,000 industry employees. We would like to submit this letter for the record of the hearing entitled "Tax Reform and Federal Energy Policy: Incentives to Promote Energy Efficiency", held before the committee on December 12, 2012.

Aside from propane's most well-known use in 42 million American backyard grills, nearly 10 million U.S. households rely on propane for space heating, cooking, hot water and many other needs. These households are predominantly non-urban and off the natural gas main, and they depend on propane gas as a clean-burning, efficient, low-cost and reliable alternative to fuel oil and/or electricity. As Congress considers policies to incentivize energy efficiency in American households and commerce, NPGA believes propane gas can play a significant role in achieving this common goal.

New innovation creates new and efficient uses for propane every day - commercial lawn mowers, furnaces, forklifts, water heaters, fleet vehicles and clothes dryers to name a few. Because propane is derived from natural gas liquids, the boom in American natural gas production has brought with it a boom in propane gas. In fact, 5 years ago propane was considered as a net import, with half of the supply produced from oil refining and the remainder from natural gas. Today, propane gas has grown to be considered a net export. Nearly 100 percent of propane is produced domestically with over 70 percent coming from natural gas sources. In 2011, the U.S. exported 12.7 percent of the total U.S. propane supply, and for 2012

that number is expected to be higher. These are supplies that could, and should, be used here at home.

NPGA believes that any tax incentives for appliance or equipment efficiency contemplated by Congress should require the use of a Full Fuel Cycle analysis as part of the energy efficiency equation. A Full Fuel Cycle (FFC) analysis is the most accurate way to calculate energy use as well as environmental emissions. FFC accounts for:

- Energy consumed in the extraction, processing and transport of primary fuels;
- Energy losses in electric power-generation or gas processing plants;
- Energy losses associated with transmission and distribution of fuel to the end user;
- Greenhouse gas (GHG) emissions associated with each step within this process.

An FFC analysis differs from a site energy, or point of use, analysis because efficiency measurements based on site, or point of use, do not account for the efficiency of all the upstream energy use and emissions associated with delivering the fuel to its point of use. Therefore, it fails to provide a complete energy efficiency, energy consumption and greenhouse gas profile.

The U.S. Department of Energy (DOE) announced on August 18, 2011 that it would adopt the recommendations of a study performed by the National Academy of Sciences, which concluded: "*DOE should consider moving over time to use of a full-fuel cycle measure of energy consumption for assessment of national and environmental impacts, especially levels of greenhouse gas emissions, and to providing more comprehensive information to the public through labels and other means, such as an enhanced website*".

NPGA supports the idea that FFC measurement enables a more comprehensive analysis of the total energy use and environmental impacts and should be included in any energy efficiency rating, building energy consumption, energy use, and energy savings test. It can be applied to everything from appliances to motor vehicles to small or large buildings.

An example of success whereby tax incentives were implemented to meet federal energy objectives is the alternative fuel vehicle credit and the alternative fuel vehicle refueling property credit. These credits were used for the propane powered, or 'autogas' as it is known in the propane industry, vehicle market. The autogas sector, particularly with fleet businesses, has burgeoned in recent years. Propane vehicles remain the most used alternative fuel vehicle on the road. The alternative fuel vehicle tax incentives stimulate the market, can increase buying-power with consumers, and create a clean, efficient, and economical alternative to gasoline and diesel.

Like their use in the autogas market, tax incentives for energy efficient appliances need this buying-power to compete, as well. But, tax incentives alone will not arm consumers with the tools they need to make informed purchases. Energy efficiency measurements must be changed to more accurately represent true energy efficiency and consumption.

Thank you for your time and consideration of this important economic issue.

Sincerely,

Richard Roldan
President & Chief Executive Officer
National Propane Gas Association

---

NPGA is the national trade association of the propane gas industry with a membership of approximately 3,200 companies, including 39 affiliated state and regional associations representing members in all 50 states. Although the single largest group of NPGA members is retail marketers of propane gas, the membership includes propane producers, transporters and wholesalers, as well as manufacturers and distributors of associated equipment, containers and appliances. More than 55 million households use propane gas for space heating, water heating, cooking, outdoor recreation, and other uses. Propane gas is also used in millions of installations nationwide for commercial heating and cooking, in agriculture, in industrial processing, and as a clean alternative engine fuel for over-the-road vehicles and industrial lift trucks.

National Roofing Contractors Association
Washington, D.C. Office
324 Fourth Street, N.E.
Washington, D.C. 20002
202/546-7584
Fax: 202/546-9289
http://www.nrca.net

December 21, 2012

The Honorable Jeff Bingaman
Chairman, Subcommittee on Energy, Natural Resources and Infrastructure
Senate Committee on Finance
U.S. Senate
Washington, DC 20510

Dear Mr. Chairman:

The National Roofing Contractors Association (NRCA) commends you for holding a hearing of the Senate Finance Committee's Subcommittee on Energy, Natural Resources and Infrastructure entitled "Tax Reform and Federal Energy Policy: Incentives to Promote Energy Efficiency" on Dec. 12, 2012. NRCA requests that this letter and enclosure be included in the hearing record.

Established in 1886, NRCA is one of the nation's oldest trade associations and the voice of professional roofing contractors worldwide. NRCA's approximately 4,000 members are located in all 50 states and typically are small, privately held companies, with the average member employing 45 people in peak season and attaining sales of about $4.5 million per year.

The roofing industry has an important role to play in advancing energy efficiency within our nation's commercial and residential buildings. Our members also believe that advancing greater levels of energy efficiency in buildings goes hand-in-hand with facilitating greater levels of economic growth and job creation.

NRCA believes that any tax reform legislation considered by Congress must provide pro-growth policies that enable entrepreneurs to grow their businesses and create jobs within our industry. Unemployment in the construction industry remains high and construction has been one of the hardest hit sectors of the economy over the past several years. Looking ahead, NRCA's members continue to struggle in difficult and uncertain economic conditions. As such, tax reform that facilitates robust economic growth is needed now more than ever, and NRCA urges Congress to pursue tax reforms that enhance economic growth as well as greater levels of energy efficiency.

**Depreciation Reform for Commercial Roofs**

Small and mid-sized businesses within the roofing industry are uniquely positioned to play an important role in creating high quality jobs for American workers. Congress should facilitate the creation of an estimated 40,000 private-sector jobs annually by passing legislation which reforms the depreciation schedule for commercial roofs. In addition to creating jobs among contractors and manufacturers, this legislation, the Energy-Efficient Cool Roof Jobs Act (S. 1575), will also enhance the energy efficiency of our nation's commercial buildings and simplify taxes for small businesses of all types. NRCA wishes to commend Senators Ben Cardin (D-MD) and Mike Crapo (R-ID) for their leadership on this bipartisan reform legislation.

Passage of depreciation reform legislation is necessary because between 1981 and 1993 the depreciation schedule for nonresidential property was increased from 15 years to 39 years. However, the current 39-year depreciation schedule is not a realistic measure of the average life span of a commercial roof. A study by Ducker Worldwide, a leading industrial research firm, determined the average life expectancy of a commercial roof to be 17 years.

The large disparity between the 39-year depreciation schedule and the average life span of a commercial roof is an incentive for building owners to delay the replacement of failing roofs. This slows economic activity and the adoption of more advanced energy-efficient roofs, because an owner who replaces a roof before 39 years have elapsed must continue to depreciate that roof for tax purposes even though it no longer exists. A Treasury Department Report to Congress on Depreciation Recovery Periods and Methods corroborated this problem by finding "...a 'cascading' effect, where several roofs are being depreciated at the same time, even though only one is physically present." Given this situation, many building owners choose to do only piecemeal repairs, most often with older technology, rather than replace a failing roof in its entirety with new, more energy-efficient materials.

S. 1575 would rectify this problem by reducing the depreciation schedule from 39 to 20 years for commercial roofs that meet a benchmark energy efficiency standard. This will facilitate job creation in the roofing industry by eliminating the disincentive in the tax code for building owners to delay full roof retrofits in favor of piecemeal repairs. Enactment of S. 1575 will also benefit small businesses of all types, not just roofing industry employers, by mitigating the "cascading effect" of having to depreciate more than one roof when a roof must be replaced before the 39-year depreciation schedule has been completed.

According to the Ducker Worldwide study, reforming the depreciation schedule for commercial roofs will produce the following benefits by accelerating demand for energy-efficient commercial roofs:

- Create an estimated 40,000 new jobs within the roofing industry;
- Add $1 billion of taxable annual revenue to the economy;
- Provide savings to small businesses of all types through a simpler and more equitable system of taxation and lower energy costs; and,
- Reduce U.S. energy consumption by 13.3 million kilowatt hours annually and cut carbon emissions by 20 million lbs. per year.

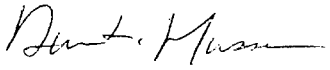
**Conclusion**

Given this unique combination of both job creation and energy-efficiency benefits, S. 1575 enjoys the support of a broad array of constituencies, including business, manufacturer, labor union and energy efficiency organizations. The bill will facilitate greater job creation not through implementation of a special tax incentive, but by the removal of an obstacle in the tax code which restricts economic growth and impedes the movement towards greater levels of energy efficiency within commercial buildings. As evidence of the broad support for this legislation, enclosed is a letter to the Chairman and Ranking Member of the Senate Finance Committee from twenty organizations in support of S. 1575.

Again, NRCA wishes to commend you for reviewing the issue of how tax reform can generate greater economic growth and improve our nation's energy efficiency policy, and also wishes to again commend Senators Cardin and Crapo for their leadership on S. 1575. NRCA looks forward to working with Congress towards the enactment of this or similar legislation which will achieve these vital goals. Please let me know if you have questions or need more information regarding this matter.

Thank you for your consideration of NRCA's views.

Sincerely,



Duane L. Musser
Vice President of Government Relations

Enclosure

October 4, 2011

The Honorable Max Baucus
Chairman, Committee on Finance
219 Dirksen Senate Office Building
Washington, DC 20510

The Honorable Orrin Hatch
Ranking Member, Committee on Finance
219 Dirksen Senate Office Building
Washington, DC 20510

Dear Chairman Baucus and Ranking Member Hatch:

We are a broad coalition of construction, manufacturing, energy efficiency and labor groups writing to express our **strong support for S. 1575, the Energy-Efficient Cool Roof Jobs Act, bipartisan legislation introduced by Senators Ben Cardin (D-MD) and Mike Crapo (R-ID)** that would remove an obstacle in the tax code that is hindering job creation as well as the advancement of energy-efficiency within the commercial building sector. We urge its quick consideration by the Finance Committee and/or its inclusion in any tax reform, energy or jobs-related tax legislation.

Unemployment in the construction industry remains an alarming 13.5 percent and any recovery in commercial construction is uncertain at best in the foreseeable future. By accelerating demand for energy-efficient commercial roofs, S. 1575 would:

- Create nearly **40,000 new jobs** among roofing contractors and manufacturers;
- Add **$1 billion of taxable annual revenue** in the construction sector;
- Save $86 million in energy costs in the first year;[1] and
- Eliminate and offset carbon emissions by 1.2 million metric tons (equal to emissions of 229,000 cars).[2]

S. 1575 would **remove an obstacle** in the tax code to job creation and achieving greater levels of energy-efficiency in the commercial building sector, which accounts for 18% of U.S. energy use. Between 1981 and 1993, the depreciation schedule for nonresidential property was increased from 15 to 39 years. However, the average life of a commercial roof is only 17 years. This is an incentive for building owners to delay the replacement of older, failing roofs with new energy-efficient technology that reduces energy consumption.

We urge the Committee to rectify this problem by advancing S. 1575, which provides a 20-year depreciation recovery period for commercial roofs that meet a benchmark energy efficiency standard. Providing more rational "economic" depreciation that is consistent with the life of the asset will accelerate demand for such roofs by removing the disincentive for building owners to delay complete retrofits of failing roofs. An independent study by Ducker Worldwide, a global research firm, estimated that reforming the 39-year depreciation schedule will create **nearly 40,000 manufacturing and construction jobs per year and add $1 billion of taxable annual**

[1] J. Phelan. 2009. Energy and Environmental Impact Reduction Opportunities for Existing Buildings with Low-Slope Roofs. Bayer MaterialScience.
[2] J. Phelan. 2009, and H. Akbari, S. Menon and A. Rosenfeld. 2009. Global cooling: increasing world-wide urban albedos to offset CO2. *Climatic Change*, 94, pp. 275-286.

**revenue** in the construction sector. This study also documented the 17-year average life of a commercial roof.

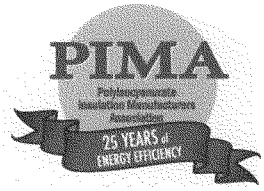
Due to the unique job creation and energy efficiency benefits of depreciation reform for commercial roofs, S. 1575 has the support of a diverse coalition of business, conservation, and labor groups. We urge Congress to quickly move forward with this legislation to help spur economic growth and job creation in the hard-hit construction industry.

Best regards,

Alliance to Save Energy (ASE)
American Council for an Energy-Efficient Economy (ACEEE)
American Institute of Architects (AIA)
American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE)
Associated Builders & Contractors (ABC)
Associated General Contractors (AGC)
Building Owners and Managers Association International (BOMA)
Business Council for Sustainable Energy (BCSE)
Center for Environmental Innovation in Roofing (CEIR)
Environmental and Energy Study Institute (EESI)
Institute for Market Transformation (IMT)
International Council of Shopping Centers (ICSC)
Joint Roofing Industry Labor and Management Committee
National Roofing Contractors Association (NRCA)
Polyisocyanurate Insulation Manufacturers Association (PIMA)
Sheet Metal and Air Conditioning Contractors' National Association (SMACNA)
Spray Polyurethane Foam Alliance (SPFA)
Sustainable Buildings Industry Council (SBIC)
United Union of Roofers, Waterproofers and Allied Workers
U.S. Green Building Council (USGBC)

cc: Senator Ben Cardin
Senator Mike Crapo

**Statement of the Polyisocyanurate Insulation Manufacturers Association**




Senate Finance Subcommittee on Energy, Natural Resources & Infrastructure Hearing from December 12, 2012
**Tax Reform and Federal Energy Policy: Incentives to Promote Energy Efficiency**

*Submitted by: Jared Blum, President*
*Polyisocyanurate Insulation Manufacturers Association*
*7315 Wisconsin Avenue, Suite 400E*
*Bethesda, Maryland 20814*
*301-654-0000*
*www.polyiso.org*

The Polyisocyanurate Insulation Manufacturers Association (PIMA) would like to thank Chairman Bingaman and members of the Subcommittee for the opportunity to comment on proposals for overcoming obstacles and disincentives that currently exist in the market place and in the tax code to improved building energy efficiency. Specifically, we would like to comment on S. 3591, the Commercial Building Modernization Act, introduced by Senators Snowe, Bingaman, Cardin, and Feinstein, and S. 1575, the Energy-Efficiency Cool Roof Jobs Act, introduced by Senators Cardin and Crapo. In addition to removing obstacles and disincentives to energy efficiency, passage of both bills would increase employment within the construction sector (close to 40,000 new jobs among roofers and roofing product manufacturers, in the case of S. 1575).

Accounting for 19% of the nation's total energy usage, policies directed at commercial buildings are essential to improving the energy-efficiency of our economy. In terms of what is possible, the Energy Information Administration (EIA) estimates that the energy use intensity (EUI) of commercial buildings, as a whole, could be reduced 20% between now and 2035 with policies encouraging best practices. Also, the Advanced Energy Retrofit Guides (AERGs) prepared by the Department of Energy this year estimate that office and retail buildings (representing 30% of commercial building energy use) are capable of reducing energy use between 45%-59% in a cost effective manner. Clearly, there is great potential here for more efficient use of energy, but this potential is likely to go unrealized without the proper federal support and tax policy.

There are several important barriers to energy efficient building practices, including split incentives (*i.e.*, the person expected to pay extra for the superior construction or product is often different from the person who pays the energy bills) and the emphasis on first-cost considerations over long-term energy savings. This last barrier is highlighted in recent surveys indicating that most building owners are only interested in energy efficiency investments that

have a return on investment of four years or less, which leaves all but the lowest hanging fruit unutilized. [1]/

Another important barrier to improved energy efficiency is the current 39-year depreciation schedule that applies to major building components. This relatively long depreciation schedule is an incentive for building owners to postpone the replacement of building components that normally wear out far sooner than 39 years, components such as roof coverings (17 yrs.) and HVAC equipment (17-23 yrs.). The American Council for an Energy-Efficient Economy (ACEEE) recently released a paper explaining that depreciation periods are too long for many building components and discourages building improvements and upgrades that would likely result in improved energy efficiency. [2]/

We believe at least two pending legislative proposals would be effective in addressing these barriers:

- S. 1575, the Energy-Efficiency Cool Roof Jobs Act, introduced by Senators Cardin, Crapo; and
- S. 3591, the Commercial Building Modernization Act, introduced by Senators Snowe, Bingaman, Cardin, and Feinstein.

**The Energy-Efficiency Cool Roof Jobs Act**

S. 1575, the Energy-Efficient Cool Roof Jobs Act, would provide a 20-year depreciation period (instead of the current 39 years) for commercial roofs that meet minimum R-values that are significantly higher (*i.e.*, requiring more insulation) than those required under state and local building codes and that have a white or other highly reflective surface. This change would correct an inequity in the current depreciation system (*i.e.*, the average life span of a low-slope roof is only 17 years) and would improve the energy-efficiency of buildings. The required R-values under the proposed legislation are identical to the prescriptive requirements found under the ASHRAE standard 189.1-2011, "Standard for the Design of High-Performance, Green

---

[1]/ The Institute for Building Efficiency (Johnson Controls) has, since 2007, surveyed facility managers and others involved in building operation decisions for information relevant to their decisions to implement building efficiency upgrades. Over the life of this survey, between 75% and 80% of the respondents report that a return on investment of 6 years or less is required and between 54% and 63% require a ROI of less than 4 years. Energy Efficiency Indicator, Institute for Building Efficiency, reports from 2007-2011. http://www.institutebe.com/Energy-Efficiency-Indicator.aspx?lang=en-US. In a similar survey conducted by the Economist this year, 423 executives worldwide in the real estate and building construction sectors (a forth of which are from the U.S.) indicated even shorter payback requirements. 90% of the U.S. respondents said their companies require a payback period of 5 years or less on energy efficiency investments, and 56% require a 1-3 year payback period. http://www.managementthinking.eiu.com/energy-efficiency-and-energy-savings.html and http://www.managementthinking.eiu.com/sites/default/files/downloads/EIU_GBPN_EnergyEfficiency_120921r3.pdf

[2]/ Depreciation: Impacts of Tax Policy, Harvey Sachs, Christopher Russell, Ethan Rogers, and Steven Nadel, April 2012, http://www.aceee.org/files/pdf/white-paper/depreciation-tax-paper.pdf

Buildings." This legislation would be limited to retrofits of existing low-slope roofs, and would not be available to new buildings.

S. 1575 complements the approach taken in S. 3591 (discussed below) by focusing on the roof, which is the only building envelop component that is regularly replaced, but rarely upgraded to address energy and other environmental impacts. Most existing buildings were constructed before building energy codes were first developed in the mid-1970s or constructed under relatively weak codes, so these older, under-insulated roofs offer an important opportunity for increased energy savings. Over the next 17 years, the weather proof membranes on all commercial roofs will be replaced or recovered, which is the most cost effective time to add needed insulation because the insulation is placed directly under the membrane. This is also the best time for building owners to switch to a "cool," reflective roof surface.

The insulation R-values required under S. 1575 are based on prior analysis and modeling demonstrating that compliance will result in significant long-term energy efficiency improvements, so modeling for IRS compliance will not have to be repeated every time a roof is upgraded. This will result in lower compliance costs and a greater adoption rate. The insulation R-value requirements are also technology neutral in that any type of insulation can be used, including spray foam, polyiso, polyurethane, and other products. As you can see from the attached letter that was sent to the Committee last year, S. 1575 enjoys broad support from construction, manufacturing, energy efficiency and labor groups.

**S. 1575 Energy, Environmental & Employment Benefits**

By combining increased insulation with cool roofs, this policy would result in several different energy & environmental benefits.

- **Increase in Building Energy-Efficiency:** temperatures on a traditional dark colored roof can be 50 to 90°F warmer than the air. Cool roofs reduce the temperature of the roof surface and the amount of heat that is transmitted into the building, which results in reduced building air conditioning loads and, in most areas of the country, lower annual energy bills for building owners. Widespread adoption of cool roofs and increased insulation levels when roofs are replaced or re-coved would reduce whole-building energy use by an average of 7 percent and save over $12 billion in the first ten years. These savings estimates are supported by several energy modeling studies performed by Bayer MaterialScience, 3/

3/ J. Phelan. 2009. Energy and Environmental Impact Reduction Opportunities for Existing Buildings with Low-Slope Roofs. Bayer MaterialScience.

Lawrence Berkley National Laboratory, 4/ and the National Renewable Energy Laboratory. 5/

- **Reduction in Global Warming:** cool roofs reflect solar radiation away from the earth where it would otherwise be absorbed and then released as infrared radiation (heat). A recent study measured this cooling effect and calculated the $CO_2$ emissions reduction, or the $CO_2$ offset, that would be equal to the cooling effect of highly reflective surfaces. 6/ This significant offset is reported in the table below.

- **Reduction in the Urban Heat Island Effect:** urban areas tend to have warmer air temperatures than the surrounding rural landscape because of the low solar reflectance, or albedo, of buildings, streets, and pavements. The annual mean air temperature of a city with 1 million people or more can be 2 to 5°F warmer. Reducing temperatures in these areas will result in reduced building air conditioning loads for all buildings, not just those with cool roofs.

| | |
|---|---|
| **Potential benefits after 10 years if 70% of each year's regular low-slope roof replacements (1.53 billion $ft^2$/year) use increased insulation and white/reflective surfaces** | |
| Ten year cumulative benefits | $12.2 billion in energy cost savings. |
| | 1,460 trillion Btu in source energy savings (1.46 Quads). |
| | 105 million tonnes of $CO_2$ emissions avoided through energy-efficiency and 42 million tonnes offset through the white roof albedo affect for a total of 147 million tonnes. This is equal to the annual emissions from 28 million passenger vehicles, a number that is greater than the passenger vehicles registered in Pennsylvania, New York, and New Jersey combined. 147 million tonnes of $CO_2$ is also equal to the annual emissions of 38 coal fired power plants. |
| Annual benefits in tenth year | $2.4 billion in energy cost savings |
| | 266 trillion Btu in source energy savings (0.26 Quads) |
| | 19.1 million tonnes of $CO_2$ emissions avoided through energy-efficiency and 7.7 million tonnes offset through the white roof albedo affect for a total of 26.8 million tonnes. This represents 2.5% of the current $CO_2$ emissions from the entire commercial buildings sector, a sector that is responsible for 19% of U.S. energy use and carbon emissions. |
| **Benefits of S. 1575 after only one year** | |
| One Year | Create nearly 40,000 new jobs among roofers and roofing product manufacturers and add $1 billion of taxable annual revenue from the roofing industry; 7/ |
| | Reduce U.S. energy consumption by 11. 4 trillion Btu and save small businesses and consumers $86 million in energy costs; 8/ |
| | Reduce $CO_2$ emissions by approximately 800,000 tonnes (through energy efficiency improvements) and offset an additional 400,000 tonnes (through white roof albedo effect) for a total benefit of 1.2 million tonnes reduced or offset (equal to emissions from 229,000 cars); 9/ |

4/ R. Levinson and H. Akbari. 2010. Potential benefits of cool roofs on commercial buildings: conserving energy, saving money, and reducing emission of greenhouse gases and air pollutants. Energy Efficiency, 3 (1), 53-109.

5/ Technical Support Document: Development of the Advanced Energy Design Guide for K-12 Shools—30% Energy Savings, (September 2007), S. Pless, P. Torcellini, and N. Long, the National Renewable Energy Laboratory (pages 141-145), http://www.nrel.gov/docs/fy07osti/42114.pdf.

6/ H. Akbari, S. Menon and A. Rosenfeld. 2009. Global cooling: increasing world-wide urban albedos to offset CO2. *Climatic Change*, 94, pp. 275-286.

7/ Ducker Worldwide, (2003) Comprehensive Nonresidential Building Analysis to Estimate the Current Reality of Roofing Longevity.

8/ J. Phelan. 2009.

9/ J. Phelan. 2009. and H. Akbari *et al.* 2009.

**The Commercial Building Modernization Act**

S. 3591 would improve the existing deduction for energy efficient commercial buildings under section 179D of the Internal Revenue Code and create a new, section 179F, deduction for comprehensive, multi-system energy-efficient building retrofits. It is generally recognized that, except for lighting retrofits, the existing section 179D deduction has not lived up to expectations. The reforms proposed under S. 3591 would address two central problems with the current program: (1) the deduction levels are set too low; and (2) the energy savings targets are very difficult or impossible to reach for most building retrofits. S. 3591 is intended as an incentive for comprehensive "deep" retrofits of multiple building systems together, not simply one system upgrades.

**Proposed Reforms to Section 179D under S. 3591**

- The deduction amounts would be raised to $3.00 for the whole building incentive and $1.00 for a one-system partial deduction (or $2.20 for a partial deduction that combines HVAC and envelope measures).
- Real Estate Investment Trusts, Limited Liability Partnerships and other real estate holding structures would be allowed to use the tax benefit.
- The baseline for measuring energy savings would be updated to ASHRAE Standard 90.1-2004 for years 2012 to 2014 and ASHRAE Standard 90.1-2007 for years 2015 and 2016.

**Proposed New Section 179F Deduction under S. 3591**

- A "sliding scale" deduction would be available to buildings that implement a "certified retrofit plan" that is designed to achieve a reduction in source energy use of 20% or more. The deduction amount would range from $1.00 to $4.00 per square foot of floor space, depending on the level energy savings.
- 60% of the deduction would be claimed by the taxpayer in the year the retrofit plan is implemented and the remaining 40% would be claimed (2 years later) after the energy savings is "verified."
- The energy use baseline (i.e., the energy used over one year prior to implementation of the retrofit plan) and the verified energy savings would be determined using the building's actual energy bills and a benchmarking tool, such as EPA's Portfolio Manager.

*PIMA is the trade association for manufacturers of rigid polyiso foam insulation, a product that is used in most low-slope commercial roofs as well as in commercial and residential wall construction. Polyiso production have a nationwide presence with manufacturing facilities located across the United States, including: 30 polyiso plants in 17 different states and several chemical plants and research centers responsible for the supply of raw materials used in the manufacture of polyiso. Nearly 100% of polyiso and the polyiso raw materials used in the U.S. are produced in the U.S.*

***Attachment***

October 4, 2011

The Honorable Max Baucus
Chairman, Committee on Finance
219 Dirksen Senate Office Building
Washington, DC 20510

The Honorable Orrin Hatch
Ranking Member, Committee on Finance
219 Dirksen Senate Office Building
Washington, DC 20510

Dear Chairman Baucus and Ranking Member Hatch:

We are a broad coalition of construction, manufacturing, energy efficiency and labor groups writing to express our **strong support for S. 1575, the Energy-Efficient Cool Roof Jobs Act, bipartisan legislation introduced by Senators Ben Cardin (D-MD) and Mike Crapo (R-ID)** that would remove an obstacle in the tax code that is hindering job creation as well as the advancement of energy-efficiency within the commercial building sector. We urge its quick consideration by the Finance Committee and/or its inclusion in any tax reform, energy or jobs-related tax legislation.

Unemployment in the construction industry remains an alarming 13.5 percent and any recovery in commercial construction is uncertain at best in the foreseeable future. By accelerating demand for energy-efficient commercial roofs, S. 1575 would:

- Create nearly **40,000 new jobs** among roofing contractors and manufacturers;
- Add **$1 billion of taxable annual revenue** in the construction sector;
- Save $86 million in energy costs in the first year;[1] and
- Eliminate and offset carbon emissions by 1.2 million metric tons (equal to emissions of 229,000 cars).[2]

S. 1575 would **remove an obstacle** in the tax code to job creation and achieving greater levels of energy-efficiency in the commercial building sector, which accounts for 18% of U.S. energy use. Between 1981 and 1993, the depreciation schedule for nonresidential property was increased from 15 to 39 years. However, the average life of a commercial roof is only 17 years. This is an incentive for building owners to delay the replacement of older, failing roofs with new energy-efficient technology that reduces energy consumption.

We urge the Committee to rectify this problem by advancing S. 1575, which provides a 20-year depreciation recovery period for commercial roofs that meet a benchmark energy efficiency standard. Providing more rational "economic" depreciation that is consistent with the life of the asset will accelerate demand for such roofs by removing the disincentive for building owners to delay complete retrofits of failing roofs. An independent study by Ducker Worldwide, a global research firm, estimated that reforming the 39-year depreciation schedule will create **nearly 40,000 manufacturing and construction jobs per year and add $1 billion of taxable annual**

---

[1] J. Phelan. 2009. Energy and Environmental Impact Reduction Opportunities for Existing Buildings with Low-Slope Roofs. Bayer MaterialScience.
[2] J. Phelan. 2009, and H. Akbari, S. Menon and A. Rosenfeld. 2009. Global cooling: increasing world-wide urban albedos to offset CO2. *Climatic Change*, 94, pp. 275-286.

***Attachment***

**revenue** in the construction sector. This study also documented the 17-year average life of a commercial roof.

Due to the unique job creation and energy efficiency benefits of depreciation reform for commercial roofs, S. 1575 has the support of a diverse coalition of business, conservation, and labor groups. We urge Congress to quickly move forward with this legislation to help spur economic growth and job creation in the hard-hit construction industry.

Best regards,

Alliance to Save Energy (ASE)
American Council for an Energy-Efficient Economy (ACEEE)
American Institute of Architects (AIA)
American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE)
Associated Builders & Contractors (ABC)
Associated General Contractors (AGC)
Building Owners and Managers Association International (BOMA)
Business Council for Sustainable Energy (BCSE)
Center for Environmental Innovation in Roofing (CEIR)
Environmental and Energy Study Institute (EESI)
Institute for Market Transformation (IMT)
International Council of Shopping Centers (ICSC)
Joint Roofing Industry Labor and Management Committee
National Roofing Contractors Association (NRCA)
Polyisocyanurate Insulation Manufacturers Association (PIMA)
Sheet Metal and Air Conditioning Contractors' National Association (SMACNA)
Spray Polyurethane Foam Alliance (SPFA)
Sustainable Buildings Industry Council (SBIC)
United Union of Roofers, Waterproofers and Allied Workers
U.S. Green Building Council (USGBC)

cc: Senator Ben Cardin
Senator Mike Crapo

SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION

**Submission of**
**The Sheet Metal and Air Conditioning Contractors' National Association, Inc.**
**(SMACNA)**

**To the Senate Committee on Finance**
**Subcommittee on Energy, Natural Resources and Infrastructure**

**Hearing on Tax Reform and Federal Energy Policy:**
**Incentives to Promote Energy Efficiency**

**December 12, 2012**

Stanley E. Kolbe, Jr., Director
Legislative Affairs

LEGISLATIVE AFFAIRS OFFICE: 305 4TH STREET NE • WASHINGTON DC 20002
PHONE: 202 547 8202 • FAX: 202 547 8810
HEADQUARTERS: 4201 LAFAYETTE CENTER DRIVE • CHANTILLY VA 20151-1209
MAIL ADDRESS: P.O. BOX 221230 • CHANTILLY VA 20153-1230
PHONE: 703 803 2980 • FAX: 703 803 3732
WEB: *www.smacna.org*

Dear Chairman and Ranking Members:

The Sheet Metal and Air Conditioning Contractors' National Association (SMACNA) is supported by more than 4500 construction firms engaged in industrial, commercial, residential, architectural and specialty sheet metal and air conditioning construction in public and private markets throughout the United States. SMACNA members can be found on a wide variety of commercial, industrial and residential projects across the nation in urban and suburban areas, most advancing energy efficiency outcomes. We specialize in heating, ventilation and air conditioning; architectural sheet metal; industrial sheet metal; kitchen equipment; specialty stainless steel work; manufacturing; siding and decking; testing and balancing; service; and energy management and maintenance.

On behalf of SMACNA, I want to submit our statement for the December 12, 2012 hearing record to the Senate Finance Committee Energy, Natural Resources and Infrastructure Subcommittee concerning the hearing on Tax Reform and Federal Energy Policy: Incentives to Promote Energy Efficiency.

SMACNA and its thousands of contracting corporate members would like to express our enthusiastic support for **S. 3591, The Commercial Building Modernization Act**, bipartisan legislation introduced by Senators Snowe and Bingaman with the co-sponsorship of Senators Cardin and Feinstein. **S. 3591** would expand upon an efficiency based energy initiative represented by the Better Buildings Initiative (BBI). The BBI is a balanced policy featuring tax and program investment incentives producing greater efficiency in residential, commercial and public facilities. All of these initiatives have created construction activity, skilled jobs, economic growth and energy savings with improvement to environmental quality. **S. 3591**, especially its reformed IRS Section 179D provision, would increase energy efficiency retrofits as well as offer deep and lasting cuts to the energy bills for business and public facilities.

While there has been a far greater interest in new and existing building energy efficiency retrofits in recent years, SMACNA joined with the Energy Future Coalition, Rebuilding America and a coalition of construction allies including real estate developers and commercial property owners supporting greater tax initiatives similar to the reformed Section 179D in **S. 3591**. By expanding incentives for whole ($3.00/sf) and partial ($2.20/sf) building renovations, **S. 3591** would encourage a far wider variety of energy efficiency retrofit projects. In addition, by including Real Estate Investment Trust properties (REIT's) in the pool of projects eligible for allocation of the 179D incentive, the reform of 179D as featured in **S. 3591** would also jump start many projects long sidelined while industry economic activity and employment suffered.

Enhancing facility energy efficiency is a key factor in driving down the operating expenses of public spaces while boosting the productivity and commercial competitiveness of rental properties. We speak from vast experience as thousands of our contractor members have retrofitted commercial office buildings, warehouses, schools and multi-unit residential facilities for high efficiency impact. Our experience convinces us that the reforms to IRS Section 179D would enhance commercial efficiency retrofits and spur building quality in new construction projects as well.

Senator Snowe and Senator Bingaman have produced a balanced and bipartisan reform in **S. 3591** that will invigorate energy efficiency construction activity across the United States to benefit building owners with lower operating costs. When coupled with existing energy efficiency tax and program initiatives driving the private sector toward greater energy efficiency, **S. 3591** would quickly benefit skilled jobs, energy efficiency equipment suppliers and the construction economy in general.

SMACNA urges the quick passage of **S. 3591, The Commercial Building Modernization Act**, and energy efficiency incentives contained in the tax extender package during the post-election session of Congress.

**STATEMENT FOR THE RECORD**

**OF**

**SOLIS PARTNERS, INC.**

**FOR THE HEARING OF**

**"TAX REFORM AND FEDERAL ENERGY POLICY: INCENTIVES TO PROMOTE ENERGY EFFICIENCY"**

**BEFORE**

**THE U.S. SENATE COMMITTEE ON FINANCE**
**SUBCOMMITTEE ON ENERGY, NATURAL RESOURCES, AND INFRASTRUCTURE**

**DECEMBER 12, 2012**

SUBMITTED BY
Jamie Hahn, Managing Director
Solis Partners, Inc.
2520 Hwy. 35, Suite 301,
Manasquan, NJ 08736
732.800.0052 ▪ http://www.solispartners.com/

Located in Manasquan, NJ, Solis Partners, Inc. is a leading energy services provider committed to helping customers increase the value of their companies by optimizing energy generation and resource efficiency. Our solutions utilize intelligent lighting systems, distributed energy generation, and project/development services to deliver high quality, low cost and environmentally responsible building solutions that perform better. Our customers have reduced energy consumption, lowered operating costs, reduced emissions, and improved system efficiencies while creating a more comfortable environment for building occupants.

As specialists in finance and design, we work closely with our clients to help them understand their energy options, the federal and state requirements, as well as the financial benefits they can realize. In this sense, we recognize the key role EPAct 179D has played a significant role in opening the way to the transition toward energy efficient technology.

With regard to the current 179D Deduction for Energy efficient Commercial Buildings, Solis Partners, Inc. is extremely interested in: extending 179D past 2013, increasing the maximum 179D deduction to $3.00, expanding the eligible building categories to include REITs and non profits, and broadening of the beneficiary base, particularly for capital providers.

Concerning the proposed Section 179F Deduction for Retrofits of Existing Commercial and Multifamily Buildings, with a maximum $4.00 per square foot tax deduction, we are very interested in working on larger projects where 50% energy cost reduction can be achieved from the current building energy state but not as compared to modern building energy codes.

**Energy Efficiency and Renewable Energy**

Since its creation, Solis Partners, Inc. provides turnkey solar energy solutions from system design, financial structuring and material procurement to installation, project management, commissioning and production monitoring. It is our utmost objective that our renewable energy systems deliver optimal returns to our customers. To this end, we understand that the use of alternative energy must go hand in hand with energy efficiency improvements.

It is our experience that buildings that prepare for solar photovoltaic systems by installing energy efficient technology can enjoy increased overall economic payback, due to lower levels of energy consumption. Lighting upgrades, for instance, can significantly reduce energy costs. Replacing outdated and inefficient HVAC systems can not only cut energy expenses but also maximize the useful roof space. Furthermore, replacing roofs at or near the end of their useful life cycle is highly recommended in order to improve insulation. EPAct 179D has played a major role in assisting building owners to undertake this sort of project.

The use of alternative energy in efficient facilities is bound to generate major savings in operating costs as well as guaranteeing a reduced economic payback time for investments.

**New Technology Can Accomplish Major Building Energy Cost Reduction**

Continuing technology developments have resulted in new, typically more expensive products that can meet the aggressive energy reduction targets embodied in the currently proposed 179D extension.

For lighting, this includes greatly improved LED lighting products now available for virtually all building categories along with wireless controls and smart sensors. For HVAC, this includes extremely efficient technologies for commercial buildings, such as high efficiency chillers and natural gas heaters. For building envelope, recent advances include better materials, cool roofs, better insulation, and improved glass and window systems.

**Building Retrofits Provide Large Employment Opportunities**

Large numbers of existing building retrofits require a considerable amount of skilled and semi-skilled work forces.

Lighting retrofits require lighting designers, laborers to remove and dispose existing fixtures, distribution centers to store the new lighting material, laborers to stage the new material near the job site and electricians to install the new fixtures.

HVAC retrofits require engineers for project system design, substantial U.S. manufacturing activity (most HVAC equipment is heavy and made in the U.S.), U.S. steel procurement and HVAC mechanics to install.

The building envelope involves a wide variety of manufactured and workshop materials including roofs, walls, windows, doors, foundations and insulation. In addition to the labor required to create these products, large numbers of roofers, carpenters, installers and laborers are needed to handle the material and incorporate it into a building.

**The 179D Tax Incentive Actually Results in Increased Tax Revenues**

By providing a tax incentive for energy cost reduction, the U.S. Treasury is actually enabling larger future tax revenues. When a commercial property owner materially reduces their energy related operating tax costs, their taxable income increases by exactly the amount of the energy cost reduction. Although the 179D tax incentive is only for the first (one) year of project completion, the company's taxable income will be increased annually every year (perpetually). When a government organization materially reduces its energy costs, it can reduce its budget deficit that may be used to reduce tax levies, including real property taxes at the local level or meeting other more vital community needs.

**REITs**

It is particularly important to provide an incentive for REIT energy reductions service providers. REITs are the largest holders of large institutional grade real estate in the country. Major REIT categories include; 1. Office buildings, 2. Apartment buildings, 3. Shopping centers, 4. Hotels, 5. Warehouse/industrial and 6. Data centers.

The REIT model is largely a tenant model and for the most part REIT's have not endeavored to materially reduce energy costs simply because they don't pay the energy bill. With REITs, the tenant bears the burden of the monthly energy bill. With America's large service-based economy, large service businesses operating from offices bear the burden of unnecessary energy bills. With apartment REITs, it is renters who bear the burden of unnecessary energy bills. With shopping centers, it is retailers and shoppers that bear the burden of unnecessary energy costs. With hotel REITs, it is nightly guests who bear the burden of unnecessary costs in their room rates. In the REIT warehouse and industrial sector, it is America's engines of commerce that bear the burden of unnecessary energy costs. Data Centers are huge consumers of electricity and hence directly responsible for large amounts of emissions. Accordingly with Data Center REITs, all of American society bears the burden of unnecessary energy costs.

**Conclusion**

Solis Partners, Inc. greatly appreciates the opportunity to submit this statement for the record. We firmly believe that the proposed extension and expansion of 179D and 179F are a unique opportunity of bringing our country to a much higher level of energy efficiency therefore preparing buildings to an optimum use of renewable energy sources.

**STATEMENT FOR THE RECORD**

**OF**

**TRIO ELECTRIC & TRIO ENERGY**

**FOR THE HEARING OF**

**"TAX REFORM AND FEDERAL ENERGY POLICY: INCENTIVES TO PROMOTE ENERGY EFFICIENCY"**

**BEFORE**

**THE U.S. SENATE COMMITTEE ON FINANCE**
**SUBCOMMITTEE ON ENERGY, NATURAL RESOURCES, AND INFRASTRUCTURE**

**DECEMBER 12, 2012**

SUBMITTED BY

Trio Electric & Trio Energy
11413 Todd Street
Houston, TX 77055
(713) 957-3336 • http://www.trioltd.com/

Headquartered in Houston, TX, Trio Electric is a privately held, full-service electrical contracting firm. Through its wholly-owned subsidiary, Trio Energy, the company provides turn-key energy solutions to clients from different sectors, such as commercial, industry, and education. Our location in Texas, one of the country's fastest growing population centers, gives us an increased sense of responsibility for incorporating energy efficiency into a rapidly expanding building inventory.

Our highly qualified team of professionals identifies, designs, and installs projects that lower operating expenses while benefiting the environment. Our services and solutions cover a broad range of projects both ahead of and behind the utility meter, such as lighting retrofit, window film installation, LEED feasibility and Energy Star Audits, power quality analysis, infrared scanning, and various other energy-savings projects.

Since 2008, EPAct 179D has been of great assistance to our ultimate goal of designing projects that benefit the environment while lowering our clients' operating costs. We have utilized EPAct 179D on several projects, which comprise a wide variety of energy-efficient buildings, from manufacturing and commercial facilities to schools and government buildings.

At Trio Electric & Trio Energy, we aim at continuously providing our clients with energy-efficient solutions. Therefore, we are extremely interested in the extension of 179D Deduction for Energy Efficient Commercial Buildings past 2013. Also, we see great value in the proposals of increasing the maximum 179D deduction to $3.00 per square foot, expanding the eligible building categories to include REITs and non profits, and broadening the beneficiary base, particularly for capital providers.

With regard to the new Section 179F Deduction for Retrofits of Existing Commercial and Multifamily Buildings, with a maximum $4.00 per square foot tax deduction, Trio Electric & Trio Energy are very interested in working on larger projects where 50% energy cost reduction can be achieved from the current building energy state but not as compared to modern building energy codes.

**Reducing Operating Expenses**

Trio Electric & Trio Energy understand energy efficiency as a major savings opportunity, particularly in difficult economic times. While low levels of electrical usage mean increased profits for private companies it is also a means of easing public institutions' budgetary constraints.

To date, the majority of our EPAct 179D projects have involved school districts. These institutions often face strict budgetary constraints. It is our experience that low levels of electrical usage and consequent energy costs savings constitute an important way of easing budget pressures, particularly in educational facilities. Furthermore, energy efficient buildings tend to favor the creation of an optimum learning environment for students.

**New Technology Can Accomplish Major Building Energy Cost Reduction**

Continuing technology developments have resulted in new, typically more expensive products that can meet the aggressive energy reduction targets embodied in the currently proposed 179D extension.

Bearing in mind our sustainability efforts, Trio Electric & Trio Energy have used new efficient technology on various projects. For lighting, this includes greatly improved LED lighting products now available for virtually all building categories along with wireless controls and smart sensors.

**Building Retrofits Provide Large Employment Opportunities**

At Trio Electric & Trio Energy, it is our experience that large numbers of existing building retrofits require enormous skilled and semi-skilled work forces. Lighting retrofits, for instance, require lighting designers, laborers to remove and dispose existing fixtures, distribution centers to store the new lighting material, laborers to stage the new material near the job site and electricians to install the new fixtures.

**The 179D Tax Incentive Actually Results in Increased Tax Revenues**

By providing a tax incentive for energy cost reduction, the U.S. Treasury is actually enabling larger future tax revenues. When a commercial property owner materially reduces their energy related operating tax costs, their taxable income increases by exactly the amount of the energy cost reduction. Although the 179D tax incentive is only for the first (one) year of project completion, the company's taxable income will be increased annually every year (perpetually). When a government organization materially reduces its energy costs, it can reduce its budget deficit which may be used to reduce tax levies, including real property taxes at local level or meet other more vital community needs.

**Not-for-Profits**

Major not-for-profit building categories include hospitals and universities. The hospital industry is rapidly consolidating into very large health care providers and the need to manage all costs including energy costs is a topic of national discussion. The hospital industry is recognized as a large, under-served building energy efficiency sector and emergence of these new, larger entities, coupled with good tax policy, can serve to achieve major energy cost reductions. Ever escalating costs of a university education is also a national discussion topic and energy cost reduction should help ameliorate the ever escalating costs.

**Conclusion**

Trio Electric & Trio Energy greatly appreciate the opportunity to submit this statement for the record. The energy retrofit industry is an ever-growing market, which provides jobs and saves businesses of all sizes significant sums of money on energy consumption. EPAct 179D has been very helpful in our business's growth and expansion and the new tax provisions would go even

further and allow us to reach out to markets which were previously un-incentivized. With the extension and expansion of 179D and 179F businesses are now poised to bring our country to a much higher level of energy efficiency performance and the current proposals will greatly move us towards supporting that effort.

Jarrod B. Pollock
President
Trio Electric, Ltd.

STATEMENT FOR THE RECORD

FOR THE HEARING ON

"TAX REFORM AND FEDERAL ENERGY POLICY: INCENTIVES TO PROMOTE ENERGY EFFICIENCY"

BEFORE

THE U.S. SENATE COMMITTEE ON FINANCE
SUBCOMMITTEE ON ENERGY, NATURAL RESOURCES,
AND INFRASTRUCTURE

DECEMBER 20, 2012

SUBMITTED BY

JOHN K BUSHMAN, PE
PRESIDENT AND CEO
WALKER PARKING CONSULTANTS
4904 EISENHOWER BLVD., SUITE 150
TAMPA, FL 33634
(813) 888-5800

Walker Parking Consultants (Walker) is the largest parking design firm in the United States with over 200 employees, and more than 10,000 completed parking projects. Walker maintains offices in the following fourteen cities: San Francisco, CA; Los Angeles, CA; Houston, TX; Tampa, FL; Denver, CO; Minneapolis, MN; Chicago, IL; Indianapolis, IN; Kalamazoo, MI; Ann Arbor, MI; Charlotte, NC; Philadelphia, PA; New York, NY; Boston, MA.

We design garages for many leading companies and institutions, including numerous major universities and airports. As such, Walker is interested in the extension of section 179D and the expansion of the lighting benefit to $1.00 per square foot.

**Major Cost-Savings Opportunity**

Parking garages typically operate 24/7 and are typically located in and near major cities where electricity rates are high and there are substantial energy cost reduction opportunities. Parking garages installing today's longer-life lighting, particularly LEDs and induction lighting, have the ability to greatly reduce operating costs. It is important to realize that the maximum Section 179D tax incentive requires a 40% to 50% energy cost reduction as compared to an ever-increasing building energy code standard. These are truly enormous building energy usage and cost reductions.

**New Technology Can Accomplish Major Building Energy Cost Reduction**

Continuing technology developments have resulted in new, typically more expensive products that can meet the aggressive energy reduction targets embodied in the currently proposed 179D extension.

For lighting, this includes greatly improved LED lighting products now available for virtually all building categories including garages along with wireless controls and smart sensors.

**Building Retrofits Provide Large Employment Opportunities**

Large numbers of existing building retrofits require enormous skilled and semi-skilled work forces.

Lighting retrofits require lighting designers, laborers to remove and dispose existing fixtures, distribution centers to store the new lighting material, laborers to stage the new material near the job site and electricians to install the new fixtures.

The building envelope involves a wide variety of manufactured and workshop materials including roofs, walls, windows, doors, foundations and insulation. In addition to the labor required to create these products, large numbers of roofers, carpenters, installers and laborers are needed to handle the material and incorporate it into a building.

**The 179D Tax Incentive Actually Results in Increased Tax Revenues**

By providing a tax incentive for energy cost reduction, the U.S. Treasury is actually enabling larger future tax revenues. When a commercial property owner materially reduces their energy related operating tax costs, their taxable income increases by exactly the amount of the energy cost reduction. Although the 179D tax incentive is only for the first (one) year of project completion, the company's taxable income will be increased annually every year (perpetually). When a government organization materially reduces its energy costs, it can reduce its budget deficit which may be used to reduce tax levies, including real property taxes at local level or meet other more vital community needs.

**REITs**

It is particularly important to provide an incentive for REIT energy reductions service providers. REITs are the largest holders of large institutional grade real estate in the country. Major REIT categories include office buildings, apartment buildings, shopping centers and hotels, many of which have parking garages.

The REIT model is largely a tenant model and for the most part REIT's have not endeavored to materially reduce energy costs simply because they don't pay the energy bill. With REITs, the tenant bears the burden of the monthly energy bill. With America's large service-based economy, large service businesses operating from offices bear the burden of unnecessary energy bills. With apartment REITs, it is renters who bear the burden of unnecessary energy bills. With shopping centers, it is retailers and shoppers that bear the burden of unnecessary energy costs. With hotel REITs, it is nightly guests who bear the burden of unnecessary costs in their room rates. In the REIT warehouse and industrial sector, it is America's engines of commerce that bear the burden of unnecessary energy costs. Data Centers are huge consumers of electricity and hence directly responsible for large amounts of emissions. Accordingly with Data Center REITs, all of American society bears the burden of unnecessary energy costs.

**Not-for-Profits**

Major not-for-profit building categories include hospitals and universities, many of which have parking garages. The hospital industry is rapidly consolidating into very large health care providers and the need to manage all costs including energy costs is a topic of national discussion. The hospital industry is recognized as a large, under-served building energy efficiency sector and emergence of these new, larger entities, coupled with good tax policy, can serve to achieve major energy cost reductions. Ever escalating costs of a university education is also a national discussion topic and energy cost reduction should help ameliorate the ever escalating costs.

**Public Private Partnerships (P3s)**

The provision in the proposed extension of 179D to include energy project financiers in the beneficiary category is crucial to America's energy policy future.

It is common knowledge that finances of many of our country's state and local government costs are in dire financial straits. These government entities find themselves in the untenable position of not having the capital to act on large energy cost reduction projects, often for steadily deteriorating essential service government buildings. The addition of the 179D financing tax incentive will encourage private sector capitalized lenders to take the added risk related to financing these important projects. There are many excellent contractors and ESCOs who have the capacity and desire to work in today's depressed construction market but who don't have the tax capacity to benefit from energy cost related tax incentives. There are many cash-strong lenders interested in entering this market who to date haven't found an economically viable pathway for doing so.

**Conclusion**

Walker Parking Consultants greatly appreciates the opportunity to submit this statement for the record. In the last five years, during very difficult economic times, Walker has made a large investment in educating our staff and customers on the technical underpinnings of EPAct. We are now poised to bring our country's stock of parking garages to a much higher level of energy efficiency performance and the current 179D tax proposal will go a long way toward supporting that effort.

# STATEMENT FOR THE RECORD

# OF

# WORLDWIDE ENERGY

FOR THE HEARING OF

"TAX REFORM AND FEDERAL ENERGY POLICY: INCENTIVES TO PROMOTE ENERGY EFFICIENCY"

BEFORE

THE U.S. SENATE COMMITTEE ON FINANCE
SUBCOMMITTEE ON ENERGY, NATURAL RESOURCES,
AND INFRASTRUCTURE

DECEMBER 12, 2012

SUBMITTED BY
Worldwide Energy
10413 W. 84th Terrace, Lenexa, KS 66214
(913) 310-0705 ▪ www.WorldwideEnergy.com

Worldwide Energy, Inc. was established in 2006 as a Woman-Owned Business Enterprise. Over the past six years we have serviced businesses across the country ranging from small 'Ma and Pa' shops to Toyota Distribution Centers.

We pride ourselves on preparing custom-built projects to fit the scope and size of our clients' energy reduction needs. Worldwide Energy is one of the only energy services companies in the Midwest that was started with the sole intent of improving businesses' energy-efficiency. We partner with only the best equipment and technology vendors across America to ensure that our clients are completely satisfied with their project's outcome.

With regard to the current 179D Deduction for Energy Efficient Commercial Buildings, Worldwide Energy is extremely interested in; prospectively retrofitting many more facilities, the extension of 179D past 2013, increasing the maximum 179D deduction to $3.00 per square foot, expansion of the eligible building categories to include REITs and non profits, and broadening the beneficiary base, particularly for capital providers.

With regard to the new Section 179F Deduction for Retrofits of Existing Commercial and Multifamily Buildings, with a maximum $4.00 per square foot tax deduction, Worldwide Energy is very interested in working on larger projects where 50% energy cost reduction can be achieved as compared to the current building energy state and not modern building energy codes (ASHRAE).

**Enhanced U.S. Economic Performance**

By lowering its building energy costs, the U.S. can be a much more effective global competitor. The marked reduction in U.S. natural gas costs has gone a long way toward making the U.S. once again a center for manufacturing. These same manufacturers, and all U.S. business operators with buildings, can also become much more globally competitive with substantially reduced energy related building operating costs. It is important to realize that the maximum Section 179D tax incentive requires a 50% energy cost reduction as compared to an ever-increasing building energy code standard. These are truly enormous building energy usage and cost reductions.

**Building Retrofits Provide Large Employment Opportunities**

Large numbers of existing building retrofits require enormous skilled and semi-skilled work forces.

Lighting retrofits require lighting designers, laborers to remove and dispose existing fixtures, distribution centers to store the new lighting material, laborers to stage the new material near the job site and electricians to install the new fixtures.

HVAC retrofits require engineers for project system design, substantial U.S. manufacturing activity (most HVAC equipment is heavy and made in the U.S.), U.S. steel procurement and HVAC mechanics to install.

The building envelope involves a wide variety of manufactured and workshop materials including roofs, walls, windows, doors, foundations and insulation. In addition to the labor required to create these products, large numbers of roofers, carpenters, installers and laborers are needed to handle the material and incorporate it into a building.

**The 179D Tax Incentive Actually Results in Increased Tax Revenues**

By providing a tax incentive for energy cost reduction, the U.S. Treasury is actually enabling larger future tax revenues. When a commercial property owner materially reduces their energy related operating tax costs, their taxable income increases by exactly the amount of the energy cost reduction. Although the 179D tax incentive is only for the first (one) year of project completion, the company's taxable income will be increased annually every year (perpetually).

**Conclusion**

Worldwide Energy greatly appreciates the opportunity to submit this statement for the record. In the last six years, during very difficult economic times, Worldwide Energy has made a business out of and placed importance on energy reduction and efficiency. The energy retrofit industry is a growing area, which provides jobs and saves businesses of all sizes significant sums of money on energy consumption. EPAct 179D has been very helpful in growing our business the new tax provisions would go even further and allow us to reach out to markets which previously un-incentivized. This extension and expansion of 179D and 179F are now poised to bring our country to a much higher level of energy efficiency performance and the current proposals will go a long way towards supporting that effort.

# STATEMENT FOR THE RECORD

# OF

# ZDS DESIGN/CONSULTING SERVICES

**FOR THE HEARING OF**

**"TAX REFORM AND FEDERAL ENERGY POLICY: INCENTIVES TO PROMOTE ENERGY EFFICIENCY"**

**BEFORE**

**THE U.S. SENATE COMMITTEE ON FINANCE**
**SUBCOMMITTEE ON ENERGY, NATURAL RESOURCES, AND INFRASTRUCTURE**

**DECEMBER 12, 2012**

SUBMITTED BY
ZDS Design/Consulting Services
91 Smiley Drive, St. Albans, WV25177
(304) 755-0075 ▪ www.zdsdesign.com

ZDS **Design/Consulting Services** is a nationally recognized engineering firm based in St. Albans, WV. For over 18 years, the WV family-owned firm has provided HVAC/plumbing, electrical, energy management, indoor air quality, and commissioning engineering services to a diverse client base in and around West Virginia, which includes but is not limited to:

- Public and Private Hospitals
- State and Municipal Office Buildings
- Military bases
- Public and Private Universities
- K-12 Schools
- Auto-manufacturers
- Commercial retail companies

To date, ZDS **Design/Consulting Services** has utilized EPAct 179D on 20 buildings, and is intending on more utilization in the upcoming year.

With regard to the current 179D Deduction for Energy Efficient Commercial Buildings, **ZDS Design/Consulting Services** is extremely interested in: prospectively retrofitting many more of our facilities, the extension of 179D past 2013, increasing the maximum 179D deduction to $3.00 per square foot, expansion of the eligible building categories to include REITs and non profits, and broadening the beneficiary base, particularly for capital providers.

With regard to the new Section 179F Deduction for Retrofits of Existing Commercial and Multifamily Buildings, with a maximum $4.00 per square foot tax deduction, **ZDS Design/Consulting Services** is very interested in working on larger projects where 50% energy cost reduction can be achieved from the current building energy state but not as compared to modern building energy codes.

**Enhanced U.S. Economic Performance**

By lowering its building energy costs, the U.S. can be a much more effective global competitor. The marked reduction in U.S. natural gas costs has gone a long way toward making the U.S. once again a center for manufacturing. These same manufacturers, and all U.S. business operators with buildings, can also become much more globally competitive with substantially reduced energy related building operating costs. It is important to realize that the maximum Section 179D tax incentive requires a 50% energy cost reduction as compared to an ever-increasing building energy code standard. These are truly enormous building energy usage and cost reductions.

**Building Retrofits Provide Large Employment Opportunities**

Large numbers of existing building retrofits require enormous skilled and semi-skilled work forces.

Lighting retrofits require lighting designers, laborers to remove and dispose existing fixtures, distribution centers to store the new lighting material, laborers to stage the new material near the job site and electricians to install the new fixtures.

HVAC retrofits require engineers for project system design, substantial U.S. manufacturing activity (most HVAC equipment is heavy and made in the U.S.), U.S. steel procurement and HVAC mechanics to install.

The building envelope involves a wide variety of manufactured and workshop materials including roofs, walls, windows, doors, foundations and insulation. In addition to the labor required to create these products, large numbers of roofers, carpenters, installers and laborers are needed to handle the material and incorporate it into a building.

**The 179D Tax Incentive Actually Results in Increased Tax Revenues**

By providing a tax incentive for energy cost reduction, the U.S. Treasury is actually enabling larger future tax revenues. When a commercial property owner materially reduces their energy related operating tax costs, their taxable income increases by exactly the amount of the energy cost reduction. Although the 179D tax incentive is only for the first (one) year of project completion, the company's taxable income will be increased annually every year (perpetually).

**Conclusion**

**ZDS Design/Consulting Services** greatly appreciates the opportunity to submit this statement for the record. In recent years, during very difficult economic times, **ZDS** has made a business out of and placed importance on energy reduction and efficiency. The energy design industry is a growing area, which provides jobs and saves businesses of all sizes significant sums of money on energy consumption. EPAct 179D has been very helpful in growing our business the new tax provisions would go even further and allow us to reach out to markets which previously un-incentivized. This extension and expansion of 179D and 179F are now poised to bring our country to a much higher level of energy efficiency performance and the current proposals will go a long way towards supporting that effort.

Sincerely,

Ted (Todd) A. Zachwieja, P.E., CEM, LEED AP
Principal, Chief Executive Officer
**ZDS Design/Consulting Services**