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FULL COMMITTEE HEARING ON THE ROLE OF GREEN TECHNOLOGIES IN SPURRING ECONOMIC GROWTH

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UNITED STATES HOUSE OF REPRESENTATIVES

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FULL COMMITTEE HEARING ON THE ROLE GREEN TECHNOLOGIES IN SPURRING ECONOMIC GROWTH

Thursday, July 10, 2008

U.S. HOUSE OF REPRESENTATIVES,
COMMITTEE ON SMALL BUSINESS,
Washington, DC.

The Committee met, pursuant to call, at 10:00 a.m., in Room 1539, Rayburn House Office Building, Hon. Nydia M.Velázquez [Chair of the Committee] Presiding.

Present: Representatives Velázquez, Cuellar, Clarke, Sestak, Chabot and Akin.

OPENING STATEMENT OF CHAIRWOMAN VELÁZQUEZ

[The prepared statement of Chairwoman VELÁZQUEZ. may be found in the Appendix on page 30.]

Chairwoman VELÁZQUEZ. Good morning. I call this hearing of the Small Business Committee to order for economic recovery. It has powered markets and pulled our own financial system out of countless downturns. In the mid-1990s, for example, the dot-com boom led the country out of a recession and rejuvenated a struggling marketplace.

Today, as our Nation strains under similar declines, new technologies are once again offering a lifeline. With jobs vanishing, payrolls falling and the cost of living skyrocketing, wind technology promises to lift us back up. Once considered an exclusively environmental issue the search for renewable energy has taken on a new role—economic stimulus.

In this morning's hearing we will discuss the role of a small firm in America's effort to become ecologically aware. We will also explore ways in which ecoconscious entrepreneurs can set business back on track and turn the country's blue collars green. Sustainable industries will drive billions of dollars into the marketplace. They will also create hundreds of thousands of new jobs and bolster our Nation's cash-strapped working class. And while efforts to promote efficiency will take innovation and flexibility, our small businesses are up to the challenge.

Today, entrepreneurs are leading the green revolution. Small firms comprise over 90 percent of the renewable and efficiency industries. Already these sectors are galvanizing the workforce. In 2006, they generated 8 million new positions. And in the near term, the wind power industry promises to single-handedly create 400,000 new jobs.

These new positions will touch all facets of the workforce. Unlike the technical industry, that has created work almost exclusively for college graduates, today's jobs will benefit Ph.D.s and blue collar laborers alike. By 2030 as much as 25 percent of American workers, or 40 million jobs, are expected to fall under this green umbrella.

By creating new positions and driving demand in sectors that already exist, wind technologies can create growth without reinventing the wheel. In other words, workers across the country can benefit from a sustainable economy without switching careers.

In addition to supporting current American commerce, these advances present tremendous potential for trade and investment. American entrepreneurs hold the lion's share of green assets, which are now globally sought-after commodities; indeed, every world market has a need for these goods and services. If American entrepreneurs can fill this need, they stand to reap billions, possibly trillions, of dollars in export revenues. At present, analysts value that alternative fuels market at $1 trillion.

Investors recognize this tremendous profit potential and are clambering to capitalize on it. The same venture capital firms that backed the dot-com boom are now powering wind technologies. Already, these firms are pouring billions of dollars into industries like solar power; and as investors increasingly support green technology, the benefits are diffused throughout the entire marketplace.

Innovation has brought us to the threshold of an economic revolution. Just at the tech boom transformed the American marketplace in the 1990s, green technologies can strengthen today's system.

It is rare for a country to have the chance to do something both financially responsible and environmentally sound. Today, we have that chance, and we must ensure that the window of opportunity stays open. In doing, so we can look to our small businesses who are propelling our Nation's emerging wind economy.

I want to thank all the witnesses in advance for their testimony. The Committee is pleased they can join us this morning, and we look forward to their insights on this very important issue.

With that, I now yield to Ranking Member Chabot for his opening statement.

OPENING STATEMENT OF MR. CHABOT

[The prepared statement of Mr. Chabot may be found in the Appendix on page 32.]

Mr. CHABOT. Thank you, Madam Chairwoman, and good morning everyone.

We are here to examine the role of green technologies and spurring economic growth. And I commend the chairwoman for calling this hearing and look forward to hearing the testimony of this very distinguished panel that we have here this morning.

Before we begin, I would like to personally thank Ms. Andrea Lucke for making the trip all the way from Cincinnati today, and I will be formally introducing her here shortly.

Energy is the lifeblood of the economy. U.S. economic prosperity is closely tied to the availability of reliable and affordable supplies of energy. It is not just the United States that is going to need

more energy in the coming years; our traditional energy supplies will be increasingly strained by a dramatic growth in global demand. Today's topic not only has far-reaching applications for our economy, but our future energy needs as well.

Great strides have been made in developing alternative fuel sources with a large amount of attention being given to renewable fuels. Wind and solar power also offer great promise in the quest for alternative resources. We have talked about ethanol, although there have been challenges there. Biodiesel. There are many sources that we do need to consider. I am certain that further research into alternative energy sources will yield new technology and techniques for producing energy that most of us here today in this room probably can't even fathom at this point in time.

The industries that produce this green technology are relatively new and are still evolving. Small businesses with their new ideas and willingness to take risks to innovate will be at the forefront of these industries.

I look forward to working with the Chair to find ways to help spur growth in these exciting new small businesses. Unlike some others on Capitol Hill, I firmly believe that this search for new energy sources should not be a zero-sum game, which is why I believe exploring these new energy production and conservation technologies is important.

Our economy is driven by energy, and we must explore ways to meet our energy needs. That means looking for ways to increase production of everything we need, including oil, coal and nuclear capabilities in addition to these new methods. Neither must we neglect the current reality that without dependable, reliable and home-grown fossil fuels our economy will continue to falter.

While looking at the future of energy independence, we have to make certain the Federal Government is doing all it can to provide the fuel our current economy needs to grow. Simply put we must balance research initiatives and incentives into renewable fuel technologies that will eventually replace our current reliance on fossil fuels while ensuring we have an abundant and affordable source of energy right now.

Unfortunately, I do not believe that the major energy bills we have considered in this Congress have achieved this balance. These bills create no new energy sources to speak of and, if anything, make fossil-fueled energy more expensive, which in turn will make us even more dependent on foreign sources.

These new energy technologies that will be discussed here today offer great promise to the American economy now and in the future, but we must also be able to maintain our current energy production while fostering growth in these exciting new fields.

Again, Madam Chair, I appreciate your calling this hearing and look forward to hearing the testimony from our very esteemed panel here this morning. And I yield back my time.

Chairwoman VELÁZQUEZ. Thank you.

And now it is my pleasure to introduce Mr. Randy Rema. Mr. Rema is president of Reese Electric, Inc. in North Bend, Oregon. Reese Electric, established in 1946, offers a full range of services in residential, commercial and industrial contracting and design.

Mr. Rema is testifying on behalf of the National Electrical Contractors Association. NECA represents more than 80,000 U.S. businesses and employs more than 750,000 workers in every State.

Welcome. And you have 5 minutes to make your statement.

STATEMENT OF MR. RANDY REMA, PRESIDENT, REESE ELECTRIC INC., ON BEHALF OF THE NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION

Mr. REMA. Thank you, Madam Chair, Ranking Member Chabot, members of the Small Business Committee. Thank you for the opportunity to be here before you today.

It is an honor and a privilege to appear before the Committee that has a tremendous impact on my business, my community and the thousands of electrical contractors who operate small businesses just as I do.

In addition to speaking from the perspective of a small business owner on the role of green technologies in spurring economic growth, I am also here representing the National Electrical Contractors Association, NECA, an association of which my company is a member. NECA is the nationally recognized voice of the $130 billion electrical contracting industry responsible for bringing power and communication systems to communities, buildings and homes.

I am Randy Rema, owner and president of Reese Electric in North Bend, Oregon. As Madam Chair said, the business was started in 1946. We became owner in 2004, 4 years ago. We had 22 employees at that time. Today we have 61, and that is partly due to green technologies.

Our company has been recognized as Business of the Year by our local Chamber of Commerce, and we ranked number one in the Nation in our category for safety by Associated General Contractors.

By definition, ″green building″ represents a movement to reduce the adverse social, economic and environmental effects that existing buildings cause and reduce the impact of new building construction. The ultimate goal of green building is to transform the design and construction of buildings to be environmentally responsible, profitable and healthy places to live and work. The focus of my testimony will be how green building produces jobs and produces economic stimulus.

In response to the growing green technologies movement, NECA has incorporated green technologies in our training and certification programs, spending $100 million a year on the National Joint Apprenticeship and Training Committee that is run in conjunction with the IBW. The NJATC has implemented green training programs to ensure that new electricians, as well as the industry's seasoned journeymen, have the skill sets necessary to operate in a green economy. And it is a good thing that NECA has invested in this training, as a recent study from the Political Economy Research Institute projected that the electrical contracting industry will be the largest single producer of jobs in the specialty contractor trade and will be one of the top five producers of jobs in a green economy.

The reasons for such strong projections for green job growth for skilled electricians include, but are not limited to, retrofitting existing buildings with green technologies; developing more energy-effi-

cient mass transit systems; installing smart meters, which help consumers reduce transmission load on the grid; and creating and installing maintaining clean, efficient self-sufficient energy systems for residential facilities and commercial buildings. Clearly, the role of the electrical contractor expands as the green economy grows.

The electrical contracting industry is well positioned to promote, expand and create an industry marketplace where they are not only the installers of energy efficient electrical systems for our homes and businesses, but to be the providers of the generation systems to make us self-sufficient.

I have experienced firsthand the economic business and environmental benefits of an industry transformation that is taking place towards green technologies and clean energy technologies. This year, we will have contracts worth roughly $2 million for solar panel installations, which represents almost 25 percent of our total business for the year. For 2009, I can project an additional $2 million worth of opportunities for those seeking building retrofit and other investments in green technologies. For my business, this means at least eight positions added, including staff, but eight electricians at family wages, which is very important.

Just last year I put our belief in green technologies to the test and invested in a system for our building, a $212,000 PV system. We had projected a 20-year payback; however, with the tax incentives that were available, that will be quite accelerated and with the rising energy costs it is even better.

Federal tax incentives have helped to offset the substantial capital investment in renewable energy technologies. I understand that unless Congress acts, these incentives will expire at the end of this year. I believe that would be devastating to the momentum that has been built not only by our company, but companies throughout this Nation. These incentives have allowed my company to improve the energy efficiency of my facility and others throughout our area.

In conclusion, green technologies provide the tools to build a better country, and our small businesses are laying the foundation for a better tomorrow. These technologies are working to transform our Nation's infrastructure and expand ″green job″ industries. Only by harnessing the power of these technologies and the potential job growth they bring are we able to both expand and grow our economy.

Indeed, the future is green; and for my business, my community, my State and our Nation, I believe that means gold.

Thank you for the opportunity to be here today, not only representing my company, Reese Electric, but also the National Electrical Contractors Association.

Thank you, Madam Chair.

Chairwoman VELÁZQUEZ. Thank you, Mr. Rema.

[The prepared statement of Mr. Rema may be found in the Appendix on page 35.]

Chairwoman VELÁZQUEZ. And our next witness is Mr. Ellis Guiles.

Mr. Guiles is Director of Sales and Marketing at TAG Mechanical Systems in Syracuse, New York. For 20 years, TAG Mechanical Systems has been providing heating and cooling products and serv-

ices to Syracuse businesses and home owners alike. Mr. Guiles is here to testify on behalf of the Air Conditioning Contractors of America. ACCA has over 4,000 air conditioning contractors.

Welcome.

STATEMENT OF MR. EELLIS GUILES, DIRECTOR OF SALES AND MARKETING, TAG MECHANICAL SYSTEMS, INC., SYRACUSE, NY. ON BEHALF OF THE AIRCONDITIONING CONTRACTORS OF AMERICA (ACCA)

Mr. GUILES. Good morning, Madam Chairman.

Chairwoman Velázquez, Ranking Member Chabot and members of the Small Business Committee, thank you for the opportunity to provide testimony on the exciting economic growth and job creation potential of green technologies in the heating, ventilation, air conditioning, and refrigeration, HVACR, industry.

My name is Ellis G. Guiles, Jr. and I am the Director of Sales and Marketing of TAG Mechanical Systems, a heating, cooling and indoor air quality services company that services both residential and commercial customers in the Syracuse Metro, New York, area. As you noted, I am a member of the Air Conditioning Contractors of America, ACCA. I am also a member of the American Society of Heating, Refrigeration and Air Conditioning Engineers, ASHRAE, and the Building Performance Contractors Association of New York State.

I am the author of LEED, Follow or Get Out of the Way, a book describing how mechanical contractors can implement green building practices in their businesses to make them more profitable.

What I hope to demonstrate today is that going green with new HVACR equipment can have a positive impact on the bottom line for home owners, small businesses and the overall economy. In the interest of time I will highlight the most important points of my submitted testimony.

ACCA and its industry partners foresee a wealth of job creation in economic development opportunities from the burgeoning green movement right here in America, because the majority of residential and commercial HVAC equipment sold in the United States is manufactured and warehoused in the United States. Any installation jobs held by contractors cannot be exported.

At the same time, ACCA members see tremendous possibilities in greater energy efficiency through emerging and existing technologies that will lower utility costs, improve indoor air quality, create less CO2 and set aside more money for investment.

The potential for America's small businesses and the HVAC contractors that service those small businesses for job creation, economic growth and environmental protection are limitless. However, in order to turn this potential into reality, Congress needs to provide direction and assistance through tax incentives, increased public awareness, promotion of proper installation and maintenance, and code enforcement.

Increased building efficiency is the low-hanging fruit in the effort to reduce energy consumption, promote national security and stimulate the economy because our national inventory of HVACR equipment is old, inefficient and ripe for upgrade. More than half of residential utility bills goes toward heating, cooling and hot water ap-

pliances. Roughly one-third of the energy consumed in commercial buildings goes to heating, cooling and ventilation. All told, Americans spend more than $142 billion on space heating and cooling for both residential and commercial buildings combined.

Today's HVACR equipment is 30 to 50 percent more efficient than the installed base. In 2005, 39 percent of the residential central air conditioners and 60 percent of residential heating equipment were more than 10 years old. Since 1990, only 30 percent of commercial buildings have had their main heating equipment replaced and only 37 percent have had their main cooling equipment replaced.

In new construction, advanced planning, design techniques and a range of highly efficient options means that today's buildings are tighter, use less energy, are more comfortable and are healthier to live and work in.

Realizing a 15 to 20 percent reduction in energy consumed by residential commercial buildings, using available technology, is not unreasonable. This would result in $28 billion in saved energy expenditures while creating a tremendous number of jobs within the HVACR industry as demand for more efficient equipment and its installation grows.

During the last 2 years, my company, TAG Mechanical, has worked with Actus Lend Lease as a part of their military housing privatization initiative at Fort Drum, New York, installing HVACR systems in 845 homes to New York State's Energy Star criteria. Our initial efforts involved right-sizing the HVACR systems and then working with Actus Lend Lease to achieve homes which generally have a 30 percent or lower energy usage as compared to a comparable code home. This results in lower energy costs for our soldiers who live in these homes, improved indoor environments and lower greenhouse gas emissions, a win for everybody because Actus Lend Lease was concerned about providing a superior product to their military customers.

TAG Mechanical Systems has been chosen to provide design build services for Hope Lake Hotel and Resort, a 150,000-square-foot facility located 45 miles south of Syracuse, New York, that will include a 106-room fractional ownership hotel combined with an indoor water park. The facility is participating in the USGBC LEED rating program.

The original schematic designs for the hotel called for a geothermal heating system; however, cost constraints drove the construction team to look for alternatives. We have decided to install the variable refrigerant flow system in the hotel in a large portion of the complex. Current design projections indicate this system will be 5 to 10 percent more efficient than the geothermal system, will cost less to install and provide a higher degree of comfort in indoor air quality than the geothermal system.

The variable refrigerant flow system's ability to modulate from 16 to 100 percent capacity allows it to precisely match the heating and cooling requirements of the spaces within the building. We project the hotel and lodge will obtain at least six points under EAc1 criteria of the LEED rating system and will be 28 percent more efficient than the baseline building.

Improved efficiency may be the low-hanging fruit in our Nation's efforts to reduce energy consumption, but not everyone can reach that fruit to take advantage of its benefits. In the last 10 years, efficiencies for central air conditioning, heating, heat pumps and furnaces have increased tremendously, both through mandatory regulation and research and development.

For example, in 2006, the minimum energy efficiency for a residential and like commercial central air conditioning was set by the Federal Government to increase by 60 percent. In the 2 years since the Department of Energy raised these minimum efficiency standards, equipment manufacturers have seen a 25 percent drop in shipments of new central air conditioning and heat pumps. While consumers have spent 25 percent more on replacement parts, they are choosing to maintain their older, inefficient equipment rather than upgrade to new, higher efficiency models.

Cost is the hurdle to those technologies for home owners and small businesses. The higher efficiency products cost more up front due to higher equipment costs and installation requirements. However, the initial investment in high-efficiency appliances earns a short payback with lower life cycle cost.

ACCA has advocated for tax incentives to make higher-efficiency equipment more attractive to residential and commercial clients. We believe these tax incentives assist home owners and building owners in making a more informed choice when purchasing new equipment. In many cases the incentives help justify the added upfront cost.

Thank you for the opportunity to testify before you today. I would be happy to answer any questions you may have on my testimony later.

Chairwoman VELÁZQUEZ. Thank you, Mr. Guiles.

[The prepared statement of Mr. Guiles may be found in the Appendix on page 39.]

Chairwoman VELÁZQUEZ. Our next witness is Mr. Gregory Wetstone.

Mr. Wetstone is Senior Director of Government and Public Affairs to the American Wind Energy Association. AWEA promotes wind energy as a clean source of electricity for consumers around the world, with over 1,500 members, and advocates the association is the hub of the wind energy industry.

Welcome.

STATEMENT OF GREGORY WETSTONE, SENIOR DIRECTOR OF GOVERNMENT AND PUBLIC AFFAIRS, AMERICAN WIND ENERGY ASSOCIATION

Mr. WETSTONE. Thank you very much, Madam Chairman and Ranking Member Chabot.

I am Greg Wetstone, Director of Government and Public Affairs at the American Wind Energy Association; and I do want to thank you very much for the chance to be with you this morning and to talk about the tremendous potential for small business and the tremendous growth already that we have seen as a result of wind energy development here in the United States.

Most of our 1,500 member companies are, in fact, small businesses. They produce critical wind turbine components like gears

and bearings and electrical parts. They make composites for blades, they work construction as wind turbines are built around the country, and they participate in the shipping and transportation of parts in order to get this new energy source in gear.

This is happening on a surprisingly large scale. Most Americans are not aware that wind, which was once a boutique source of electricity, is now a mainstream option for electrical generation. The U.S. currently has 18,000 megawatts of wind power already on the grid; that is enough for 5 million homes. Three years in a row, wind has been second only to natural gas as a source of new electrical capacity, and last year wind power provided 35 percent of all the new electrical capacity in the U.S., once again second only to gas. That was over 5,200 megawatts of wind power.

So it is growing at a dramatic scale, and the reason is that the U.S. has one of the best wind resources of any nation in the world. And when you combine that with rapidly growing electricity demand—and that is what we have here in this country—we see that the U.S. is the biggest market in the world for wind energy development. That has meant that the construction and manufacture and operation of wind turbines has been a rare bright spot in an economy that, overall, has been pretty tough, spurring growth and creating jobs to the tune of more than $9 billion last year.

Since January of 2007, 28 new wind industry manufacturing plants have been opened or operated in the United States. And I would be surprised—and the States where these are located are listed in my written testimony; there are a lot of them, and the list grows every week.

Mr. Chabot, Ohio is a tremendous center of wind industry manufacturing. It is just starting now. The potential there is immense, and I would be surprised if there is another sector of the economy you can point to that is creating jobs at a faster rate than we are.

A single wind turbine has 8,000 parts. And a typical turbine manufacturing facility is like an auto assembly plant in that it is buying component parts from a large number of subsuppliers, typically about 400 subsuppliers for a single turbine manufacturing facility. And that is creating a lot of jobs and helping a lot of small businesses that are providing these parts and transporting them.

Wind turbine manufacturing is also spurring an expansion in demand for other kinds of products and materials. Suppliers for the automotive and other heavy equipment industries are now also increasing their production because of wind. So that is steel and concrete providers, foundries, fabricators. These are now providing raw materials, metal casting and machining for wind turbines.

Because, when turbines are so large, there is a tremendous economy of scale in building the domestic manufacturing capability here in the U.S., rather than shipping these massive turbines and blades long distances, especially at today's fuel prices, today, about half of wind turbine components are made in the U.S. Only 2 years ago, that number was 30 percent; and if we could get stable Federal policies, long-term extension of the tax credit, we would see that number go up in terms of domestic manufacturing.

In addition to spurring thousands of green jobs, wind power is helping to diversify our power supply, stabilize electricity costs; and that is good for any small business. Wind uses no fuel, so the price

of electricity for wind is not affected by gyrations in global markets for oil or natural gas.

Studies project more than $100 billion in consumer savings from a shift to wind power consistent with the renewable energy requirements that were included in the bill that passed the House last summer in the national renewable standard; and this recent growth could be just the beginning. The Department of Energy has projected we could get to 20 percent wind energy.

There are some barriers. We have to build transition, build manufacturing capability, get stable domestic policies. But there is no technological requirement. And that growth would create 500,000 jobs, and that is just the beginning.

Twenty percent wind would boost economic development in windy rural areas, promote energy security; and if you care about global warming, we are talking about effectively taking 140 million vehicles off the road by using clean wind energy.

Now, all this growth over the past several years, and particularly last year, has been a phenomenal bump for the economy, but today it is at risk because the production tax credit is on the threshold of expiration. And every time the PTCs expired—I direct you to the chart in our testimony; it has expired three times. Each time it expires, you see a 70 to 90 percent decline in new wind development, and that is bad for our economy and it is bad for this country in a lot of ways.

Already we are seeing impacts from the delay in extending the credit. Investors want to know, what is the tax policy going to be before they put the money down for a new project to go on line next year. A study by Navigant Consulting concluded that if the credit expires, it will cost us $11 billion in wind energy investment and more than 76,000 jobs here in this country. So we need the stability of a long-term extension to promote U.S. manufacture and to keep this industry growing.

There is broad support across the political spectrum for extending the credit, and it is absolutely critical that Congress find a way quickly to get through the current impasse and enact a long-term, full-value extension of the tax credit; and that would be the starting point for a healthier economy and a cleaner energy future.

Thank you so much.

Chairwoman VELÁZQUEZ. Thank you, Mr. Wetstone.

[The prepared statement of Mr. Wetstone may be found in the Appendix on page 47.]

Chairwoman VELÁZQUEZ. Our next witness is Mr. James Resor.

Mr. Resor is Chief Financial Officer of groSolar in White River Junction, Vermont; groSolar is the national leader in solar energy, leading customers to meet global warming by using solar energy to power their home and businesses.

Mr. Resor is here to testify on behalf of the Solar Energy Industries Association. SEIA is the national trade association for the solar industry.

Welcome.

STATEMENT OF MR. JAMES RESOR, CHIEF FINANCIAL OFFICER, groSOLAR, ON BEHALF OF THE SOLAR ENERGY INDUSTRIES ASSOCIATION

Mr. RESOR. Thank you Madam Chair, Ranking Member Chabot, other members of the Committee and the staff as well.

Again, I am Jamie Resor with groSolar. We are an active participant in the solar industry, active in more than 40 States throughout the country, and we focus on the installation of photovoltaic systems to generate electricity for homes and businesses.

Some examples, to put this more in layperson's terms, are residential homes which are a key part of our market, municipal buildings, schools, stadiums, resorts, multiresidential complex, and agricultural operations. These are just some examples of the kinds of customers that we have that are using solar photovoltaic systems to generate electricity.

One thing that is important to keep in mind is that solar—clearly, in the U.S., when people think of solar, they think of California, which is natural; that is where about 75 percent of the market is. But I think it is important to realize that it is a broader opportunity.

Our company is based in Vermont. The Northeast, for example, is a very important area for solar, partly because electric rates are very high; and that is the most important determinant as to where solar can make sense at the residential and commercial level. So States like New York State, Massachusetts and Connecticut are going to be very big growth areas for solar, in addition to California and places like that.

The one thing I wanted to focus on, really, today is, we have heard a lot about and I concur there are a lot of environmental benefits to wind and solar energy, a lot of these energy efficiency steps that we have heard about, in terms of diversified energy supply, reducing energy consumption. And that is all very true.

In addition, solar has the advantage that it can be a distributed source of energy. So it doesn't need to put pressure on transmission lines or other choke points in the distribution grids. In fact, we are working with Nstar, a utility in Massachusetts, just for that reason. They have congestion; and they either can spend a lot of money to upgrade substations for better distribution or they can try to bring about a program which reduces consumption in certain parts of their grid and increases the generation of things like solar which can be done at the point where you need it instead of a central power station.

But what I wanted to focus on today is, given the Committee's mandate to really underscore the importance of job creation. GroSolar is somewhat of a microcosm of what you are seeing in the green economy. In the last 2 years, we have gone from about 25 employees to approximately 100 employees. We have raised $15 million of investment capital who see the opportunity to back us. We have set up a national platform for our company, whereas we were just based in the Northeast a couple of years ago.

Not only are we a small business, but our customers, that we often sell product to and give design assistance, that are the ones doing the installation in many States, they are all small businesses. Like Mr. Rema represented, we will work with electrical

contractors, for example, or plumbers or other construction people to actually do the implementation of a solar system.

So if I look at our customer base, which is, say, 300 to 400, they are all small businesses and privately held. So there is very much a ripple effect in what this Committee does for this legislation.

Secondly, even when we do larger commercial projects—for example, we did the a solar hot water system for Fenway Park and the Boston Red Sox; we have done other projects for a winery. In rather large multi-residential firms, it might be 800 kilowatts to 1 megawatt in multiple States.

Again, when you look at our partners who are involved in implementation of these projects, they are all uniformly small businesses. So again there is a very important ripple effect there.

To cite the same Navigant study that Mr. Wetstone cited for wind, very comparable statistics. We are looking at the drop-off of—or the loss of $8 billion investment in 2009 alone and approximately 39,000 jobs that would not be created if the ITC for commercial and the personal tax credit for residential are allowed to expire. We are already seeing adverse impacts in terms of some of our customers because, for businesses, uncertainty is a very difficult thing to manage; so already people are wondering what can I expect for 2009.

As I am talking to customers about the potential for a project that can't get implemented this year, just because it takes some time to design it and get it implemented, already we are seeing a lot of wondering, what is Congress going to do in terms of the ITC. So we think it is paramount that the ITC be extended for the 8-year period and that we also have the personal tax credit for residential, and that it be—you know, that the $4,000 cap be eliminated as well to further stimulate job growth.

Thank you very much for your time. I appreciate your interest in these issues.

Chairwoman VELÁZQUEZ. Thank you, Mr. Resor.

[The prepared statement of Mr. Resor may be found in the Appendix on page 51.]

Chairwoman VELÁZQUEZ. And now I recognize the ranking member for the purpose of introducing our next witness.

Mr. CHABOT. Thank you, Madam Chair. I am pleased to introduce Andrea Lucke, who is the Vice President of Sales and Design for Robert Lucke Homes, the second oldest home builder in the greater Cincinnati area. In this capacity, she directs and manages the company's sales and marketing staff, along with designing, pricing and selling.

Ms. Lucke also serves as the new President of the Home Builders Association of Greater Cincinnati where she provides leadership for the association of more than 1,300 member-companies, including over 26,000 people working in the industry. She is the first woman elected President in the 73-year history of the Home Builders Association.

A native of Cincinnati, Ms. Lucke graduated from Ohio University and received her real estate license from Hunter College, and we appreciate your being here this morning, Ms. Lucke, to present your testimony. Thank you.

STATEMENT OF MS. ANDREA LUCKE, VICE PRESIDENT OF SALES AND DESIGN, ROBERT LUCKE HOMES, ON BEHALF OF THE NATIONAL ASSOCIATION OF HOME BUILDERS

Ms. LUCKE. Chairwoman Velázquez and Ranking Member Chabot, distinguished members of the Committee, my name is Andrea Lucke, and I am the 2008 President of the Home Builders Association of Greater Cincinnati and a member of the National Association of Home Builders. I am also a third-generation home builder for Robert Lucke Homes, one of the top 20 largest builders in the Cincinnati area; and I appreciate the opportunity to talk with you today about the progress home builders across the Nation are making incorporating green technologies and design within the residential construction industry.

NAHB members build more than 80 percent of the Nation's new homes, and more than half of its members are currently incorporating green practices into the development, design and construction of new units. For over a decade, NAHB members have been researching and implementing environmentally friendly products into new homes. Consumer interest in the latest green design and products in the market continues to grow, and builders are excited to share the benefits of green construction and energy-efficient features.

For home builders like myself, customer interest in homes that have reduced the carbon footprint has been a bright spot in this current down market. In fact, 40 percent of NAHB builders recently reported that it is easier to market green homes when market conditions are less than ideal, and 70 percent of members report they will be at least moderately involved in green building by next year.

In my experience, consumer interest lies in those technologies that are both energy efficient and, above all, cost effective. For example, many of my customers in the Cincinnati area have expressed a strong interest in geothermal heat pumps simply because of the significant savings associated with this water heating technology. Above all, I have found that increased education at both the builder and consumer level is needed for greater awareness of the many benefits of building green.

NAHB recognizes the need to promote green building and innovation in green construction among its members and the public. In collaboration with the International Code Council, the first national consensus standard on residential green building in the United States will soon be approved by the American National Standards Institute, ANSI. The standard includes single-, multifamily construction, remodeling and land development, and is flexible enough to adjust to the specific resource in energy concerns in the country's different climate zones.

The path to creating an ANSI-certified standard is certainly not an easy one, but our industry is motivated to address the country's growing environmental changes in a way that is comprehensive, flexible and preserves affordability everywhere.

In addition to its work with the ICC, NAHB also established a national green building program that embodies a consumer education campaign highlighting the benefits of green building, substantially in housing design. Together, the National Green Building

Standard and program will help home builders continue to drive technology and innovation in green design and construction.

As Congress explores ways to encourage the growth of both green technology and the economy, it should look for ways to enhance it within the Nation's Tax Code. The section 45L New Energy Efficient Home Credit is a key incentive in shifting builders towards significant energy savings in new home construction. The program, which expires at the end of this year, provides for a $2,000 credit towards a home builder who constructs a qualified New Energy Efficient Home, certified to achieve a 50 percent reduction in energy usage. NAHB has heard from its members that this credit is especially beneficial to small builders who, in many cases, have the flexibility to react to individual marketplace references.

The House did not include an extension of 45L in its Energy Tax Extenders package, and it is crucial that leaders in both Chambers immediately restore their commitment to extending or making permanent the only Federal incentive to promoting efficiency in new construction.

I also want to quickly highlight the work that NAHB's workforce development arm, the Home Builders Institute, HBI, is doing to provide job training standards and opportunities in the green job trade. HBI crafted a new job training component that will be based on industry standards and will be used by high school and community college job training programs around the country. Through the joint efforts of NAHB, HBI and government entities thousands of young workers will soon have the opportunity to build a greener America.

This is an important time for the housing industry, and NAHB appreciates the Committee's interest in spurring economic growth through green technology and construction. Thank you again for the opportunity to testify today. And I look forward to any questions you may have.

Chairwoman VELÁZQUEZ. Thank you, Ms. Lucke.

[The prepared statement of Ms. Lucke may be found in the Appendix on page 60.]

Chairwoman VELÁZQUEZ. Our next witness—last but not least, Mr. Kevin Tindall—is owner of Tindall & Ranson Plumbing, Heating and Air Conditioning in Princeton, New Jersey. Tindall & Ranson was established in 1993 and provides plumbing, heating and cooling services.

Mr. Tindall is here to testify on behalf of the Plumbing-Heating-Cooling Contractors Association. PHCC has more than 4,100 contractor members.

Welcome.

STATEMENT OF MR. KEVIN TINDALL, OWNER, TINDALL & RANSON PLUMBING, HEATING AND AIR CONDITIONING, INC., ON BEHALF OF PLUMBING-HEATING-COOLING CONTRACTORS ASSOCIATION

Mr. TINDALL. Thank you, Madam Chair, and distinguished members of the Committee for the opportunity to testify today.

My name is Kevin Tindall, and I appear before you as a small business owner who represents over 4,000 member-companies of the Plumbing-Heating-Cooling Contractors National Association.

Members of the association, all of whom are privately owned businesses, cover a broad spectrum of plumbing work, ranging from changing washers in residential homes to the most elaborate skyscrapers in the country.

New green technologies are having a positive impact on our industry in spurring economic growth for plumbing contractors. Small businesses in the plumbing industry are at the forefront of the effort to develop and utilize innovative technologies which help conserve water.

This year, the PHCC celebrated the 125th anniversary of our association. During this time, the plumbing industry has played a crucial role in the economic development and growth of our country while ensuring the public's health. To that end, the green movement and green technologies have and will continue to be an integral part, protecting not only consumers around the company but promoting growth of small businesses.

The emerging water and conservation market has the potential to revitalize traditional plumbing businesses. We see green technologies as an opportunity to put our members to work and create jobs at a time when the current economic conditions are having a dramatic negative effect on households. Green technology is something that is positive for both consumers and small businesses alike, while at the same time providing a service for society. The green movement and the advancement of green technologies are benefiting every aspect of our industry, which is mostly comprised of small companies. Not only are plumbing contractors profiting from green technologies, but their workers, manufacturers and engineering professionals are also enjoying economic benefits.

Through a partnership with various stakeholders, PHCC and its members are evolving with the green movement. Recently, the PHCC joined with the U.S. Environmental Protection Agency's WaterSense Program. This program helps reduce water consumption by creating an easy-to-identify label for water-efficient products that is backed by strict criteria and independent certification.

The PHCC of California is currently offering a nationwide accredited certification for green plumbers. This program is an innovative way of training that assists plumbers in understanding their role in the environment and public health. The organization's goal is to train and deploy a ″green army″ of thousands of plumbers to promote the benefits of water conservation and the reduction of greenhouse gas emissions.

As part of the plumbing industry, the United Association of Plumbers and Pipe Fitters, the union representing thousands of plumbers in the U.S., is a driving force in green skills. Furthermore, as a part of the effort to educate consumers, on June 1, 2008, the PHCC launched a Summer 2008 Water Conservation Initiative. This initiative challenges consumers to make at least one change in the way they use water this summer.

By installing new technology, tremendous amounts of energy can be conserved while promoting growth and development of small contractors. According to the EPA, toilets account for 30 percent of the water used in the home, and America wastes 900 billion gallons of water a year by flushing old, inefficient toilets. If every home replaced just one old toilet with a WaterSense-labeled, high-efficiency

water closet, the water savings would be enough to supply 10 million U.S. households with water for a year while providing opportunities for economic growth for plumbing contractors.

Plumbing contractors are enjoying tremendous success with the evolution of the green movement in which we have been engaged for years. The commitment of the plumbing industry to water and energy conservation is demonstrated throughout our 125 year history and recently in our national water campaign.

PHCC feels strongly that we can achieve practical solutions without sacrificing economic growth. In fact, we can promote new technologies which will provide opportunities for the growth of small businesses through the use of these new green technologies.

Thank you again for your time. I am looking forward to any questions you may have.

Chairwoman VELÁZQUEZ. Thank you, Mr. Tindall.

[The prepared statement of Mr. Tindall may be found in the Appendix on page 64.]

Chairwoman VELÁZQUEZ. Mr. Rema, I would like to address my first question to you. If you retrofit existing buildings with new, energy-efficient technology, the savings over time must be large.

Do you have any data on what the savings will be and over what period of time?

Mr. REMA. Well, personally, from a system that we put on our building, that system, the cost was $212,000. It generates about $200 worth of electricity per month, so long term, over the life of the system, that is pretty substantial.

From a short-term perspective, without the tax incentives, it is almost impossible to do not only for ourselves, but for our customers. So it is very important that the tax incentives, of course, be extended.

But from an energy savings point of view, the carbon offset, our system has been in place about 6 months now, we have offset over 2,400 tons of carbon dioxide by that system's being in place.

Chairwoman VELÁZQUEZ. So let me ask you, how do you think we can get more small businesses to retrofit, to going to retrofitting the buildings that they own?

Mr. REMA. By maintaining the incentives to do so and helping offset the cost. Over time, costs are starting to come down slowly. There are more manufacturing plants going into production. Even in our State of Oregon—we have one in Hillsboro, I believe groSolar—or is that Solar World? Excuse me.

Anyway, PV Powered in Bend is making inverters. So in our State there are quite a few businesses that really are up and going; and they have got a lot of momentum, and we all hate to see that fade.

Chairwoman VELÁZQUEZ. But also I heard Ms. Lucke talking about the importance of educating not just on the tax incentives, but we have to educate consumers, and in this case, small businesses. So the government and the Small Business Administration could play a role in educating small businesses as consumers, as to the role that adopting efficient technologies will bring into their businesses.

Mr. REMA. Absolutely. The benefits.

Chairwoman VELÁZQUEZ. Mr. Resor, many countries around the world are ahead of the U.S. in terms of green electricity generation, especially the European countries, European Union countries.

What do you see as the primary reason that the U.S. is lacking—behind in solar as well as other forms of renewable energy production?

Mr. RESOR. Madam Chair, your point is absolutely right on, because Germany and Japan have had a much bigger solar industry than the U.S.; and the main reason is, they have had consistent federal support to create the incentives for the manufacturers. And also they have what are called ″feed-in tariffs,″ so the solar power that is generated, the excess is bought at a higher rate.

In the U.S., we have something that is called ″net metering,″ which is helpful, where excess power is bought by the utility at least at the same price that they would sell it to you.

So the main lesson is that they have had consistent incentives in place that have allowed manufacturers and companies to plan ahead.

Just the earlier point about costs are coming down, the cost of the solar module, which is the main piece in the solar PV system, those costs are coming down because you are starting to get large -scale production. Now, quite frankly, most of that scale has been due to demand in Europe and so we are benefiting, but the main lesson is that it is consistent federal policies in place.

Chairwoman VELÁZQUEZ. Thank you.

Mr. Wetstone, sometimes there is a natural reluctance to move toward products in the marketplace where there are long-established alternatives. This is true whether it be a new television set or a different source of power to heat and cool one's office or home.

How has your industry worked to educate consumers about the benefits of wind power?

Mr. WETSTONE. Yes, Madam Chairwoman. And, in fact, we see a tremendous growth in demand for wind and solar because consumers are receptive and they are willing to pay more.

What seems to be the single most important factor right now in terms of what is the level of new clean energy we can bring on to the grid, particularly for wind—I think it is true for solar as well—is the availability of a stable tax policy. We have that now for other forms of electrical generation. They are receiving depletion allowances or other forms.

Permanent tax treatment, for us, it has been year to year. If you look at the chart on page 3 in my testimony, you see that in 2000 when the credit expired, a 93 percent drop; expired again in 2002, a 73 percent drop; expired again in 2004, a 77 percent drop—the first time we were able to get 3 consecutive years where a credit was applicable; and the industry grew hand over fist, you know, 35 percent of the new electricity last year.

This year, 2008, we will match 2007; we will have another great year. But what is happening now, because we haven't extended the credit, is, we are looking at a situation where 2009 could look like these other years where we are taking the momentum out of the industry; and for those we want to invest in manufacturing that is a big problem.

They want to know that market is there before they spend the money to retool what used to be a gear plan for automaking. And the automakers are downsizing and they are looking for markets. Do they go out of business or do they reinvest and create another product? And they need to know that market is going to be here.

Chairwoman VELÁZQUEZ. Mr. Resor, can you talk to me, to the Committee, about what is special about California?

Mr. RESOR. California has had a good incentive program that has really spurred the solar industry there. They do with the sun, but more importantly, they had a good incentive program in place that has been continuous. Also, they had high electric rates. And those are really the two most important things that drive solar.

Chairwoman VELÁZQUEZ. Mr. Guiles, H.R. 6049 that passed out of the House included provisions that would allow consumers to receive tax credits for installing certain hot water heaters, heat pumps and boilers.

Can you talk about how these credits incentivize consumers to purchase more energy-efficient technologies and what will happen if these programs are not extended?

Mr. GUILES. Most certainly, Madam Chairwoman.

Actually, what has ended up happening to us is, we had that 2-year stretch from January 1, 2006, to December 31, 2007, where those tax incentives were in place; and we personally at TAG Mechanical took tremendous opportunities to market those. We found that probably 90 percent of the consumers that we dealt with at the residential level would choose to go to the higher-efficiency equipment because the tax credit allowed them to offset the incremental costs from what would have been standard-efficiency equipment to the high-efficiency.

So, for them, it became the no-brainer in the equation; and we found that probably 90 percent of the time a consumer would say, well, if I can get a tax credit, why wouldn't I do this. So it was a very smart, smart thing to do.

Unfortunately those tax credits lapsed at the end of last year. We still market and promote high-efficiency equipment. We find by doing a lot of education that a lot of consumers will take advantage of that without the tax credit, but our rate of seeing people deciding to go to the uptick has reduced.

There are now—especially with economic conditions, gas costs where they are at, fuel heating costs where they are going to go this winter, people are starting to make that balancing act and say, do you know what, maybe I can't quite get there. And if they had the incentive, I can guarantee you they would.

Chairwoman VELÁZQUEZ. Thank you. I have other questions for the other witnesses, but I will come back on the second round.

And now I recognize Mr. Chabot.

Mr. CHABOT. Thank you, Madam Chair.

Mr. Rema, it is my understanding that there are some plans out in Oregon to tap the ocean tides out there as a source of energy to produce power.

Could you explain a little bit about that process out in your State and, additionally, what problems are being experienced trying to implement this new power source?

Mr. REMA. Well, it is a wonderful power source. Obviously, the ocean is always moving. There has been—the technology is there. It is being met right now with a little bit of resistance from our local fishermen, who have been very hard hit already anyway with decreased seasons, decreased stock of fish and also some of the environmental concerns.

But I think that is a tremendous technology, and I have been trying to watch it. And it is moving, but it is moving rather slowly.

Mr. CHABOT. Are you aware if it is being done anywhere else either in the United States or around the world successfully at this point?

Mr. REMA. I understand there are a couple of systems in New York. I believe there is one that is actually in the harbor, which harnesses the tidal movement in the channel, not necessarily out on the ocean floor.

Mr. CHABOT. Thank you.

Mr. Guiles, you mentioned in your testimony about buildings nowadays are tighter and healthier than they have ever been. And some years ago that would have been an oxymoron. And I was just wondering if you could touch a little bit on the improvements that have been made in that area to make that possible.

Mr. GUILES. Mr. Chabot, we have seen a number of improvements that have occurred over the last, I would say, 5 to 10 years, mostly in the realm of code improvements.

First place, and most efficiently with any building is, you have to build a good envelope. The very shell of the building is highly important; if you don't build that well, then we are going to have some problems there.

We always chuckle a little bit in our office. When you go back and you think about the energy crunch of the 1970s where people coming out of that say, we built really tight houses, and now people are getting sick because you can't breathe in them. We go in and we test those houses now and we find out that they are not quite as tight as we thought they were.

So we find that testing is a big, important part of determining just where we are with our buildings.

But improved envelopes is certainly a big component of what has been going on. And probably the next major one is where we use most of our electricity goes for heating and cooling the buildings and improvements in efficiencies, and those technologies have been very tremendous over the last 10 to 15 years. Manufacturers around the world, and specifically here in the U.S., have sunk billions of dollars into research and development, into technologies that are substantially more efficient than they are today. So we have seen those areas.

And then we get into the areas of water conservation and domestic hot water heating. Again, we use a tremendous amount of energy to heat our water in this country; and, again, those technologies have improved substantially as well. So all of that taken in combination provides us with opportunities today as we construct new buildings, to make them substantially more efficient than the ones that we currently live and work in.

So there are huge opportunities that exist out there for people to tap into just simply reducing the energy that we use. You know,

a simple 20 percent reduction in electricity and fossil fuel use in this country is going to result in tremendous job growth, environmental impact improvements. And do you know what? It is going to put less load on the grid.

All of it is going to be a very positive thing. But a lot of it is not going to happen if people don't have some incentives to kind of push them over the edge.

Mr. CHABOT. Thank you very much.

Mr. Wetstone, relative to wind power, for some time there were some animal rights activists who were concerned about birds, especially, that were being injured or killed.

Could you give us the latest credible research, what it indicates at this point about that whole controversy?

Mr. WETSTONE. Yes. Actually, the National Academy of Sciences has looked at the issue and concluded that wind turbines actually are not having any kind of a substantial impact on birds.

There was a single project that was built in a flyway in California, in Altamont, that was a problem. It was one of the first wind projects ever and did have an impact on some important species there. Since then, I think there was a great deal more attention to siting. We are actually participating, our industry, with a nonprofit community and pulling together an American Wind Wildlife Institute to address these concerns.

But the NAS concluded that wind turbines have less than 1/1,000ths of the impact of house cats in terms of impacts on birds, and less than 1/10,000ths of buildings—you know, that they just simply fly into buildings.

So it is not something we take lightly, but we do feel like there is not a serious impact on birds at this time as long as we are careful in siting.

And the turbines have been redesigned so that they don't have a trestle crosspiece for the birds to perch on, which was the case at Altamont. You know, there are these solid poles now, and the blades are much bigger so that it is a little easier; they are not these short, rapidly spinning blades. So they can be seen and avoided.

Mr. CHABOT. Thank you very much.

Mr. Resor, how has the cost-benefit dynamic changed over the past few years with respect to solar energy, and how much more efficient is the technology nowadays?

And if you could comment, my State happens to be Ohio, and we used to hear that States like Ohio in the Midwest are more challenging when it comes to solar as compared to Arizona, California, et cetera. Could you touch on that as well?

Mr. RESOR. Sure.

Generally, the cost-benefit is improving because you have got two major variables. One is, the cost of the equipment that you need for a solar system is coming down. Secondly, electricity rates are generally going up. And I think there is a very good study, put out recently by the Department of Energy, that looks at the country State by State and projects ahead as—I think they used a figure of about 4.7 percent per annum increase in electric rates, but that will vary by different regions in the country.

They map out basically how the solar cost is coming down like this, utility rates are going up like this, and where that cross point occurs—is already occurring in parts of California, a little bit now in Connecticut, Massachusetts and other small spots, but if you go out 2 or 3 years they cross in many more States because your cost-of-system prices are going down and your electricity prices are coming up.

And the third variable, which we don't have yet available at the residential level, is a way to finance the solar installation. The way you and I might go to a car dealership and buy a car, you know, you just sign some papers, you can buy it on a loan, a commercial company like Wal-Mart can install solar on their rooftops because they can get 20-, 25-year financing. There is a system set up to do that.

There are now, just beginning, people to look at, how can we do that on a residential basis. Unfortunately, with a credit crisis right now, people are a bit distracted, kind of trying to protect what they have out there as opposed to coming up with innovative products.

Mr. CHABOT. Thank you very much.

Ms. Lucke, as you mentioned in your testimony, the most recent Tax Extender bill that was voted, at least in the House, did not include the $2,000 tax credit for new homes achieving the 50 percent energy savings that was granted in the Energy Policy Act of 2005.

Could you tell us if there were any reasons that were given to your organization by the bill's authors as to why that particular provision was not included? Did you get any feedback or anything on that?

Ms. LUCKE. You know, I didn't. I am not very familiar with that bill. We haven't, at least in the Cincinnati area, been able to in the past—you know, to work with that energy code. It is $8,000 to $10,000 on the builder, and at least in the Cincinnati area, it hasn't been very beneficial. So I am not very familiar with that.

NAHB would probably be able to help you with that.

Mr. CHABOT. But it is your opinion that including that would be very important?

Ms. LUCKE. Absolutely, because it would only help with, especially a small business owner like myself.

Mr. CHABOT. As the other tax incentives that were mentioned here today, these are all important to the various industries that we have talked about?

Ms. LUCKE. Absolutely.

Mr. CHABOT. Thank you very much.

And then finally, Mr. Tindall, with the recent run-up in gas prices—and they are over $1 a gallon, as we all know, now, relative to—and I know with your industry, plumbing, heating and air conditioning, you have a lot of vans and trucks that are out there, traveling all over the place—what impact is that having on the bottom line in your industry, if you know?

Mr. TINDALL. Well, our gas prices for my company are up 50 percent, and that is with combining crews. You know, we are trying to take some measures to offset that problem.

It is a significant problem. Combine that with commodity prices going up, too, and we have been hit from basically every sector. We have got the fuel problem; we have got commodity prices going up.

DuPont recently announced a 20 percent increase. A lot of what we deal with are products that are produced with DuPont products alone. So it has been a significant problem, and we are forced, as I am forced as a company, to increase our prices because—to offset that charge. I mean, there is no other way around it.

Mr. CHABOT. And if I could conclude, just by a quick comment, and I would ask for the panel to acknowledge, even if we are using wind to provide more energy or solar for more buildings, et cetera, the fact is, with your businesses, I am sure you have vehicles and personal vehicles that are still getting around. So even if this is part of the problem, we still face the problem of a not sufficient energy supply relative to oil to put in our cars at this point, and that is something that needs to be dealt with seriously as well.

Does anyone disagree with that statement?

Mr. Wetstone.

Mr. WETSTONE. Well, not disagree, but I would certainly point out that there are connections between the electrical world and the fuel world. And in particular, I might mention that a long-time oilman, T. Boone Pickens, launched a campaign earlier this week promoting wind and other renewables with a notion that the percentage of the electricity now generated by natural gas—which is, I think, 22 percent—could be provided by renewables and that natural gas used to displace oil in vehicles.

In other words, you can power vehicles right now—technology is there—by natural gas. It is a pretty big change from a long-time oilman. And he is saying what we need to do is a crash course to expand these kinds of approaches: renewables efficiency, reduce the use of natural gas for electricity and, instead, put it in vehicles, and that could displace 38 percent of our oil imports, which is pretty substantial mostly. That is as much as we get from the Middle East right now and Venezuela combined.

Also that gives time for plug-in hybrids to develop, and that is obviously another technology where we are using electricity instead of oil, so these worlds can connect.

Mr. CHABOT. It is my understanding that Mr. Pickens has invested a pretty fair amount of money in the wind industry.

Mr. WETSTONE. He has invested in wind and oil. And I imagine a lot of other things, I guess.

Mr. CHABOT. I am sure he has. Thank you very much. I yield back my time.

Chairwoman VELÁZQUEZ. Mr. Sestak.

Mr. SESTAK. Thank you, Madam Chairman.

If I could follow up what I thought were really good questions by the ranking member and this interchange, because I was taken also by two things: the importance of getting the production tax credit, the ITC, and also the personal income tax credit for the solar, and the section 45L allowance continue to maybe increase from $2,000.

But I was taken by what you said earlier. There is this crossover point that as prices go up and the cost of solar energy comes down, more and more people will be turning to you. But I guess, to his point to some degree, we would all like to get that price going up to come down because people are hurting out there at the cost of

energy. And just making you more likable to come to isn't the only goal; it is how to make you less affordable.

But we didn't speak much about R&D tax credits therefore. And so my first question is how often does a house turn over on average? Someone told me what it was in one hearing. But when you own a house, how long do you keep it?

Ms. LUCKE. Typically about 7 years.

Mr. SESTAK. Seven years is what I got told also before.

So to make solar energy to be attractive, there is this more important point, I think: how much you should pay for that house with this solar energy, but you have only got a 7-year turnover point.

That is, to me, the more driving factor; and that drives you to, what are the best research and development incentives we should be aiming for to make solar energy less expensive—not more attractive just because of mass production and stuff, but what is that R&D? Is it nanotechnology or what?

Mr. RESOR. I think right now you can look at the venture capital community has invested a lot of different technologies. In my testimony, I summarize a couple of them.

One is, for example, thin film, which is actually a very exciting company based in Toledo, Ohio, called Xunlight, spelled with an X-U-N-L-I-G-H-T, which is a representative example for a new form of solar that will drive the cost down.

And they have got, I think, some R&D money from the State of Ohio, the University of Toledo and what-not.

Mr. SESTAK. Any Federal R&D?

Mr. RESOR. I am not aware of much Federal R&D.

Mr. SESTAK. Do you have any proposals for Federal R&D? We got yours for the tax incentives, but how about R&D, Federal?

Mr. RESOR. Again, I would defer to my colleagues at the Solar Energy Industry Association on that particular point.

I will point out that extending the ITC, in a sense is triggering capital investment that goes in the things you want to end up at. So I think—let's not lose sight of—from a Federal policy perspective, the ITC is basically stimulating more demand and creating more certainty, and that is what people in Silicon Valley want to see.

I spent New York yesterday with four sets of investors, and if we had an ITC passed in place today, the tenor of our conversation would have been more focused on how much money do you want to raise and where to deploy it, as opposed to, yes, you have a great business, there is an opportunity, but what about the ITC?

Mr. SESTAK. If I could—on the wind side, you cost, I think, about 5 cents per kilowatt hour, but the standard for electricity across the Nation is 12 or something—1.2 cents or something. What is the research and development to get you down?

Unless my figures are wrong. I mean, tremendous improvement from—80 percent reduction since the 1980s and all, but this is even more affordable with this crossover point.

Mr. WETSTONE. We do have a research and development agenda, and I would be happy to provide that for the record. I am not too knowledgeable on the details.

But I want to be clear that if you are looking at new electricity—which is really where the question is, is bringing something new on line—that we are competitive with new gas and new coal at this point when you consider the uncertainty about the carbon pricing and coal.

Mr. SESTAK. Your points are well taken. I am just curious, what can drive energy overall down—overall?

Can I ask you one other question? Is your new—there is LEED. What is the difference between LEED and this new national standard that NAHB is moving towards? Because—are environmental groups also involved in that consortium that is putting this national standard together?

Ms. LUCKE. There are, I guess, two points. The LEED program is pretty expensive.

Mr. SESTAK. But some people think it is a good marker.

I am not arguing this way. It might be expensive.

Ms. LUCKE. The new National Home Builders green building program has had actually a representative from LEED and other organizations to put this program together, which is very helpful. But—we actually personally built a LEED home this year, so I am very familiar with the LEED process; but it was very expensive.

And the new National Home Builders program is to help with—one, to make it more affordable for both the builder and the buyer and not have so many constraints towards what you need to do to get the certification. But there are other—you know, this is the national program. Other associations, locally—State and local—are also coming up with their own programs as well.

Mr. SESTAK. Thank you.

I was just asking because there might be different standards out there soon. And who pushes what, and is it environmentally good but too expensive, or what is the cost, not quite as good environmentally, I guess that will be a challenge.

But thank you. I am out of time.

Chairwoman VELÁZQUEZ. Ms. Clarke.

Ms. CLARKE. Thank you, Madam Chair, and ranking member for holding this very timely and important hearing today. Small businesses can play an important role. And combating global climate change, I think has been demonstrated by a lot of your conversation in testimony this morning. With these developments small businesses can and will drive our new and emerging green economy which can create new opportunities, good jobs and stronger communities.

After reading all of the witnesses' written testimony, I commend all of you for recognizing the importance of green technologies and how to create job growth in economic development. But let me state that I believe that economic development is not truly sustainable unless we address the many needs, including the economic and environmental needs of our underserved communities, be they remote rural communities or densely populated inner cities which face these challenges on a daily basis and where conservation can often be illusive for low-income consumers.

Let me ask if ″green job″ training programs were developed as a great way to move low-income residents, youth of color, into the green economy and, quite frankly, a green way of life, such a pro-

gram could provide low-cost solar system installation to low-income home owners and training low-income residents from the community to do the work.

Mr. Resor, do you believe that small solar energy businesses should partner with nonprofits to provide technical training that people need to partake in the emerging solar economy?

Mr. RESOR. Yes, I think there are several opportunities here. For example, we are a partner with Habitat for Humanity. We built some homes with them for, obviously, their new home owners.

Another example is, we are working with a real estate developer that owns many units of affordable housing, several thousand units, and they are trying to lock in a fixed utility price. This is in Massachusetts and Connecticut, where rates are escalating. In terms of job training, we are going to face a constraint in terms of the amount of installers and people that can do the installation. Right now, we are not facing that constraint yet, because industry is still growing and, quite frankly, the economy is off. So it is easy to find that kind. But presumably, when things pick up again, we are going to need those kinds of training programs, I think, and partner with some of the groups that you mentioned. There is a lot of potential for that.

Ms. CLARKE. Do you believe that a program like this could provide people with practical skills needed for entry levels of the job market?

Mr. RESOR. Yeah. We find in our hiring to date—for example, if you look at the installation of a solar system on a home, you typically have a crew of three people. The lead person has to have a lot of experience. Quite frankly, the second and third person can really learn on the job. So that is an example where there is a fairly reasonable entry for new trainees.

Ms. CLARKE. And would you say that our educational systems are really preparing that next generation of technicians that will be required in the new green space that we are creating?

Mr. RESOR. Well, that is a pretty broad question when you get into our overall educational system.

Ms. CLARKE. Are there skills that you would say are transferable?

Mr. RESOR. Yeah, I think there are. When I listen to the testimonies of my colleagues here, we partner really with everybody at this table in terms of—I mean, less so wind and solar since they are more in parallel. But in terms of heating, cooling people, contractors, electricians, plumbers, home builders, very much we share a lot of the same resource base in terms of personnel and the kinds of training that I think are needed.

Ms. CLARKE. Mr. Wetstone, would you say that this is applicable to your industry as well?

Mr. WETSTONE. I think it is. I think you see wind development more concentrated in rural areas. And there, I think, is a real opportunity—in windy rural areas, both—for folks to provide their own power with smaller wind facilities.

A lot of places where agriculture has been tough, where you are looking at what happens in a drought year, what happens when the market goes down, where we see farmers who are still able to work their land, but they are able to have utility-scale turbines and

they are getting payments of $3-, $4-, $5-, $6-, $8,000 a year for each turbine on their land and getting free electricity to boot.

Ms. CLARKE. So in those remote areas, remote rural areas, this is an opportunity for young people growing up in those areas that tend to migrate because of a lack of opportunity to see the green—the growth of the green industry as something that perhaps they could pursue as a career?

Mr. WETSTONE. Exactly. And, in fact, a number of our companies are supporting training and renewable engineering at local community colleges, because there is a tremendous demand for jobs right now in that area, and there is not enough training.

We have a lot of government support, for example, for training nuclear engineers, but it has been a long time since we built a nuclear power plant, and maybe that will happen—I don't know—but meanwhile we are producing those graduates, and our companies are finding it difficult to find trained engineers.

Ms. CLARKE. Thank you both very much.

Madam Chair, I yield back.

Chairwoman VELÁZQUEZ. Thank you, Ms. Clarke.

Mr. Tindall, you spoke about conservation efforts in terms of water. Installation of new infrastructure can make a big difference in conservation efforts. This includes products like low-flow toilets and high-efficiency faucets.

How accessible are these materials and building techniques to small business contractors?

Mr. TINDALL. Well, the materials are readily accessible. As a matter of fact, it came to my attention this week, by one of the national staff members, that one of the primary manufacturers of China has gone away from—or is moving towards going away from—producing the existing low-flush water closets of 1.6 gallons per flush and are going to go solely to the 1.28 gallon technology.

And that is due to consumer demand. It has hit these manufacturers at a much greater rate than what they ever anticipated, and we assume it is because of the high cost of water. The water utility rates are going up, and not only when you—water, it is—up to 12 percent of the Nation's energy produced, electric energy, goes to treating, cleaning or pumping water.

So if we conserve water by installing these readily available products, we can not only save the energy it costs to move the water—in California it is 20 percent—we can also save the energy it takes to heat the water when it gets into the home if it is a faucet that is using less water.

These products are readily available. We do feel, as an industry, though, that—as the rest of the industries here, that there needs to be some kind of a push to the consumer to get them over this hurdle of cost in this time, which there hasn't been in our industry.

Chairwoman VELÁZQUEZ. What are you doing, or your industry, in making sure that your contractors and their workers can meet increasing demand for these products and techniques?

Mr. TINDALL. Well, as I stated in my testimony, that we had—green plumbers is training.

And we are out—you know, the objective this year is to train 10,000 existing plumbers in green technologies; and that program offers the consumer the option for water conservation. Typically, a

plumber comes into your home and doesn't necessarily offer you these available technologies.

Some of them are relatively inexpensive. Changing your aerator out on a lavatory faucet from a 1.5-gallon-per-minute flow rate to a 0.5-gallon-per-minute flow rate can make a huge difference in water consumption in a home, and it is a relatively inexpensive repair. It can be done at the time of the service call.

So this training process of the existing workforce to retrain them to offer the consumer energy/water conservation measures is up and running, and to date, I believe they have trained 1,500 people and the goal is 10,000 this year.

Chairwoman VELÁZQUEZ. Thank you.

Mr. Akin.

Mr. AKIN. Thank you, Madam Chair.

We have got three Committees at the same time; it is kind of hard to be at all of them, and so I missed your testimony. But I appreciate all of the different things that you are doing to try and make things work together here.

One of the reasons that I tend to be a little bit skeptical, but perhaps aside from the engineering background is, I have seen a lot of these environmental efforts that we have made from a government point of view being almost perfectly counterproductive.

We try to do something like put MTBE in gasoline because it will burn a little bit more efficiently, and instead, the MTBE washes out of the gasoline into the groundwater and you create more problems than what you wanted.

And there are a lot of other examples like that. The fact that people drive very heavy, big, truck-type cars is partly because of the fleet mileages, which we thought was going to make it so people would drive around in smaller, more efficient cars.

There are a lot of times where we pass legislation, it kind of does the opposite.

I am just curious on the low-volume toilets, is that another one of these deals where you say, oh, yeah, you can only do it with half a gallon, but then you have to flush it four times or something like that? Are we sort of cutting off our nose to spite our face with some of these technologies?

I guess that is a concern that I have, that we make sure that things become practically doable before we jump into them too rapidly.

Mr. TINDALL. Is that something you want me to comment on?

Mr. AKIN. Yes, if you want.

Mr. TINDALL. We, as an organization, have the exact same concern.

As many of you may be aware, in the early 1990s when there were Federal mandates to reduce water consumption, part of the energy bill, the government required the manufacturers to go from the existing 3.5-gallon-per-minute flush water closets to 1.6-gallon-per-minute water closets. And as many of you probably had in your home, they simply didn't flush, and the consumer did not have a satisfactory experience.

The plumbing contractors ended up sharing most of the burden of that on us because we are the direct contact with the consumer.

They would come back, you have sold us a product that doesn't work. This process—

Mr. AKIN. Were you just limiting how fast the water could refill the tank or how much the tank actually held?

Mr. TINDALL. Well, basically all they did with the first generation of the 1.6-gallon-a-minute flush toilets was that they just limited the amount of water in the tank. There wasn't really any redesign of the existing water closet, so the product didn't work.

That has since been worked through, and the new products are quite satisfactory.

This round of product going from the 1.6 down to the 1.28 is a different scenario. The manufacturers have driven this. The manufacturers, they want this product out. They think—they have redesigned, reengineered these products, and they believe they work.

The PHCC, as an organization, is concerned, and we want to take a systems approach to this. It doesn't do a lot of good if we can get the waste through the product and then can't get it out of the home, or we can get it to the street and can't get it to the sewer plant, or we get it to the sewer plant and the design of the sewer plant is such that the water waste solid mixture is different than what it was originally designed for.

So we 100 percent agree that going forward with new technology such as greywater systems—there are rainwater reclamation systems. All these technologies need to be taking a systems approach. And we had—the PHCC is involved with the EPA, WaterSense, with the Alliance for Water Efficiency, with IATMO, with the I Codes. And it is still being worked out as to who is going to end up writing the standard. But we believe that the standard ought to be fully encompassing of the whole system.

Mr. AKIN. I appreciate what you are saying here. You answered my question exactly.

We just passed a bill that said—it was a bright idea that Congress came up with that we are going to get rid of light bulbs, which is an odd thing because there is a picture of bright ideas that has light bulbs. We are going to get rid of light bulbs and we are going to go with the mercury type. Well, those have got a big advantage. They use a quarter or less of the same energy as an incandescent bulb.

But they have disadvantages; that is, you break one in your home and you have got to call a hazmat team to clean it up for you because of the mercury in the bulb.

In engineering there is always a balance between these things, and we have to just be cautious as to how we proceed, it seems, to make sure that we don't get lopsided.

But, Madam Chair, I didn't mean to get too far afield from your hearing here, but it is a concern that we have to consider all sides of the equation. Thank you very much.

Chairwoman VELÁZQUEZ. Thank you.

Well, so much is going on in terms of how can we address the issue of energy independence in this country and how can we help legislatively to move forward an agenda that will green the American economy and create jobs.

We have a legislative instrument; the House passed H.R. 6049. We all heard here how important it is to incentivize a green econ-

omy by providing these type of incentives not only for the small businesses, but also consumers. We will continue to work in advocating for these extenders and reach a compromise between the House and the Senate.

So I want to thank all of you for being here. I also want to take this opportunity to recognize Mr. Rema's wife and daughter. I believe they are here. And this is their first trip to Washington. So welcome.

To all the witnesses, thank you for your participation.

I ask unanimous consent that members will have 5 days to submit a statement and supporting materials for the record. Without objection, so ordered.

This hearing is now adjourned.

[Whereupon, at 11:35 a.m., the Committee was adjourned.]

NYDIA M. VELAZQUEZ, NEW YORK
CHAIRWOMAN

STEVE CHABOT, OHIO
RANKING MEMBER

Congress of the United States
U.S. House of Representatives
Committee on Small Business

2361 Rayburn House Office Building
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STATEMENT
of the Honorable Nydia M. Velázquez, Chairwoman
United States House of Representatives, Committee on Small Business
Full Committee Hearing: "The Role of Green Technologies
in Spurring Economic Growth."
Thursday, July 10, 2008

Innovation has long been a catalyst for economic recovery. It has powered world markets and pulled our own financial system out of countless downturns. In the mid 1990's, for example, the dotcom boom led the country out of recession and rejuvenated a struggling marketplace. Today, as our nation strains under similar declines, new technologies are once again offering a lifeline.

With jobs vanishing, payrolls falling and the cost of living skyrocketing, Green Technology promises to lift us back up. Once considered an exclusively environmental issue, the search for renewable energy has taken on a new role—Economic Stimulus.

In this morning's hearing, we will discuss the role of small firms in America's efforts to become ecologically aware. We will also explore ways in which eco-conscious entrepreneurs can set business back on track, and turn the country's blue collars green.

Sustainable industries would drive billions of dollars into the marketplace. They would also create hundreds of thousands of new jobs and bolster our nation's cash-strapped working class. And while efforts to promote efficiency will take innovation and flexibility, our small businesses are up to the challenge. Today, entrepreneurs are leading the Green Revolution.

Small firms comprise over 90 percent of the renewable and efficiency industries. Already, these sectors are galvanizing the workforce. In 2006, they generated 8 million new positions. And in the near term, the wind power industry promises to single-handedly create 400,000 new jobs.

These new positions will touch all facets of the workforce. Unlike the tech boom, which created work almost exclusively for college-graduates, today's jobs will benefit PhD's

and blue collar laborers alike. By 2030, as much as 25 percent of American workers-- or 40 million jobs—are expected to fall under this Green umbrella

By creating new positions and driving demand in sectors that already exist, Green Technologies can power industry without reinventing the wheel. In other words, workers across the country can benefit from a sustainable economy without switching careers.

In addition to supporting current American commerce, these advances present tremendous potential for trade and investment. American entrepreneurs hold the lion's share of Green assets, which are now globally sought-after commodities. Indeed, every world market has a need for these goods and services. If American entrepreneurs can fill this need, they stand to reap billions—possibly *trillions*--of dollars in export revenues. At present, analysts value the alternate fuels market at 1 trillion dollars.

Investors recognize this tremendous profit potential, and are clamoring to capitalize on it. The same Venture Capital firms that backed the dotcom boom are now powering green technologies. Already, these firms are pouring billions of dollars into industries like solar power. And as investors increasingly support green technology, the benefits are diffused throughout the entire marketplace.

Innovation has brought us to the threshold of an economic revolution. Just as the tech boom transformed the American marketplace in the 1990's, Green Technologies can strengthen today's system.

It is rare for a country to have the chance to do something both financially responsible and environmentally sound. Today, we have that chance, and we must ensure that the window of opportunity stays open. In doing so, we can look to our small businesses, who are propelling our nation's burgeoning Green Economy.

I want to thank all the witnesses in advance for their testimony. The Committee is pleased they could join us this morning, and looks forward to their insights on this pressing issue. With that, I now yield to Ranking Member Chabot for his opening statement.

Opening Statement

Ranking Member Steve Chabot

House Committee on Small Business

Hearing: "*The Role of Green Technologies in Spurring Economic Growth*"

July 10, 2008

Good morning, everybody. Thank you for being with us today. We are here to take a look at the role of green technologies in spurring economic growth. I commend the Chairwoman for calling this hearing and look forward to hearing the testimony. Before we begin, I would like to personally thank Ms. Andrea Lucke (PRONOUNCED **LUCKY**) for making the trip from Cincinnati to be here today.

Energy is the lifeblood of the economy. U.S. economic prosperity is closely tied to the availability of reliable and affordable supplies of energy. It is not just the United States that is going to need more energy in the coming years. Our traditional energy supplies will be increasingly strained by dramatic growth in global demand. Today's topic not only has far reaching implications for our economy, but also our future energy needs as well.

Great strides have been made in developing alternative fuel sources, with a large amount of attention being given to renewable fuels. For example, biodiesel and ethanol have been proven to be safe optional fuels which are derived from bountiful and renewable sources. Wind and solar power also offer great promise in the quest for alternative resources. I am certain that further research into alternative energy sources will yield new technology and techniques for producing energy that most of us here today in this room cannot even fathom.

The industries that produce this "green technology" are relatively new, and are still evolving. Small businesses, with their new ideas and willingness to take risks to innovate, will be at the forefront of these industries. I look forward to working with you, Madame Chair, to find ways to help spur growth in these exciting new small businesses.

Unlike some others on Capitol Hill, I firmly believe that the search for new energy sources should not be a zero sum game, which is why I believe exploring these new energy production and conservation technologies is important. Our economy is driven by energy, and we must explore ways to meet our energy needs. That means looking for ways to increase production of everything we need--including oil, coal, and nuclear capabilities in addition to these new methods. We must not neglect the current reality that without dependable, reliable and home grown fossil fuels, our economy will continue to falter. While looking to the future of energy independence, we have to make certain the federal government is doing all it can to provide the fuel our current economy needs to grow.

Simply put, we must balance research initiatives and incentives into new renewable fuel technologies that will eventually replace our current reliance on fossil fuels, while ensuring we have an abundant and affordable source of energy right now. Unfortunately, I do not believe that the major energy bills we have considered this Congress have achieved this balance. These bills create no new energy sources at all, and if anything, make fossil fueled energy more expensive—which in turn will make us even more dependent on foreign sources.

The new energy technologies that will be discussed here today offer great promise to the American economy now and in the future, but we must also be able to maintain our current energy production while fostering growth in these exciting new fields. Again, Madame Chair, I appreciate your calling this hearing and I look forward to hearing the testimony of our esteemed panel. I yield back.

Statement of Rep. Jason Altmire
Committee on Small Business Hearing
"The Role of Green Technologies in
Spurring Economic Growth"
July 10, 2008

Thank you, Chairwoman Velazquez, for holding this hearing to discuss the role of green technologies in spurring economic growth. As energy prices continue to rise, more and more businesses are beginning to look for viable alternatives. Small businesses dominate many of the industries that are producing these alternatives. Construction companies, electric contractors, and agriculture firms are at the forefront of the transition to green technology and green jobs.

This is a great opportunity for small businesses around the country to benefit from the development and implementation of these new green technologies. Last year, the House passed legislation aimed at helping small businesses acquire energy efficient technologies and authorized funds to establish national and state job training programs for the green job market. I look forward to the testimony that today's panel will provide and I hope we can use their insight to assist us in continuing to promote small business development and growth in the areas of green technology and green job creation.

Chairwoman Velazquez, thank you again for holding this hearing. I yield back the balance of my time.

# # #

Statement for the Record

of the

NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION

Committee on Small Business

U.S. House of Representatives

For the hearing

The Role of Green Technologies in Spurring Economic Growth

July 10, 2008

NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION
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Introduction

Madam Chair, Ranking Member Chabot, Members of Small Business Committee, thank you for the opportunity to appear before you today. It is an honor and privilege to appear before the committee that has tremendous impact on my business, my community, and the thousands of electrical contractors who also operate as small businesses.

In addition to speaking from the perspective of a small business owner on the role of green technologies in spurring economic growth, I am also here representing the National Electrical Contractors Association (NECA), an association of which my company is a member.

NECA is the nationally recognized voice of the $130 billion electrical contracting industry, responsible for bringing power and communications systems to communities, buildings and homes. In all, NECA represents more than 80,000 US businesses and employs more than 750,000 workers in every state.

I am Randy Rema, the owner and President of Reese Electric in North Bend, Oregon. Reese Electric began as a two person electrical contracting business back in 1946. Since I took over 4 years ago, my company has grown to 61 employees and has been recognized by the Chamber of Commerce as the "Business of the Year" and was ranked 1st in the small business category for Construction Safety Excellence.

The Changing Electrical Contracting Industry

By definition, "green building" represents a movement to reduce the adverse social, economic, and environmental effects that existing buildings cause and reduce the impact of new building construction. The ultimate goal of green building is to transform the design and construction of buildings to be environmentally responsible, profitable, and healthy places to live and work.

The focus of my testimony will be how "green building" produces jobs and provides economic stimulus.

How is NECA addressing Green Building?

In response to the growing green technologies movement, NECA has incorporated green technologies in its training and certification programs, spending $100 million per annum on its National Joint Apprenticeship and Training Committee, a program run in conjunction with the IBEW. NJATC has implemented green training programs to ensure that new electricians, as well as the industry's seasoned journeymen, have the skill sets necessary to operate in the increasingly green economy.

And it's a good thing NECA has invested in this training as a recent study from the Political Economy Research Institute projected that the electrical contracting industry would be the single largest producer of jobs in the specialty contractor trade and would be one of the top 5 producers of jobs in a green economy. The reasons for such strong projections for green job growth for skilled electricians include, but are not limited to:

- retrofitting buildings with green technologies,
- developing more energy-efficient mass transit systems,
- installing smart meters, which help consumers reduce transmission load on the grid, and
- creating, installing, and maintaining, clean, efficient, and self-sufficient energy systems for residential facilities and commercial buildings.

Clearly, the role of the electrical contractor expands as the green economy grows. The electrical contracting industry is well positioned to promote, expand, and create an industry marketplace where they are not only the installers of energy efficient electrical systems for our homes and businesses, but to be the providers of the energy generation systems that would make our homes and buildings self-sufficient.

How is Green Building impacting Reese Electric?

I have experienced first hand the economic, business, and environmental benefits of an industry transformation that has trended towards clean energy technologies and green job growth through business development.

This year we have contracts worth $2 million for solar panel installations, which represents almost 25% of our total business. For 2009, I can project an additional $2 million worth of opportunities for those seeking building retrofit and other investment in green energy technologies. For my small business, this amounts to the employment of at least 8 new electricians, plus support staff, with the possibility of even greater employment opportunities at competitive wages.

Just last year, I put my belief in green technologies to the test and invested in my company's infrastructure and retrofitted our roofing system with a $212,000 solar panel unit. I had projected a 20 year payback on the system but with increasing energy costs and the potential to sell off extra power through potential utility buyback programs, I believe my investment will exceed my earlier predictions and my company will realize an accelerated payback.

Extend renewable energy tax incentives

Federal tax incentives have helped to offset the substantial capital investment in renewable energy technologies. I understand that unless Congress acts, many of

these incentives will expire at the end of this year. These incentives have allowed my company to improve the energy efficiency of my facility, hire new workers, and to support other local businesses, including several Portland-area solar panel manufacturers, which have brought over a billion dollars in investments to our state and added thousands of new living wage jobs.

Green opportunities for electrical contractors will contract if the renewable energy tax incentives, such as the commercial building tax deduction, are not extended. If there is an action item I might leave you with it would be that you please ask your Senate colleagues to support H.R. 6049 so that these renewable energy incentives are extended.

The Future is Green

In conclusion, green technologies provide the tools to build a better country and our small businesses are laying the foundation for a better tomorrow. These technologies are working to transform our nation's infrastructure and expand green jobs industries. Only by harnessing the power of these technologies and the potential job growth they bring, are we able to both expand and grow our economy.

Indeed, the future is green and for my business, that means gold.

Thank you for the opportunity to be here today, not only representing my company Reese Electric, but also NECA, our industry trade association.

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Written Testimony of
Ellis Guiles
Director of Sales & Marketing,
TAG Mechanical Systems, Inc.
Of Syracuse, New York

On Behalf of the
Air Conditioning Contractors of America (ACCA)

Submitted To the House Small Business Committee
Full Committee Hearing on "The Role of Green Technologies in Spurring Economic Growth"

July 10, 2008

Introduction
Chairwoman Velazquez, Ranking Member Chabot and members of the Small Business Committee, thank you for the opportunity to provide testimony on the economic growth and job creation potentials of green technologies in the heating, ventilation, air conditioning, and refrigeration (HVACR) industry.

My name is Ellis Guiles and I am the Director of Sales & Marketing of TAG Mechanical Systems, Inc, a heating, cooling, and indoor air quality service company that serves both residential and commercial customers in the Syracuse, New York metro area.

I come before you as a member of the Air Conditioning Contractors of America (ACCA). I currently serve as the Chairman of the Government Relations Committee for ACCA. I am also a member of ASHRAE, and served as a past president of Central NY Chapter. I am a Board Member and Treasurer for the Building Performance Contractors Association of New York State. And I authored "LEED, Follow or Get out of the Way" a book describing how mechanical contractors can implement green building practices in their businesses to make them more profitable.

Every day, thousands of ACCA members help homeowners, small business owners, and building managers realize the comfort, convenience, and cost benefits of energy efficient HVACR equipment. What I hope to demonstrate today is that going "green" with new HVACR equipment can have a positive impact on the bottom line for home owners, small businesses, and the overall economy.

ACCA and its industry partners foresee a wealth of *job creation and economic development* opportunities from the burgeoning "green movement" right here in America. The majority of residential and commercial HVAC equipment sold in the United States is manufactured and warehoused in the United States. And the installation jobs held by contractors cannot be exported.

At the same time, ACCA members see tremendous possibilities in *greater energy efficiency* through emerging and existing technologies that will benefit homeowners and small businesses through lower utility costs, improved indoor air quality, fewer CO_2 emissions, and more money to invest or spend.

The potential for America's small businesses and the HVACR contractors that service those small businesses, for job creation, economic growth, and environmental protection are limitless. However, in order to turn this potential into reality, Congress needs to provide direction and assistance through **tax incentives, increased public awareness, proper installation and maintenance, and code enforcement**.

Energy Use and the HVACR Industry
Increased efficiency is the low hanging fruit in the effort to reduce energy consumption, promote national security, and stimulate the economy. According to the Department of Energy's 2005 Buildings Energy Databook and the Energy Information Administration, residential buildings account for 22% of all US energy consumption. Of that, 30.7% goes toward space heating and 12.3% goes toward space cooling, with another 12.2% going toward water heating. Commercial buildings account another 18% of total US energy consumption. Within those buildings, 14.2% of the energy consumed goes toward space heating, 13.1% goes toward space cooling, and 6% goes toward ventilation.
All told, nearly $142 billion was spent nationally in 2005 on space heating and cooling for both residential and commercial buildings combined.

Now consider that according to the 2005 Residential Energy Consumption Survey, 39% of the residential central air conditioners and 60% of residential heating equipment were more than 10 years old. Since 1990, only 30% of commercial buildings have had their main heating equipment replaced, and only 37% have had their main cooling equipment replaced.

Realizing a 15-20% reduction in energy consumed by residential and commercial buildings, using available technology, is not unreasonable. This would result in $28 billion in saved energy expenditures while creating a tremendous number of jobs within the HVACR industry as demand for more efficient equipment and its installation occurs. There would also be an increase in tax revenues due to increased jobs and sales/installation of equipment providing a funding mechanism to allow for a balanced approach (tax revenues offsetting tax incentives) to funding tax incentives for individuals and businesses who want to take advantage of technologies available today.

Real World Residential and Commercial Examples

During the last 2 years my company, TAG Mechanical, has worked with Actus Lend Lease as part of their military housing privatization initiative at Ft Drum, NY. During this time we have installed HVACR systems in 845 homes and have also rated over 600 (all 845 will be rated before end of September 08) of these homes to New York State's Energy Star New Home criteria. Our initial efforts involved "right sizing" the HVACR systems and then working with Actus Lend Lease to achieve homes which generally have 30% or lower energy usage as compared to a comparable "code" home. This results in lower energy costs for the soldiers who live in these homes, improved indoor environments and lower greenhouse gas emissions. A win for everyone because Actus Lend Lease was concerned about providing a superior product to their military customer.

TAG Mechanical Systems, Inc was awarded a contract to perform renovations at the New Boston Air Force Space Command Center located in New Boston, NH. During the initial kick-off meeting for the project multiple stakeholders expressed their views and opinions on the current state of the buildings HVAC system. This facility monitors satellites for the US Air Force and has more than 60% of the facility with mission critical environments which must be maintained 24/7. A major renovation was designed in 1999 and was only now, in 2007, on its third and final phase. Through all of these renovations major operational issues and concerns had not been adequately addressed or corrected and new ones (such as dust accumulating on sensitive data processing equipment) had arisen.

After our initial meeting with the facilities' stakeholders, we performed an extensive operational survey of the facility, collecting data on the existing building's construction, current use and anticipated future requirements. Based upon these findings and development of extensive computer models of the facility we provided a revised scope of work which is projected to reduce utility expenses by approximately $48,000 per year, improve the reliability of the existing HVACR system, improve temperature and humidity control through-out the facility and provide a simple payback of under 2.5 years (based upon the incremental cost increase from the original contract amount to the proposed new contract amount).

None of this would have been possible if the Air Force had taken a simple "this is what was designed" approach to this particular project. Instead they were willing to consider alternatives that would address their perceived needs and perhaps even a few they didn't know they had.

In the end, the Air Force will have a more efficient facility performing their mission for less cost with better performance from their staff because the environmental conditions will be more acceptable to everyone in the facility.

Tax Incentives

Improved efficiency may be the low hanging fruit in our nation's efforts to reducing energy consumption, but not everyone can reach that fruit to take advantage of its benefits. In the last ten years, efficiencies for central air conditioners, heat pumps, and furnaces have increased tremendously, both through mandatory regulations and research

and development by HVACR equipment manufacturers. For example, in 2006, the minimum energy efficiency rating for a residential and light commercial central air conditioning set by the federal government increased 30 percent. In the two years since the Department of Energy raised the federal minimum energy efficiency rating standard for central air conditioners and heat pumps, equipment manufacturers have seen a 25% decrease in the sale of new units, and a 25% increase in the sale of replacement parts. Consumers find it harder to afford the minimum level, so they are forced to maintain older, inefficient equipment that is more costly to run instead of investing in new, high efficiency models.

Cost is the greatest hurdle to these technologies for homeowners and small businesses. The higher efficiency products cost more in upfront costs, due to higher component costs, installation requirements, and economies of scale. However, the initial investment on a high efficiency appliance earns a shorter payback period with lower life cycle costs.

ACCA has advocated for tax incentives to make higher efficiency equipment more attractive to residential and commercial clients. These tax incentives assist homeowners and building owners in making a more informed choice when purchasing new HVACR and plumbing equipment. In many cases, the incentives helped justify the added cost of a high efficiency system by reducing the payback period of the investment.

Residential Buildings
Section 1333 of the Energy Policy Act of 2005 created a residential tax credit for energy saving home improvements. Homeowners that installed qualifying high efficiency appliances, including central air conditioners, heat pumps, furnaces and boilers, water heaters, and furnace fans during the years 2006 and 2007, could claim a cumulative total $500 in tax credits over the two years by filing IRS form 5695.

During the years it was available, ACCA members found this particular tax credit to be a strong incentive for home owners to select a higher efficiency furnace, air conditioner, heat pump, boiler, or water heater.

An extension of this tax credit has been included in one of the several energy efficiency and renewable energy tax credit proposals passed by the House and Senate. As you know, these bills have been bogged down due to disagreement over offsets and other issues. I am concerned that the delay in extending this successful tax credit is causing homeowners to miss the opportunity to benefit from lower utility costs and increased energy efficiency.

And now we are facing the prospect of significantly higher prices for heating fuels, such as heating oil, natural gas, and propane. Federal and state governments spend billions on heating fuel assistance for low income individuals. Perhaps some consideration should be given to also assisting in upgrading to more efficient heating equipment.

Most homeowners replace their older, inefficient HVAC and plumbing equipment when it breaks down beyond repair, which typically occurs in January and February for heating

equipment, and June, July, and August for cooling equipment. In order to make sure consumers can take full advantage of an extension, action by Congress must be completed in the very short term.

While the extensions proposed would be retroactive to January 1, 2008, these tax credits must be extended beyond the proposed expiration date of December 31, 2008. More than half of the proposed extension has already passed and includes the months that see the highest incidence of HVAC and plumbing equipment replacement. Homeowners faced with equipment replacement since the beginning of the year could not rely on information that Congress may pass an extension. As a result, we will never know how many homeowners that purchased a new furnace, air conditioner, heat pump, boiler, or hot water heater since the beginning of the year would have opted for a higher efficiency product.

In order to get the maximum impact, Congress must consider at least a two year extension of this important provision. Doubling the term of the extension should not double the cost in lost revenues.

Commercial Buildings
Section 179D of the Internal Revenue Code authorizes the Commercial Building Tax Deduction until December 31, 2008, which allows buildings owners to claim a tax deduction of up to $1.80 per square foot for expenses incurred for energy-efficient commercial building property in the year in which the building or improvements are placed into service. Extending §179D would give building owners more time to make energy efficiency improvements and take advantage of the $1.80 per square tax deduction.

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Renewal of the residential tax credit and an extension and increase of commercial building tax deduction are critical to encouraging the transition to high efficiency HVACR equipment. ACCA is working to extend these important tax incentives in order to promote energy efficiency and reduced energy consumption.

Accelerated Depreciation Schedules
Under current tax law, a building owner must treat HVACR equipment as non-residential real property and therefore its costs may only be recovered over 39 years. Because the expected lifespan of properly maintained HVACR equipment is only 15 to 20 years, commercial building owners have little or no incentive to upgrade to newer, more energy efficient HVACR equipment.

HR 4574 was introduced by Representatives Melissa Bean and Peter Hoekstra to correct this disparity and reduce the holding period to a more realistic 20 years for HVACR equipment that is 10% more efficient than the federal minimum standards and a 25 year schedule for all other HVACR equipment.

In addition to providing a more realistic depreciation schedule, HR 4574 promotes economic stimulus and energy conservation. Passage of HR 4574 would stimulate

domestic job creation at the manufacturing, distribution, and contractor segments in the emerging green market economy. In the past 15 years there have been dramatic advancements in HVACR technology, making the equipment manufactured today extremely energy efficient, which means lower utility bills and less energy use. Providing a financial incentive to building owners now would encourage them to upgrade to more energy efficient equipment instead of waiting until their outdated equipment breaks down beyond repair, which is the current practice today.

Small Business Loan Programs
Rep. Heath Shuler's Small Energy Efficiency Act that was passed into law as part of the Energy Independence and Security Act will encourage small businesses to upgrade by expanding eligibility under current federal loan programs to energy efficiency improvements. The Small Energy Efficiency Act will help America's small businesses take advantage of newer, more efficient heating, ventilation, and air conditioning (HVAC) technologies. This important bill will encourage small business owners to upgrade to systems with lower operating costs instead of simply maintaining their inefficient systems through repair, freeing up more funds for capital investment and job creation.

Increased Public Awareness
The Energy Policy Act of 2005 created two HVAC-specific energy efficiency consumer education and public information initiatives that direct the Environmental Protection Agency, the Department of Energy, and the Small Business Administration to work together and promote energy efficiency by small businesses and home owners and landlords.

Section 132 of the Energy Policy Act directed the Department of Energy and the US EPA to "carry out a program to educate homeowners and small business owners concerning the energy savings from properly conducted maintenance of air conditioning, heating, and ventilating systems." Section 132 also directed the Small Business Administration and the US EPA to develop an Energy Star for Small Business Program.

Funding for Section 132 was "authorized to be appropriated such sums as may be necessary to carry out this subsection, which shall remain available until expended." However, funding has never been requested in the federal budget for this program, or appropriated by Congress.

Section 134 directed the Secretary of Energy to carry out a "comprehensive a comprehensive national program, including advertising and media to inform consumers about the practical, cost effective measures that consumers can take to reduce consumption of electricity, natural gas, and gasoline, including (a) maintaining and repairing heating and cooling ducts and equipment. The intent of section 134 is to promote energy efficiency on a national scale with a general message about by reducing consumption of electricity, natural gas, and petroleum.

The Energy Policy Act authorized $90,000,000 a year from FY06-FY10 for the purposes of carrying out Section 134, but no money has ever been requested by the White House or appropriated by Congress.

Code Enforcement

Over the course of the last four years, I've performed more heat loss/gain calculations on both residential and commercial buildings than I have in my previous two decades in our business, and there have been times when I've leaned back and thought, "These numbers can't be right." Properly sized HVACR systems are critical to lowering energy consumption, improving comfort, indoor air quality and reducing greenhouse gas emissions. Too many HVACR systems are designed and installed using "rules of thumbs" and are not reviewed by local Code Officials for compliance with local and national codes. Investments in training code officials and HVACR contractors to understand compliance with the Energy Codes would provide lower energy usage, better indoor environments and more jobs.

ACCA supports HR 4471, the Community Building Code Administration Grant (CBCAG) Act which would award grants, on a competitive basis and with federal matching funds, to qualified local building code enforcement departments to increase staffing, provide staff training, increase staff competence and professional qualifications, support individual certification or departmental accreditation, or for capital expenditures specifically dedicated to department administration

Proper Installation and Maintenance

In too many cases, efficiencies are not realized because of improper or poor installations performed by under trained or poorly trained HVACR contractors. Improper installation of an HVACR system can result in efficiency reductions of up to 50%.

HVAC systems don't operate "out of the box". Today's contractor uses sophisticated tools and programs to design a system that matches the building's intended uses. ACCA members regularly use such programs as ACCA Manual J, N and D to properly size HVACR system prior to installation. They employ standards such as ACCA QI to insure these systems are installed properly and deliver the efficiencies stated in the manufacturer's literature. Finally, they encourage building owners to make use of Standards such as ASHRAE/ACCA 180's Commercial HVAC Maintenance standard to insure these systems continue to perform as specified and design over their intended lifetimes.

A significant market opportunity for improving the quality of HVAC equipment installations and service involves raising the awareness of consumers and building owners / operators about the benefits provided by professional contractors following industry-recognized quality installation practices (e.g., correct equipment selection, installation, and commissioning). Building owners / operators and residential consumers need to be informed of the links between comfort, humidity levels, utility bills, and indoor air quality with a proper HVAC system design and installation. Once aware, consumers will better understand the value of a high performance standard from their

HVAC contractor. This understanding will also help position consumers and building owners / operators to consider the complete value-to-cost equation, not merely the "first price," when making HVAC equipment purchasing decisions. Customers who select contractors that promote high performance HVAC equipment – and their proper installation – enjoy enhanced comfort, reduced energy usage, improved occupant productivity, and enhanced occupant safety.

Heating Ventilating and Air-conditioning (HVAC) Contractors use different approaches for inspecting and maintaining HVAC systems. There are many types of "seasonal tune-ups", "clean and checks", and "maintenance services" performed on HVAC equipment. However, there was no way to determine if the minimum level of inspection tasks had been performed. This standard was written to establish a minimum level of acceptable compliance for HVAC equipment maintenance inspections.

HVACR systems are the heart of every building making them comfortable places to work and live. However, they are far too often overlooked because they aren't sexy or don't speak to the aesthetic needs of the individuals living and working in these buildings. You, are representatives in Washington, have a unique opportunity to put into place legislation encouraging Americans to take advantage of the technologies available today to help lower their individual energy usage and improve our national security by lowering our dependence on foreign sources of fossil fuels. Put together and pass legislation that will stimulate home and business owners to upgrade their existing HVACR systems.

Testimony of the

American Wind Energy Association

before the

House of Representatives
Committee on Small Business
The Honorable Nydia M. Valazquez, Chairwoman

"The Role of Green Technologies in Spurring Economic Growth."

July 10, 2008

Gregory Wetstone
Senior Director for Government and Public Affairs
American Wind Energy Association

Chairwoman Velazquez and members of the committee, my name is Gregory Wetstone and I serve as Senior Director for Government and Public Affairs at the American Wind Energy Association (AWEA). Thank you so much for the chance to join you this morning and talk about the tremendous opportunity for small business associated with wind energy in the United States.

Although we also have a number of big companies like General Electric and BP, most of our more than 1,500 members are small businesses. These companies produce critical wind turbine components like gears, bearings, and electrical parts. They make composites for blades, and provide maintenance for wind turbines. They're in the shipping and transportation business and they work construction as wind farms go up around the country.

This is no small matter. Once a boutique power source, wind energy has now moved into the mainstream of U.S. electricity generation. The U.S. currently boasts more than 18,000 megawatts of wind generating capacity spanning 34 states and producing enough electricity to power 5 million homes. For three consecutive years wind has been second only to natural gas as a source of new electrical capacity. The rate of industry growth escalated dramatically in 2007, when new installations more than doubled and wind provided 35 percent of the nation's new electrical capacity.

With one of the best wind power resources of any nation and rapidly growing electricity demand, the U.S. is today the world's biggest market for wind energy development. The construction, manufacture and operation of wind power facilities is a rare bright spot in a tough economy, creating jobs and spurring growth to the tune of more than $9 billion in investment last year. Since January 2007, 28 new wind industry manufacturing plants have opened or been announced in Arkansas, California, Colorado, Idaho, Illinois, Iowa, Michigan, Montana, Nebraska, New York, North Carolina, Oklahoma, South Dakota, Texas and Wisconsin. A wind turbine has some 8000 parts, and a turbine assembly plant can be expected to rely on some 400 sub-suppliers, many of which are typically small businesses.

Growth in U.S.-based manufacturing has not been limited to just the turbine assembly companies and manufacturers of major components. The wind power supply chain is also spurring an expansion in demand for basic products and materials used in other industries. For example, suppliers to the automotive and other heavy-equipment industries — such as steel providers, foundries, and fabricators — are now providing the raw materials, metal castings, and machining for wind turbines.

Blades are one of the largest components that make up a wind turbine. By the end of this year, the U.S. will have at least eight different blade manufacturers with a total of eleven U.S. manufacturing locations employing over 5,000 people. In 2005 there were only two U.S. facilities. Gearboxes for wind turbines have historically been imported. However, today companies like Winergy Drive Systems, based in Illinois, are expanding capacity to meet growing demand. Another company, K&M Machine Fabricating, Inc. of Michigan once primarily served the mining and construction industry. But today K&M finds most

of its business from wind power. Because of wind energy growth, K&M expects to add an additional 120 jobs over the next two years to a state that is in its fourth year of recession.

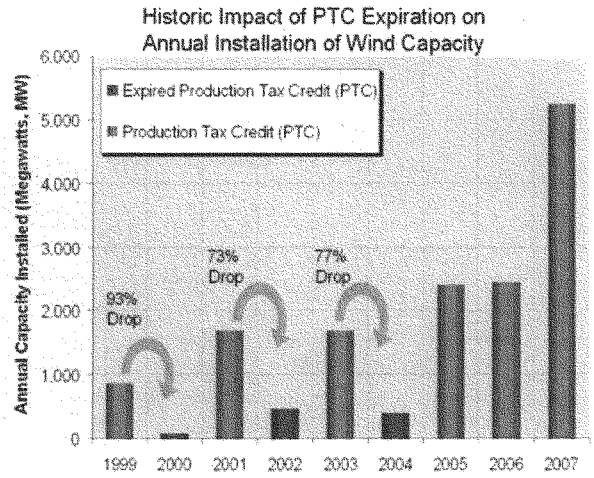
Other states such as Iowa, Pennsylvania and Ohio have been quick to seize the wind opportunity, creating task forces and plans to capture wind component manufacturing. Since 2005, Iowa alone has brought half-a-dozen wind energy companies and thousands of new jobs to the Hawkeye state. As for Ohio, *Gear Technology* magazine notes that "from casting for gearboxes, to tension bolts, to pitch control systems, Ohio companies are already manufacturing key components for this rapidly growing industry."

In addition to spurring thousands of new green jobs, wind power also helps diversify America's power supply and stabilize electricity costs, which is good news for *any* small business. Since wind uses no fuel, the price of electricity from a wind farm is unaffected by gyrations in global markets for oil and natural gas. Studies project more than $100 billion in consumer savings if wind and other renewable energy sources provide 15% of our electricity.

The dramatic recent growth in the wind industry could be just the beginning, according to the U.S. Department of Energy (DOE) which last month released a report documenting the feasibility of expanding wind power to provide 20% of U.S. electricity needs by the year 2030. To achieve this growth, the U.S. will need to surmount important challenges: increasing transmission, providing stable federal policy support, and continuing to build wind turbine manufacturing capability. But no technological breakthroughs will be needed.

Such an expansion in wind power would create 500,000 American jobs. But that is only the beginning of the benefits. Achievement of 20% wind power would also boost economic development in windy rural areas, promote our energy security, and provide for a critical contribution to the climate solution, reducing greenhouse pollution as much as taking 140 million vehicles off the road.

Wind energy has been a source of important economic growth over the past three years, especially for small companies. But today, all of that progress is in jeopardy. The reason is that the one major federal policy that supports renewable energy, the Production Tax Credit (PTC), is about to expire. The PTC has expired three times since 1999, leading in each case to dramatic declines (70 to 90 percent) in new wind power development. (See the chart I below.)



Already, the delay in extending the renewable energy credits is reducing investment in wind energy projects scheduled to come on line next year. Not surprisingly, investors want to know what tax policies will apply before they commit to projects for the next calendar year. A study by Navigant Consulting concluded that expiration of the tax credits would place 76,000 wind industry jobs, and more than $11 billion in clean energy investment at risk.

There is broad support across the political spectrum for extending the credit. It is absolutely critical that Congress act quickly to find a way through the current impasse and enact a full value, long-term extension of the PTC. That is the starting point for a healthier economy and a cleaner energy future.

Gregory Wetstone
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Testimony of James Resor,
Chief Financial Officer,
groSolar

Before the United States House of Representatives
Committee on Small Business
July 10, 2008

Introduction:

Thank you, Chairwoman Velazquez and Members of the Committees for providing me the opportunity to testify before the Committee's hearings on "The Role of Green Technologies in Spurring Economic Growth".

My name is James Resor. I am the Chief Financial Officer of groSolar, Inc. groSolar (www.grosolar.com) is a national distributor, integrator and installer of solar photovoltaic systems for residences and commercial enterprises. We are active in more than forty states and Canada with offices and distribution centers in several northeastern states, New Jersey, Maryland, Delaware, Colorado, California, Oregon and Canada.

In addition to our diverse residential solar experience, groSolar has designed and installed solar systems for a wide range of commercial and government enterprises and other property owners. These installations include: food distribution centers, agricultural operations, schools, municipal buildings, general office buildings, multi-unit residential complexes, sports stadiums and resort properties. These solar installations are tied to the local electric utility ("grid-tied"). Customers retain access to their electric utility while generating electricity from solar power.

Solar energy systems (photovoltaic for electricity or solar thermal for water heating) can be used in most places throughout the United States. Photovoltaic (PV) and solar water heating systems are distributed generation (DG) technologies. Like other DG technologies, they provide energy at the point of consumption rather than at a central power plant hundreds of miles away. As such, DG does not rely on vulnerable regional transmission lines and local distribution networks. By producing energy at the source of consumption, solar power alleviates stress and vulnerability on the grid. It also ensures power generation should transmission facilities or generating stations fail due to terrorism, accidents or natural disaster. Solar power is a very flexible solution that can be added in targeted or widespread doses for residential and commercial purposes to meet the needs of consumers and utility grid reliability.[1]

Solar Energy and Job Creation:

[1] See Appendix 1 for overview of PV, solar thermal and other solar technologies

The recent history of our company, groSolar, illustrates the very positive impact of the solar energy industry on technology development and job creation in the U.S. In less than two years, we have grown from approximately 25 employees to 100 employees, established a national network of customers and offices and raised about $15 million in investment capital. These jobs include engineers, installers (e.g. electricians, construction workers), managers and sales persons. In many cases, we are hiring people from other industries that are contracting due to the economic slowdown. These jobs cannot be exported to other countries since our work involves the hands-on design and installation of solar systems. These jobs truly represent the broad foundation of an emerging alternative energy economy.

In many cases, we design and install solar systems with our own employees. However, we often act as a distributor and provide solar equipment and assistance to many small businesses (e.g. local remodeling contractors, HVAC contractors) who undertake the installations with their employees. Thus, the extension of the ITC not only impacts our company's growth and job creation prospects, but it also has a direct impact on our broad network of our customers in more than 40 states who are predominantly small businesses. There is a similar ripple effect for other national companies like groSolar who work with local installers in many parts of the country.

According to a recent report undertaken by Navigant Consulting, the extension of the ITC will stimulate approximately $8 billion of investment and 39,400 jobs in the solar industry in the U.S. in 2009 alone. These include jobs for installers and distributors like groSolar, our customers and also manufacturers who will invest in additional plant capacity in the U.S. if they see a long-term commitment by the U.S. Government.

Where Solar Energy Makes Sense:

The relative attractiveness of solar installations depends upon three sets of variables: (i) geographic/economic factors, (ii) site characteristics, (iii) and program objectives:

1. Geographic/Economic Factors:

- Utility prices for conventional electricity vary greatly among different parts of the country. High cost areas like the Northeast, much of California, Hawaii and Insular Areas such as the U.S. Virgin Islands make solar systems look relatively more attractive than in low cost areas such as parts of the Southeast or certain Western states. When electricity prices are approaching $0.20 per kwh or even higher (versus the U.S. mainland average of $0.13 per kwh), this makes solar energy that much more attractive. Given the upward trend of electric prices in the U.S., more and more regions will become economically attractive for solar as documented in a recent Department of Energy report.

- Favorable local regulations such as the existence of "net metering", which allows customers to sell excess power back to the grid at the same price as they purchase power, are critical.

- Local/utility financial incentives provided by the state or local government or utility company that can augment federal incentives. An example of this can be where the local utility is willing to provide incentives to homeowners or businesses to install solar in order to address peak demand or grid congestion issues. This can help the utility mitigate risks of brownouts and/or avoid expensive grid or generation capacity enhancements. For example, groSolar is working with several utilities to provide "distributed generation" near the demand points to work around grid congestion points and thus avoid expensive grid upgrades.

- Amount of sunlight. While Arizona is obviously better than Massachusetts in terms of sunlight, other variables such as relative utility prices and local regulations are more critical and usually outweigh the significance of the amount of sunlight. Consider the fact that Germany and Japan have been the leaders in solar capacity with far less solar resources than the U.S. Acceptance of solar energy in southern California has more to do with high electric rates and supportive local incentives than plentiful sunlight.

2. Site Characteristics:

- Various site-specific characteristics affect the productivity and/or installation costs of solar systems. It is preferable to have:
    - Unobstructed southerly site exposure
    - Flat roof or low-angle slope (or nearby fields or parking lots for ground-mounted or canopy arrays)
    - Less than 60 feet above ground for roof mounted systems (preferably 1-2 stories)
    - Structurally sound roof to bear weight of solar array without significant obstruction from dormers, mechanical equipment, vents or shading from sunlight

3. Program Objectives (some of these apply more to commercial opportunities):

- Property owner/manager objectives
    - Lock in long-term, predictable energy costs to mitigate risks of electric rate increases, particularly for those areas that are highly dependent upon petroleum-based sources for electric generation.
    - Reduce carbon emissions

- Use solar energy as part of broader energy conservation measures (e.g. with efficient lighting, recycling, etc.) to reduce overall energy costs
- Public relations value to residents, employees, customers and other constituents

- Sufficient scale of project to provide economies of scale for design, permitting, financing, installation of multi-residential sites or office buildings. A portfolio of smaller projects or residential installations, which share a common owner/manager and other characteristics, can also provide attractive economies of scale and reduce the all-in cost of solar installations.
- Long-term financing potential
  - Good credit quality of owner/user of power (or use of 3rd-party credit enhancements/guarantees) to facilitate long-term financing
  - Ability of owner or third-party to use commercial investment tax credits which are currently 30% in year one

Current Legislation:

I would now like to direct my testimony to current discussions within Congress. The timing of this hearing is an excellent opportunity to underscore the importance of job creation in the context of renewable energy incentives. Recently the House passed the Renewable Energy and Job Creation Act of 2008 (H.R. 6049). It contains key items that are necessary for continued rapid growth of solar energy in the U.S. The proposed legislation draws on strong bipartisan support for solar. For example, two important provisions are the ITC for commercial and the personal tax credit for residential solar:

1. the extension of the 30% Investment Tax Credit (ITC) for commercial solar investments for eight years (versus six years in current legislation) in order to ensure that appropriate long-term financing and business planning is feasible. Many commercial solar installations involve small business owners as contractors to the overall project.

2. the extension of the 30% personal tax credit for residential solar investments while also eliminating the residential cap ($4,000 in current legislation) since a monetary cap of $4,000 results in an effective personal tax credit of only 10% on many residential systems. This provision is particularly beneficial to residential installers who are mostly small business owners.

The short and long-term benefits of enacting this legislation would be significant. The benefits include:

- **Increased energy security:** Solar energy is a domestic and abundant energy source in the U.S. The U.S. has the best solar resources of any developed country in the

world. Proportionally, U.S. solar energy resources exceed those of fossil, nuclear or other renewable energy resources. Despite this tremendous advantage, the U.S. has failed to capture and harness this free and readily available energy. In 2006, solar energy produced just 1/30th of one percent of all electricity in the U.S.; Germany in contrast, with the solar resources no better than those of Alaska, installed seven times more solar energy property than the entire U.S.[2] Solar technologies help stabilize the nation's electricity grid, provide clean, reliable power, and reduce the impact of natural disasters and terrorist acts. By generating electricity at the point of consumption, the effects of natural disaster or terrorist attacks can be mitigated. Producing these home-grown technologies in the U.S. will reduce our dependence on foreign sources of energy, while simultaneously lowering the cost of energy to consumers.

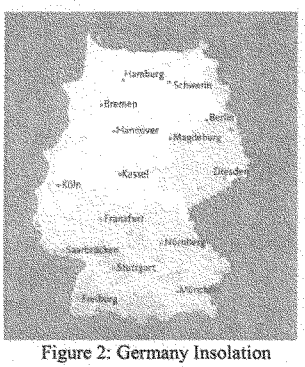


Figure 2: Germany Insolation

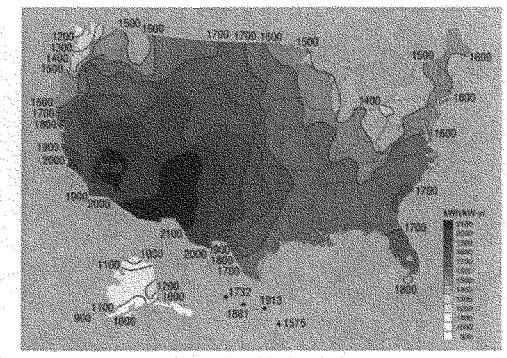
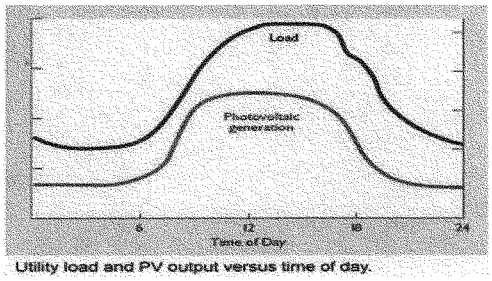


Figure 3: U.S. Insolation

- **Reduction in the use of high cost natural gas (and other petroleum-based fuels):** In most parts of the U.S., peak electricity demand occurs when solar electricity is near optimal efficiency (9 AM – 6 PM). This demand load is almost exclusively served by central station gas generation (or other petroleum-based fuels) that can be easily cycled on and off and is often highly inefficient. Given the high price of natural gas to key industrial sectors and consumers, the U.S. can no longer afford to neglect its abundant solar resources. Analysis conducted by the Solar Energy Industries



Utility load and PV output versus time of day.

[2] EIA, Net Generation by Energy Source by Type of Producer, October 2006.

Association (SEIA) concludes that an eight-year extension and expansion of investment tax credits for solar energy will displace over 5.5 trillion cubic feet (Tcf) of natural gas, providing an economic value to consumers in excess of $50 billion.[3] This is enough energy to displace the need for all new LNG terminals by 2012.

- **Hedge against rising energy prices:** In the last five years, consumers have seen electricity prices escalate between 20 and 78 percent. At the same time, we have seen the price of natural gas triple and the price of gasoline routinely exceed $3.00 per gallon. Each year the cost of energy is taking a larger percentage of a family's income than at any other time in U.S. history. This energy inflation vulnerability especially impacts the poor and elderly on fixed incomes. Solar can help address this vulnerability because it requires no fuel to operate. Although a solar system is more expensive up front in many cases, there are no additional costs for operating a system once installed. Furthermore, solar panels are guaranteed for 20-25 years, allowing consumers to "lock in" their electricity prices for decades.

- **Job creation:** Solar systems require high-tech manufacturing facilities and produce well paying, high-quality jobs. Extending the tax credit will create an estimated 40,000 new jobs in the solar industry and over $8 billion in economic investment in 2009 alone according to Navigant Consulting. groSolar has doubled its workforce in the last 12 months, including some hires who had been recently laid off from construction related employment due to the downturn in the U.S. housing market.

- **Clean energy and environmental benefits:** Solar energy is the cleanest method of energy generation, in terms of avoided air, waste and noise pollution, energy payback, water conservation, radiation, harm to wildlife, or environmental risk in the event of an accident. Solar energy produces no greenhouse gases, no acid precipitation or toxic emissions, and no other air pollution of any kind. Over the 40-50 year life of a solar electric system, every kilowatt (kW) of solar electric power reduces 217,000 pounds of carbon dioxide, 1500 pounds of sulfur dioxide, and 830 pounds of nitrogen oxides emissions as compared to electricity produced by conventional generation.[4] Photovoltaic solar energy generates electricity without using any water. In contrast, fossil fuel and nuclear based electricity generation use substantial amounts of water to run steam turbines. Across the U.S., approximately 40% of fresh water withdrawals are used for electric generation.[5] If water-starved communities like Phoenix and Las Vegas are to continue growing, we must place greater emphasis on water-free electricity generating technologies.

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[3] Solar Energy Industries Association Natural Gas Displacement Model

[4] NREL report, "Distributed Energy Resources for the California Local Government Commission," October 2000.

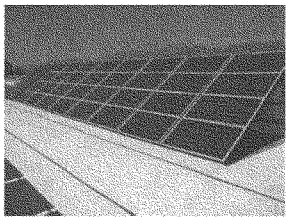
[5] Sandia National Laboratories, Energy-Water Nexus, http://www.sandia.gov/news-center/news-releases/2006/environ-waste-mgmt/mapwest.html

APPENDIX 1

OVERVIEW OF SOLAR ENERGY TECHNOLOGIES

Photovoltaics (PV)

Technology



Photovoltaic (PV) devices generate electricity directly from sunlight via an electric process that occurs naturally in certain types of material. Groups of PV cells are configured into modules and arrays, which can be used to power any number of electrical loads.

Crystalline silicon - the same material commonly used by the semiconductor industry - is the material used in approximately 90% of all PV modules today. PV modules generate direct current (DC) electricity. For residential use, the current is then fed through an inverter to produce alternating current (AC) electricity that can power the home's appliances.

The majority of PV systems today are installed on homes and businesses that remain connected to the electric grid. Consumers use their grid-connected PV system to supply some of the power they need and use utility-generated power when their power usage exceeds the PV system output (e.g., at night). In 41 U.S. states, when the owner of a grid-connected PV system uses less power than their PV system creates, they can sell the electricity back to their local utility, watch their meter spin backwards, and receive a credit on their electric bill - a process called **net metering.** The electric grid thus serves as a "storage device" for PV-generated power. Net metering is a critical requirement to facilitate adoption of PV systems.

Markets

The global PV market has averaged 38% annual growth over the last five years. Yet PV still accounts for a small percentage of electricity generation worldwide and less than 1/30th of 1% in the U.S. Furthermore, the U.S. lags behind Germany and Japan in installations as well as in manufacturing. Germany and Japan have surged to the lead with coherent, long-term national incentive policies, despite dramatically inferior amounts of sunshine.

The U.S. possesses the best solar resources in the world, and yet Germany installs **seven-times as much PV as the U.S**. Germany and Japan have taken the lead in solar manufacturing and installations because of long-term national incentive policies designed to make solar power mainstream. Japan instituted a carefully designed rebate program

that lasted over ten years, while Germany incentivizes solar installations by paying 3–4 times retail electric rates for the electricity generated from PV systems for 20 years. The surging player in the industry, China, has gone from having no PV industry to manufacturing twice the level of the U.S. in just three years. While California is the dominant U.S. market for PV, with 73% of the grid-tied installations in 2006, there is substantial activity in other states.

Solar Thermal Systems

Technology

Solar thermal systems provide environmentally friendly heat for household water and space heating. The systems collect the sun's energy to heat either air or a fluid. The air or fluid then transfers solar heat to your home or water. In many climates, a solar heating system can provide a very high percentage (50 to 75%) of domestic hot water energy. In many northern European countries, combined hot water and space heating systems are used to provide 15 to 25% of home heating energy.

Active solar water heating systems can be either "open loop," in which the water to be heated flows directly through the rooftop collector, or "closed loop," in which the collector is filled with an antifreeze solution that passes through a heat exchanger mounted in or around your normal water heater. During the day, in good weather, your water can be heated entirely by the sun. In any weather, the heating system can back up your existing heater, reducing overall energy costs.

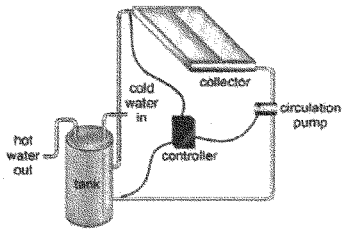


Diagram of an active solar thermal system.

Markets

An installer mounts a solar water heater flush to the roof.

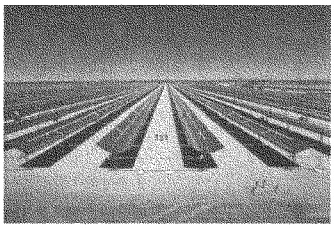
In the absence of coherent national policies, from 1997 until 2005, the U.S. solar water heating and solar space heating market showed little growth, averaging about 6,000 installations per year. In the past couple years, numerous states have created or expanded incentives to complement the new federal tax credits. Accordingly, the market is has increased quite a bit. Solar water heating can be done at same time as PV.

Concentrating Solar Power

Technology

Concentrating solar power (CSP) plants are utility-scale generators that produce electricity by using mirrors or lenses to efficiently concentrate the sun's energy. Two principal CSP technologies are parabolic troughs and dish-Stirling engine systems.

Using curved mirrors, **parabolic trough** systems concentrate sunlight to drive conventional steam turbines. The mirrors focus the sun's energy onto a receiver pipe or heat collection element. From there, a high temperature heat transfer fluid picks up the thermal energy and uses the heat to make steam. The steam drives a conventional steam-Rankine power cycle to generate electricity. A typical collector field contains many parallel rows of troughs connected in series.



A parabolic trough plant in California's Mojave Desert.

Thin Film Solar

Technology

There are four basic categories of thin film PV based on the materials used to convert light into electricity. They are: i) Amorphous Silicon (• α-Si), ii) Cadmium Telluride (CdTe), iii) Copper Indium (Gallium) di-Selenide (CIS/CIGS) and iv) Emerging (Dye-sensitized, Organic or Nano-materials)

Not only can different materials be used to create the PV effect, but they can also be deposited on different substrates. Currently, most production technologies use glass as the substrate, as in the case of all CdTe technologies, and many emerging α-Si technologies. But some α-Si solutions use a flexible metal foil as the substrate, and many emerging and CIGS technologies can be deposited on glass or metal foil as well as lower temperature substrates like plastic.

Unlike today's traditional solar photovoltaic (crystalline PV) technology, thin film PV uses very little or no silicon and other material to build a solid state electricity generation device. Thus, a whole new range of applications otherwise not possible using traditional solar cells are enabled because thin film materials can be applied to a multitude of surfaces such as glass, plastic and flexible metal foils. Thin film PV can be manufactured using various deposition and packaging methods that offer flexibility in scaling production and addressing applications. Currently, commercial applications of thin film PV are limited due to lower efficiencies and used predominantly for large utility-scale PV projects where space is not a constraint.

Written Statement for

Andrea Lucke

On Behalf of:

The National Association of Home Builders

To the

United States House
Small Business Committee

Hearing On

"The Role of Green Technologies in Spurring Economic Growth"

July 10, 2008

housing downturn since the Great Depression, 40% of builders surveyed reported that it is easier to market green homes in a down market.

Building green is about how little impact the home has on the land; how conservatively it uses resources; and how it provides healthy, safe, and decent shelter to the homeowner or renter. To that point, home builders have found that the products that are commonly the most appealing to buyers are energy-efficient products, including energy-efficient windows, appliances, and heating and cooling equipment. Buyers also like the use of certain environmentally-friendly wood products, and the preservation of open space on the lot site. The study found that builders are increasingly becoming aware of brand name green building products, showing that green building is trending toward mainstream commercialization.

NAHB remodelers also report that homeowners are increasingly turning to professionals to maximize their current home's energy performance. The most popular green remodeling items closely match the features that consumers choose to include in a new home, with energy efficient windows topping the list. In a recent NAHB Remodeling Market Index (RMI) Survey of projects completed in the first quarter of 2008, 73% of NAHB remodelers reported installing more energy-efficient windows that are insulated to prevent outdoor heat exchange. 56% of members installed high-efficiency HVAC systems, and almost half of remodeling projects included installing high-efficiency kitchen appliances. Word is getting out about newer technologies as well; 35% of remodelers reported that they installed tankless water heaters, which heat water on demand rather than throughout the day, in the first four months of 2008. This is up from just 19% of remodelers reporting they installed the same product in 2005.

Both the McGraw Hill Construction study on green building and the NAHB Remodeling Market Index Survey conclude that consumer demand for energy-efficient products is steadily on the rise. The studies also conclude that to remain competitive in the residential construction and remodeling industry, members will have to remain involved in green building, particularly in the current down market.

National Green Building Standard™

Recognizing the growing interest in green building among its members, NAHB, in collaboration with the International Code Council (ICC), initiated a landmark effort in February 2007 to establish the first national consensus standard on residential green building for the United States approved by the American National Standards Institute (ANSI). Normally, standards development processes can take a while to complete, given the extensive public input that requires full consideration. However, the need to develop appropriate strategies to address growing environmental challenges like climate change has motivated our industry to commit to a fast-tracked standards process because we believe that it simply cannot be put off any longer. Once this process is complete the Standard™ will exist as the only consensus-based industry standard for residential green construction in the country.

ANSI certification requires consensus-based decision-making, opportunity for public comment, and openness to help guarantee that the Standard™ is acceptable to all stakeholders as well as to those who regulate them. This process involves full participation from interested

delivery systems, native and drought-resistant landscaping, and careful treatment of storm water and wastewater in the construction process.

- **Indoor Environmental Quality:** Health indoor environments are another hallmark of green building. Following energy efficiency, the quality of a home's indoor air is often recognized as the most important feature of a green home. Although no official authoritative definition exists of what healthy indoor air means, there are measures that green home builders can take to mitigate the effects of potential contaminants by controlling the source, diluting the source, or capturing some of the source through filtration.

- **Operation, Maintenance, and Homeowner Education:** Inadequate or improper maintenance of a green home can defeat the designer and builder's best efforts to create a resource-efficient home. Failing to change air filters regularly, or neglecting to use kitchen and bath exhaust fans in moist air, are very common mistakes homeowners make. By giving homeowners a manual that explains proper operation and maintenance procedures, includes information on alternatives to toxic cleaning substances and lawn and garden chemicals, and directs them to water-saving practices, a green home builder can help assure that the home functions as carefully as it was constructed, in an environmentally-responsible manner.

Encompassing single-and multi-family construction, remodeling and land development, the National Green Building Standard™ demonstrates the level of urgency with which the housing industry is approaching and addressing energy efficiency and sustainability issues. I am proud of the continued effort of the home building community to create the first comprehensive residential green construction standard that not only informs builders on how to build green, but also educates homeowners on how to operate their home in an energy- and resource efficient manner. What has been developed is a standard that is flexible enough to adjust to the specific resource and energy concerns in the varying climate zones around the country, while at the same time encouraging continued innovation in green technology that is already dramatically shifting the market. Green building should continue to exist in its most flexible form.

National Green Building Program

In conjunction with the first national consensus green building standard, NAHB is also establishing a national green building program to proactively contribute to efforts to reduce greenhouse gas emissions. NAHB members stepped up their national campaign to inform the public about the innumerable benefits of green building and sustainability in housing design by launching the National Green Building Program in February 2008 at the International Builders Show. In this program, there is a substantial effort to market the green building standard as an effective alternative, and to monitor state and local legislative and regulatory activity to ensure builders retain the right to choose from the myriad of green building options and are not restricted to the sole use of one branded product or rating system. Viable green alternatives exist in the market today in both residential and commercial construction.

Section 45L New Energy Efficient Home Credit, which was enacted as part of the Energy Policy Act of 2005, is a key market incentive that shifts builders towards significant energy savings in new home construction. The program allows a $2,000 tax credit to a home builder who constructs a qualified new energy-efficient home, certified to achieve a 50 percent reduction in energy usage, thereby adding a highly efficient home that will likely remain part of the nation's housing stock for 60 years or more.

Tax incentives are effective ways to promote energy efficiency because they combine the tax incentive with market-determined supply and demand for home construction. Other approaches, such as an artificially-imposed mandate, require government officials to sort through reports in order to enforce rules and verify compliance. Meanwhile, a tax incentive simply reduces the cost of construction above minimum building code requirements, i.e building highly energy-efficient homes, thereby encouraging that behavior. Further, with a tax credit, important production decisions are still reserved for builders, buyers and home owners. Consequently, a tax credit program costs little to operate and does not require expensive administrative oversight that is usually associated with a mandate.

NAHB has learned from its members that the credit is particularly beneficial to small home builders, who in many cases have the flexibility to react to marketplace preferences, such as the demand for highly efficient homes. The credit can be an effective means of developing and maturing this market, which would yield long term benefits with respect to our nation's energy needs.

Unfortunately, the credit is set to expire at the end of this year. The limited window of applicability of the credit also limits its use. Home building is a lengthy process, and builders are unlikely to participate in a program that may end before the construction process is completed. The House did not include an extension of 45L in its energy tax package – H.R. 6049, the *Energy and Tax Extenders Act of 2008*. The Senate has yet to act and there is still no agreement between the chambers over extending 45L. Furthermore, the political disagreement over offsets endangers the possibility of extending this credit this year. Unless Congress can end the political debate and extend this credit soon, it will be a tremendous loss for builders that will see an elimination of the only federal incentive for efficiency in new homes.

Finally, Congress should also increase the dollar amount of the credit. As nearly everyone agrees that energy efficiency in buildings and homes is a major priority, so similarly Congress should tackle this priority by offering a more meaningful incentive to those that bear the most cost – i.e., builders. Achieving the 50% threshold required by statute can be an expensive proposition, especially for smaller builders. Home builders report that the increased construction cost required to meet the 45L requirement can dramatically exceed the $2,000 tax credit. In conjunction with the required basis adjustment (which reduces the value of the credit to approximately $1300), the credit is somewhat limited in its effect. In today's market, these costs cannot be transferred to homebuyers; therefore Congress must provide a way that will help builders ameliorate the expenses associated with achieving such high levels of code compliance.

"THE ROLE OF GREEN TECHNOLOGIES IN SPURRING ECONOMIC GROWTH"

TESTIMONY OF KEVIN TINDALL

BEFORE THE UNITED STATES HOUSE OF REPRESENTATIVES
HOUSE SMALL BUSINESS COMMITTEE

July 10, 2008
10:00 a.m.
Room 1539, Longworth House Office Building

The Honorable Nydia Velázquez (NY-12), Chairwoman
The Honorable Steve Chabot (OH-1) Ranking Minority Member

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www.phccweb.org • naphcc@naphcc.org

Madame Chair and distinguished members of the Committee, thank you for the opportunity to testify on behalf of the Plumbing-Heating-Cooling Contractors – National Association (PHCC) regarding the efforts of the plumbing industry to use and promote new green technologies. My name is Kevin Tindall and I appear before you today as a small business owner and a representative of the over 4000 member companies of PHCC. PHCC is the oldest trade association in the construction industry and as I mentioned represents over 4000 Plumbing-Heating-Cooling Contractors from around the country, the majority of whom are small business owners, that employ thousands of individuals in the plumbing industry each year. Members of the Association, all of whom are privately owned contractors, cover the spectrum from changing washers in single family homes to installing the sophisticated systems in the tallest skyscrapers and state-of-the-art medical facilities. Therefore, I would like to commend you for your efforts to bring focus to the very important issue of new green technologies and the impact it has on small businesses. New, green technologies are having a tremendous positive economic impact on our industry and are spurring economic growth for plumbing contractors around the country. Recently we have seen an increased demand for new technologies in our industry and this has proven to be a positive economic stimulation for our members.

In the past 20 years the plumbing industry emerged as a major player in the energy and water conservation movements. Plumbing contractors have taken the lead in advocating for – and – installing new water and energy efficient systems. In addition, plumbing contractors are leading the effort to help promote water conservation and energy efficiency through installation and use of green technologies.

Madame Chair in your home city of New York, during the 1980's, city leaders launched a major initiative to conserve water by utilizing new technologies. The city's plumbing industry played a major role in that effort. Because of these conservation efforts, average daily consumption of water in the city was reduced from nearly 1.5 billion gallons per day in the late 1980's to less than 1.1 billion gallons per day in 2006. This was due in large part to new innovative technologies.

A major contributing factor for the decrease in water consumption was a decision by the NYC Department of Environmental Protection to adopt a universal metering program for water customers. Under the program, water customers were required to pay water fees based on usage rather than a flat fee in order to discourage wasteful consumption. The Association of Contracting Plumbers of the City of New York and its Foundation strongly supported the change and plumbing contractors played an important role installing meters in tens of thousands of homes throughout the city.[1]

[1] *Association of Contracting Plumbers of the City of New York, 125th Anniversary Commemorative Edition*

Introduction

This year PHCC celebrated the 125th Anniversary of our Association. For the past 125 years the plumbing industry has played a crucial role in the development and growth of our country, ensuring that we built, taller office towers, bigger apartment buildings and grander shopping districts, while our public health remained second to none. We are in short dedicated to the safety of the American public and the millions who live, work and visit our country every day. To that end the green movement has and will continue to be an integral part of protecting not only consumers around the country, but also our nation's most precious resource, water. We appreciate the opportunity to be here today to discuss the role of green technologies and the positive economic impact the green movement is having on small businesses, particularly in the plumbing industry. It is not an exaggeration to say that the development of modern civilization was made possible by the advent of safe plumbing. Over many centuries, mankind has learned that providing clean water and removing waste water safely is essential to promoting public health, preventing disease and stimulating economic growth. Therefore, it is only fitting that the plumbing industry is a leader in the efforts to develop and maintain new green technologies which promote water conservation and energy efficiency, while helping to protect our environment.

Most PHCC members are small family owned firms and many have been in business for decades. In fact 50% of our members have been established for more than 30 years and an amazing 40% have been installing safe, sanitary plumbing systems for more than 40 years. PHCC and its members are truly leading the way in the growing demand for water and energy efficient technologies. Small businesses in the plumbing industry are at the forefront in the efforts to develop and utilize new and innovative technologies which help conserve water. Consumer demand has increased exponentially over the past 3-5 years for new more efficient appliances and products. The dwindling supply of water in the United States and constant debate surrounding climate change has created a new market force for water efficient plumbing fixtures and appliances, while helping to stimulate growth within our industry. The impact of our industry on the economy is substantial and accounts for a large percentage of our nation's GDP, through installation, service and repair, in both residential and commercial markets – and, by encouraging consumers to make use of new emerging technologies, sustainability and growth of small businesses becomes more secure, while our contribution to the economy becomes even greater.

Green Technologies – Economic Impacts

The plumbing industry works to promote water conservation and energy efficiency through the use of new technologies meant to conserve water and promote energy efficiency. Recently, PHCC has joined with the U.S. Environmental Protection Agency's (EPA) WaterSense program, a public/private partnership, to help foster a national ethic of water efficiency, so that water is valued as a limited resource that should be used wisely. EPA's WaterSense program is an innovative partnership program that helps America's small businesses, consumers and governments to make smart water choices that save money and maintain high environmental standards without compromising performance. The WaterSense program helps to reduce water use across the country by creating an easy-to-identify label for water-efficient products that is backed by a strict criteria and independent certification. According to EPA's Assistant Administrator for Water, Ben Grumbles, in less than two years, WaterSense has become a national symbol for water efficiency among plumbing contractors, plumbing manufacturers, consumers, and utilities. Awareness of the WaterSense label is growing every day and PHCC is helping to advance consumer awareness of these products.

EPA's WaterSense program reduces water use across the country by creating an easy-to-identify label for water-efficient products that is backed by strict criteria and independent certification. WaterSense labels products that use 20 percent less water and perform as well as—or better than—conventional models. In order to earn the WaterSense label, products must be independently tested and certified to meet EPA's criteria for efficiency and performance.[2]

Currently, over 170 models of high-efficiency toilets from 21 different brands have earned the label, and over 100 models of faucets and faucet accessories. PHCC is working with stakeholders in all aspects of the plumbing industry to educate consumers on the benefits of changing to water-efficient products such as these.

In addition, some new emerging technologies which are not code compliant are available in the market place. These include, gray water systems, rainwater collection systems, high efficiency irrigation systems, recirculating shower systems, regulations controlling hot water delivery, recirculation of hot water, insulation of hot water piping, demand-type tankless water heaters, water softeners, and drinking water treatment systems, all are being implemented through EPA Water Sense, Efficient Single-Family New Home Specification. This new specification is presently in the draft stages. PHCC, together with the EPA, the Alliance for Water Efficiency, the International Association of Plumbing and Mechanical Officials (IAPMO), and the International Code Committee (ICC) are working to develop a consensus standard.

Furthermore, as part of effort to educate consumers, on June 1st 2008, PHCC launched the ***Summer 2008 Water Conservation Initiative***. This initiative challenges consumers to make at least one change in the way they use water this summer, installing new technologies. For example, by repairing leaking fixtures or pipes, modifying a wasteful behavior or installing water-efficient products, tremendous amounts of water and energy can be conserved. In addition, PHCC member contractors are offering free water audits for consumers in an effort to make the public aware of the new technologies that can be used to save hundreds of gallons of water on a daily basis. We are hopeful this will provide a much needed stimulation for our industry. To date our findings indicate that this effort is incredibly helpful in stimulating growth for our member businesses, particularly during these tough economic times, many plumbing contractors are able to find new business opportunities via promotion of new technologies. We are hopeful this is a small way to help stimulate the plumbing industry sector of the economy. Also, this effort will potentially provide economic stimulus by helping consumers save money during the summer by installing relatively inexpensive, new technologies in their homes and businesses.

PHCC's members are able to help consumers determine the water savings available through installation of high efficiency water closets, 1.6 and 1.28 gallons per minute flush, low-flow shower heads at 2 ½ gallons per minute, and low-flow water aerators on lavatory faucets that flow at .5 gallons per minute. Installation of these new green products would have the potential of saving up to 2 gallons per flush on all the water closets, one gallon per minute flow rate on lavatory faucets, and 1 ½ gallons per minute on shower heads. Adding up the total usage in the average home, there could be significant water savings achieved just by PHCC's ***Summer 2008 Water Conservation Initiative***. In addition to the water savings, we have the energy savings based on not having to heat as much water, and the electric power required to pump clean, and

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[2] EPA's Assistant Administrator for Water's testimony to the U.S. House of Representative's Transportation & Infrastructure Committee

treat water supplies, which in some cases can add up to as much as 20% of the total electric power produced.

According to one PHCC member who specializes in water audits of commercial structures, a recent water audit of Purdue University in Indiana, their calculations indicated the annual savings to be roughly 11 million gallons of water or about 1/3 of their total metered usage. This massive savings comes from only changing a few hundred toilets.

According to EPA, toilets account for about 30 percent of the water used in the home, and Americans waste 900 billion gallons per year by flushing old, inefficient toilets. By replacing an older toilet with a WaterSense labeled model, a family of four could reduce total indoor water use by about 16 percent and, depending on local water and sewer costs, save more than $90 annually. If every home replaced just one old toilet with a WaterSense labeled High Efficiency Toilet, the water savings would be enough to supply nearly 10 million U.S. households with water for a year.

In addition, water conservation translates into energy conservation and savings. If just one in every 10 homes in the United States were to install WaterSense labeled faucets or aerators in their bathrooms, in aggregate, they could save 6 billion gallons of water, and more than $50 million in the energy costs to supply, heat, and treat that water.[2]

Also according to EPA, if the average home were retrofitted with water-efficient fixtures, there would be a savings of 30,000 gallons of water per year. If just one out of every 10 homes in the U.S. upgraded to water efficient fixtures (including ENERGY STAR labeled clothes washers), it could save more than 300 billion gallons and nearly $2 billion annually.[2] This could amount to huge positive economic impacts for small plumbing contractors and small businesses throughout various sectors.

Due to increased demand and focus on water efficiency, the emerging water and energy conservation market has the potential to revitalize not only the plumbing industry, but also traditional construction and small businesses across the country at a time when most small business owners are suffering because of tough economic times.

Since 1950, the United States population has increased nearly 90 percent. In that same period, public demand for water increased by 209 percent. Americans now use an average of 100 gallons of water per person each day. This increased demand has put additional stress on water supplies and distribution systems, threatening both human health and environment.

Energy and Water – Vital Components of our Economy

In the United States, over 50,000 water utilities withdraw approximately 40 billion gallons per day of water from the nation's resources, to supply water for domestic consumption, industry, and other uses. When severe water shortages occur, the economic effect can be substantial. According to a 2000 report from the National Oceanic and Atmospheric Administration, eight water shortages from drought or heat waves each resulted in $1 billion or more in monetary losses over the past 20 years.[3]

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[3] U.S. Government Accounting Office, 2003 Report: *Freshwater Supply States' Views of How Federal Agencies Could Help Them Meet the Challenges of Expected Water Shortages.* GAO-03-514

An adequate supply of treated water is critical to many industries, including agriculture and food processing, beverages, power generation, paper production, manufacturing, and mineral extraction, new and innovative technologies are vital components of sustaining this balance. Water shortages can negatively affect companies and entire industries and reduce job creation and retention for small businesses as well as the economy as a whole. Current industry trajectories, population growth, and dwindling water supplies all point to increased water shortages. Increased water demand will come with additional costs to all businesses, industries, and municipalities which rely on the same water resources. The Association of California Water Agencies ACWA) reported in April 2008 that California is now losing income and jobs due to the state's water supply crisis.[4] Therefore, the development and utilization of any new technology to conserve water will potentially be critical to the survival of small businesses and our economy as a whole.

Water is a vital component of our economy's energy sector. Water is used for resource extraction, refining and processing and transportation with new green technologies. Furthermore, water is essential for electricity generation. The use of water in the extraction and processing of petroleum-based transportation fuels is relatively small compared to the electric-generating industry. According to the Department of Energy's National Energy Technology Laboratory, the thermoelectric power sector accounts for 39 percent of total freshwater withdrawal in the United States, and 3.3 percent of total freshwater consumption. This consumption for electricity production accounts for over 20 percent of nonagricultural water consumption. Water is also used directly in hydroelectric generation, which constituted approximately 14 percent of energy produced in the United States in 2006 according to the Energy Information Administration (EIA).

Not only do we need vast quantities of water for energy production, but we also need energy to transport and treat water. DOE estimates that nationwide, about 4 percent of U.S. power generation is used for water supply and treatment. Across the country, the amount of energy used to provide water to meet agriculture needs represents the most significant regional difference. However, the supply and transport of water can be quite energy-intensive. For example, pumping water to consumers that live far away from the source can be energy intensive. California's State Water Project pumps water 444 miles of aqueducts from three recreational lakes in Plumas County in Northern California to Riverside County in Southern California and is the state's largest energy consumer using between 2 to 3 percent of California's energy (5,000 GWh per year).[5]

Job Creation and Small Businesses Role in Economic Stimulation

Through partnerships with various stakeholders in the plumbing industry such as, PHCC of California, the United Association of Plumbers and Pipefitters (UA) and EPA's WaterSense program, we are using new green technologies to further advance the plumbing industry both economically and technologically. The PHCC of California is currently offering a certification for GreenPlumbers. The program is an innovative, national training and accreditation program that assists plumbers in understanding their role in the environment and public health. The organization's goal is to train and deploy a green army of thousands of plumbers to promote the benefits of water conservation and the reduction of GHG emissions. The focus is on changing consumer and plumbing behavior through the use of energy efficiency and water saving

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[4] "California Water Supply Crisis Affecting Economy," *Water and Wastewater News*. April 21, 2008

[5] "Water Energy Use in California," California Energy Commission.

technologies. As a grassroots effort, the plan is a voluntary one that can be implemented quickly without legislation or regulation. How can we expect the homeowners and business people of America to be serious and knowledgeable about water and energy conservation unless the plumbers that bring the water and energy to their houses are not equally serious? The GreenPlumbers goal is nothing less than complete culture change for the plumbing industry.

GreenPlumbers training consists of a five-course, 32 hour, accreditation in environmental and technical issues including Climate Care (8 hrs), Caring For Our Water (8 hrs), Solar Hot Water (4 hrs), Water Efficient Technology (8 hrs), and an Inspection Report Service(4 hrs).

GreenPlumbers USA is a good example of job creation and economic stimulation. In just six months, the GreenPlumbers Training program, has issued more than 1,200 accreditations in water and energy conservation to plumbers in twenty-two states.

Plumbing contractors enhance their company's value and image when their employees are knowledgeable about new energy-efficient products and concerned about the sustainability of their community.

Additionally, some PHCC contractors are part of labor/management education programs with our union counterpart, the United Association of Plumbers and Pipefitters (UA). The UA's education programs have high graduation rates and provide complete skill sets that allow plumbers and service techs to fluidly adapt to new technologies. As part of the plumbing industry the UA is a driving force in green skills. The UA has a mobile green training trailer that includes waterless, and grey water plumbing systems and the latest HVAC skills. In addition, they have a green awareness program that trains the trainer in the latest skills, and have worked to develop curriculum and tests that are accredited by 3rd party organizations. Workers are able to adapt to the technologies of the future because they have complete skill sets. The UA also offers continuing education classes and are always working in a tripartite way to ensure the construction industry has enough skilled workers to meet industry needs.

Recommendations/Outlook

As the Committee reviews options for how the federal government can help further advance the role of green technologies, it is important to consider the efforts and impacts on small businesses in the plumbing industry and how they are helping drive momentum in ways that are already positively impacting the economy.

PHCC and its members have demonstrated our commitment to promoting the use of new innovative, green technologies in a number of ways, including the promotion and advancement of proven water conservation methods. Because PHCC's plumbing contractor members play an integral role in the lives of Americans every day, they are in an ideal position to promote and assist in efforts to conserve water. Through their daily contact with customers, licensed and qualified plumbing contractors can help individuals and businesses by maintaining existing systems or replacing outdated, low-efficiency plumbing fixtures. Plumbing contractors serve as the direct link to homeowners and building owners and can assist consumers in making informed decisions regarding the purchase of water-conserving products and services.

In addition, PHCC is also actively involved with several groups committed to water conservation research and methods. The PHCC Green Task Force has been working with the Alliance for Water Efficiency at Purdue University, and the Plumbing Manufacturers Institute, to study various systems' effect of the emerging technologies.

As many of you may be aware, there were significant problems when the requirement to evolve from 3 ½ gallon per flush water closets to 1.6 gallons per flush was originally instituted. The consumer had an unsatisfactory result when trying to flush the new water closets, and the manufacturers did not have ample time to properly assess their operation with current plumbing systems. We believe that in moving forward that it is imperative that there be a thorough review of any new products to be certain that these new technologies will be customer friendly, sanitary, and operate within the existing piping configurations that are in most of the homes and buildings today. We believe that a one-size-fits-all approach to replacement of existing fixtures may not have the desired water savings effect if the existing piping systems will not adequately clear the lines to the street. Where ample field testing demonstrates the reliability of the new technologies, the PHCC supports the installation and use of water conserving methods and products.

Because PHCC members are involved in the actual installation and maintenance of water devices and systems, they offer a direct experience perspective that is very helpful during discussions. It is our hope that as Congress and Federal Government Agencies move forward in their evaluation and implementation of new green technologies that the expertise of PHCC and its members will be considered.

PHCC believes strongly that in order to achieve the ultimate goal of water conservation, new technologies aimed at specifically conserving water, such as water-efficient plumbing, wastewater management systems, wastewater recycling systems (greywater), and desalination technologies, must undergo a thorough process, including research, evaluation and testing. Introduction of new technologies into the marketplace must be based on sound science and a transparent process.

Beginning in the 1980's, California was the first state to enact legislation designed to mandate changes in flush volumes of water appliances – specifically toilets. California's actions resulted in the Energy Policy Act of 1992 (EPAct) which required, among other things, for toilets installed in the United States to utilize 1.6 gpf (gallons per flush) rather than the 3.5 gpf that prevailed before the passage of EPAct. The technological infrastructure was not in place at the time this change took effect, forcing plumbing contractors to deal with the public backlash from consumers. In 2007, the state of California lowered this standard below 1.6 and set a timetable for high efficiency toilets to take over the state market. Plumbing contractors are concerned that the current infrastructure and technology may not support the proper function of high efficiency toilets, once the equipment is installed. This would again create dissatisfaction for consumers, forcing plumbing contractors to again bear the brunt of consumer frustration. It is anticipated that the California standard for high efficiency toilets could be proposed as a national standard in the future.

PHCC supports public policy designed to promote the efficient use of water in agriculture, municipalities, homes, businesses, factories, offices and institutions. Furthermore, PHCC supports public policy that mandates the installation and use of water-conserving plumbing systems that are proven effective through sound science and an approval process that includes all parties in open discussion and decision-making.

It is our suggestion that additional testing and analysis be performed to evaluate the compatibility of the existing water and sewer infrastructure. At this time there are concerns that America's existing infrastructure cannot handle the water efficient products being considered. Testing and analysis should be performed for both residential and commercial systems before mandates for

high efficiency toilets or other ultra-low water consumption products are adopted. The impact of these low water consumption products on the entire plumbing system must be considered. In the future it is likely that the plumbing system will incorporate greywater, rain collection systems and other water-conserving technology that will be impacted by low water consumption products.

To facilitate the necessary implementation of these water conservation measures, PHCC supports the use of tax and other incentives, such as customer rebates for all new residential, commercial, industrial and institutional construction and renovation using water conservation and water-efficient products and systems installed by a qualified plumber. PHCC also supports efforts to fund and conduct comprehensive studies of all forms of water-conserving measures and research projects.

Furthermore, PHCC will continue to support voluntary programs, such as the Environmental Protection Agency's (EPA) WaterSense program, in efforts to promote water-conserving products and services.

PHCC urges Congress to provide adequate funding for water-related legislative initiatives, including, but not limited to, annual EPA appropriations measures, the Safe Drinking Water Act and the Clean Water Act. Monies should also be dedicated toward research into recycled water technology and toward improvements in water and sewer infrastructure.

Conclusion

PHCC members have shown that water conservation and use of new emerging technologies are both proactive and profitable for our industry. The plumbing industry's commitment to protecting our nation's vital resources, specifically water, remains a top priority.

PHCC will continue to promote new, emerging, green technologies that are flexible, market driven and encourage continued growth in the overall water conservation that preserves, protects, and promotes the health, safety and comfort of our nation. Plumbing contractors are enjoying tremendous successes with the evolution of the green movement, in which we have been engaged in for years. The commitment of the plumbing industry to water and energy conservation is demonstrated throughout our 125 year history and our recent national water conservation campaign.

Thank you again for your time and consideration in this matter of mutual interest.

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Statement for the Record

House Small Business Committee

Full Committee Hearing

"The Role of Green Technologies in Spurring Economic Growth"

July 10, 2008

Madame Chairwoman and distinguished members of the committee, the National Roofing Contractors Association (NRCA) wishes to commend you for holding this hearing to review the role of "green" technologies in spurring economic growth. NRCA greatly appreciates the opportunity to submit a statement for the hearing record on this issue.

Established in 1886, NRCA is one of the nation's oldest trade associations and the voice of professional roofing contractors worldwide. It is an association of roofing, roof deck, and waterproofing contractors; industry-related associate members, including manufacturers, distributors, architects, consultants, engineers, and city, state, and government agencies; and international members. NRCA has more than 4,000 members from all 50 states and 54 countries and is affiliated with 105 local, state, regional and international roofing contractor associations. NRCA contractors typically are small, privately held companies, and the average member employs 35 people in peak season, with sales of just over $3 million per year.

It is clear that "green" technologies in the roofing industry can play an important role in stimulating economic growth and job creation across the nation. NRCA believes that the trend towards adoption of green buildings is a key driver of economic growth in our industry, and we are working with our membership to maximize the economic, environmental and energy conservation benefits of the green building trend. NRCA roofing contractor and manufacturer members are in the forefront of developing and installing a wide variety of green technologies, such as vegetative roofs that have numerous environmental benefits, "cool" roofs that reduce energy consumption by reflecting sunlight, and roofs that incorporate solar panels, just to name a few.

NRCA produces two technical publications aimed at educating roofing contractors and building owners about the availability and benefits of green roofing technologies: the NRCA Green Roof Systems Manual, which provides technical know-how on the installation and maintenance of vegetative roofs, and the NRCA Guidelines for the Design of Energy-Efficient Roof Systems, which is written for design professionals who want to incorporate energy-efficient roofs of many types into their building designs. By providing these highly detailed technical publications to roofing contractors and other industry participants, NRCA hopes to facilitate and accelerate the movement towards energy-efficient buildings that provide for a sustainable environment.

NRCA urges Congress to enact proactive policies that facilitate the development and implementation of green technologies in the construction industry. First and foremost, Congress should take action to remove impediments in federal law that have the effect of blocking or slowing the adoption of green construction technologies.

A prime example of an impediment to the adoption of green building technologies is the severely out-dated tax depreciation schedule for commercial roof systems. NRCA strongly urges Congress to pass the Roofing Energy Efficiency Tax Act of 2007, legislation which amends section 168 of the Internal Revenue Code to provide a realistic recovery period for the tax depreciation of commercial roof systems. This will greatly stimulate economic growth in the construction industry by accelerating the installation of new energy-efficient, environmentally beneficial roofing systems.

The Roofing Energy Efficiency Tax Act

From 1981-1993, the depreciation recovery schedule for nonresidential property was increased from 15 years to 39 years in order to, at least in theory, raise additional revenue for the federal treasury. 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 17.5 years.

The disparity between the current 39 year depreciation schedule and the average life span of a commercial roof serves as a significant disincentive for building owners to replace failing roofs, and this is slowing the adoption of more advanced energy-efficient roofs. This is because an owner who replaces a roof before 39 years have elapsed must carry that roof on its books for tax purposes even though it no longer exists. A Treasury Department Report to Congress on Depreciation Recovery Periods and Methods (July, 2000) corroborated this quandary, finding "…a 'cascading' effect, where several roofs are being depreciated at the same time, even though only one is physically present." As such, many building owners choose to do only piecemeal repairs, most often with older technology, rather than replace a failing roof in its entirety with a new, more energy-

efficient product. Thus, the current depreciation schedule for commercial roofs is a disincentive to invest in green roofing systems.

To rectify this situation and accelerate the adoption of energy-efficient commercial roof systems, Congress should approve the Roofing Energy Efficiency Tax Act of 2007 (REETA), H.R. 4126, which was introduced by Reps. Bill Pascrell and Ron Lewis. This bipartisan legislation reduces the tax depreciation schedule for commercial roof systems from 39 to 20 years for roofs that meet the energy efficiency requirements of Standard 90.1 of the American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE). This will have a positive impact on both the environment and the economy by spurring demand for energy efficient roofing systems and reducing carbon emissions.

In fact, according to the Ducker study, REETA will have the following positive impacts:

- Reduce U.S. energy consumption by **13.3 million kilowatt hours** annually;
- Cut carbon dioxide emissions by **20 million lbs.** per year;
- Create **40,000** new **"green"** manufacturing and contracting jobs;
- Add **$1 billion** of taxable annual revenue to the economy; and,
- Save **small businesses** billions through a simpler and **more equitable** system of taxation and **lower energy costs**.

Enactment of REETA also would benefit the nation's small business owners by eliminating or mitigating the "cascading effect" of having to depreciate more than one roof in instances where a roof must be replaced before the 39 year depreciation schedule has been reached. This tax simplification feature of REETA for commercial building owners that install energy efficient roofs is an even greater benefit for small businesses that own their building.

Given the many economic as well as environmental benefits of REETA, the legislation enjoys strong support among both business and organized labor. The bill has been endorsed by the United Union of Roofers, Waterproofers and Allied Workers, the AFL-CIO's Building and Construction Trades Department, and the Joint Roofing Industry Labor and Management Committee, as well as numerous business organizations.

Approving the bipartisan REETA legislation is one way that Congress could take quick action that would immediately benefit the environment while simultaneously spurring economic growth. NRCA commends the following members of the House Small Business Committee for cosponsoring H.R. 4126: Chairwoman Velazquez, Rep. Cuellar and Rep. Michaud. NRCA looks forward to working with these and other members of Congress towards enacting REETA and other legislative initiatives that will advance the adoption of green roofing throughout the nation.

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