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CUTTING THE FEDERAL GOVERNMENT'S ENERGY BILL: AN EXAMINATION OF THE SUSTAINABLE FEDERAL GOVERNMENT EXECUTIVE ORDER

HEARING

BEFORE THE

FEDERAL FINANCIAL MANAGEMENT, GOVERNMENT INFORMATION, FEDERAL SERVICES, AND INTERNATIONAL SECURITY SUBCOMMITTEE

OF THE

COMMITTEE ON
HOMELAND SECURITY AND
GOVERNMENTAL AFFAIRS
UNITED STATES SENATE

OF THE

ONE HUNDRED ELEVENTH CONGRESS

SECOND SESSION

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CUTTING THE FEDERAL GOVERNMENT'S ENERGY BILL: AN EXAMINATION OF THE SUSTAINABLE FEDERAL GOVERNMENT EXECUTIVE ORDER

WEDNESDAY, JANUARY 27, 2010

U.S. SENATE,
SUBCOMMITTEE ON FEDERAL FINANCIAL MANAGEMENT,
GOVERNMENT INFORMATION, FEDERAL SERVICES,
AND INTERNATIONAL SECURITY,
OF THE COMMITTEE ON HOMELAND SECURITY
AND GOVERNMENTAL AFFAIRS,
Washington, DC.

The Subcommittee met, pursuant to notice, at 2:37 p.m., in room SD–342, Dirksen Senate Office Building, Hon. Thomas R. Carper, Chairman of the Subcommittee, presiding.

Present: Senator Carper.

OPENING STATEMENT OF SENATOR CARPER

Senator CARPER. Good afternoon. The Subcommittee will come to order.

My Republican colleagues are holding a one-day retreat off campus, but they are not too far away. But some of them may be coming in and joining us later this afternoon, but they are in retreat today—not full retreat, but—— [Laughter.]

And, I might add, we are not, either. But we like to do things in a bipartisan basis in this Subcommittee and that is our history. Hopefully, we will be able to continue to do that.

I am very excited about this hearing. It is one of those things when I think you actually mix good policy and good politics. Like Rutherford B. Hayes used to say, good policy makes for good politics, or something to that extent. We will see how this rolls, but we have a great panel of witnesses, and I am very excited about what you have to share with us.

The last few years have underscored not only the need, but the opportunities for our Nation to rethink its energy use. Ever changing energy costs and our Nation's severe economic problems have resulted in families and homeowners and businesses and local governments and schools all taking a hard look at how much they are spending.

As a recovering governor—that is me—I know what it is like to be responsible for coming up with a budget and living within its constraints. Within State government, you have to make sure that you balance your budget every year. You have to make some tough

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choices and look across government to find ways to do, in some cases, more with less. And the Federal Government should be no different, at least not remarkably different. Becoming more energy efficient is a clear way for the Federal Government not only to save money, but to also improve the quality of service that we provide to the American people.

President Obama has recognized that the Federal Government can lead by example. In October, the President issued Executive Order 13514, calling for the Federal Government to step up its efforts to conserve energy by challenging agencies to meet a number of energy, water, and waste reduction targets. The Executive Order establishes a series of energy savings and other green government targets for the Federal Government. Each Federal agency is required to develop plans to reach those targets, and we expect initial reports on the status of those plans sometime later this year.

In the meantime, we should start a dialogue about what the Executive Order means for not only our environment, but also for our Nation's bottom line. This Subcommittee is always looking at the financial implications of new Federal ideas—sometimes old Federal ideas—and we have to explore some basic questions which I hope our witnesses will help us to do today, and among those basic questions are these.

Will the Executive Order save taxpayers' money? What are the costs and potential rewards associated with investing in energy efficiency or alternative energy strategies? Are there financial or bureaucratic challenges that Congress can address or at least help to address? In other words, if there are opportunities to save money through energy efficiency, why aren't we moving more quickly? Is there something we can do about that?

I should point out that we are talking here about not a little bit of money. Potentially, we are talking about a lot of money. And I should first note that the Federal Government is, I believe, the single largest energy user in the Nation, is that right? I see a nodding of heads.

In fiscal year 2008, I am told the total energy consumption of the Federal Government in all of our buildings and operations was roughly 1.5 percent of all energy consumption in the United States. I wonder who is number two? The energy bill for the Federal Government that year was almost $25 billion, $24.5 billion, or almost one percent of total Federal expenditures. Of that roughly $25 billion, over $7 billion was spent on energy to operate Federal buildings alone. With a price tag that large, there are significant opportunities for savings of taxpayer dollars.

During these times of mind-boggling budget deficits, the Federal Government needs to find every way it can to better manage its operations and finances, and we also need to find ways to put Americans back to work again. I would just sort of underscore or put an exclamation point at the end of those sentences. We ran up as much new deficit in our first 8 years in this decade as we did in the first roughly 208 years of our Nation's history. And this last year, we are just coming off the heels of the largest single-year deficit that we have ever had in our Nation's history.

As we look ahead, the red ink doesn't get much better. We are going to hear a lot, I think, tonight from the President about that,

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which is a good thing. We are also going to hear tonight, I am sure, in his State of the Union a fair amount of discussion on what we are doing to try to put Americans back to work and what we ought to be doing to put Americans back to work.

I just had a very interesting meeting with the CEO of Cummins. They make a lot of products, this technology and manufacturing company. They figured out that it is possible to do good and to do well at the same time, to reduce emissions, to make more energy efficient products, and to sell them all over the world. At a time and age when a lot of workforces are shrinking, here is a company that has increased its workforce by more than a quarter, maybe close to 50 percent. So it is possible to do good and to do well. They are actually a pretty good poster child for that.

Our Federal Government occupies, I am told, nearly 500,000 buildings of every shape and size, including buildings like this beautiful one that we are in today. We have more than, I am told, 1.8 million civilians and we purchase more than $500 billion per year in goods and services. The scope of these assets presents opportunities for businesses and entrepreneurs to employ energy saving products and services that will save taxpayers money and provide a marketplace for innovation.

So it is clear that we have an abundance of opportunities to lead by example in the Federal Government and that is what we need to do—lead.

Today, we are blessed to have four very knowledgeable experts from the Federal Government—well, three, and one from sort of like a quasi-Federal Government entity, the Postal Service. But we have four very knowledgeable experts today with us to share some of their ideas on how we might provide the kind of leadership that is needed.

The first two represent the overall picture of the Executive Order from the perspectives of the White House and the Department of Energy. The second two witnesses will describe the Executive Order from the perspective of a couple of very large entities, the Department of Defense and the U.S. Postal Service.

Federal managers appear to want the Executive Order. A recent survey of Federal agency managers showed, I believe, two things. First, these managers say that green government ranks as high in importance as managing human capital and financial management. So managers see that taking steps like saving energy makes sense in a variety of ways.

But second, more than half of the respondents to that survey said that creating a more green government requires more accountability and clear measures of success. I understand that these are key goals of the Executive Order.

Before I close, I must mention a piece of very relevant legislation that our full Committee Ranking Member Susan Collins introduced last year. I am pleased to be a cosponsor, in fact an original cosponsor, of what is called the Federal Agency Energy Efficiency Improvement Act of 2009, which has many of the same goals of the Executive Order, and I believe it is complementary to it. Our legislation has already been approved by the full Committee, the Senate Homeland Security Committee and Governmental Affairs. We look forward to moving it through the full Senate. Although I will be

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honest with you. I can introduce a resolution today that says today is Wednesday. I am not sure I could get 60 votes for it in the U.S. Senate. Things are tough. [Laughter.]

But having said that, Senator Collins and I, we team up on a lot of stuff, and maybe we can get this one into the end zone. I hope so.

In the next few weeks, I plan on introducing legislation to ensure that the money the Federal Government spends on improving building efficiency is reaching its full potential. New technology demands new skills, I might add, and I have introduced a new bill that I think would better ensure that the individuals who manage our Federal facilities receive the training they need in order to meet these new demands.

With that having been said, I think we are going to get underway here. I am going to say a couple of words about each of our witnesses, not at any great length. I am just delighted that you are here, delighted that you have prepared for this.

Our first witness is going to be Nancy Sutley. I was pleased to meet her here literally, I think, a year ago. She is the Chair of the President's Council on Environmental Quality (CEQ), a position once held by former Delaware Governor Russell Peterson, who at the tender age of 92 is alive and going strong and doing great things for our environment and our State. But she is Chair of the President's Council on Environmental Quality and works in the White House. She will discuss the Executive Order and what it means to the Federal Government and what it means for our Nation as a whole. The Council on Environmental Quality is a lead entity not only in designing the Executive Order, but also in its implementation.

Our second witness is Richard Kidd. Mr. Kidd is the Program Manager of the Federal Energy Management Program residing in the Department of Energy. Mr. Kidd will discuss how agencies are responding to the Executive Order, what progress has been made, and what we can do to make even more progress in the future.

Our next witness is Deputy Under Secretary Dorothy Robyn. She joins us from the Department of Defense. Ms. Robyn will discuss what progress the Department of Defense has made on the energy efficiency front. Far and away the largest consumer of energy in the Federal Government, the Department of Defense will provide clear examples of the challenges that agencies face in pursuing these goals. Currently, the Department of Defense accounts for, I am told, almost two-thirds of the energy consumed by Federal facilities and buildings.

Our final witness is Sam Pulcrano, Vice President of Sustainability for the U.S. Postal Service. Mr. Pulcrano will discuss how the Postal Service long ago understood the business case for investing in energy efficiency for their operations. We just had a chance to meet yesterday with the Postmaster General. We talked about some of these issues. The Postal Service has been a real leader in this area, and by his position's very existence, Mr. Pulcrano has proven that the Postal Service understands the value of making energy efficiency a part of their everyday business.

We thank all the witnesses for being with us today. We will begin on the left, if we could, with Ms. Sutley. Your entire state-

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ment will be made part of the record. In fact, I have read your oral statement and it will probably fit within 5 minutes, but if you take more than 5 minutes, 6 or 7 minutes, that is OK. Then we will come back and do questions once everybody is finished with their testimony. Again, we are delighted you are all here. This is an important issue. Thanks for joining us.

Ms. Sutley.

TESTIMONY OF NANCY SUTLEY,[1] CHAIR, COUNCIL ON ENVIRONMENTAL QUALITY

Ms. SUTLEY. Thank you, Mr. Chairman, for holding this hearing and the opportunity to appear before you and the interest and enthusiasm the Subcommittee has for this issue. I will apologize up front. I am getting over a cold, so hopefully, I won't start coughing in the middle of this.

As you pointed out, the Federal Government is the single largest energy consumer in the United States. It owns more than 500,000 buildings, more than 600,000 vehicles, and purchases more than $500 billion a year in goods and services. Given this impact and scope, the President recognizes that the Federal Government must be a leader in sustainability and in our efforts to build a clean energy economy. Cutting the Federal Government's energy use will not only reduce our carbon footprint, but will also save taxpayers' dollars.

President Obama signed Executive Order 13514 on October 5 of last year. The Executive Order sets sustainability goals for Federal agencies and focuses on making improvements in environmental, energy, and economic performance. I would like to take this opportunity to thank all the agencies for their hard work and enthusiasm in implementing the goals of the Executive Order, including the agencies who are represented here today. Meeting these goals will reduce costs, reduce air and water pollution, and drive investments in local and clean energy jobs.

The goals and strategies Federal agencies are developing will be in harmony with existing statutory energy efficiency requirements, such as those in the Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007. In fact, statutory requirements such as metering and building recommissioning will help us meet these goals.

In addition, the Executive Order for the first time requires Federal agencies to set a greenhouse gas pollution reduction target. The overall Federal Government-wide target will be the aggregate commitment of 35 Federal agencies. Achieving the reduction goal will be done through a combination of efforts, including becoming more energy efficient, reducing petroleum use in government fleets, and using more renewable energy.

The investments made by Federal agencies will pay dividends for years to come in taxpayer savings. For example, achieving a 5 percent reduction in greenhouse gas emissions by 2020 from the current baseline would save an estimated $1.7 to $2.1 billion in avoided energy costs.

[1] The prepared statement of Ms. Sutley appears in the Appendix on page 38.

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Agencies are working towards achieving their targets by pursuing a number of strategies. These projects, many of which were made possible by Recovery Act funding, will drive long-term savings, build local market capacity, and create new private sector clean energy jobs.

We know that inefficient energy use in buildings is a major contributor to Federal greenhouse gas emissions. Federal buildings provide significant opportunities for reducing emissions, and the effort is bolstered by the $5.5 billion provided in the Recovery Act to the General Services Administration (GSA) to renovate and build high-performance green Federal buildings.

Looking forward, implementation of the Executive Order will focus on integrating achievement of sustainability goals with agency mission and strategic planning. The goal is to optimize performance and minimize costs. Detailed agency implementation plans are due in June 2010, when each Federal agency will deliver a strategic sustainability performance plan to CEQ and the Office of Management and Budget (OMB). Each plan will prioritize the agency's action toward the goals of the Executive Order based on the return on investment. These sustainability plans will describe the specific actions agencies will take to achieve their individual greenhouse gas reduction targets, reduce energy costs, and meet other goals of the Executive Order.

Finally, to ensure accountability, annual agency progress will be measured and reported online to the public by OMB through its scorecard process. By fulfilling this Executive Order, the Federal Government will demonstrate that economic performance and a healthy environment go hand in hand.

Thank you again for the opportunity to be here today and I look forward to your questions. Thank you.

Senator CARPER. Thank you, Ms. Sutley, very much, for your leadership, as well. Mr. Kidd, welcome.

TESTIMONY OF RICHARD KIDD,[1] PROGRAM MANAGER, FEDERAL ENERGY MANAGEMENT PROGRAM, U.S. DEPARTMENT OF ENERGY

Mr. KIDD. Thank you. Good afternoon, Chairman Carper. We at Federal Energy Management Program are responsible for facilitating the Federal Government's implementation of sound, cost-effective energy management and investment practices in order to enhance the Nation's security and environmental stewardship. Today, we are examining Presidential Executive Order 13514, which establishes greenhouse gas emissions reduction as the overarching metric to guide Federal actions and investments.

The most cost-effective way to achieve these reductions is through increased use of energy efficiency technologies applied in a whole system, sustainable manner. Not using energy is cheaper than buying energy, and the Federal Government, as the largest energy consumer in the country, buys a lot of energy—$25 billion worth in 2008. Of this amount, $7 billion was for energy costs in buildings, with associated greenhouse gas emissions of over 43 million metric tons of carbon dioxide equivalent.

[1] The prepared statement of Mr. Kidd appears in the Appendix on page 41.

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The good news, though, is that through energy efficiency improvements, we can reduce these emissions, avoid future costs, and generate positive attendant benefits, such as a healthier, more productive Federal workforce.

Instead of costs and expenditures, think about energy efficiency as a stable, reliable source of future savings. For instance, in 2008, the Department of Energy avoided $140 million of its total energy costs as compared with 1985. The government's energy intensity decreased 12.7 percent in 2009 from 2003.

The private sector is already demonstrating the value of energy efficiency. Over a building's 20-plus-year life, the owner is likely to pay more in energy costs than in construction costs. A 2 percent increase in the up-front costs can easily generate a tenfold savings over the life of the building.

This applies to retrofits, as well. For example, the Empire State Building, well known to all Americans, is currently undergoing a $20 million retrofit that will save $4.4 million annually and reduce energy consumption by up to 38 percent. The retrofit of the Empire State Building will pay for itself in less than 6 years.

The energy conservation measures chart shown here provides a few examples of historic payback periods for some of the energy efficiency and renewable technologies that have been applied throughout the Federal Government.[1] Investing in each of these various technologies makes financial sense within a given payback period.

Senator CARPER. Excuse me. Are you going to talk at all off of this slide? It is hard, I am sure, for some people to see. But if you want to take a minute and just walk us through a little bit of it—I have a hard copy up here, which is easier to see.

Mr. KIDD. Sure. I would be happy to.

Senator CARPER. Do you want to take just a minute and describe the relevance of this slide.

Mr. KIDD. We have records of most of the major energy projects across the Federal Government that have been financed through what is called alternate financing, or Energy Savings Performance Contracts (ESPCs). In each of those contracts, there are identified measures with the associated savings. So we picked some of the dozens of technologies that have been applied throughout the Federal Government.

For example, the chart shows that by the application of advanced metering, advanced meters pay for themselves in roughly 3 months, two-tenths of a year. So I was trying to calculate that in months. Lighting pays for itself in about 6 years. A building envelope improvement is 9 years. And these are historical records going back 10 to 15 years. Today's technology is better than the technology that we have in our database that was entered in the late 1990s. So, in fact, the payback periods for these various technologies are actually shorter now and will be shorter going forward than they were over the past decade or so.

Senator CARPER. OK. Thanks.

Mr. KIDD. Great. As you can see from this chart, energy efficiency investments have the shortest payback periods. But renew-

[1] The chart referenced by Mr. Kidd appears in the Appendix on page 48.

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able power generation is also an important component of the Federal Government's effort and also important if we intend to reduce our greenhouse gas emissions.

Though the Federal Government purchased or produced over 4 percent of its electricity last year from renewable sources, it is difficult for all agencies to take advantage of on-site renewable energy generation. Except for the Department of Defense and the Power Marketing Administrations, agencies cannot enter into power purchase agreements longer than 10 years. The Federal Energy Management Program (FEMP) would like all agencies to have authorities of 20 years or more in this regard.

Senator CARPER. Say that last sentence one more time, just for emphasis.

Mr. KIDD. OK. Except for the Department of Defense and the Power Marketing Administrations, agencies cannot enter into power purchase agreements of longer than 10 years. FEMP would like all agencies to have authorities of 20 years or more in this regard.

Senator CARPER. Thank you.

Mr. KIDD. This would afford all agencies the opportunity to build solar power plants like the one shown here at Nellis Air Force Base, which saves the Air Force about $1 million per year in avoided electricity expenses.

Efficiency improvements also generate other direct benefits besides cost savings. The General Services Administration reported indoor lighting and temperature, which are hallmarks of sustainable green buildings, can elevate worker productivity by 5 to 15 percent, reduce absenteeism, and improve morale. With more natural lighting, as seen at the Internal Revenue Service campus in Kansas City, workers experience less eye fatigue.

Senator CARPER. Does that mean they can probably catch our mistakes better? [Laughter.]

Mr. KIDD. That is the intent. That would also have the attendant benefit of increasing revenue, perhaps.

Senator CARPER. Well, we have a $300 billion tax gap, so this maybe will help.

Mr. KIDD. The Wayne Morris Courthouse in Oregon is rated as a LEED Gold by the U.S. Green Buildings Council, partially due to its focus on indoor air quality. And the Environmental Protection Agency's addition to its Research Triangle Park improves indoor air quality as well as saves $1.5 million in energy expenses on a $2 million investment. This is just some of the potential and some of the examples that exist within the Federal Government.

Looking forward, there is every reason to conclude that the Federal Government can be a leader in generating savings while increasing performance through energy efficiency. Executive Order 13514 outlines the expectation: That by 2030, all new Federal buildings must save or produce as much energy as they use.

Senator CARPER. Explain that. Just stay on that point. When I read that in your testimony, I had to look at it a couple of times. What does that mean? Just say it again and explain it.

Mr. KIDD. Well, Executive Order 13514 outlines the expectation that by 2030, all new Federal buildings must save or produce as much energy as they use. This is roughly what is called a net-zero

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building, which is a building that produces as much energy over the course of a year as it uses in that same time frame.

The strategy to obtain such buildings is to start with a whole systems integrated design approach, make the building as efficient as possible, super-efficient, and then integrate on-site renewables to cover what demands exist within the building. And we at DOE have a database of net-zero buildings, commercial buildings that now exist in America, and near net-zero and very high-performing buildings that exist in both the commercial sector and the public sector.

So it is out there. It is proven. We can, right now, get 30 to 60 percent energy reductions in building retrofits and 40 to 90 percent energy reductions in new builds.

Senator CARPER. Thank you.

Mr. KIDD. By making greenhouse gas reductions, the integrating metric for performance, the Executive Order encourages whole systems thinking, establishes a more energy efficient Federal Government, a government that will save money, protect the environment, enhance security, and cut back on greenhouse gas emissions.

I look forward to your questions.

Senator CARPER. Good. Thanks for that testimony, very much. Thanks for reading some of it twice.

Senator CARPER. Dr. Robyn, please proceed.

TESTIMONY OF DOROTHY ROBYN, PH.D.,[1] DEPUTY UNDER SECRETARY OF DEFENSE FOR INSTALLATIONS AND ENVIRONMENT, U.S. DEPARTMENT OF DEFENSE

Ms. ROBYN. Thank you very much, Chairman Carper. My testimony today on behalf of the Department of Defense will focus on the Department's energy performance. As the Deputy Under Secretary of Defense for Installations and Environment, I oversee policy and programs related to the energy used on our permanent military installations, our bases, both at home and overseas. This is the area called facilities energy. I will also in my testimony cover so-called operational energy, which is the energy that is used in our combat systems and support for combat operations.

My message today is a fairly straightforward one. The Department of Defense has stepped up the long-term effort needed to reduce our high level of energy consumption, and this effort is driven first and foremost by mission considerations.

First of all, in a combat setting, in an operational setting, our military's heavy reliance on fossil fuels creates significant risks and costs that can be measured in reduced mission effectiveness and in U.S. soldiers' lives. The best way to show this, and I am sorry I don't have it electronically, but this is a picture of a convoy going through the Khyber Pass in Afghanistan.

Senator CARPER. How can I be sure? [Laughter.]

That could have been a picture of my backyard and I would not have known.

Ms. ROBYN. Let us hope not. A large fraction of the tonnage carried by convoys is fuel and water. Convoys are the largest and most vulnerable target for insurgent attacks and improvised explosive

[1] The prepared statement of Ms. Robyn appears in the Appendix on page 52.

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devices (IEDs). The more convoys we send, the greater the need for protection and, in turn, for supplies to support the protective forces. Marine Corps General Jim Mattis famously said during the course of the Iraq War, "Unleash us from the tether of fuel."

In addition to the combat operational concern or problem, there is a problem with our fixed installations. They are dependent on a commercial power grid that is increasingly vulnerable to disruption from overload, natural catastrophe, and cyber attacks. See the front page story in yesterday's *New York Times*. The Defense Science Board has warned that the vulnerability of the grid puts critical military operations that are launched from these bases at risk.

In short, unleashing warfighters from the tether of fuel and reducing our installations' dependence on a costly and potentially fragile power grid will not simply enhance the environment, it will significantly improve the military's mission effectiveness. Executive Order 13514 is a tool to help us turn these vulnerabilities that I described around. One indication that we view it as a very helpful tool is that we are developing an aggressive target under the order for reducing our greenhouse gas emissions, which are due overwhelmingly to our direct energy use.

Now, operational energy, energy used in theater, is exempt, necessarily so, from any regulatory target because our immediate goal, our immediate priority is to provide support for the warfighter. But reducing the energy demands of our operational forces is nevertheless a major focus of our efforts to cut energy consumption.

Senator CARPER. Good.

Ms. ROBYN. As I say, we have stepped up the effort. We have a long way to go. This is a long change and a cultural change for the Department. Let me highlight three areas where we have stepped up the effort.

The first is organizational leadership, commitment from the top. The Secretary has expressed his strong support for the goal of reducing energy consumption. The Department has created the Office of Director for Operational Energy Plans and Programs in the Office of the Secretary of Defense. The President has nominated Sharon Burke to head this new directorate and we hope the Senate will confirm her very soon.

The Military Departments are standing up their energy offices, as well, and the Service Secretaries have, without exception, made energy one of their highest priorities. For example, in October, Navy Secretary Ray Mabus announced a set of ambitious new goals to boost the energy efficiency of the Navy and the Marine Corps. His plans include fielding a completely sustainable carrier strike group, dubbed "the Great Green Fleet," by 2016 and producing half of all the Navy's installation energy requirements from renewable sources by 2020. Those are very ambitious goals. So that is one area of leadership.

Second, we are investing more to make our fixed installations, which I oversee, less energy consuming. Our basic strategy is a two-part strategy: Reduce the demand for traditional energy while increasing the supply of renewables energy sources.

The press has focused on renewables for understandable reasons. Pictures like the one Mr. Kidd showed you of Nellis Air Force Base,

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it is incredible, 72,000 solar panels that track the sun. I have fabulous slides which I am kicking myself for not having brought of things we are doing with wind turbines and wave power and all kinds of renewables. Geothermal, the Navy has been doing geothermal at China Lake for more than 20 years.

But while the press focus has been on what I call the supply side, the renewable side, and that is very important, as Mr. Kidd said, the real low-hanging fruit is on the demand side. That is where we can really get the big gains. That is the most cost-effective thing that we can do. And so our focus has been there, and that is in investment in retrofit of existing buildings, and we have a lot of them. We account for 300,000 of the 500,000 Federal buildings. And then also investment in new building construction.

Let me highlight a new initiative that we have just gotten underway in the facility energy area. DOD's fixed installations, and as I said, there are a lot of them, offer an ideal test bed for next-generation energy technologies coming out of industry, labs, out of the Department of Energy, and university labs. Our built infrastructure is unique for its size, 300,000 buildings, 2.2 billion square feet of space. That is four times as much as Wal-Mart has. And also for the variety of facilities that we have—commissaries, data centers, office buildings, and barracks. And that variety captures the diversity of building types and climates in the United States more broadly.

As both a real and a virtual test bed, our many facilities can assess the technical validity, cost, and environmental impact of advanced pre-commercial technologies, technologies that are caught in that valley of death between the lab and deployment.

Moreover, in addition to testing those technologies, for those that prove effective, we can serve as an early and large customer, helping to create a market, much as the Department did with everything from electronics to aircraft to the Internet. This test bed, using our facilities as a test bed, is key to our own needs, but I think it is also going to be an essential element of a national strategy to develop and deploy the next generation of energy technologies needed to support our built infrastructure.

And then finally, let me mention a third area where we have stepped up the effort. We are changing the rules to take account of the real cost of fuel used in theater, used in war. As I mentioned earlier, the weapons systems and the platforms we use have what is called a logistics tail, because of the need to deliver fuel under difficult circumstances, and to protect the supply lines. That is risky and it is expensive. Taking that logistics tail into account, the real cost of fuel used in theater, what we call the fully burdened cost of fuel, can be as much as an order of magnitude higher than the commodity price, at least under certain scenarios. So it can be quite expensive.

Currently, the fully burdened cost of fuel is not captured in either the process whereby we set requirements for new weapons systems or actually acquire them, the acquisition process. So we are implementing two fundamental changes that together will represent a systemic change in the way we make decisions that affect our energy demand in terms of weapons systems. Energy consumption will no longer be an unquestioned assumption. It will be seen

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as a strategic and tactical vulnerability. This will take a long time to play out because of the life cycle of our systems, but it is a really critical change that has been a long time coming.

So in sum, the military's heavy reliance on fossil fuels is both a tactical and a strategic vulnerability, the costs of which are exacted in dollars, lives, and reduced mission effectiveness. The Executive Order is a tool for helping us turn this vulnerability around. Although our goal of energy security will require a long-term effort and much remains to be done, we are committed to making significant changes. We feel we don't have any choice. These changes will not simply enhance the environment, they will significantly improve the effectiveness of the military mission. Thank you.

Senator CARPER. Great. Thank you very much for that testimony. Mr. Pulcrano, welcome.

TESTIMONY OF SAM PULCRANO,[1] VICE PRESIDENT, OFFICE OF SUSTAINABILITY, U.S. POSTAL SERVICE

Mr. PULCRANO. Thank you. Good afternoon, Mr. Chairman. I am pleased to represent the Postal Service here today.

My testimony will center on three main points: How the Postal Service has been and will continue to be a sustainability leader; the details of our environmental initiatives; and how we can partner with the Federal Government.

In 2008, the Postal Service established a dedicated Office of Sustainability to coordinate energy, fuel, recycling, and sustainability programs within our 33,000 facilities, nearly 217,000 vehicles, and with our approximately 600,000 employees. We approached sustainability as an initiative that was fundamental to our business plan. Adopting sustainable practices is not only good for the environment, it also helps us reduce our operational cost.

Last October, President Obama signed Executive Order 13514, Federal Leadership in Environmental, Energy, and Economic Performance. Although this Executive Order does not apply to the Postal Service, we were extremely honored when the White House press release accompanying the Executive Order recognized our work.

Our leadership activities have included releasing the first Federal Government greenhouse gas emissions inventory, and our first ever sustainability report, which highlights our progress and looks at our future challenges.

Some of our environmental achievements include reducing our energy intensity since 2003 by nearly $250 million each year; saving $42 million in fuel costs in quarter one of this year; implementing green teams that saved over $4 million last year; saving $3 million in a short agency-wide energy challenge that we initiated last year; avoiding approximately $1 million in costs last year via green IT initiatives; and we recycled over 200,000 tons of waste last year.

Moving forward, we have set targets to build upon these successes. Three of these targets coincide with the Federal agencies' targets. They are to reduce energy use and intensity in our facilities by 30 percent, reduce petroleum use by 20 percent, and in-

[1] The prepared statement of Mr. Pulcrano appears in the Appendix on page 59.

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crease our use of alternative fuel by 10 percent. By 2020, we have also incorporated our own goal to reduce greenhouse gas emissions by 20 percent.

Our roughly 33,000 facilities vary greatly and provide unique challenges and large-scale opportunities for energy management efforts. We have conducted facility audits, modernized facility infrastructure and control systems, and improved processes and systems to allow for more effective and efficient management of our energy consumption. To help ensure ongoing success, we evaluate each energy impacting project and have implemented energy information systems.

Another one of our priorities is managing fuel consumption. Our 217,000 vehicle fleet is, on average, approximately 18 years old, and travels more than 1.2 billion miles a year, and we are consistently looking for ways to reduce it environmental impact. Vehicles are critical to our mission and we are thinking hard about what steps will best take us into the future and focusing on customer service and energy efficiency as our guiding goals.

The Postal Service has always led the way in testing alterative fuel vehicles, which can use a variety of clean fuels. Currently, we have about 44,000 alternative fuel vehicles in our fleet and we are now gathering data on how best to improve our long life vehicles. Those are the delivery vehicles that you see each and every day in your neighborhood. We are investing $250,000 to assist five electric vehicle technology companies in researching and developing an electric vehicle conversion solution for those neighborhood vehicles. These projects will provide invaluable information on what might work best to transition our aging long life vehicle fleet. By working together with industry, our goal is to find a solution that is environmentally friendly, compatible with our business needs, and cost effective.

We have also worked with consumers on environmental initiatives. On our Website, we created a special green section. At usps.com/green, customers can find helpful facts and suggestions, along with tools to improve their environmental awareness, measure their carbon emissions, and create conservation plans.

We also have a Post Office Lobby Mail Recycling Program that we plan to expand to 8,000 offices in 2010. The program places secure recycle bins in post offices for customers to use when they are finished reading their mail. The simple but very effective message of the program is "Read, Respond, and Please Recycle."

We look forward to working with the Congress on any legislation that will help the Postal Service to continue to fulfill its mission for the American public, ensure financial responsibility, and promote sustainable business practices.

To close, I feel confident in saying that the Postal Service is ready to take the next steps in our green leadership role. Because of our size, the Postal Service could serve as a catalyst for leading the rest of the Nation toward a greener future.

I appreciate your consideration. Thank you for inviting me to speak and discuss these important matters. I would be pleased to respond to any questions that you may have.

Senator CARPER. Good. Mr. Pulcrano, thank you very much for wonderful and encouraging testimony.

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I like to say that sometimes people would rather see a sermon than hear one, and I think in a number of respects, the Postal Service has shown us a sermon, really by your behavior, and I just applaud you for that. That is one of the reasons why you are here and why we wanted you to be here.

Yesterday, I got to do something that was a lot of fun. I have a neat job that the people of Delaware have given me. It has some downsides from time to time, but a lot of upsides, as well. Yesterday, I got to drive the Chevrolet Volt. I call it the most advertised car in the world that has never been built. [Laughter.]

It is something that the car makers developed and I have been following since I was in Detroit at the Detroit Auto Show several years ago when it was first unveiled by General Motors. What a fun car to drive. Did anybody here in the audience ever drive an electric car? If you have, raise your hand. They are not only clean and quiet, but they are also just a lot of fun.

The fellow who was riding shotgun with me was the guy who was the development team leader for the Volt for the last several years and we had a good time driving. We drove on a slalom course that was on a huge parking lot where they used to have the D.C. Convention Center. I just drove as fast as I could and scared him to death. [Laughter.]

Mr. PULCRANO. That is the nice thing about those vehicles.

Senator CARPER. He said, I am about to lose a car that is probably worth a million dollars because of this guy's driving. [Laughter.]

But when we finished the drives around and around, he said to me, this vehicle has the ability, if it is at home or wherever it is being charged at night, he said, they lose electricity and the home has actually the ability to move the electricity the other way and to use the battery of the vehicle to provide electricity for the home. About a year earlier, I had driven another electric car back in Delaware that had been developed using a different platform.

But the idea was to take some next steps on vehicle-to-grid, where again we use a whole fleet of batteries in vehicles for storage, maybe for electricity you can create by offshore wind or onshore wind, or by solar or other renewables where the sun doesn't always shine and the wind doesn't always blow. So when it does, store the electricity, and when you need it, you just pull it out of the batteries of vehicles.

I think this is something the Postal Service might be looking at. I don't know how familiar you are with the prospects for doing that, but I think it is something that you all might be looking at. I am always thinking about ways to save or make money. As the Postal Service faces these enormous deficits, you all have done a very nice job managing down the size of your workforce and finding a lot of efficiencies, looking for other ways to make money. But if you have any thoughts about what kind of potential there might be for the Postal Service with all their vehicles—how many vehicles do you say they have?

Mr. PULCRANO. We have 217,000. About 170,000 deliver mail each and every day.

Senator CARPER. Given your business model and all those vehicles you have, is there any potential for not just saving money, but

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actually making some money through a vehicle-to-grid approach using your 200-and-some-thousand vehicles for that purpose?

Mr. PULCRANO. We have explored that, Senator. In fact, we have met with the University of Delaware, which has developed a vehicle-to-grid technology. It is relatively expensive at this current time as there is no economy of scale in production.

Mr. Kidd and I, and our teams have met several times. We have met with some of the electric providers and we have had conversations about being willing to test that technology and look at what opportunities it may present to the Postal Service.

Senator CARPER. Good. Well, I will be interested to see what you turn up. Thank you.

Let me go back to Ms. Sutley, if I could. How long have you been in your job so far?

Ms. SUTLEY. It has been just a year.

Senator CARPER. What is it like?

Ms. SUTLEY. It has been a very exciting year.

Senator CARPER. It sure has been, hasn't it?

Ms. SUTLEY. It certainly has.

Senator CARPER. You get to work on a lot of interesting stuff.

Ms. SUTLEY. Absolutely.

Senator CARPER. Former Governor Peterson, who I mentioned earlier, the former governor of Delaware, from 1968 to 1972, has been one of my mentors, but he said one of the best jobs he ever had was the job that you now hold.

The Executive Order that we are here talking about lays out some measures of success in saving energy and achieving other goals. For example, the agencies will report on greenhouse gas emission reductions and the reductions of petroleum-based fuels for the Federal fleet, which I think you have already said. Although the Executive Order does not require a report of cost issues, I believe knowing the financial ramifications could be very helpful. For example, knowing Federal agencies saved millions or tens of millions of dollars over the previous year due to increased energy efficiency investment would, I think, underscore the importance of Federal leadership.

I just want to ask you, could the White House include cost savings estimates as part of its regular reporting? Have you given that any thought? Is that something that you all have discussed? Are you open to doing that? Your thoughts?

Ms. SUTLEY. Well, thank you, Senator. I am always happy to hear about my distinguished predecessors at CEQ, and as you may know, we are celebrating our 40th anniversary this year, so it is a great institution.

The Executive Order really tries to drive performance, and in a couple of ways. First of all, the oversight of the Executive Order is with the Office of Management and Budget and with the Council on Environmental Quality. So we want to make sure that we are achieving the twin goals of environmental improvement as well as cost savings for the taxpayers. The sustainability plans that the agencies will submit in June, the greenhouse gas emission reduction goals that they have already submitted are really based on trying to prioritize those actions that will save the most money. And then we have the opportunity through the OMB process and

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through the scorecards to report on performance. So certainly open to looking at ways that we can show the taxpayers what they are getting for these investments.

Senator CARPER. What I am going to do is just follow up in writing with a request that you further explore that. I see value in reporting cost savings, along with some of the other measures of success that you have cited in energy efficiency. So I am going to follow up, and if that is something that you all think might have value, I would be delighted if you would run with that ball.

Mr. Kidd, you have given us a chart that you were good enough to put up on the screen that shows the time for energy savings to actually break even and then start making money. Some, such as new photovoltaic panels, could take years to pay off. Others, like metering, which you pointed out, smart metering, much quicker, sometimes in a matter of months—2 months, in fact, from your graph, if I am not mistaken. Does this show that the Federal Government needs to take more of a long-term view of the economics of energy savings? In other words, the Federal Government should think not just about the cost maybe this year or this month, but over the next 5 years or even 10 years? If you could take that one for starters, I would appreciate it.

Mr. KIDD. Well, sir, that is actually a very easy one. The answer is yes.

Senator CARPER. Thank you very much. [Laughter.]

Mr. KIDD. Sir, as I said in my spoken remarks and in my prepared testimony, we need to think of our expenditures as investments, investments in energy efficiency, and investments in renewable power. We need to recognize that the payback period for some of these investments is longer than the one-year budget cycle or an election cycle. We need to think about the cumulative benefits, not just the cost-benefits, but the other attendant social benefits, as well, whether it is increased work or productivity, a better experience for the great American public when they come in to a Federal building, or, as Dr. Robyn pointed out, benefits such as the security and welfare of our soldiers. So we certainly need to take the long view.

One of the things that we in FEMP are doing in support of all our Federal customers is that we are trying to provide decision support tools and planning models based on marginal abatement cost curves, based on best practice in the private sector, trying to guide the other agencies' investment decisions so that they will get the highest amount of benefits possible from their expenditures.

Senator CARPER. Thank you. I am going to ask you another question, if I could. Your metering example. I found just especially intriguing. It kind of jumped off the chart at me, in fact. And I note that your chart showed savings could be realized in just a couple of months. I understand with advanced metering technology a facility manager can known in real time when there is a spike in energy use.

I don't know who said this, but somebody once said, what gets measured gets managed. That is a phrase that most of us have probably heard. I also understand that in companies like Wal-Mart—I visited one of their big facilities in Delaware recently—ad-

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vanced metering is employed, they think it saves money and that is why they are interested, in part, in doing it.

Am I missing something? Do you think Federal agencies should adopt advanced metering as a technology with a relatively quick payback period? Maybe you are already doing it and I am not even aware of it, but——

Mr. KIDD. The Federal agencies have a number of statutory requirements on metering and building audits and assessments which are closely related to metering. By the data that we have, the Federal agencies are actually ahead of where they need to be. This is EISA Section 432. Advanced metering certainly has the potential, where applicable and appropriate, to generate these high returns. So you might not want to meter every single building or every single piece of equipment in the building. But when you look at the realm of the possible and you have the idea of having an electronic device on every facility and all the major energy-using equipment in that facility—your heating, ventilation, and cooling (HVAC), your boilers, your chillers, your air handling equipment—and the use is reported nearly instantaneously, you can then get to the point where you can control and direct your building to operate efficiently.

One of the greatest areas for energy efficiency is to just use the energy efficiency investments that have already been installed on the premises. There have been a number of cases reported where Federal agencies or others have an efficiency measure or an energy conservation measure that is not being used.

Senator CARPER. I think that is a good point, but can you just give us a couple of examples where that has proven true?

Mr. KIDD. I will go ahead and point a finger at our own agency, the Department of Energy. There was recently an IG audit that indicated we had setback controls which were not being used. A setback control is like a building thermostat. It turns the temperature down when people go home and turns the temperature up when folks come to work in the morning. An advanced metering system that was measuring building performance would have immediately identified that and flagged it for correction.

Our ideal state is to get to a place where Federal buildings are continuously commissioned. Commissioning right now is a process where outside experts come into your building and make sure everything is working. It is like taking your car on a service schedule to the dealer once or twice a year and they make sure your car is working. Continuous commissioning is where we would harness the powers of meters and associated IT technology to make sure your building is commissioned continuously and it is updated and operating at peak performance all the time.

Senator CARPER. All right. Thank you.

I want to ask the next question of Dr. Robyn and Mr. Kidd. You both mentioned two interesting public-private partnership tools. Incentivizing private businesses to partner with the Federal Government is a useful approach, I think especially when the investment dollars come from the private sector. I understand that the power purchase agreements allow the private sector to economically make use of military land to build solar-powered generators.

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And so, for example, if the Dover Air Force Base, a major installation in our State, would—and, I might say, the current holder of the Commander in Chief Outstanding Air Force Base in the World—want an alternative energy project, the City of Dover, which is the local utility, by the way, could agree to pay for and construct a solar power facility using the Dover Air Force Base's land or their building space. In return, the Air Force Base would receive electricity at a reduced rate.

And energy service performance contracts are, I am told, another creative way to pay for energy efficiency projects, such as more efficient heating and control units for buildings. But both can often mean that there is no need for the initial Federal investment, but see savings for Federal agencies.

So with that as a backdrop, could you all just take a minute or two and talk about the power purchase agreements employed by the Department of Defense as well as the energy service performance contracts? Dr. Robyn.

Ms. ROBYN. Sure. We are using power purchase agreements, enhanced use leases, other mechanisms like that at a number of the renewable projects.

For example, at Fort Irwin in Southern California, huge Army National Training Center, the Army Corps of Engineers is partnering with two developers, not the local utility but two energy developers, to build a 500-megawatt solar facility. I mean, that is phenomenally big.

Senator CARPER. That is huge.

Ms. ROBYN. Yes. It is immense. I think Fort Irwin's peak power need is something like 35 megawatts, so it is several orders of magnitude——

Senator CARPER. How big is this facility, the base?

Ms. ROBYN. Well, Fort Irwin is immense——

Senator CARPER. Bigger than Delaware? We are immense. [Laughter.]

Ms. ROBYN. We have 31 million acres of ranges and installations, and I used to know what that was equivalent to in terms of a State, but I can not remember.

Senator CARPER. Several Delawares.

Ms. ROBYN. I am sure it is not as big as Delaware. [Laughter.]

So, yes, enhanced use leases, power purchase agreements are absolutely critical to these sort of deals. The Fort Irwin project will be somewhere on the order of $1.5 billion, and as you say, the private sector will finance that. What Fort Irwin will get is a reduced rate on electricity. There may be some sort of a preferential treatment in the case of an emergency for critical operations.

Senator CARPER. Before you move on——

Ms. ROBYN. Yes?

Senator CARPER [continuing.] Again, how much money in the investment? How many dollars goes into that investment?

Ms. ROBYN. How much are we putting into—I don't know. Mr. Kidd, do you know?

Mr. KIDD. It is not in the footnote here.

Ms. ROBYN. I think I have some numbers on Energy Savings Contractors (ESCOs). Well, this is a combined number for——

Senator CARPER. What was the total investment?

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Ms. ROBYN. For Fort Irwin—or just that one project?

Senator CARPER. That one project.

Ms. ROBYN. It is around $1.5 billion. There have been different numbers reported in the press.

Senator CARPER. And some of that is from private——

Ms. ROBYN. That will all be private money.

Senator CARPER. OK. So in terms of taxpayer dollars that are involved in that project, how much would that be?

Ms. ROBYN. I don't think there will be any——

Senator CARPER. Zero?

Ms. ROBYN. Yes.

Senator CARPER. Is that correct?

Ms. ROBYN. Right.

Senator CARPER. OK. So $1.5 billion in private dollars, maybe nothing from the Federal Government. And in return for that, the Federal Government gets less expensive electricity.

Ms. ROBYN. Right.

Senator CARPER. And do we know how much less? Ten percent? Twenty, 30, 40 percent?

Ms. ROBYN. I think in the case of Nellis Air Force Base with a 14-megawatt facility which provides roughly a quarter of their needs is saving $1 million per year.

Senator CARPER. All right.

Ms. ROBYN. A million a year. Can I say a word about Energy Savings Performance Contracts (ESPCs)? And Mr. Kidd really is the expert on ESPCs, and they are a wonderful mechanism because, again, it allows the Federal Government to make improvements that it would not otherwise be able to by having Honeywell or some other ESCO be paid out of the savings, the savings that the Federal Government would otherwise get in its energy bill as a result of the new technology.

But let me just mention one issue with ESPCs and it ties back to my notion of a test bed. When a military installation or when a Federal agency works with an ESCO, and ESCOs are the ones who carry out ESPCs, the ESCO is trying to minimize its risks——

Senator CARPER. I am not real good on acronyms. Go ahead and say what that stands for.

Ms. ROBYN. ESCO is Energy Savings Contractor. I think of Honeywell because I met with Honeywell, but there are many companies that are ESCOs. Honeywell is one of the largest. Johnson Controls is another one. There are a lot of very small ones that specialize in—for example—putting daylighting into Federal buildings, and they are terrific. But their goal is to minimize their risk. That is how they make money. And so they want to use technology that does not entail risk.

We, the Federal Government, should be willing to take on some risk and that is what we would be doing and the test bed concept envisions that. We have facilities. We are willing to take some risk. Come try your novel technology out on us. We can afford to be patient and to take some risk. When you use an ESCO, there is an opportunity cost to doing that because you are putting in some existing technology as opposed to trying out something more novel that might be the next generation of technology. So that is a cautionary note on the ESPC concept.

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Senator CARPER. All right. Thank you.

Mr. Kidd, any point you want to make on this before we move to the next one?

Mr. KIDD. I never pass up an opportunity to talk about all financing and public-private partnerships.

Senator CARPER. OK.

Mr. KIDD. I think all the Federal agencies appreciate the authorities that Congress has given them to enter into private-public partnerships in the area of energy savings and renewable energy production. Congress has given the Federal Government four tools: UESCs, Utility Energy Savings Contracts; ESPCs, Energy Savings Performance Contracts; PPAs, power purchase agreements; and enhanced use leases (EU's). These are the major mechanisms for investment in energy efficiency and renewables in the Federal Government.

We don't have all the data for 2009, but it looks like last year, 2009, was the best year ever in terms of Federal investment in energy efficiency projects. Nearly an 80-some-percent increase over the previous year. And of that investment amount, roughly two-thirds came from appropriations and one-third came from these various mechanisms. Without these mechanisms, the Federal investment basically would have been one-third less, and that adds up and makes a difference.

I alluded to it earlier in my testimony: I would like to see the authorities on these mechanisms expanded so that all agencies are on an equal footing. Even agencies that have land, like Nellis Air Force Base, and where it makes financial sense to enter into a power purchase agreement, if the agreement is for more than 10 years, they can't enter into it right now.

Senator CARPER. Well, what should we do about that?

Mr. KIDD. We have discussed it with your staff. It is just a matter of taking the authorities that are available to the Department of Defense and extending them to all the Federal agencies.

Senator CARPER. OK. Thank you.

Mr. KIDD. On ESPCs, Energy Savings Performance Contracts, I would like to align myself with the comments of Dr. Robyn. These are a great tool when appropriately managed and used where it makes sense to do so. They do have some limitations. They are not perhaps as aggressive as we in the Federal Government would like. And there is also an attendant cost of capital expense.

So last year, it looks like the Federal Government made about $440 million of investment. None of that money came from appropriated funds. But the ESCO, the company that did the work, borrowed the money, and it makes the total project cost about 2.4 times higher.

One of the things that I would like to see us do and work collectively is to reduce the cost of capital to the Federal agencies. When the project basically has the good faith and trust of the Federal Government as the basis of risk, we should be paying full market rates for the cost of capital as if you were a company borrowing the money on Wall Street. Thank you.

Senator CARPER. And you already discussed that with our Subcommittee staff?

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Mr. KIDD. They are all nodding their heads, so I think that is yes.

Senator CARPER. That is a good sign. Thank you.

Dr. Robyn, let me come back to you. You represent quite a unique agency. The Department of Defense is tasked with the mission of keeping our Nation safe. If the Department of Defense can't perform this task, there probably wouldn't be any Postal Service or Department of Energy or budget process. There might not even be a legislative body like the Congress.

The point is that the Department of Defense's ability to achieve its mission is in many ways the most important mission of any agency in our Federal Government. Many would argue that nothing should get in the way of this mission or make it harder for the Department to achieve it. And I am sure you have encountered many of these advocates from time to time in the Pentagon.

This means that you and some of your colleagues in charge of the Department of Defense's energy policies and energy use have not an easy assignment. How are you going to incorporate, or how are you endeavoring to incorporate energy efficiency into an agency that historically has had an unhindered mandate to use whatever resource it needs to protect this country? Has energy efficiency and the Department of Defense's mission ever been at odds? My guess is they probably have. You actually alluded to this a little bit in your testimony. But how do you make energy efficiency harmonize with the Department of Defense's mission?

Ms. ROBYN. A couple of months ago, Nancy Sutley and I were meeting with a senior Defense official—I won't say who it was, but somebody quite senior who at one time worked on the staff in the Senate, and he said to both of us, the change here with respect to energy is reminiscent to him of what happened with child care many years ago, in the late 1980s. He said, Congress told the Department, you have to provide child care for service members, and the Department was resistant to it, but within a year they had pivoted and embraced it and the services have among the best child care programs that there are in the Federal Government.

And, he said, the same thing has happened with energy efficiency, that we get it because of the tremendous operational restrictions that this tether of fuel has placed on us. It has become very graphic in Iraq and Afghanistan, how difficult it is to operate when you have to have these long convoys. And so I think there is a way—a sense in which people get it in a way that they have not before.

Now, it is true that operational energy is exempt from the target. It has to be. We can't be on the hook to meet a target because we don't know how many wars we will be in, if any. And it will take a long time, at least with respect to weapons systems. But I think the Department has been a leader in technology forever and I think that will be the case here. We won't be the leader when it comes to a lot of the energy technology. That will be the Department of Energy (DOE). But we will be a test bed.

And I don't sense resistance to it. What I sense is impediments of the kind that Mr. Kidd has talked about. It is just the Federal Government budget is structured in such a way that we don't have a capital budget, and so when an investment makes sense over

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time, we have to figure out a way to pay for that up front that doesn't get scored by OMB, and these mechanisms that we have been talking about are ways to do that.

Senator CARPER. Mr. Pulcrano, the Executive Order that we are talking about—what is the number——

Mr. PULCRANO. Thirteen-five-one-four.

Senator CARPER. Executive Order 13514 calls on agencies to better monitor the energy they are using, and in your testimony, you mention how the Postal Service tracks its energy use through a single system. I believe you call it the corporate energy interface. Is that what it is called? You probably have an acronym for it.

Mr. PULCRANO. That is one of our measurements. It is the energy management system.

Senator CARPER. All right. Just take a minute and explain to us how this system works, if you would, please, and what kinds of rewards that the monitoring at that level can bring to an agency. And I would invite the other witnesses to also comment on the benefits, if you see them, in such a system and perhaps why all agencies haven't considered following the Postal Service's lead. Maybe they are.

Mr. PULCRANO. Let me talk about this in a couple stages. First, at the Postal Service, we have an inventory of 33,000 facilities that we directly manage. Of those 33,000, we have selected 2,000 that are the largest facilities, and they account for about 75 percent of our overall electrical energy use.

Senator CARPER. So how many facilities do you have, 33,000?

Mr. PULCRANO. Thirty-three-thousand.

Senator CARPER. You picked 2,000 and they represent 70 percent of the——

Mr. PULCRANO. These 2,000 facilities represent 75 percent of our total energy use. So we have narrowed it down and we are focusing on those particular facilities. We started this program in 2007 and currently we are aggressively conducting energy audits at each and every one of those facilities. We have completed 500 of them to date. We started with the largest. To give you a sense of the scale, most of those facilities are approximately a million square feet—our facility in downtown Manhattan, Morgan Station, which has a green roof, I might add—is 2.2 million square feet. So we have targeted and completed the largest facilities.

Based on those audits, we examine possible capital improvements and put them in rank order. We look for a maximum return on investment because currently we are in difficult economic circumstance. We really have to be very careful how we invest our money. So we look for the best return.

We also have an energy management system. To date we have 6,800 of our facilities in that system, and the system monitors all our use. It provides our fuel use, our natural gas use, our energy use, etc. We are able to track it on a month-to-month basis and we measure performance against the goals we have set corporately. We have tied those goals to our individual managers' performance, this year, and next year, it will be compensable. This year, we are baselining it.

We have the National Performance Assessment (NPA) system. It is the methodology by which our management team across the

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country is recognized. The NPA assesses progress toward a number of corporate goals—safety goals, service goals, etc. This year, one of the new goals is baselining an energy index. It counts for both fuel reduction and electricity reduction, and we have weighted them appropriately. This is how we have tied it to our managers' individual performance. This year, we are baselining. Next year, it will become part of their compensable bonus program.

The other thing that we are doing is in those 500 largest facilities, much as Mr. Kidd has discussed, our facilities group is going to meter those facilities and we are going to bring it into a central command system so that we can monitor those largest facilities' energy use in real time. So if we see a spike in energy use compared to yesterday or compared to last year, same time, we would be able to pick up the phone and call that plant manager and say, something is not right. I mean, it is really to that extent that you can do this. So that is how we are targeting it.

Senator CARPER. Good stuff.

Do any other witnesses want to comment on some of the things that Mr. Pulcrano just mentioned? Go ahead, please, Mr. Kidd.

Mr. KIDD. Thank you very much. I note a common theme in some of your questions and some of the answers, and that is the emphasis on behavioral and cultural change. In my remarks, I mentioned the requirement for an integrated whole systems approach. There is no single technology. And one of the most critical components of any suite of technologies or any efforts is leadership and an emphasis on cultural change. Your smartest meter doesn't matter if no one pays attention to what it is telling them.

So I think all across the Federal Government, the agencies are starting cultural changes now, and Dr. Robyn mentioned the increased emphasis that this is being given, both structurally and organizationally in the Department of Defense. I work with all the Federal agencies, and I would say that trend is occurring across the Federal Government. The Federal agencies are embracing the need for cultural change, and this is highlighted and reinforced by the Executive Order.

Senator CARPER. Well, I would say this is the change we need.

Let me come back to you, if I could, Ms. Sutley. It seems to me from our testimony today that adding energy efficiency to our Federal buildings could save a whole lot of money. In fact, it is already starting to in a variety of places. However, I could imagine that those watching the budget for Federal buildings could see the Executive Order as maybe an additional burden, higher costs during our times of economic challenge and huge Federal budget deficits.

Doesn't the Executive Order require a very cost-effective and common sense planning process which is the requirement to consider energy efficiency and other sustainability measures during the planning for new building construction? Isn't that part of it?

Ms. SUTLEY. Thank you, Senator. The whole thrust and theme of the Executive Order is to really make it an integrated system to build sustainability into everything that agencies do and that the sustainability plans focus on the highest priority for those investments that pay back the quickest and that save the most money. So there is real opportunity here, and as you have heard from my

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colleagues at the table, these are real world examples of how agencies large and small have been able to implement those things.

The other thing I would say is that—not only for buildings that are managed by the General Services Administration and the Department of Defense, or they are using Recovery Act money when they do building refurbishments and some deferred maintenance and things like that, looking to improve the energy performance of those buildings, and that is already paid for.

So we believe that there is real opportunity to make the investment now to save the taxpayers money, to create clean energy jobs, and to make the Federal Government more sustainable overall.

Senator CARPER. OK. As I mentioned earlier, the amount of buying power that the Federal Government possesses is remarkable. Unfortunately, a lot of buying power, we are borrowing from around the world and we are buying way too much, as you know. But we buy over a half-trillion dollars' worth of products every year. In fact, our 500,000 Federal buildings represent about, I am told, about 5 percent of the total commercial real estate in our Nation.

How does the Executive Order work to leverage this enormous buying power to help grow the emerging green sector of our economy? How can we work with the private sector to help provide a healthy or healthier marketplace for innovation? And sort of a follow-up to that, how can we use energy efficient technologies in our Federal buildings to spur the wider adoption of these technologies in the rest of our Nation's buildings?

Ms. SUTLEY. Just to say, I think, with respect to the procurement power of the Federal Government, and we can go back to World War II to when the Federal Government essentially institutionalized recycling, when they asked people to save their nylons and tin cans and things like that, and up to more recent times, the Federal Government really being one of the first parts of our economy to think about spurring on investment in innovation and green buildings. So the Federal Government has not only a history of doing this and across many sectors, not just the green sector, but for many entities who sell goods and services to the Federal Government, the Federal Government is often their largest customer.

So the innovation and entrepreneurship that will emerge from making it—for requiring agencies to think about green procurement, is to find ways to remove some of the barriers to green procurement, we think will drive innovation and entrepreneurship in the green sector. This enormous buying power that the Federal Government will provide real opportunity for businesses, small and large, to innovate and to provide green services and goods to the Federal Government.

Senator CARPER. Good. Does anyone else want to take a shot at that?

Mr. PULCRANO. We are exploring other alternatives. Currently we have about 10 facilities that have significant solar arrays and we are looking at how we might increase our use of solar energy.

Our supplies management group is examining how we can focus our purchase systems and recommend which products they should buy that are the most environmentally friendly. What products are "green products," etc. Those are the products that we as an organi-

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zation prefer that our folks buy. Additionally, we increased our alternative fuel use 26 percent last year.

We are looking at where we can use our buying power, to drive in that direction. To be, not only a sustainable enterprise ourselves, but also to partner with suppliers who have the same principles, green leadership, and guidance factors that we are embracing.

Senator CARPER. Dr. Robyn, anything you want to add to this question?

Ms. ROBYN. Not to sound like a broken record——

Senator CARPER. Go ahead. Actually, I think repetition is good. [Laughter.]

Ms. ROBYN. Let me make two points. The first is that when you talk about $500 billion in buying power, it sounds incredible, and it is. There are a lot of impediments that you have to work your way through. I think we buy Energy Star electronic products, but we disable the features in many cases for security reasons, and security turns out to be an issue when running them. When you try to install advanced meters, you run into problems with the Chief Information Officer on a base because it fouls up some other things. So, I mean, it is not easy. If I could understand why we don't have advanced meters or advanced energy management information systems at all of our installations, I would understand everything. I mean, it is not easy. So it is a complicated problem.

But the good news is—and this goes back, again, to the test bed concept—where I think the Defense Department can really make a contribution is using its procurement power as an early technology adopter, but also an early customer of technology that can help create markets, and that is happening with renewable technology, but it can also happen with energy efficiency technology.

So when we think about the procurement power of the Federal Government, we need to think about that procurement at a very early stage when technology is coming out of the labs and it isn't yet commercial and the Federal Government has the ability to fill that gap.

Senator CARPER. OK. Thank you. Mr. Kidd.

Mr. KIDD. Well, I agree with everything that the other panelists have said. I would just digress a little bit and talk to your last point about how we can spur wider adoption. I think this is where the Federal Government can play a unique role in exhibiting to the American people the realm of the possible.

We get wider adoption when the average American goes to their hardware store and chooses to buy the LED light as opposed to the incandescent light, and there are some unique opportunities in the Federal Government. First of all, the Postal Service has 30,000-plus facilities that are basically in every community in America; and every American at one time or the other goes to the Post Office. Why can't they go to a net-zero Post Office every time they go and see what is possible and come back to their home and make the same sort of purchasing decisions in their home?

An even sweeter spot is in the Department of the Interior. We have 500,000 Federal buildings. We have 756 visitor centers in the Department of Interior that get over 500 million visitors a year, and these visitors go to these interpretive centers to learn. Why can't they learn what the realm of the possible is for net-zero en-

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ergy and take that back to their schools and their churches and their households and say, we saw the Federal Government do it. We can do the same.

Senator CARPER. Great points.

I am going to a question that sometimes I ask panelists when we have a little bit of time at the end. I have a couple of comments that I am going to make when we conclude, but I just want to extend to each of you the opportunity to maybe add a point or two that maybe you didn't have a chance that you might think might be helpful in this endeavor, or maybe to reemphasize something that you have already said.

Mr. Pulcrano, anything else that you want to reemphasize or just a point that when somebody else was testifying, you said, well, that reminds me of something I would like to say?

Mr. PULCRANO. I think you provided the opportunity, Senator. You are very familiar with our financial situation.

Senator CARPER. And I commend you very much, as I did the Postmaster General yesterday, for working as diligently as you are on so many fronts to rein in costs, control your expenses, and also to look for other ways to develop new sources of revenue, and I just urge you to continue both.

Mr. PULCRANO. Well, we thank you. On behalf of the Postal employees, I want to thank you, Senator.

What we at the Postal Service need is the flexibility, really, to determine what our network will be in the future. We have a tremendous opportunity and it is a subject that draws various responses. We need to look at things like changing our network to go to 5-day delivery. If we were to go to 5-day delivery, for example, that would be a 15 percent reduction, about 24 million gallons a year, in our fuel use, and the environmental impact that would bring with it. We would still be able to provide the service, the universal service at affordable rates to the American public, which is our mission. We need to have flexibility to make those types of network decisions.

Senator CARPER. All right. Thank you.

Mr. PULCRANO. Thank you.

Senator CARPER. Before we turn to Dr. Robyn, I would say on 5-day service, some of my colleagues, as you know, are not enthusiastic about it, in fact, quite the opposite. But there are some who are supportive of giving you that kind of flexibility. We probably can learn from what other countries have done in that regard.

When I was governor of Delaware, I served on the Amtrak Board, and we tried, as Amtrak does today, to figure out how to rein in their growth, their costs. One of the things we sought to do was to reduce frequencies on certain train routes outside of the Northeast Corridor, service where we used to provide it every day of the week, or 5 or 6 days a week, we would go down to 4, 3, or 2 days a week.

And what we found is that when we reduced the frequencies on a daily basis, we saw the bottom drop out in terms of the folks who would take the train on those routes because there were less opportunities, like on a round trip, to come back on the same day. People just stopped thinking about using the train. So there are those kinds of unanticipated consequences we just need to be mindful of.

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But this is a point that the Postmaster General reiterated again yesterday—I appreciate your raising it again today.

Mr. PULCRANO. Thank you for listening.

Senator CARPER. Thank you very much. Mr. Kidd.

Mr. KIDD. Sir, I would like to just express my appreciation to you and your staff for giving me the opportunity to be here and I look forward to working with them as we go forward.

Senator CARPER. Thank you. Ms. Sutley.

Ms. SUTLEY. Thank you, Senator. One thing I don't think we talked a lot about today was how we reached out when the President signed the Executive Order to all Federal employees to solicit their ideas——

Senator CARPER. Oh, good. That is smart.

Ms. SUTLEY [continuing]. About how we can green the workplace, and——

Senator CARPER. Did you get a lot of responses?

Ms. SUTLEY. The responses were overwhelming. We had a voting system and we had 165,000 votes. We had a lot of really good ideas, and I think there is such interest and enthusiasm among Federal employees, both civilian and military, for greening the workplace, great ideas to save money and great ideas to make their workplaces better places to work, and these are ideas that will not only help the Federal Government save money, but are also ideas that could be shared among non-Federal, State and local government and private sector employers, too. But we were just bowled over by how much enthusiasm there was among Federal employees.

Senator CARPER. Well, that is great to hear.

I do have another question for you. Some of you already mentioned ideas. I don't want to let a panel like this slip away without asking for you to add some things to our "to do" list here, not just in this Subcommittee but in the Congress, things that we can do to help support the initiatives that will enable us to not just reduce greenhouse gases, not just reduce our dependence on fossil fuels, but save us real money.

Some of you mentioned a couple of things that would be helpful for us to do. Maybe if you could each give us another idea or two. You can reiterate what you have already said, but just give us a couple of items for our "to do" list here, please. What can we do to help? You have mentioned a number of things that we are doing, that we have done, but if you also mention a couple of things we ought to be doing or should consider. If you have another idea or want to reiterate one, please, use this opportunity. Anybody?

Ms. SUTLEY. Let me just start with a little bit of an overview, just to say that in asking the agencies to do these sustainability plans, I think we will learn a lot, and we have already heard them. These folks are the real experts about some of the impediments and barriers and things that—in the complex series of rules that the Federal Government lives under, both budgetary and otherwise. I think we will learn a lot about where there may be impediments that we need to remove, and you have heard some of them today. We would just be very interested in continuing the discussion with the Subcommittee and with yourself about some of those ideas.

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Senator CARPER. OK, thanks.

Mr. Kidd, I know you mentioned at least one of them and said, I think, something to the effect of giving other agencies outside the Department of Defense some of the same prerogatives that the Department enjoys, but if you want to mention that one again or any others, go ahead.

Mr. KIDD. Sir, I will just mention the ones I was able to get on your provided piece of paper here in a short amount of time. Earlier, there was an interagency working group and we submitted a range of suggested legislative actions to your Subcommittee and other committees that went through that, and so your staff have those. I will highlight a few things that were in there as well as some others.

(1) Expand the power purchase and enhanced use lease authority to all agencies. (2) Extend the term of a renewable power contract. Right now, the Federal Government cannot buy renewable power for more than 10 years, for example, biomass power for a plant, which adds price volatility to some of our renewable actions. (3) I mentioned reduce the cost of capital for Federal ESPC projects. (4) Clarify under the ESPC authorities the ability to use combined funds and recognize the implications that it has in the budget process. (5) And then also allow for expanded generation capacity for agencies to receive back the money that they would create from expanding their authorities.

For example, we have a number of turbines across America in Federal dams. These turbines are working fine. They are in the middle of their engineering life. They have 16 or 20 more years to go before we would ever want to replace them. But if we were to replace them with newer technology, we could increase by 5, 10, 15 percent the amount of power produced by that dam for the same amount of water, but there is no financial incentive for the agency that owns the turbines to do so now because they don't get to keep the difference or any portion of the difference. And we could generate a longer list with more time.

Senator CARPER. I have always been intrigued by how do we harness financial incentives in order to drive good public policy behavior, and whether it is in health care and incentivizing people to take better care of themselves, stop smoking, lose weight, that kind of thing to help drive down health care costs to agencies.

The Veterans Department, when they sell a property, they get to keep part of the proceeds. Meanwhile, we have all these tens of thousands of abandoned properties, surplus properties that we don't need that we pay security and utilities for. For the most part, the agencies that own them, they have to spruce them up to sell them. They don't get any money to spruce them up, get them ready to sell, and then when they sell them, they don't get to keep any of the proceeds. With the VA, we do. They get to keep maybe 20 percent of the proceeds to use in their programs.

What you just said just reminds me of financial incentives and I especially like that idea. Thank you.

Mr. Pulcrano, last word?

Mr. PULCRANO. Well, I think I have raised the issue that we are most concerned about at this time. I thank you for the opportunity.

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Senator CARPER. Not at all. In closing—let me see, what time is it? It is about 4:15. In about 4 hours and 45 minutes, my colleagues and I will be over in the House of Representatives, and we will be hearing from the President there who will begin addressing us and our Nation around 9 p.m. Eastern time this evening. We expect him to talk about a whole lot of things, our economy and how to create more jobs, how to get this economy moving even more quickly in the right direction, what to do to try to extend health care, not just to people who don't have it, but how to rein in the growth of health care costs and improve quality outcomes.

He is going to be talking with us about how to reduce our Federal budget deficit and the flood of red ink that we have seen rising over the last 9 years now, to try to slow that down, to stem that flood. There are a number of things on that point that I expect him to talk about. We expect him to call for a freeze, essentially a freeze on domestic discretionary spending starting in the next fiscal year for 3 years and then extend it beyond that to not exceed the rate of inflation.

We expect for him to call for the establishment of a bipartisan commission that would be empowered to look at our government rather broadly with respect to especially entitlement programs, but other spending, as well, and to come back to us with recommendations on what to do to help rein in their costs a bit and to make them more sustainable for the long term and to talk to us honestly about revenues, a panel of Democrats and Republicans, maybe drawing from some of my former colleagues, people that have worked here that now are doing other things with their lives. And those are all good and important.

When President Obama was a U.S. Senator, I remember being in the Senate Chamber on the last day that he spoke as a Senator. It was right after the election. And I wrote down on the back of an envelope and I gave to Melissa about six or seven things that the Subcommittee had been looking at that would enable us to spend our money more wisely. He said, "I can't read your handwriting." [Laughter.]

Actually, he probably could, if he tried. But he said, why don't you put it in a letter or memo to me so not only I can read it, but other people will be able to read it, as well. And among the things I suggested to him, if we are interested in controlling spending and being better stewards of taxpayers' dollars, go after improper payments. That is the amount of money that is being misspent, largely overspent, in the tens of billions of dollars every year.

And not just go after improper payments, but all levels of Federal Government domestic spending, and defense spending, entitlements. But when we find out that we have improperly spent money, that it has gone to places it shouldn't go, go out and get the money back. And in some cases, hire a private contractors to do it and let them keep a portion of the money that we have recovered.

And we are starting to do that at Medicare. I think last year we recovered $700 million in just three States from fraud, going after the money—I think they should go after all 50 States. We are going to take some of those lessons and go after Medicaid fraud money

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and recover that, split the money 50–50 with the States and use private contractors.

I mentioned to the President, on the back of my envelope, the discussion that we had a $300 billion annual tax gap, monies that are owed to the Treasury and not being collected. We have some idea who owes it and we need to do a much better job of getting that money. We have major weapons systems overruns, as Dr. Robyn probably knows. I think in 2001, the estimate from major weapons system cost overruns was about $45 billion in 2001. Last year, it was about $295 billion. It flat lines. Actually, the last 2 years, I think the level of overruns has been flat, but it is still a huge amount of money.

I mentioned all that surplus property, a lot of which is just hanging around. We need to figure out what we can offload and stop spending money on utilities and security and so forth there.

We also found out that there is a huge focus these days on cyber security, not just kids trying to hack into our systems, not just criminal elements, but literally sovereign nations and elements in other nations trying to steal our identities, steal our secrets for weapons systems and do other kinds of mischief. There is a lot of focus on that, not nearly as much focus on how much we spend on IT, system development, and how we don't do a very good job of understanding what we need and managing the IT system development.

And all those are just ideas. Those are things that will enable us to be better stewards. If we just work on all of them and focus, we will be better stewards of our taxpayer dollars.

And another great example of how we can save a lot of money for our taxpayers is what you have all been talking about here today. In the case of a number of agencies, we are really starting to realize a substantial savings. And the great thing about it is for those of us who care about the environment, and we all do, this does good things for our environment. We reduce our reliance on foreign oil. It makes us more energy independent. We do good things for the air that we breathe and we create the opportunity for a lot of innovation in this country, a lot of development of new products that we can not just consume and use in the Federal Government, but all across our country, and we can sell them in other countries.

Just as I said earlier, I was talking with the CEO of Cummins earlier today and they were telling me about all the products that they are developing here and selling around the world to conserve energy and reduce pollution. So there are a lot of payouts. This is not just a win-win situation, it is a multiple-win situation.

We need to be setting a good example in the Federal Government. We need to be leading by our example. In some cases, we don't provide very good examples. I think in this case, we are providing a good example. We are providing the kind of leadership that is needed. And to the extent that those of us in the Legislative Branch can be supportive and more encouraging, we want to do that. You have given us some good ideas, so we thank you for those.

Thank you very much for your testimony today. Thank you for what you are doing with your lives. And just extend to your col-

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leagues when you go back to work that we are mindful of the work that is being done and grateful and just keep it coming.

With that having been said, we will adjourn. Oh, one last thing. Some of my colleagues who were unable to join us today will want to submit questions for your responses in writing. I would just ask, when you receive those, just respond to them promptly.

Thank you so much.

[Whereupon, at 4:24 p.m., the Subcommittee was adjourned.]

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APPENDIX

FOR IMMEDIATE RELEASE

TOM CARPER

UNITED STATES SENATOR · DELAWARE

FOR RELEASE: Jan. 27, 2010
CONTACT: Katinka Podmaniczky (202) 224-2441

SUBCOMMITTEE ON FEDERAL FINANCIAL MANAGEMENT, GOVERNMENT INFORMATION, FEDERAL SERVICES, AND INTERNATIONAL SECURITY

COMMITTEE ON HOMELAND SECURITY AND GOVERNMENTAL AFFAIRS

HEARING: "Cutting the Federal Government's Energy Bill: An Examination of the Sustainable Federal Government Executive Order"

Opening Statement of Senator Thomas R. Carper, Chairman

The last few years have underscored not only the need, but the opportunities, for our nation to rethink its energy use. Ever-changing energy costs and our nation's severe economic problems have resulted in families, homeowners, businesses, local governments and schools all taking a hard look at how much they are spending.

As a "recovering Governor," I know what it is like to be responsible for coming up with a budget and living within its restraints. And within our state government, you have to make sure the budget is balanced every year. You have to take a tough look across the government and find ways to do more with less.

The federal government should be no different. Becoming more energy efficient is a clear way for the federal government not only to save money, but also improve the quality of service we provide to the American people.

President Obama has recognized that the federal government can lead by example. In October, the President issued Executive Order 13514, calling for the Federal Government to step up its efforts to conserve energy by challenging agencies to meet a number of energy, water and waste reduction targets. The Executive Order establishes a series of energy saving and other 'green government' targets for the federal government. Each federal agency is required to develop plans to reach those targets and we expect initial reports on the status of these plans later this year.

In the meantime, we should start a dialogue about what the Executive Order means for not only the environment, but for our nation's bottom line. Our Subcommittee is always looking at the financial implications of new federal ideas. And we have to explore some basic questions, which I hope our witnesses will help us do today.

Will the executive order save taxpayers' money?

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What are the costs, and potential rewards, associated with investing in energy efficiency or alternative energy strategies?

Are there financial or bureaucratic challenges that Congress can address? In other words, if there are opportunities to save money through energy efficiency, why aren't we moving more quickly?

I should point out that we are talking about a lot of money.

And, I should first note that the Federal Government is the single largest energy user in the nation. In fiscal year 2008, the total energy consumption of Federal Government buildings and operations was roughly 1.5 percent of all energy consumption in the United States. The energy bill for the Federal Government that year was $24.5 billion or about 0.8 percent of total Federal expenditures. Of that $24.5 billion, over $7 billion was spent on energy to operate Federal buildings alone. With a price tag that large, there are significant opportunities for savings of taxpayer dollars.

During these times of mindboggling budget deficits, the Federal Government needs to find every way it can to better manage its operations and finances. We also need to find ways to put Americans back to work again.

The Federal government occupies nearly 500,000 buildings of every shape and size, operates more than 600,000 vehicles, employs more than 1.8 million civilians, and purchases more than $500 billion per year in goods and services. The scope of these assets presents opportunities for businesses and entrepreneurs to employ energy saving products and services that will save taxpayer money, and provide a marketplace for innovation.

So, it is clear that we have an abundance of opportunities to lead by example in the federal government.

We have four very knowledgeable experts from the federal government here with us today to share some of their how ideas on how we might provide that leadership.

The first two represent the overall picture of the Executive Order, from the perspective of the White House and the Department of Energy. The second two witnesses will describe the executive order from the perspective of two large federal agencies: The Department of Defense and the U.S. Postal Service.

Federal managers seem to want the executive order. A recent survey of federal agency managers showed two things. First, managers say that green government ranks as high in importance as managing human capital and financial management. So managers see that taking steps like saving energy makes sense. But second, more than half the respondents said that creating a more green government requires more accountability and clear measures of success.

I understand that these are key goals of the executive order.

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Before I close, let me mention a piece of very relevant legislation that our full committee Ranking Member, Sen. Susan Collins introduced last year. I am a cosponsor of the "Federal Agency Energy Efficiency Improvement Act of 2009," which shares many of the same goals of the executive order and, I believe, is complementary to it. Our legislation has already been approved by the full committee, and we look forward to moving it through the full Senate.

Finally, in the next few weeks I plan on introducing legislation to ensure that the money the federal government spends on improving building efficiency is reaching its full potential.

New technology demands new skills. My bill would give the individuals who manage our federal facilities the training they need to meet these new demands.

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STATEMENT OF SENATOR JOHN MCCAIN, RANKING MEMBER

SUBCOMMITTEE ON FEDERAL FINANCIAL MANAGEMENT, GOVERNMENT INFORMATION, FEDERAL SERVICES AND INTERNATIONAL SECURITY

COMMITTEE ON HOMELAND SECURITY AND GOVERNMENTAL AFFAIRS

"Cutting the Federal Government's Energy Bill: An Examination of the Sustainable Federal Government Executive Order"

January 27, 2010

Senator Carper, thank you for holding this hearing today. It is important that we critically examine the President's Executive Order directing agencies to reduce energy consumption and implement sustainable practices. We must ensure that the policy promotes environmental responsibility in a fiscally responsible manner.

The federal government is the largest institutional consumer of energy in the world. In 2008, its total energy bill topped $24 billion. Over $7 billion alone was expended on energy costs to operate federal buildings. Prior administrations have issued executive orders aimed at shrinking federal energy consumption and reducing related spending. The current Executive Order seeks to build upon those efforts by fully integrating sustainable practices into overall agency mission and budgetary considerations.

Of course, this order will not be implemented in a vacuum. Our nation continues to endure economic hardships as our national debt climbs to new record highs. The Senate may soon be facing a vote to increase the federal debt limit to $14.3 trillion dollars -- a $1.9 trillion dollar increase, the largest ever. The American taxpayers are demanding that Congress rein in out-of-control spending and make reduction of the federal debt a top priority. To accomplish this goal, agencies will inevitably be forced to operate on leaner budgets.

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While I appreciate that investments in renewable energy and green building design are important parts of any comprehensive sustainability strategy, we must take economic factors into account. Future investments in energy sustainability must remain cost-effective and be able to provide a consistent return in energy savings.

In closing, there is obvious opportunity for the federal government to lead by example. But just as dangers lurk in doing too little, there is peril in going too far, too fast, in a way that imposes undue burden on our federal agencies in a time of economic crisis. The Executive Order demands that energy efficiency become a fully integrated consideration in each agency's mission in the future. However, implementing that Order must not be made at the expense of their most pressing priorities today.

I hope our witnesses will be able to shed some light on how that may be accomplished.

Thank you again, Mr. Chairman.

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Written Testimony of Nancy H. Sutley
Chair of the Council on Environmental Quality
Before the Subcommittee on Federal Financial Management, Government Information, Federal Services, and International Security
U.S. Senate Committee on Homeland Security and Governmental Affairs
January 27, 2010

Thank you Chairman Carper. And thank you Ranking Member McCain and Members of the Committee, for the opportunity to appear before you today.

As you know, the Federal Government is the single largest energy consumer in the United States. It owns nearly 500,000 buildings, more than 600,000 vehicles, and purchases more than $500 billion per year in goods and services. Given this impact, the President recognizes that the Federal Government itself must be a leader in sustainability and our efforts to build a clean energy economy. Cutting the Federal Government's energy use will not only reduce our carbon footprint, but will also save taxpayer dollars.

As you know, President Obama signed Executive Order 13514 on October 5, 2009. This Executive Order sets sustainability goals for Federal Agencies and focuses on making improvements in environmental, energy and economic performance.

The Executive Order requires Agencies to meet a number of energy, water, and waste reduction targets, including:

- 30% reduction in vehicle fleet petroleum use by 2020,
- 26% improvement in water efficiency by 2020,
- 50% recycling and waste diversion by 2015,
- 95% of all applicable contracts will meet sustainability requirements,
- implementation of the 2030 net-zero-energy building requirement,
- implementation of the stormwater provisions of the Energy Independence and Security Act of 2007, section 438, and,
- development of guidance for sustainable Federal building locations in alignment with the Livability Principles put forward by the Department of Housing and Urban Development, the Department of Transportation, and the Environmental Protection Agency.

Meeting these goals will reduce costs, reduce air and water pollution, and drive investments in local, clean energy jobs. The goals and strategies Federal Agencies are developing will be in harmony with existing statutory energy efficiency requirements such as those in the Energy Policy Act of 2005 and in the Energy Independence and Security Act

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of 2007. In fact, statutory requirements such as metering and building recommissioning will help us meet these goals.

In addition, the Executive Order requires Federal Agencies, for the first time, to set a greenhouse gas pollution reduction target. The overall Federal government-wide target will be the aggregate commitment of 35 Federal Agencies[1]. Achieving the reduction goal will be done through a combination of efforts, including becoming more energy efficient, reducing petroleum used in government fleets, and using renewable energy. The investments made by Federal Agencies today will pay dividends for years to come in taxpayer savings. For example, if annual greenhouse gas emissions decrease incrementally to produce a reduction equal to five percent of calculated base year emissions, the Federal Government will save an estimated $1.7 - $2.1 billion in avoided utility costs over the period 2010 to 2020.

Agencies are working toward achieving their targets by pursuing a number of strategies, including installing solar arrays at military installations, tapping landfills for renewable energy, retrofitting Federal buildings, and greening the Federal fleet. These projects, many of which were made possible by Recovery Act funding, will drive long-term savings, build local market capacity, and create new private-sector clean energy jobs.

We know that inefficient energy use in buildings is a major contributor to Federal greenhouse gas emissions. As such, Federal buildings provide significant opportunities for reducing emissions, and the effort is bolstered by the $5.5 billion provided in the Recovery Act to the General Services Administration to renovate and build high-performance green Federal buildings.

In fact, the General Service Administration's Edith Green Wendell Wyatt Federal building in Portland, Oregon is a good example of what can be done. The building features a series of seven 250 foot tall trellises designed to shade the entire west side of the building during summer months, while allowing light and solar gain during winter months. Once complete, this 18-story building will also include rooftop solar panels that will provide nearly 13 to

[1] Central Intelligence Agency, Department of Homeland Security, Department of Commerce, Department of Defense, Department of Energy, Department of Health and Human Services, Department of Interior, Department of Justice, Department of Labor, Department of State, Department of Transportation, Department of Education, Environmental Protection Agency, General Services Administration, Department of Housing and Urban Development, National Archives and Records Administration, National Aeronautics and Space Administration, Office of Personnel Management, Railroad Retirement Board, Social Security Administration, Department of Treasury, Tennessee Valley Authority, Nuclear Regulatory Commission , Department of Agriculture and Veterans Affairs, Federal Housing Finance Agency, Federal Trade Commission, Smithsonian, Army Corps of Engineers- Civil Works, National Science Foundation, Corporation for National and Community Service, Court Services and Offender Supervision Agency, Small Business Administration and US Postal Service.

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15 percent of the building's energy, elevators that generate electricity during descent, smart lighting systems which will adjust with natural light levels, thus reducing light use by 50 percent, and solar-thermal systems which will provide 30 percent of the building's hot water.

Another example of an agency working to reduce its energy use is the Food and Drug Administration. The FDA has implemented upgrades to the energy management control system at its Jefferson Laboratories Complex in Jefferson, AR that will save an estimated 2.3 percent of the average annual energy consumption on campus, resulting in nearly $93,000 in annual savings.

Another innovative approach is the Defense Department's Energy Conservation Investment Program, which competitively funds clean energy projects according to estimated return on investment. One such project will install 2,000 solar panels on buildings at the Naval Weapons Station in Seal Beach, CA. The project will produce about 5.5 percent of the total electricity used by the facility, saving the Navy more than $86,000 per year in energy costs.

Looking forward, implementation of the Executive Order will focus on integrating achievement of sustainability goals with agency mission and strategic planning. The goal is to optimize performance and minimize implementation costs.

Detailed agency implementation plans are due in June 2010, when each Federal Agency will deliver a Strategic Sustainability Performance Plan to the Council on Environmental Quality and the Office of Management and Budget. Each plan will prioritize the agency's actions toward the goals of the Executive Order based on lifecycle return on investment. These Sustainability Plans will describe the specific actions agencies will take to achieve their individual greenhouse gas reduction targets, reduce long-term costs, and meet the other goals of the Executive Order. Finally, to ensure accountability, annual agency progress will be measured and reported online to the public by the Office of Management and Budget through the "scorecard" process.

Meeting the goals of this Executive Order will demonstrate good government as much as green government.

Thank you for the opportunity to testify today and I look forward to your questions.

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STATEMENT OF

RICHARD KIDD

PROGRAM MANAGER

FEDERAL ENERGY MANAGEMENT PROGRAM

OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY

U.S. DEPARTMENT OF ENERGY

BEFORE THE

SUBCOMMITTEE ON FEDERAL FINANCIAL MANAGEMENT,

GOVERNMENT INFORMATION, FEDERAL SERVICES AND

INTERNATIONAL SECURITY

COMMITTEE ON HOMELAND SECURITY AND GOVERNMENT AFFAIRS

U.S. SENATE

JANUARY 27, 2010

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INTRODUCTION

Good afternoon Chairman Carper, Ranking Member McCain, and other distinguished members of the subcommittee. I lead the Department of Energy's (DOE) Federal Energy Management Program (FEMP), which is part of the Office of Energy Efficiency and Renewable Energy. FEMP's mission is to facilitate the Federal Government's implementation of sound, cost-effective, energy management and investment practices to enhance the Nation's energy security and environmental stewardship.

I am responsible for advising Federal agencies on how best to comply with statutory requirements related to Federal energy management such as those in the Energy Security and Independence Act of 2007 (EISA), as well as the requirements of Presidential Executive Orders such as Executive Order 13514, signed by President Obama on October 5, 2009.

I am pleased to have the opportunity to address this subcommittee about the Federal Government's efforts to increase energy efficiency in Federal facilities and operations, and to undertake other sustainability measures. It is clear from past Federal performance and documented success in the private sector that saving energy can save money. Investments in energy savings will not only reduce the Federal energy bill, they can also lead to a range of other important benefits including safeguarding our environment, increasing the productivity of the Federal workforce and improvements to our Nation's energy security.

I would like to address the following topics:

- Energy use in the Federal Government;
- Current Federal authorities;
- Executive Order 13514;
- Economics of greenhouse gas (GHG) management; and
- Progress in the Federal sector.

ENERGY USE IN THE FEDERAL GOVERNMENT

For perspective, the Federal Government is the single largest user of energy in the Nation. In fiscal year (FY) 2008, total energy consumption of Federal Government buildings and operations was 1.6 quadrillion British thermal units (Btu "quads"), roughly 1.5 percent of U.S. total consumption. The Federal Government's site-delivered energy bill was $24.5 billion. This represented approximately 0.8 percent of total Federal expenditures ($2.983 trillion) that year. Of the $24.5 billion, over $7 billion was spent on energy to operate Federal buildings.

In FY 2008, energy use and production at Federal facilities resulted in direct and indirect emissions of 42.7 million metric tons of carbon dioxide equivalent ($MMTCO_2e$). This does not include lifecycle emissions.

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ENABLING AUTHORITIES FOR FEDERAL ENERGY MANAGEMENT

The actions of Federal Agencies in the area of energy management are governed by a variety of Congressional Acts, the most salient of which are:

- National Energy Conservation Policy Act, as amended by the Energy Independence and Security Act of 2007 and the Energy Policy Act of 2005 (EPAct 2005);
- Energy Conservation and Production Act, as amended by EISA and EPAct 2005;
- Energy Policy Act of 1992 (EPAct 1992); and
- Annual appropriations.

Included in these Congressional Acts are a variety of specific goals and targets, the most salient of which include:

- Reducing energy intensity (Btu/ft^2) by 15 percent by the end of FY 2010, compared to a FY 2003 baseline and by 30 percent by the end of FY 2015;
- Increasing renewable electric energy equivalent to at least five percent of total electricity use in FYs 2010-2012 and at least 7.5 percent in FY 2013 and beyond; at least half must come from sources developed after January 1, 1999; and
- Achieving 20 percent reduction in vehicle fleet petroleum use by 2015.

EXECUTIVE ORDER 13514

Executive Order (E.O.) 13514, signed by President Obama on October 5, 2009, establishes GHG reduction as an overarching integrated metric to guide Federal actions and investments as existing statutory requirements are met. Each agency is required to develop and annually update a Strategic Sustainability Performance (SSP) Plan that will outline planned actions, policies, and metrics necessary to achieve the sustainability goals and targets, including GHG reduction targets, established by E.O. 13514. Each agency establishes its own goals based on its circumstances. The SSP Plan will be integrated into an agency's strategic planning and budget process. It will promote actions based on a full accounting of both economic and social benefits and costs for agencies to achieve the best lifecycle return on investment. This is the first time that legislation or an Executive Order related to Federal energy management has explicitly required agency level planning, clearly linking that planning with the budget formulation process. The impact of this change should guide agencies to adopt rigorous analysis to ensure that all proposed energy-related investments result in the highest possible return to the American taxpayer.

ECONOMICS OF GREENHOUSE GAS MANAGEMENT

GHG emission reductions achieved through energy savings can be cost-effective. However, realizing some of these energy savings requires up-front capital investments. One way to show potential GHG reductions and associated costs is through a marginal abatement cost curve (MACC). **Figure 1** shows an illustrative example of a MACC created for the United Kingdom (UK) commercial and public building sector prepared for

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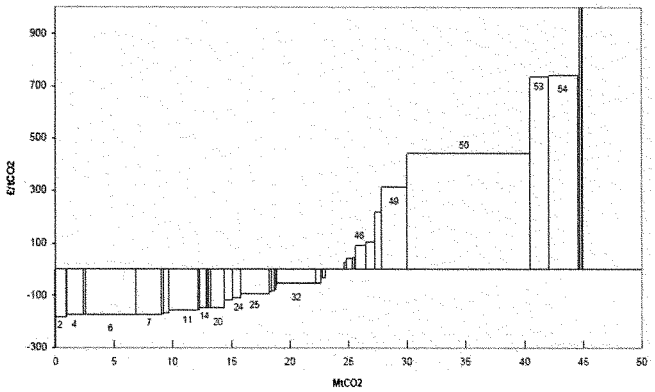
the UK Committee on Climate Change.[1] The MACC displays potential GHG reduction measures by how much carbon dioxide (CO_2) is reduced and the associated net savings or costs. In a MACC, options are ranked according to their unit cost, with the most cost effective measures on the left-hand side. Those below the x-axis have a negative marginal cost, which reduce energy costs more than the initial investment cost over the life of the project. An even higher level of reduction is achievable by bundling these measures with projects that have a positive net cost, which can simultaneously reduce GHGs and save money.

Figure 1. United Kingdom Commercial/Public Sector Building Cost Curve in 2022



1	Lights- Most EE Replacement Tungsten Total	31	OffEq - Most EE Monitor Total
2	Heating - More efficient air conditioning Total	32	presence detector Total
3	Compressed air Total	33	Motor - 4 Pole Motor - EFF1 replace 4 Pole Total
4	Heating - Optimising Start Times Total	34	Heating - TRVs Fully Installed Total
5	Lights - Sunrise-Sunset Timers Total	35	Heating - most EE boiler Total
6	Heating - Programmable Thermostats High Total	36	Most EE pitched roof insulation Total
7	Lights - Basic Timer Total	37	Most ee double glazing Total
8	Lights - Light Detectors Total	38	Most EE flat Roof insulation Total
9	stairwell timer Total	39	Most EE external wall insulation Total
10	Most EE fridge Total	40	Lights - HF Ballast Total
11	Heating - Reducing Room Temperature Total	41	Most ee cavity wall insulation Total
12	Most EE freezer Total	42	Biomass
13	Photocopiers - Energy Management Total	43	Lights- Most EE Replacement Tungsten Total
14	Monitors - Energy Management Total	44	Most EE fridge-freezer Total
15	Printers - Energy Management Total	45	Lights - Metal Halide Floods Total
16	OffEq Fax Machine switch off Total	46	Lights - IRC Tungsten-Halogen - Spots Total
17	Vending Machines Energy management Total	47	Variable Speed Drives Total
18	OffEq - Most EE Monitor pc only Total	48	Heating - most EE boiler Total
19	Computers - Energy Management Total	49	Most EE fridge-freezer Total
20	Lights - Turn off Lights for an extra hour Total	50	Most EE freezer Total
21	OffEq - Most EE Monitor Total	51	Most EE fridge Total
22	presence detector Total	52	Most ee cavity wall insulation Total
23	Motor - 4 Pole Motor - EFF1 replace 4 Pole Total	53	Lights- Most EE Replacement 26mm Total
24	Heating - TRVs Fully Installed Total	54	Most EE pitched roof insulation Total
25	Heating - most EE boiler Total	55	Most EE flat Roof insulation Total
26	Most EE pitched roof insulation Total	56	Lights - HF Ballast Total
27	Most ee double glazing Total	57	Lights- Most EE Replacement 26mm Total
28	Most EE flat Roof insulation Total	58	Most EE external wall insulation Total
29	Most EE external wall insulation Total		
30	Lights - HF Ballast Total		

[1] AEA Energy and Environment. *Review and Update of UK Abatement Cost Curves for the Industrial, Domestic, and Non-Domestic Sectors.* Final Report to the Committee on Climate Change. August 2008.

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Social Benefits

There are many social benefits associated with GHG reductions through improved energy efficiency. In a 1999 report, the General Services Administration states that indoor environments (including lighting and temperature) can affect worker productivity by 5 to 15 percent.[2] With Federal agencies spending almost 30 times as much on salaries and benefits as on energy, even a few percentage points of productivity gain could be immensely valuable.

The public and private sectors are recognizing that potential climate change impacts, such as sea level rise, extreme weather events, droughts, floods, and the increased spread of life-threatening diseases, will have significant consequences on business operations. An analysis conducted by the CNA Corporation and a military advisory board concluded that additional climate change stressors and disasters pose a threat to our Nation's security and stability while exacerbating conflicts around the world.[3] Federal Agencies may encounter direct impacts on their missions due to climate change. For example, the Department of Transportation predicts that the Nation's infrastructure will be at greater risk of damage and failure due to climate change effects such as extreme weather events.[4] The Department of Defense's (DoD) Strategic Environmental Research and Development Program has also recognized that climate change will affect national security and DoD operations. A number of built and natural infrastructure sites, for instance, are at risk of flooding due to sea level rise and damage from erosion. The cost and availability of energy required for DoD operations are also threatened by climate change.[5]

PROGESS IN THE FEDERAL SECTOR

All Federal agencies submit energy use data to FEMP for analysis annually. The data show that the Federal Government has made significant progress in reducing its energy use during the past decade. The total site-delivered energy consumption in FY 2008 was 23.5 percent less than in FY 1985 and 2.3 percent less than in FY 2003. Compared to FY 2003, direct and indirect GHG emissions from energy use in Federal buildings subject to the National Energy Conservation Policy Act energy reduction requirement decreased 9.3 percent,[6] from 47.1 $MMTCO_2e$ to 42.7 $MMTCO_2e$ in FY 2008. Performance in a few other key areas is summarized below.

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[2] *An Overview of the Integrated Workplace: A Comprehensive Approach to Developing Workspace.* pp. 30. Office of Real Property within the General Services Administration. 1999. http://www.gsa.gov/gsa/cm_attachments/GSA_DOCUMENT/integrated_workplace_rpt_pdf_R2OD26_0Z5RDZ-i34K-pR.pdf

[3] CNA. "National Security and the Threat of Climate Change." 2007. http://securityandclimate.cna.org/

[4] Transportation Research Board. "The Potential Impacts of Climate Change on U.S. Transportation." 2009. http://144.171.11.107/Main/Public/Blurbs/156825.aspx

[5] Strategic Environmental Research Development Program. "SERDP and ESTCP Launch Climate Change Efforts." Information Bulletin Late Fall 2009. http://www.serdp.org/general/Publications/upload/2009-LateFallBulletin-Final.pdf

[6] This includes reductions achieved through the purchase of renewable energy credits.

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Energy Intensity
Based on FY 2008 data, the Federal Government's energy intensity in its buildings subject to EISA/EPACT goal requirements was 110,914 Btu/ft^2 or 12.4[7] percent lower than the FY 2003 base year energy intensity of 126,583 Btu/ft^2.

Renewable Energy
Federal agencies reported purchasing or producing 1,903.6 gigawatt hours (GWh) of renewable electric energy in FY 2008, equivalent to 3.4 percent of the Federal Government's electricity use of 56,172.1 GWh. This represents a doubling of renewable energy as a percentage of total facility electricity use since 2003.

The Federal Government has shown significant leadership in supporting renewable energy use. The Navy's geothermal power plant in China Lake, California delivers an average of 1.4 million megawatt hours (MWh) of electricity to the state's grid and represents nearly ten percent of the total U.S. geothermal power production.[8] The Nellis Air Force Base in Las Vegas, Nevada, is home to one of the largest solar photovoltaic system in the country, with more than 72,000 solar panels generating 30,000 MWh of electricity.[9] Additionally, in California Fort Irwin will soon produce nearly 2.5 million MWh of solar power[10] and DOE's Savannah River Site recently broke ground on one of the largest biomass plants in the nation,[11] with the potential to generate 77.5 million MWh annually.

Federal Investments
Capital costs for making energy efficient investments can come from a number of sources. Agencies may use appropriated funds, or if conditions merit, Energy Savings Performance Contracts (ESPCs) or Utility Energy Savings Contracts (UESCs). ESPCs and UESCs are generally budget neutral contracts paid over time from future energy savings, to fund energy efficient projects. These performance-based, third-party financed contracts are used to provide investment capital to improve Federal facilities and reduce their energy use in a timely manner. Building improvements that reduce energy and operating costs are paid for from the savings, making Federal facilities more efficient and productive.

Approximately $2.3 billion[12] has been invested in Federal facilities through ESPCs, saving more than 18 trillion Btu annually—equivalent to the energy used by a city of

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[7] This includes reductions achieved through the purchase of renewable energy credits.
[8] Energy Information Agency. *Renewable Energy Trends in Consumption and Electricity, 2007.* http://www.eia.doe.gov/cneaf/solar.renewables/page/trends/table1_11.xls
[9] Nellis Air Force Base. *Nellis Activiates Largest PV Array in Nation. 2007.* http://www.nellis.af.mil/news/story.asp?id=123079933
[10] Cooler Planet. *Largest Solar Panel Array in Military History to be Built at Army National Training Center*. August 2009. http://solar.coolerplanet.com/News/8040902-largest-solar-panel-array-in-military-history-to-be-built-on-army-national-training-center.aspx
[11] Biomass Magazine. *DOE Secretary Chu to Attend SC Biomass Plant Groundbreaking.* November 2009. http://www.biomassmagazine.com/article.jsp?article_id=3259
[12] The investment costs at the time of award for all Federal ESPCs (but not UESCs or direct funding) awarded since 1992 in unadjusted dollars. The investment is solely the cost to implement the project, i.e. no financing costs are included.

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more than 500,000 people. These ESPC projects contain guarantees that will result in $6 billion in avoided energy costs over the life of the contracts.

These energy efficiency investments have proven to be cost effective. Historical data collected from FEMP's ESPC database were used to determine average investment payback periods for the implemented energy conservation measures (ECMs).13 Based on a Department of Energy study, Figure 2 shows that renewable technologies have the longest average payback period (about 18 years), while advanced metering and rate schedule changes have the shortest average payback periods (less than one year). The average payback period for all ECMs is just over six years.14 It is worth noting that these data are drawn from projects that started as long as a decade ago. For many of these ECMs, better technology is now available, meaning that the investment payback period is now even shorter. Many energy service companies used by the Federal Government have comprehensive expertise with the full range of ECMs and will often bundle technologies with different payback periods to produce optimal energy and cost saving results.

[13] The average percent variation in ECM standard deviations was determined for the entire ESPC contract database. New ECM averages and ranges were calculated from the smaller data sets. Wide variations in the results suggest potential issues with data quality and reporting.
[14] Department of Energy. *2008 Federal Energy Management Program Market Report*. July 2009. http://www.nrel.gov/docs/fy09osti/46021.pdf

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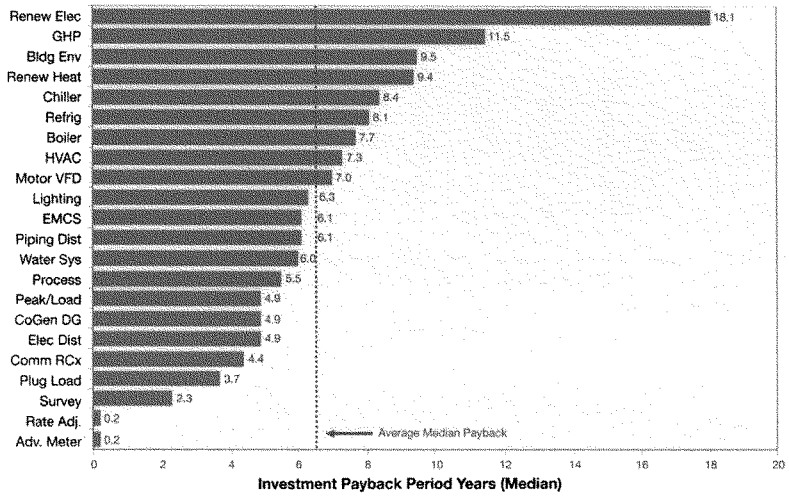
Figure 2. Energy Conservation Measure Median Payback Periods



Renew Elec – renewable electricity	Water Sys – water and sewer systems
GHP – geothermal heat pump	Process – process improvements
Bldg. Env. – building envelope	Peak/Load – maximum load
Renew Heat – renewable heating	CoGen DG – cogeneration and distributed generation systems
Chiller – chiller improvements	Elec Dist – electrical distribution
Refrig – refrigeration improvements	Comm RCx – commissioning and retro-commissioning
Boiler – boilers	Plug Load – plug load reduction
HVAC – heating, ventilating, and air conditioning	Survey – energy surveys
Motor VFD – motor variable frequency drive	Rate Adj. – rate adjustments
Lighting – lighting	Adv. Meter – advanced metering
EMCS – energy monitoring and control systems	
Piping Dist – piping and distribution systems	

Power purchase agreements (PPAs) are another method through which Federal Agencies are able to implement on-site renewable energy projects without up-front government financing. Under a PPA, a developer installs, owns, operates and maintains a renewable energy system on agency property while the agency agrees to purchase the power generated by the system. The agency simply purchases the power generated by the system at a set price over the length of the contract. This price is typically less than what would have been paid to the utility without a PPA. Through PPAs, agencies are able to use renewable energy at a known, long-term electricity price, offering a type of insurance against future price increases while incurring no up-front capital costs. Though a typical PPA term length is 20 years, DoD, and the Power Management Authorities (e.g. Western Area Power Management Authority) are the only agencies that currently have the authority to enter into PPA's beyond 10 years.

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INTEGRATED SUSTAINABILITY PLANNING LEADS TO RESULTS

The Private Sector Business Case for Sustainability

Businesses in the private sector have made commitments to sustainability performance measures and successfully increased revenues while achieving their goals. A leading environmental think tank concluded new building sustainability does not have to cost more. A two percent increase in upfront costs to support sustainable design has been shown to save 10 times the initial investment during a building's 20-year life cycle. An increasing number of companies are setting GHG and energy reduction goals. In 2009, 169 of the S&P 500 corporations set GHG emission reduction targets, representing a 52 percent increase over the previous year.[15] While there are thousands of examples from the private sector, here are a few illustrative examples from American industry (identities omitted in order not to endorse any particular firm). A major public corporation and international retailer reported that it set a GHG reduction goal of 20 percent below 2005 levels by 2012 and has already achieved a 38 percent increase in fleet efficiency, in addition to being in the process of opening a new store that will be 25-30 percent more energy efficient than standard buildings. A major multinational information technology (IT) software and services company reported that it was an early adopter of sustainability measures and has made public commitments on climate protection and energy efficiency. Between 1990 and 2008, this IT company indicated that it saved 4.9 billion kilowatt-hours of electricity consumption, avoided nearly 3.3 million $MTCO_2e$, an amount equal to 48 percent of the company's 1990 global CO_2 emissions, and saved over $343 million through its annual energy conservation actions. A major chemical company has indicated that it achieved an 80 percent reduction of GHG emissions below 1990 levels, saving $3 billion. A company that is among the world's largest global private energy corporations met its operational carbon reduction goals eight years early, saving $2 billion.[16] The private sector has learned that reducing GHG emissions through energy efficiency improves the bottom line.

Federal Sector Taking a More Integrated Approach

Federal agencies are realizing the value of taking a more integrated, strategic approach to their sustainability efforts, which can lead to lower energy costs, increased energy security and reliability, and higher worker productivity.

DoD perhaps best illustrates how strategic thinking about energy use has already been integrated into Federal Agencies. The Army, Navy, Air Force, and Marines have all developed strategies to reduce energy use and improve energy security. This is critical because, as the Air Force states, "energy is a key enabler of U.S. military combat power

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[15] Carbon Disclosure Project 2009 S&P 500 Report http://www.pwc.com/gx/en/carbon-disclosure-project/s-p-500.jhtml

[16] Amory Lovins. *Profitable Solutions to Climate, Oil, and Proliferation.* Rocky Mountain Institute. 31 December 2009.

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and, as such, must be managed in an integrated manner."[17] The Navy acknowledges that "energy efficiency increases our combat effectiveness."[18]

Each year FEMP recognizes outstanding energy efficiency projects across the Federal Government. In FY 2008, 32 winning projects, only a fraction of all Federal efforts, will save the taxpayers more than $26 million per year in energy and operating costs.

EPA's energy and water management project at their Research Triangle Park Campus in North Carolina reduced energy demand by over 46 billion Btu, the equivalent of over 8,500 $MTCO_2e$ at the national emissions rate. With the total cost of the project at slightly under $2 million, and first year savings of $1.5 million, the project can be expected to pay for itself during its second year of operation.

The U.S. Army's Base at Fort Hood, Texas, implemented a web-based Utility Management Control System (UMCS) to allow for efficient management of installation-wide facilities. The system provided $200,000 in energy savings the first year, with future savings expected to be around $500,000 annually, resulting in a simple payback period of a little over 10 years for the $5.65 million project. In addition, lifetime emissions reductions total approximately 86,000 $MTCO_2e$ and 124 tons of nitrous oxide.

The VA's James J. Peters Medical Center in Bronx, New York, modernized its energy management control system at the Facility Management Service Center. The project cost only $129,000 and delivered $187,000 of savings in just one month. The project is expected to reduce emissions by 4,000 $MTCO_2e$ annually with energy savings expected to be around one million dollars annually.

WHAT IS THE REALM OF THE POSSIBLE FOR THE FEDERAL GOVERNMENT?

Looking forward, there is every reason to conclude that the Federal Government can be a leader in generating savings while increasing performance through energy efficiency. Executive Order 13514 already outlines the expectation that, by 2030, all new Federal buildings must save or produce as much energy as they use. This may sound challenging, however the necessary technology exists today and with integrated whole-systems design approaches 30-60 percent of current energy use can be eliminated in retrofits and 40-90 percent of energy use can be saved in new facilities.[19]

There are many untapped energy reduction measures in the Federal Government. Behavior change can also be a powerful driver in reducing energy consumption and ultimately GHG emissions. The American Council for an Energy Efficient Economy

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[17] U.S. Air Force Energy Plan 2010. http://www.safie.hq.af.mil/shared/media/document/AFD-091208-027.pdf

[18] Naval Energy: A Strategic Approach. October 2009. http://www.onr.navy.mil/en/naval-energy-forum/~/media/5EFD428CFEB0412391CC321DCAF67138.ashx

[19] Amory Lovins. *Profitable Solutions to Climate, Oil, and Proliferation.* Rocky Mountain Institute. 31 December 2009.

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estimates U.S. residential energy use could be reduced by as much as 11 percent as a result of consumer behavior change and lifestyle choices alone[20]. The widespread use of operations and maintenance best practices also falls under the category of behavior and culture change.

CONCLUSION

In conclusion, energy efficiency investments in Federal facilities and operations save taxpayer dollars while reducing energy consumption, water consumption, and petroleum use. Ongoing federal investments will save money, protect the environment, enhance security, reduce energy use and water consumption, while also reducing GHG emissions.

I would be pleased to answer your questions.

[20] The American Council for an Energy Efficient Economy. http://www.conference-energy-behaviour.nl/downloads/Karen%20Ehrhardt.pdf

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Statement of Deputy Under Secretary of Defense for Installations and Environment

Dr. Dorothy Robyn

Before the

Senate Homeland Security and Governmental Affairs Committee

Subcommittee on Federal Financial Management, Government Information,

Federal Services and International Security

January 27, 2010

Thank you for the opportunity to testify on behalf of the Department of Defense (DoD) on Executive Order 13514, "Federal Leadership in Environmental, Energy and Economic Performance." My testimony today will focus on the Department's energy performance. As the Deputy Undersecretary of Defense for Installations and Environment, I oversee policy and programs related to energy use on our permanent military bases at home and overseas. My testimony will also address the other broad category of Defense Department energy use—namely, combat systems and other support for our combat forces.

My message today is straightforward: the Department has stepped up the long-term effort needed to reduce our high level of energy consumption, and this effort is driven first and foremost by mission considerations. The Department's own analysis confirms what outside experts have long warned: our military's heavy reliance on fossil fuels creates significant risks and costs at a tactical as well as a strategic level. They can be measured in lost dollars, in reduced mission effectiveness and in U.S. soldiers' lives. Unleashing warfighters from the tether of fuel and reducing our installations' dependence on a costly and potentially fragile power grid will not simply enhance the environment, it will significantly improve our mission effectiveness.

Executive Order 13514 is a tool to help us turn these vulnerabilities around. As one indication, the Department is developing an aggressive target under the Order for reducing our greenhouse gas emissions, which are due overwhelmingly to direct energy use. For the military, these reduced emissions will represent major gains in energy efficiency. Operational energy is necessarily exempt from any regulatory target, since providing immediate support for the warfighter must remain our highest priority. Nevertheless, reducing the energy demands of our operational forces is a major focus of the Department's efforts to cut energy consumption. Moreover, our combat operations will benefit as we improve the energy profile at our supporting installations and solve the cross-cutting structural problems that drive DoD's energy inefficiency.

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Level and Cost of DoD Energy Consumption

The Department consumes energy for two broad purposes. The first is to support our combat, or operational, forces. "Operational energy" consists largely of the fuel used by aircraft, ships, tanks and other tactical vehicles, as well as by the generators that provide heating and air conditioning in our forward operating bases in Iraq and Afghanistan. The second broad use of energy is to support the 507 fixed installations we operate in the United States and overseas, which comprise more than 300,000 buildings and 2.2 billion square feet of space. "Facilities energy" consists largely of traditional energy sources used to heat and cool these buildings. It also includes fuel for the 160,000 non-tactical vehicles used at our installations. Although the role of fixed installations historically was to train and deploy our combat forces, they increasingly have a more direct link to combat operations, by providing "reachback" support for those operations or as a staging platform for homeland defense missions.

In 2008, the Department of Defense consumed 890 trillion BTUs. That represents more than half of the federal government's energy consumption but less than one percent of total U.S. energy consumption.

Focusing just on petroleum-based energy, DoD consumes more than 300,000 barrels of oil a day, or about 1.7 percent of the total for the United States and about 0.35 percent of the world's total oil consumption. The Air Force burns 70 percent of that oil—roughly the same amount as United Airlines.

In 2009, DoD spent $13.4 billion on energy—about the same as in 2007. Of that, 72 percent ($9.6 billion) went for fuel for operational energy and 28 percent ($3.8 billion) for facilities energy. In 2008, our energy bill was 50 percent larger ($20 billion), due largely to higher oil prices. The recent volatility of the oil market, with prices ranging from $50 to $150 per barrel, has played havoc with our budgeting process.

For fuel used in the theater of war, the real cost is even higher than the price implies because it is so expensive to transport and protect the fuel. A large fraction of the tonnage carried by convoys is fuel and water, and in the winter months it can take up to 45 days to move supplies from a port in Pakistan through tribal areas to our end users in Afghanistan. Convoys are the largest and most vulnerable target for insurgent attacks. The more convoys we send, the greater the need for protection and, in turn, for supplies to support the protective forces. Taking into account this long logistics "tail," the real cost of fuel used in theater—we call it the "fully burdened cost of fuel"—can be an order of magnitude higher than the commodity price.

Although fixed installations and non-tactical vehicles currently account for less than a third of DoD's energy costs, they contribute nearly 40 percent of our greenhouse gas emissions. This reflects the fact that our installations rely on commercial electricity, which comes from fossil fuels—principally coal. Given that facilities energy as a share of total DoD energy will increase when we reduce our presence in Iraq and Afghanistan, fixed installations will likely become the major source of greenhouse gas emissions by the military.

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Energy-Related Security Challenges

The U.S. military's reliance on oil and other fossil fuels poses four broad security challenges. The first is the *growing risk to operating forces.* Attacks on our supply lines in Afghanistan and Iraq are increasingly sophisticated and effective, resulting in a growing number of casualties. The ability of potential adversaries to attack our fixed energy supplies and delivery forces will continue to improve. In short, our fuel inefficiency endangers our troops and threatens our missions.

A second challenge is the *insecurity of the global commons.* Most petroleum products are transported by sea, and much of this trade passes through vulnerable chokepoints such as the Straits of Hormuz and the Straits of Malacca. The free flow of energy through these vital channels may be threatened by piracy, political instability or military action. Thus, fuel inefficiency is a strategic as well as a tactical threat.

A third challenge has to do with *oil supply, demand and price volatility.* Tightening global oil supplies and political instability within some oil-producing nations created significant price volatility in recent years, raising our costs and making budget and acquisition decisions more difficult. The challenge will increase as the growing demand for energy—particularly in Asia—outstrips projected oil production and refining capacity.

A final challenge is *grid vulnerability.* DoD's reliance on a fragile commercial grid to deliver electricity to its 500-plus installations places the continuity of critical missions at risk. Most installations lack the ability to manage their demand for and supply of electrical power and are thus vulnerable to intermittent and/or prolonged power disruption due to natural disasters, cyberattacks and sheer overload of the grid. Because of U.S. combat forces' increasing reliance on "reachback" support from installations in the United States, power failures at those installations could adversely affect our power projection and homeland defense mission capability. For example, we operate Predator drones in Afghanistan from a facility in Nevada and analyze battlefield intelligence at data centers here at home. This means that an energy threat to bases at home can be a threat to operations abroad.

Progress to Date

Although our goal of energy security will require a long and focused campaign, and while much more remains to be done, the Department has made meaningful progress. In keeping with the requirements of the 2009 National Defense Authorization Act, DoD has created the office of Director for Operational Energy Plans and Programs in the Office of the Secretary of Defense. The President has nominated Sharon Burke to head this new Directorate, and we hope the Senate will confirm her very soon. The Military Departments are standing up their energy offices as well and they are developing detailed strategic plans. The Service Secretaries have made energy a high priority. For example, in October, Navy Secretary Ray Mabus announced a set of ambitious new goals to boost the energy efficiency of the Navy and the Marine Corps. His plans include fielding a completely sustainable carrier strike group (nuclear vessels and ships powered by biofuel), dubbed "the Great Green Fleet," by 2016, and producing half of the Navy's installation energy requirements from renewable sources by 2020.

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To achieve operational energy reductions, the Department has tripled investment in energy security technology over the last four years, from $400 million to $1.2 billion. We are investing heavily to improve aircraft engines, which account for a large fraction of all operational energy consumption. One promising project is the Highly Efficient Embedded Turbine Engine, based on a high-pressure ratio, high-temperature core turbine technology that should reduce fuel consumption by 25 percent and also be applicable to commercial aircraft. The Army is developing technology to reduce the fuel consumption of tactical ground vehicles such as the HMMWV by 30-40 percent. And DARPA is spending $100 million on an 18-month project to develop affordable algae-based synthetic fuels.

Generators used to provide heating, ventilation and cooling (HVAC) at forward operating bases are another major consumer of operational energy. In 2008, we began spraying insulating foam on tents, trailers and other temporary structures in Iraq, and later Afghanistan, with dramatic results: the energy consumed for HVAC dropped by more than 50 percent. In one demonstration, we insulated 9 million square feet of temporary structures and reduced daily fuel demand by more than 77,000 gallons, which meant 13 fewer trucks convoying fuel each day. We're testing a more advanced approach, Net-Zero, that would allow a forward operating base to create all the power it needs within its own perimeter fence—largely through renewable energy.

With respect to fixed installations, the Department has pursued a two-part investment strategy that is designed to (1) reduce the demand for traditional energy while (2) increasing the supply of renewable energy sources. In addition to the Department's military construction budget, financing for these investments has come from our Energy Conservation Investment Program, Energy Savings Performance Contracts and mechanisms such as Enhanced Use Leases and Power Purchase Agreements.

Efforts to curb demand—through conservation measures and improved energy efficiency—are by far the most cost-effective way to improve an installation's energy profile. A large fraction of our energy efficiency investments go to retrofit existing buildings; typical retrofit projects install high efficiency HVAC systems, energy management control systems, new roofs and improved lighting. We are also taking advantage of new construction to incorporate more energy efficient designs, material and equipment, using LEED Silver standards as a guide. From 2005 to 2008, we reduced the energy intensity of our facilities by 11 percent through conservation and investment in energy efficiency.

On the supply side, military installations—which are large and disproportionately located in the Southwest and on our coasts—are well-situated to support solar, wind, geothermal and other forms of renewable energy. For example, Nellis Air Force Base in southern Nevada built a 14-megawatt (MW) photovoltaic solar array using a public-private partnership. More than 72,000 solar panels track the sun to generate 30 million kilowatt-hours of electricity per year—equivalent to a quarter of the total power used at the 12,000-person base. Nellis saves $1 million a year in electricity costs and avoids 24,000 tons of carbon dioxide emissions. In October, the U.S. Army Corps of Engineers signed an agreement with two private companies to develop a 500-MW solar power plant at Fort Irwin in California's Mojave Desert. The plant will be built using an Enhanced Use Lease—a mechanism that allows the private partners to finance the

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estimated $1.5 billion in capital costs. The military's interest in renewable energy is nothing new. Naval Air Weapons Center China Lake in California has been operating a 270-MW geothermal plant since 1987. The heat from 166 wells, some of them 12,000 feet deep, is sufficient to light up 180,000 homes. The Navy is helping the Army tap into geothermal resources at its Weapons Depot in Hawthorne, Nevada, and that project will be capable of producing 30 MW of clean power.

Key Initiatives Going Forward

The shift to clean energy and reduced energy consumption will entail a fundamental change in the culture of the Defense Department, which has traditionally viewed energy as both cheap and plentiful.[1] In addition to strong leadership from the top, that change will require a shift in current decision making processes, incentives and requirements. Let me summarize five key initiatives we are implementing to bring about this fundamental change.

The Department is implementing two far-reaching changes so that when we write requirements for and acquire our weapons systems, we take into account the full cost and logistical burden of the energy required to operate the systems. First, we are instituting the *Energy Efficiency Key Performance Parameter* (KPP). A KPP is a set of requirements that the Department specifies for any new weapons system it sets out to acquire. Although our requirements process has traditionally addressed the range, weight and payload of any new system, decision makers have implicitly assumed that the fuel logistics available to support our combat forces was adequate and secure. Recognizing that this longstanding assumption is no longer valid, the Energy Efficiency KPP will incentivize those setting requirements for weapons systems to limit the operational burden imposed by the new system's energy needs.

Second, once the requirements are set, the acquisition process will take into account the financial burden that energy requirements would impose—i.e., the *Fully Burdened Cost of Fuel* (FCBF). As I discussed above, there is a significant cost to providing the logistics and force protection for those systems and platforms that require fuel, and those costs are not currently captured in the weapons acquisition process. The Department is developing the methodology to estimate the average cost per gallon of fuel under different scenarios and to incorporate this cost analysis into its formal evaluation of alternatives.

These two decision tools—the Energy Efficiency KPP and the Fully Burdened Cost of Fuel analysis—complement one another and together represent a systemic change to the way we make decisions that affect our energy demand. If effectively implemented, they will represent a new way of thinking about how we wage war. Energy consumption will no longer be an unquestioned assumption; it will be seen as a strategic and tactical vulnerability.

We are encouraged by the initial use of the Fully Burdened Cost of Fuel concept, in the Army's analysis of alternatives for its Ground Combat Vehicle and Joint Light Tactical Vehicle. Given the long life cycle of our weapons systems, it will take years for this new approach to produce

[1] "More Fight-Less Fuel," Report of the Defense Science Board Task Force on DoD Energy Strategy, February 2008; and "Powering America's Defense: Energy and Risks to National Security," Center for Naval Analysis, May 2009.

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dramatic results. Over time, however, we believe it will result in a more efficient and effective war-fighting capability.

Third, we are addressing DoD's lack of an enterprise-wide energy information management system for its global assets. Large commercial enterprises manage their energy portfolio using such data systems; they are essential to a firm's ability to set goals and incentives for optimal energy efficiency and to monitor subsequent performance. My office has begun an effort to evaluate various commercial systems and assess DoD's needs with the goal of having the Department develop and implement a state-of-the-art, mission-driven, *enterprise-wide energy information management system* that can provide the appropriate information on energy consumption at various levels of aggregation, including the individual building, the installation, the geographic region and the Military Department. With accurate management, control, collection and analysis of energy data, DoD can more effectively monitor, measure, manage and maintain energy systems at their optimal performance levels: collect renewable energy generation and performance data: and compare performance across facilities and across Military Departments.

Fourth, DoD's fixed installations offer an ideal *testbed for next-generation energy technologies* coming out of industry, Department of Energy and university laboratories. DoD's built infrastructure is unique for its size and variety, which captures the diversity of building types and climates in the United States. For a wide range of energy technologies for which deployment decisions must be made at the local level, DoD can play a crucial role by filling the gap ("valley of death") between research and deployment. These include technologies to improve the conservation and efficiency of building energy, on-site renewable energy generation, distributed energy resources, and control and management of local energy loads. As both a real and a virtual testbed, our many facilities could assess the technical validity, cost and environmental impact of these advanced, pre-commercial technologies. Moreover, for those technologies that prove effective, DoD could serve as an early customer, helping create a market, as it did with aircraft, electronics and the internet. That would allow the military to later leverage both cost savings and technology advances from the private sector. We are using the energy testbed approach on a small scale and hope to expand it, working closely with the Department of Energy among other organizations. This approach is key to meeting the Department's needs but it is also an essential element of a national strategy to develop and deploy the next generation of energy technologies needed to support our built infrastructure.

Finally, we have begun what will likely be a major effort to *address the risk to our installations from potential disruptions to the commercial electric grid.* The Department is participating in interagency discussions on the magnitude of the threat to the grid and how best to mitigate it. We are also looking at how to ensure that we have the energy needed to maintain critical operations in the face of a disruption to the grid. As required by the National Defense Authorization Act, the Secretary of Defense this year will give Congress a plan for identifying and addressing areas in which electricity needed for carrying out critical military missions on DoD installations is vulnerable to disruption. The development of renewable and alternative energy sources on base will be one element of this effort. When combined with microgrid technology and energy efficiency investments that significantly reduce demand, distributed

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renewable energy sources will allow installations to carry out mission-critical activities and potentially serve as islands that support restoration of the grid in the event of disruption.

In a recent report on DoD's energy strategy, the Defense Science Board concluded that, because of the vulnerability of the grid, rapid improvements in the electrical efficiency of military installations would have national security value far greater than the economic value of reduced electricity consumption. The Board argued that the risks and consequences of grid outage should be the basis for a business case to pursue higher levels of energy efficiency at permanent installations. Our planned assessment of the risk facing individual critical missions and installations will allow us to evaluate that business case.

Conclusion

The Defense Department is developing an aggressive target for reduction of greenhouse gas emissions under the new Executive Order. This action reflects mission considerations above all: the military's heavy reliance on fossil fuels is both a tactical and a strategic vulnerability, the costs of which are exacted in dollars, lives and reduced mission effectiveness. The target we're setting under the Order will be a tool for helping us turn this vulnerability around. Although operational energy is exempt from the target, operational activities will be a major beneficiary of our efforts to reduce the Department's energy consumption consistent with the target.

The Department has made progress in improving its energy efficiency, and we are undertaking new initiatives to address the flawed processes and incentives that continue to drive our inefficient use of energy. Although much remains to be done, we are committed to making bold changes. These changes will not simply enhance the environment, they will significantly improve the effectiveness our military mission.

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UNITED STATES POSTAL SERVICE

STATEMENT OF
SAMUEL M. PULCRANO
BEFORE THE
SUBCOMMITTEE ON FEDERAL FINANCIAL MANAGEMENT
OF THE
COMMITTEE ON HOMELAND SECURITY
AND GOVERNMENTAL AFFAIRS
UNITED STATES SENATE

JANUARY 27, 2010

Good afternoon, Mr. Chairman and members of the Subcommittee. I appreciate the opportunity to share information regarding the sustainability programs and initiatives being pursued by the United States Postal Service. I am pleased to report that we have implemented such programs in nearly every one of our operations, including building design, facility management, fleet operations, waste management, materials sourcing, and product stewardship. As we continue to conduct testing to improve the efficiency of our vehicles, we are also working to make our buildings more efficient and reliable, and above all, provide a safe and healthy environment for our employees and our customers.

My testimony today will center on three main points:

- Highlighting the fact that the Postal Service has been, and will continue to be, a sustainability leader — not only as an independent establishment of the executive branch of the Federal government, but also as a global business with revenues of $68 billion in fiscal year (FY) 2009.
- Sharing the details of the broad array of environmental initiatives that are underway at the Postal Service.
- Extending an offer for the Federal government to partner with the Postal Service. Given our vast size and reach, we believe such a partnership would provide a unique opportunity to invest in and further develop green advancements for the benefit of all Americans.

Among government agencies and the private sector, the Postal Service is a proud and successful sustainability leader. Since 1995, we have been honored with more than 75 major environmental awards, including 40 White House Closing the Circle Awards for environmental stewardship and 10 consecutive WasteWise Partner of the Year awards from the Environmental Protection Agency (EPA) for overall waste reduction achievements. The Postal Service also is very pleased to have won the 2009 Climate Action Champion award, the Direct Marketing Association Echo Green Award, and the 2009 Postal Technology International Environmental Achievement of the Year award.

Involvement with environmental programs dates back many years for the Postal Service. We can claim Benjamin Franklin — an early environmentalist — as part of our 235 year history. In addition to being a Colonial Postmaster General, Franklin was an early advocate for the environment. In 1739, he petitioned the Pennsylvania Assembly to stop dumping waste and to remove tanneries from the commercial district in Philadelphia. In his will, Franklin left money to go toward the construction of a fresh water pipeline that eventually led to the formation of the Philadelphia Water Commission.

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We also like to cite that the Postal Service was at the forefront of the "green" movement before it even had a name. Our letter carriers have used bicycles to deliver mail in some cities since the early 1890s. In 1899, the first known test of an electric vehicle for mail collection was conducted in Buffalo, New York. By 1909, electric mail trucks were in daily service in New York City and Boston. In 1959, we began testing a variety of electric vehicles for city delivery — tests that continue to this day. We also were an early advocate of recycling. In the early 1900s, the Postmaster General repeatedly urged postal clerks to recycle lengths of twine, which were used to bundle letters and packages. From 1907 to 1916, we experimented with numerous devices to fasten twine without knotting it, to make it easier for clerks to recycle.

The Postal Service has always been a leader in using planet-friendly technologies such as alternative fuel-capable vehicles to deliver the mail and solar panels to reduce our facilities' energy use. In 2008, the Postal Service established a dedicated Office of Sustainability to coordinate all of our energy, fuel, recycling and sustainability programs across our more than 33,000 facilities, with our nearly 217,000 vehicles, and among our roughly 600,000 employees. Although the Postal Service has more than 36,000 total locations, this testimony will only discuss our approximately 33,000 owned and leased facilities.

In every city and town across the country, our trusted letter carriers and recognizable vehicles maintain a routine and community-based presence. Because of our size and reach, we know the activities of the Postal Service have a significant impact on society, the economy, and the environment. And we are using that impact to make a positive difference wherever we can through our serious commitment to sustainability. Simply put, we believe it is the right thing to do.

For the Postal Service, sustainability is a business initiative that is fundamental to our business plan. Adopting sustainable practices is not only good for the environment; it also helps to reduce our operational costs. This is particularly advantageous for the Postal Service as we strive to hold down our costs during the ongoing recessionary period that is affecting the nation.

As you know, last October President Barack Obama signed Executive Order (EO) 13514, "Federal Leadership in Environmental, Energy, and Economic Performance." This EO expanded upon EO 13423 signed by President George W. Bush in 2007, titled "Strengthening Federal Environmental, Energy, and Transportation Management." A portion of the new order requires Federal executive agencies to increase their energy efficiency, reduce fleet petroleum consumption, conserve water, reduce waste, support sustainable communities, and leverage their Federal purchasing power to promote environmentally responsible products and technologies.

Although the EO does not apply to the Postal Service because of our unique mission and status, we were extremely honored when the official White House press release accompanying EO 13514 recognized the Postal Service for our Green Purchasing Program. We were further honored by Michelle Moore, the Obama Administration's Federal Environmental Executive, when she commented on October 15, 2009 that, "The U.S. Postal Service's commitment to reduce greenhouse gas emissions, energy use, and petroleum fuel consumption demonstrates that Federal agencies can lead by example."

As an environmental leader, the Postal Service released the first Federal government greenhouse gas (GHG) emissions inventory. A major Postal Service management priority is measuring and managing our GHG emissions that contribute to climate change and have potential negative effects on natural systems, human health, and economic prosperity. To meet our target for GHG emissions reduction, we included direct emissions from our facilities and vehicles, and indirect emissions from electricity use at our facilities — typically referred to as Scope 1 and Scope 2 GHG emissions.

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In our first full GHG emissions inventory, we included, among other emission sources, approximately 33,000 facilities, nearly 217,000 vehicles, and contracted surface and air transportation. We used calendar year 2007 as the inventory baseline for GHG emissions and the methodology prescribed by the Climate Registry and the California Climate Action Registry (CCAR). As a founding and reporting member of the Climate Registry, we have committed to measure, verify and report GHG emissions annually based on the registry's general reporting protocol. This report, which was verified by a third party, is available online at *climateregistry.org*.

In April 2009, we earned a Climate Action Champion award from CCAR for our efforts to reduce GHG emissions. At present, our reporting does not include estimates of our GHG emissions associated with employee business travel and commuting, but we plan to report this type of information in the future.

Another milestone for the Postal Service occurred in November of 2009, when we released our first-ever Sustainability Report, which highlights our progress during 2008 and looks at the challenges ahead. The report also features a brief history of our sustainable practices, and in-depth information and metrics on the many ways the Postal Service is working to reduce its carbon footprint. It also highlights the efforts of Postal Service employees who are committed to helping us build a conservation culture.

In issuing our 2008 Sustainability Report, we took the opportunity to lead by example and reduce environmental impact. We limited our press run to a minimal number of copies and we printed them using Forest Stewardship Council (FSC)-certified paper made from 100 percent post-consumer waste. To read the report, we continue to encourage the public and our employees to view the document online at *usps.com/about* and *usps.com/green*.

Early this year, we expect to release a FY 2009 update to our 2008 Sustainability Report. In that report, we will update our baseline for GHG emissions to 2008, to voluntarily comply with EO 13514. In subsequent years, we plan to coordinate the release of our Sustainability Report in conjunction with the Postal Service's Comprehensive Statement and other annual reporting requirements.

During 2009, the Postal Service continued its commitment to sustainability. Some of our many environmental achievements included:

- Reducing facility energy use since 2003 by 8.2 trillion British Thermal Unit (BTU) — the energy equivalent of over 250,000 average American households.
- Reducing energy intensity by 21 percent since 2003 through capital improvements and low-cost, no-cost activities which now represent a cost avoidance of $150 million each year.
- Conducting energy audits at hundreds of facilities covering 64 million square feet, bringing our total to 106 million square feet audited.
- Saving $3 million and nearly 100 million kilowatts in an agency-wide energy challenge.
- Avoiding $1.05 million in costs via green information technology (IT) initiatives.
- Recycling over 200,000 tons of waste materials in FY 2009 alone.
- Expanding recycling to 6,000 Post Office lobbies.
- Increasing alternative fuel use by 26 percent from 2008 to 2009.
- Using electric, propane, and natural gas delivery vehicles and retiring approximately 3,800 non-energy efficient vehicles.

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To align with the established energy management goals and requirements in the Energy Independence and Security Act of 2007 (EISA 2007), the Postal Service has set targeted goals for our sustainability performance. We also are encouraging our customers, suppliers and business partners to join us by engaging in sustainable business practices and environmentally friendly choices. Below are the goals we are aiming to reach. The first three goals are EISA targets and the fourth goal is our own.

- Reduce energy use and intensity in our facilities by 30 percent by 2015.
- Reduce vehicle petroleum fuel use by 20 percent by 2015.
- Increase use of vehicle alternative fuel by 10 percent by 2015.
- Reduce greenhouse gas emissions by 20 percent by 2020.

I would now like to provide greater detail on what we are doing to achieve these goals.

The Postal Service's roughly 33,000 facilities vary greatly in size and function, providing unique challenges and large scale opportunities for our energy management efforts. Our facilities range in size from small Post Offices to large processing and distribution centers. In addition, our different facilities must accommodate different functions such as customer service activities, administrative offices, mail processing, delivery units, and training centers.

As part of our broad strategic energy plan, the Postal Service conducts facility audits, modernizes facilities infrastructure and control systems, and improves processes and systems to allow for more effective and efficient management of energy consumption.

The Postal Service conducts comprehensive facility energy audits to identify potential energy and water conservation opportunities. All opportunities are considered based upon technical and financial viability, meeting Postal Service goals, and impact on operations. In FY 2009 alone, energy audits were completed at hundreds of facilities covering 64 million square feet, bringing our audited to-date total to 106 million square feet. Practically every facility and system across our building portfolio offers energy reduction potential. Energy audits have detected opportunities for more energy efficient lighting and lighting controls systems, mechanical system controls upgrades, new energy efficient chillers, new air compressors with compressed air management controls systems, and much more. The energy audits identified an additional 1.8 trillion BTU a year in annual energy reduction potential. Most of the identified opportunities are in process or have already been completed, realizing both energy reduction savings and a favorable return on investment. The facility energy audits are one of our key strategies for reducing our energy use.

During 2009 the Postal Service also launched the Enterprise Energy Management System (EEMS) for managing all aspects of our facility energy performance. EEMS consolidates all internal and external energy data related to our facilities so we can measure, monitor and manage facility energy performance. We currently have financial costs, consumption, building and weather data for more than 6,800 facilities — representing nearly two-thirds of our facility space and 75 percent of energy consumed. EEMS has easy-to-use dashboards and reports to assess energy performance for multiple enterprise levels, time periods and metrics.

EMMS also will enable us to achieve some of the benefits of advanced metering. This advanced metering functionality will provide detailed information for an estimated 75 percent of our building energy consumption by the end of FY 2010. Where it provides additional value, we will be able to enhance the meter systems in selected buildings to be able to provide 15 minute increment data.

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Because we are continuously performing repairs and upgrades on our building inventory of roughly 33,000 facilities, at any given time we have thousands of projects underway and most of them have the potential to impact the environment in some way.

In completing these thousands of energy-impacting projects each year, the Postal Service is able to achieve significant energy consumption and cost savings, and a roughly 15 percent return on our investment. Our energy intensity is down 21 percent from the FY 2003 baseline, which now correlates to an avoided annual total utility expense of over $150 million. Last year, we experienced an actual decrease in energy spending year over year for the first time since we began this tracking.

Given our limited dollars, it is vital that we make sound business decisions that have both financial and environmental benefits. We need to not only reduce our energy use and improve efficiency, but since we rely solely on our own revenues, we also need to get a good value from our energy investments. Our building projects are expected to produce strong technical and financial results, so every energy-impacting project is subjected to a rigorous evaluation process. We perform thorough engineering analysis to determine the energy improvement and we conduct life-cycle cost analysis to ensure we are getting a favorable return on investment and the best value over a period of time. The dual evaluation is one of the key strategies making our energy conservation efforts successful.

With one of the largest construction programs in the nation, the Postal Service recognizes the opportunity to minimize the environmental impact and we are committed to building and operating high performance, sustainable buildings. We continually integrate energy management, environmental stewardship, and sustainable principles into our building design standards. Although our current financial situation — largely caused by the severe economic recession — has forced us to suspend building construction projects, we are focusing our efforts on operating our facilities in the most energy efficient means possible, both now and into the future.

As the Postal Service needs new buildings, we will be well positioned because we already have developed and integrated a variety of high-performance sustainable building design concepts into our national building design standards, such as energy-efficient lighting, heating, ventilation and air conditioning (HVAC), recycled-content materials, low-water use fixtures, and low volatile organic compound (VOC) paints.

These building standards are used for all projects including new construction as well as for repair and alteration projects. For each significant energy-impacting project, our design teams are required to perform energy modeling on multiple alternative design concepts, and we select designs based on energy and financial considerations. We also require roofing materials to be Energy Star compliant to address the "heat island" effect. And to minimize the use of resources, we use native plant species in our landscaping.

By following our building design standards, any new building construction we undertake meets the intent of both the U.S. Department of Energy's (DOE) criteria for High-Performance Sustainable Buildings (HPSB) and the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) certification requirements — nationally accepted rating systems that measure the environmental attributes and sustainability features of buildings. In 2008, our Denver Post Office facility was honored with LEED certification, becoming the first LEED certified Post Office in the country.

At present, we have three more current building projects designed to meet these certification standards: the Greenville Processing and Distribution Center (P&DC) in South Carolina, the Royal Oak P&DC in Troy, Michigan, and the Southampton Main Post Office in Long Island, New York. The following design components highlight what certification included at the Southampton site. We planted native drought-resistant plants to reduce water use; used timers on the parking lot lights to minimize hours of use; designated preferred parking spots for low

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emission vehicles; and used recycled composite materials on the exterior instead of new wood — and that's just on the outside. On the inside of the building we used low ceilings so that air handlers don't have to work as hard; have an 'instant-on' water heater that uses energy only when a hot water tap is on; used lighting sensors that power down to 50 percent when not needed; and installed energy-efficient windows that are double-paned and insulated with filler air to reduce heat loss. These and many other environmentally friendly features at our Southampton site allow us to pursue the LEED and HPSB certifications — the highest honors a green building can receive. Qualifying for these certifications validates that the Postal Service's standard building practices meet the industry benchmarks of sustainability.

Another notable building project the Postal Service completed in July of 2009 was the conversion of the roof at the Morgan P&DC in Manhattan into a nearly 2.5 acre green, environmental oasis that reduces energy use and provides a safe, sustainable outdoor environment for our employees. This is the largest green roof in New York City. The green roof is estimated to last 50 years, twice as long as the roof it replaced. In addition, the green roof will reduce the amount of storm water runoff by as much as 75 percent in summer and 40 percent in winter. Savings from the green roof are projected to be $30,000 yearly in heating and cooling costs for the Postal Service.

The Postal Service also continues to realize benefits from the use of solar power. From California to Rhode Island, we have a number of solar photovoltaic systems that convert sunlight directly into electricity. Last year we issued a Request for Proposals from industry leaders for conversion of a significant portion of our purchased power to come from renewable sources. We are currently evaluating the proposals to install solar power generation systems at a number of sites, seeking an arrangement that is financially as well as technically viable.

The Postal Service is demonstrating leadership in energy management by adopting policies and procedures to achieve our energy reduction goals. In 2008, the Postal Service developed a National Energy Management Strategy (NEMS) to document the efforts of our business units to reduce energy consumption and costs. The NEMS plan includes high-level objectives for facility energy management, fleet management, fuel strategy, utilities management, and energy conservation and awareness within the Postal Service. The strategy also discusses our plan to broaden awareness and engagement in this ongoing effort.

Now we are taking another step to emphasize our commitment to energy reduction. For fiscal year 2010, we have added an Energy Reduction Indicator to our National Performance Assessment (NPA) to track building consumption of electricity and petroleum-based fuel for Postal Service owned vehicles. NPA is a Postal Service system that collects performance-related metrics — such as retail revenue, on-time Express Mail delivery, etc. — from source systems and then translates those metrics into scorecards that can be used to monitor performance across the nation. The new Energy Reduction Indicator in NPA is now part of a suite of performance metrics used during annual reviews, making the Postal Service the first federal agency to add energy reduction metrics to their managers' Pay for Performance system. For building electricity, each District is required to reduce consumption by 3.5 percent and petroleum use by 4.5 percent during 2010. We are working aggressively with management and employees to hit these targets. So far, we have saved $42 million in fuel costs during the first quarter of FY 2010.

We are also moving ahead by improving our data on energy management. Our energy initiatives have focused on developing a common energy strategy for the organization and improving data quality.

Along this line, the Postal Service has developed the Corporate Energy Interface (CEI) system which provides consolidated energy consumption and spending information to allow us to accurately track our energy usage. We also created an Energy Expense report that accurately reflects the spending for all energy categories and consumption for fuel for Postal Service owned vehicles and Highway Contract Routes (HCR). In 2009, we found that our energy expenses

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amounted to $2.2 billion. Of this amount, transportation consumed 75 percent and the balance was spent on utilities. Transparency in overall consumption and cost will lead to significant improvements in energy management. These wise investments in energy efficiency today will repay their cost over time.

With nearly 217,000 vehicles that are an average of 18 years old and travel more than 1.2 billion miles a year, the Postal Service consistently is looking for ways to reduce the environmental impact of our fleet. We know that vehicles are critical to our mission, so we are thinking hard about what steps will best take us into the future, focusing on service to our customers and energy efficiency as guiding goals.

Along these lines, much has been done already. The Postal Service has always led the way in testing alternative fueled vehicles (AFVs) which can use clean fuels such as, ethanol, compressed natural gas, liquefied propane gas, electricity and bio-diesel. With currently 44,156 AFVs, we have the largest civilian fleet of AFVs which includes:

- 39,805 – Ethanol E-85 flex fuel
- 3,370 – Compressed Natural Gas (CNG)
- 34 – Propane
- 30 – Electric
- 915 – Hybrid
- 2 – Hydrogen Fuel Cell

In June 2009, the Postal Service benefited from a portion of a $210 million purchase of new vehicles made by the General Services Administration (GSA) from Chrysler, Ford, and General Motors using funds from Public Law 111-5, the *American Recovery and Reinvestment Act of 2009*. Part of this GSA purchase allowed the Postal Service to replace over 6,500 vehicles with more fuel efficient models — 996 E-85 flex fuel capable, 903 hybrid and 4,658 conventional cars with four-cylinder gasoline-powered engines. Each of the new vehicles will have a higher miles-per-gallon rating than the one it replaces. The Postal Service greatly appreciates the purchase made by GSA and hopes there will be additional opportunities in the future to obtain more fuel efficient vehicles.

Other efforts to reduce the environmental impact of the Postal Service's vehicle fleet include:

- Testing two fourth generation fuel-cell vehicles in partnership with a major manufacturer and with funding from DOE.
- Testing medium-duty hybrid electric vans.
- Promoting the use of biodiesel in heavy-duty vehicles such as cargo vans and tractors.
- Continuing the use of CNG vehicles, electric vehicles, and propane vehicles.
- Eliminating older, less fuel efficient vehicles and optimizing the use of our existing fleet.
- Working with industry to increase the lifecycle of vehicle components, and as a result reducing waste from repair parts.

Since our organizational purpose is to deliver mail to households and businesses across the country, our vehicle fleet is mission critical to the Postal Service. We are now taking the next step to gather data on how best to improve our existing fleet of Long Life Vehicles (LLVs). LLVs are our most familiar delivery vehicles and are regularly seen in neighborhoods across the nation.

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Over the years, the Postal Service has gained a good deal of experience through our testing of electric vehicles dating back to the first known test in 1899. More recently, in 1993 and 1999 we worked with major manufacturers to test electric minivans. In 1996, we partnered with a major manufacturer to convert six LLVs to electric, using lead acid battery technology. However in 1998, the manufacturer canceled their electric vehicle program.

In a subsequent effort in 2000, the Postal Service awarded a contract to another manufacturer to build 500 electric vehicles with a body similar to the LLV. Two years later, that manufacturer also decided to cancel their electric vehicle program for a variety of reasons including a lack of replacement batteries, diminished battery range in cold weather, and a lack of interest from consumers in electric vehicles. Due to the collapse in the supply chain, the Postal Service had to discontinue this effort.

At the present time, the Postal Service is investing $250,000 to assist five electric vehicle technology companies in the research and development of an electric vehicle conversion solution for our LLVs. These projects will provide invaluable information on what concepts might work best to transition our aging LLV fleet. Testing of these vehicles will start in the summer of 2010. The information collected and other crucial data will help form critical decisions about how best to green our vehicle fleet so that the Postal Service may continue to provide quality service to our customers. By working together with industry leaders, our goal is to find a solution that is environmentally friendly, compatible with our needs, and of course, cost effective.

Through our work with the development and testing of electric vehicles, the Postal Service has gained much experience and learned valuable lessons. We believe this experience provides an opportunity to further explore electric vehicle technology. One possible avenue might be a cooperative effort with DOE through which the Postal Service would be able to provide a national test bed for the different types of technologies currently being developed for the electric vehicle environment.

Several other options the Postal Service has been actively using for a number of years are low-energy mail delivery methods. Mail is delivered by bicycle in Arizona and Florida. And 30 two-ton electric vehicles have been delivering mail in New York City since 2004. Three-wheel electric vehicles are being tested as possible replacements for some traditional gasoline delivery vehicles in Florida, California, and Arizona.

The Postal Service also delivers mail using the most energy efficient method possible — walking. Our letter carriers' "fleet of feet" delivers mail door-to-door by walking over 9,000 foot routes each delivery day. We also have nearly 80,000 "park and loop" routes which involve a large amount of walking. With park and loop routes, a vehicle is used as a movable relay box from which the carrier withdraws a substantial amount of mail. The carrier completes delivery by walking up one side of the street and down the other side (looping) back to the vehicle to retrieve mail for additional relay loops or to move the vehicle to other strategic park points.

Congress has been very active on various types of environmental legislation. While the Postal Service appreciates these efforts, we have concerns about legislation that would impact our delivery vehicle fleet and infrastructure. If such legislation is to move forward, the Postal Service supports the inclusion of provisions that allow us to determine that:

- The vehicles will fulfill the Postal Service's mission, safety, longevity, reliability, maintenance cost, and other requirements.
- The state of infrastructure, existing technology, and other existing conditions or events will be taken into account.
- The vehicles must be commercially available and long-term support will be available for the life of the vehicles.

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We look forward to working with the Congress on any legislation that will help the Postal Service continue to fulfill our mission for the American public, ensure financial responsibility and growth, and promote sustainable business practices.

At the Postal Service, our employees are helping to lead the way in our energy efficiency efforts. Postal Service headquarters employees were challenged to adopt low-cost, no-cost ways to reduce energy use, lower vehicle petroleum fuel use, improve water efficiency, reduce the purchase of supplies, and achieve zero waste. In 2009, we expanded our efforts by forming Green Teams at our Area Offices. The teams identified a number of opportunities to lower the Postal Service's carbon footprint by using Lean Six Sigma methods — a management tool that identifies targeted improvements to make business processes leaner and more efficient.

As a result, our headquarters office reduced energy use by 21 percent, when compared to 2008. The efforts underway at our headquarters and Area Offices have saved over $4 million in FY 2009 when compared to FY 2008. The savings are due to reductions in spending on supplies by an average of 39 percent, reductions in energy use by an average of 32 percent from the same period last year (SPLY), reductions in vehicle fuel use by an average of 16 percent from SPLY, reductions in water use by an average of 26 percent from SPLY, and the diversion of solid waste by 32 percent. At present, we are ready to roll out Green Teams at all of our 75 District offices. We believe these efforts will spark additional positive results nationwide.

To help get the word out to our employees, we have started several communication campaigns to inform them about what they can do to help us reach our goal. These campaigns provide information on how they can easily implement low-cost or no-cost opportunities in their own facilities. As a result, our employees are more involved than ever in striving to reach our energy efficiency goals and reduce our carbon footprint.

To help consumers make environmentally responsible decisions about their mail, the Postal Service created a special "green" section on its website that was first launched in 2008 and redesigned in December of 2009. At *usps.com/green*, consumers can find hundreds of helpful facts and suggestions, along with smart tools and information to improve their own environmental awareness, measure their carbon emissions, and create individual conservation plans. And just for children, there is a place for them to learn how to create green family trees.

A key feature of the site is the "Skip the Trip" calculator that shows consumers how to save money, fuel and energy by using our easy and convenient online services to conduct their postal business from home or office. It's another way the Postal Service helps customers make greener choices about their mail and their environment.

Through ongoing pilot programs, the Postal Service also is partnering with companies, agencies, and organizations to provide consumers with mail-back options for safely recycling and properly disposing of their small electronics, compact fluorescent lamps, and discarded or expired pharmaceuticals.

In 2008, the Postal Service began a Post Office Lobby Mail Recycling program at almost 4,000 facilities that to date has expanded to include more than 6,000 Post Offices. The program places secure recycle bins in Post Office lobbies to make it easier for customers to make environmentally friendly choices when they are finished reading their mail. The simple, but effective message of the program is "Read, Respond, Recycle." During 2010, we have plans to expand this convenient lobby recycling program to an additional 2,000 Post Offices. And we anticipate continued expansion of this program over time.

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We also would like to note the fact that the Postal Service is the only shipping or mailing company to earn Cradle to Cradle Certification™ based on the quality of the raw materials used to produce our Priority Mail and Express Mail packaging, cardboard signs in Post Office lobbies, and Ready Post packaging and shipping supplies, including tape and labels. The one half billion pieces of green packaging supplies the Postal Service provided to customers last year prevented more than 15,000 tons of carbon emissions. That is equal to the amount from 2,747 average vehicles driving on the road for a year.

Some of the other innovative environmental initiatives the Postal Service has put into practice over the past few years include:

- A green purchasing program that "closes the loop" on recycling by purchasing products with recycled content that can themselves be recycled.
- Producing postage stamps using water-based inks that are made from soybeans and contain no lead.

The Postal Service also created and chairs the Greening the Mail Task Force, which is a public/private partnership charged with improving the environmental performance of mail. One primary goal is to work with marketers to help ensure mail is addressed and targeted correctly, so that consumers receive the mail they want.

The Postal Service is also one of 20 world-wide posts that are participating in the sustainability efforts of the International Post Corporation (IPC). The IPC sets standards for upgrading quality and service performance, and also provides informed intelligence about postal and related markets.

The IPC released its inaugural Sustainability Report, which was timed in conjunction with the December 2009 Climate Change Conference in Copenhagen, Denmark. In addition, the organization recently unveiled its first industry-wide collaborative effort to reduce carbon dioxide (CO_2) emissions in which some of the largest posts, including the Postal Service, are actively involved. The efforts mark the first time the industry, as a whole, has come together and agreed to common targets, common time frames, and a common set of criteria.

As the largest post in the world, the Postal Service's involvement is helping lead the way to establish sustainability as a routine business practice and guide change on a global level within the world-wide delivery industry. The participating posts realize that if they collaborate as an industry, they have greater purchasing power and broader influence on suppliers in terms of the technological changes needed to help drive further advancement and research in areas, such as electric vehicles.

At this time, we believe the Postal Service is ready to take the next steps in our green leadership role. To do so, we will need some help because of the unique status of the Postal Service. Unlike most other Federal agencies, the Postal Service is an independent establishment of the executive branch. Since 1983, we have not requested or received appropriation monies for our operations, except for very small amounts to reimburse the Postal Service for statutorily mandated services, such as free matter for the blind and overseas voters. Overwhelmingly, the Postal Service relies on the sale of its products and services — *not* taxpayer dollars — to generate revenue and cover the costs of providing universal service to an ever increasing number of addresses in the United States. And it is our intent to continue to provide universal service to the American public.

While we are proud of our efforts to pay our own way through the sales of our products and services, we simply do not have the capital funds to invest in greening all of our nearly 217,000 vehicles and approximately 33,000 facilities.

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Nevertheless, we believe that because of the size of our vehicle fleet and the number of our facilities, the Postal Service represents a unique opportunity for the Federal government and the nation to invest in and develop green advancements. Such an investment would be significant and the Postal Service would need some assistance from the Federal government, but we firmly believe that the results would certainly benefit everyone.

In our opinion, government funding provided through DOE or another Federal agency could assist the Postal Service with the financial support needed to develop sustainable energy-saving solutions for our large number of vehicles and facilities. Because of our size, working with the Postal Service could serve as a catalyst for leading the rest of the nation toward a greener future.

The Postal Service enjoys an ongoing and close working relationship with our colleagues at the Council on Environmental Quality (CEQ), DOE, EPA, GSA, Department of Transportation (DOT), and other Federal agencies. Recently, we have had some very productive discussions and plan to continue talking with our Federal agency counterparts, as well as other environmental stakeholders and industry leaders. The Postal Service believes that replacing all of our vehicles at once would not allow us to truly test emerging technologies. We would support an approach that includes targeted pilot or demonstration projects in geographically diverse areas that would yield the crucial information needed for testing the next generation of Postal Service vehicles, including electric models.

At the Postal Service, we have set aggressive goals for our near and long term sustainability performance. We will continue to focus on using less energy, water and other resources by encouraging sustainable best practices. Given the size and scope of our operations, it is apparent that our green initiatives and activities can and do have significant, positive impacts in every American community.

Despite our financial difficulties during this troubled economic time, we know that energy conservation is a sound financial investment and we plan to continue to expand our role as a sustainability leader within the Federal government, the mailing industry, and beyond. We look forward to working with the members of this Committee, Congress, Federal agencies, and the nation, to take the next steps toward achieving the necessary reductions in energy use and greenhouse gas emissions.

I appreciate your consideration and thank you for inviting me to discuss these important matters. I would be please to respond to any questions you may have.

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Post-Hearing Questions for the Record
Submitted to Nancy Sutley
"Cutting the Federal Government's Energy Bill: An Examination of the Sustainable Federal Government Executive Order"
(Hearing Date: January 27, 2010)

From Senator Tom Carper:

1. The Executive Order includes requirements for reporting several metrics. I see value in reporting cost savings, in addition to the other measures of success. Could the White House include cost savings estimates as part of its regular reporting? Has reporting of cost savings been discussed?

   The Executive Order requires each agency to submit a Strategic Sustainability Performance Plan ("Sustainability Plan") to CEQ for review and to OMB for approval in June of this year. The data provided by the agencies in their Sustainability Plans should include cost savings estimates. Additionally, these plans require the agencies to identify and prioritize projects and programs that will meet the goals of the Executive Order based on projected lifecycle return on investment. The content of these plans will provide CEQ and OMB the opportunity to develop cost saving metrics.

2. The Executive Order places requirements for "net zero" buildings. My understanding is that this would entail individual federal buildings to meet the standard, as opposed to a collection of buildings to collectively meet the standard. Has the White House determined the specifics of how a facility could meet the "net zero" building standard? Is there an advantage to include flexibility so that a group of buildings can collectively meet the standard?

   The Executive Order sets a 2020 design deadline, requiring agencies to begin planning to meet the 2030 Net Zero statutory deadline set in the Energy Independence and Security Act of 2007 (EISA). Further research and development, breakthrough technologies, and market capacity are needed to achieve the EISA 2007 2030 goal. However, the private sector and the Department of Energy have already achieved net-zero facilities – demonstrating that reaching this goal is feasible.

   The Executive Order uses the definition contained in section 422 the Energy Independence and Security Act of 2007. The term "zero-net-energy commercial building" is defined as a commercial building that is designed, constructed, and operated to –

   (A) require a greatly reduced quantity of energy to operate;
   (B) meet the balance of energy needs from sources of energy that do not produce greenhouse gases;
   (C) therefore results in no net emissions of greenhouse gases; and

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(D) be economically viable.

3. The Department of Defense is a leader within the federal government of power purchasing agreements. The hearing described the DOD's successful history with such agreements. Has the Administration considered the advantage of proposing a change in statute so other agencies can enter into Power Purchasing Agreements lasting longer than ten years? What are some of the lessons learned by DOD in the use of Power Purchase Agreements that could prove useful to other agencies, especially if the Congress decides to make statutory changes for other agencies that would extend the agreement time beyond ten years?

   The Department of Defense has extensive internal expertise in executing power purchasing agreements (PPAs) as well as statutory authority to enter into 20-year PPAs. DOD's combination of expertise and statutory authority, as well as the scale of DOD installations, has positioned the Department to be a leader in utilizing this tool for developing renewable energy projects on Federal sites.

   Although this Administration has not yet considered legislative proposals to extend to other agencies the use of PPA authority beyond 10 years, it strongly supports the generation of renewable energy projects on federal sites. Additionally, from an economic perspective, there is logic in matching the length of agreements to asset life, provided there is a reasonable cap such as the 20 years that DOD is operating under.

4. The private sector companies that have dedicated themselves to issues of sustainability have been pretty successful. For example, the DuPont Company made it a goal in 1999 to keep energy levels flat with what they were using in 1990. They have not only met that goal, but they've exceeded it. In 2008, they were down 7 percent overall from what they were using nearly 18 years before. How is the federal government sharing and learning from the successes of private sector companies like DuPont and others?

   Best practices from leading private sector companies are shared with agency leaders through two specific efforts within the overall Sustainability Executive Order implementation program. First, private sector best practices and best practices from local and state governments are being presented to the Steering Committee on Federal Sustainability through CEQ's Office of the Federal Environmental Executive and OMB. Second, best practice case studies are presented through a series of topical workshops for agency staff working to meet the goals of the Executive Order. To date, more than a dozen workshops have been held on setting greenhouse gas pollution reduction targets, and on developing sustainability plans. Multiple private sector companies have presented their lessons learned to members of the Steering Committee.

5. In a report released in October 2009 titled "Federal Energy Management: Agencies Are Taking Steps to Meet High-Performance Federal Building Requirements, but Face Challenges," (GAO 10-22) the GAO said a serious challenge agencies face is "not having

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dedicated energy staff with appropriate expertise." Specifically they reported that, "agencies lacked dedicated, skilled energy managers." In your view, how can Congress help narrow this training gap?

Congress has provided an important tool to close this gap. Section 432 of EISA 2007 requires each agency to designate dedicated facility energy managers. Agencies have designated these energy managers and are using this existing statutory requirement to develop the appropriate internal expertise. The Federal Energy Management Program at DOE hosts regular training sessions and webinars aimed at building skills in energy management.

6. As co-chair of the Senate Recycling Caucus, I am pleased to see that key sustainability measures such as recycling are at the center of this Executive Order. Recycling is not only good for the environment, but also creates quality jobs for our country, saves us energy and increases our exports. Could you please elaborate on current recycling and waste practices within Federal agencies, ways in which the Executive Order will strengthen recycling and waste management, and private sector economic and job benefits that you anticipate will be spurred through increasing recycling and reducing waste in the Federal government?

Federal agencies continue to show leadership in recycling, waste diversion, and waste management. In FY 2009, agencies reported waste reduction rates ranging from 17 to 67 percent. Some of the higher rates include construction and demolition debris recycling. Federal agencies composted at 280 facilities in FY 2009. This consisted of both on-site composting and collection of compostables to be sent off-site for composting. Also, in 2009, 14 agencies participating in the Electronics Reuse and Recycling Campaign reused and recycled 15.8 million pounds of electronics, almost 6 million more pounds than in 2008.

Executive Order 13514 builds on this progress, requiring agencies to achieve a 50 percent recycling and waste diversion rate by 2015, including a 50 percent diversion of construction debris. As the largest employer in the nation, the Federal Government has a responsibility to lead by example in promoting recycling and responsible waste management in its operations.

7. How will this Executive Order work with the Livability Principles established by HUD, DOT and EPA to create more sustainable communities in areas throughout the US? What might be some of the steps we can expect to see and some of the benefits from the Executive Order's attention to supporting sustainable communities?

Section 10 of Executive Order 13514 establishes an interagency working group, lead by DOT and including EPA and HUD, among others, to deliver recommendations on green locations for Federal facilities in accordance with the Sustainable Partnership Agreement and the Livability Principles. This effort will enable the Federal agencies to put the Livability Principles into practice through their own facility siting decisions.

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Post-Hearing Questions for the Record
Submitted to Nancy Sutley
"Cutting the Federal Government's Energy Bill: An Examination of the Sustainable Federal Government Executive Order"
(Hearing Date: January 27, 2010)

From Senator John McCain:

1. In your testimony, you highlight that projects such as installing solar arrays and retrofitting federal buildings are being funded by stimulus funds. This amounts to billions of dollars in additional funding specifically directed to various energy efficiency and sustainability improvements.

   a. Is most of this funding specified for particular types of sustainability investments (i.e. renewable energy, building improvements) or is it left up to the discretion of the recipient agency as to which projects to fund?

      Funding is being spent as directed in the American Recovery and Reinvestment Act of 2009.

   b. What additional oversight mechanisms are there to ensure that stimulus funding is being spent on cost-effective projects with positive lifecycle returns?

      The American Recovery and Reinvestment Act of 2009 makes it clear that taxpayer dollars spent under the Recovery Act must be transparent and accountable. To ensure that accountability requirements are being met, the Inspectors General of the 28 Federal agencies distributing Recovery Act funds continually review their agencies' management of such funds. In addition, the American Recovery and Reinvestment Act of 2009 created the Recovery Accountability and Transparency Board to provide oversight of all Recovery Act projects.

   c. Was the existence of additional stimulus funding for energy efficiency improvements and sustainability a factor in setting the reduction goals of the Executive Order?

      No. We do, however, expect the agencies to leverage Recovery Act-funded projects to meet performance goals.

   d. When the supplemental stimulus funding for these projects runs out, will these agencies have to ask Congress to provide additional appropriations so that they will reach the reduction targets established by the Administration?

      Meeting the performance targets set by Executive Order 13514 will reduce costs and save taxpayer dollars over the long term, and resources required for

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implementing agency strategic sustainability performance plans to meet these goals will be reviewed and approved during the official budget review process. For instance, achieving the Federal greenhouse gas pollution reduction target of 28 percent by 2020 will reduce Federal energy use by the equivalent of 646 trillion BTUs. Assuming current energy prices, this is equivalent to a cumulative total of $8 to $11 billion in avoided energy costs through 2020.

2. The Executive Order tasks agencies with developing their own greenhouse gas emission targets and solutions for meeting those targets. In addition, the Executive Order mandates a number of energy, water, and waste reduction targets, including reductions in fleet petroleum use, water efficiency, and recycling diversion.

   a. Have you analyzed whether the mandated reduction targets will require agencies to divert manpower and spending from other mission priorities to cover the cost of meeting these mandates?

      The Executive Order specifically directs agencies to meet the targets in a way that aligns with agency mission and operating objectives. In their Agency Strategic Sustainability Performance Plans, due to OMB and CEQ in June 2010, agencies will explain how they plan to achieve these goals.

   b. Has the CEQ and/or OMB done any preliminary cost estimates to measure the possible direct cost burden to federal agencies to meet these requirements? If so, what are they?

      In June 2010, the agencies will deliver their Strategic Sustainability Performance Plans to OMB and CEQ. Executive Order 13514 requires agencies, in these plans, to prioritize projects with the highest lifecycle return on investment as measured by economic and social costs and benefits.

   c. What impact will the President's proposed 3-year spending freeze have on implementation of the Executive Order?

      None. Agencies are directed by Executive Order 13514 to prioritize agency actions based on lifecycle return on investment taking into consideration environmental measures as well as economic and social benefits and costs.

3. Under this Executive Order, agencies must ensure that all new federal buildings, entering the design phase in 2020 or later, are designed to achieve zero net energy by 2030.

   a. Is the technology currently available to make building construction under this requirement cost-effective by 2020?

      The Executive Order sets the 2020 design deadline so agencies are required to begin planning now to meet the 2030 Net Zero statutory deadline set in the Energy Independence and Security Act of 2007. Further research and

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development, breakthrough technologies, and market capacity are needed to achieve the EISA 2007 2030 goal. However, the private sector and the Department of Energy have already achieved net-zero facilities – demonstrating that reaching this goal is feasible.

b. How will net-zero be defined: by facility, by region, by agency?

The Executive Order uses the definition contained in section 422 of the Energy Independence and Security Act of 2007. The term "zero-net-energy commercial building" is defined as a commercial building that is designed, constructed, and operated to –

(A) require a greatly reduced quantity of energy to operate;
(B) meet the balance of energy needs from sources of energy that do not produce greenhouse gases;
(C) therefore results in no net emissions of greenhouse gases; and
(D) be economically viable.

c. Are there other reduction targets mandated by the Executive Order that have not been fully defined or where further guidance is pending? If so, please explain which targets and what type of guidance is being offered.

The only remaining target from the Executive Order to be defined is agency indirect greenhouse gas pollution reduction targets. These agency-reported targets are due to CEQ and OMB by June 2, 2010. The Chair of CEQ is required to report a Federal aggregate target to the President on July 2, 2010.

Implementing guidance is pending for clean fleets and will be issued in the near future. Guidance on a Federal greenhouse gas emissions measurement protocol is also pending and will be issued during summer of this year. This will be based on recommendations that were delivered to CEQ and OMB by an interagency working group led by DOE.

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Post-Hearing Questions for the Record
Submitted to Nancy Sutley
"Cutting the Federal Government's Energy Bill: An Examination of the Sustainable Federal Government Executive Order"
(Hearing Date: January 27, 2010)

From Senator George V. Voinovich:

1. In my opinion, one of the primary messages of the Executive Order is that if we are to successfully and efficiently improve the energy efficiency of Federal buildings, we need to do it in a comprehensive and integrated way. How will your agency's sustainability performance plan take this lesson into account, both in the design and construction of new buildings, and the retrofit of existing ones?

   To assist agencies in meeting the goals of the Executive Order, CEQ and OMB have developed templates, tools, and guidance for agencies as they develop their Strategic Sustainability Performance Plans. The Executive Order drives agencies towards an integrated approach to building design, construction, and operations and maintenance to achieve energy efficiency and sustainability goals.

2. I understand that by addressing the building envelope (roofing, windows, cladding, etc.) in an integrated fashion, it is possible to produce significant energy savings with the use off-the-shelf technology. Is your agency incorporating this approach into its plans?

   Agencies will address the building envelope in their Strategic Sustainability Performance Plans. The goal of improving building energy efficiency and the Executive Order's requirements to achieve a minimum of 15% compliance with the Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings will drive agencies to include integrated building envelope improvements in their plans. There are many proven off-the-shelf technologies and well-established best practices that agencies can use to meet these goals.

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Questions and Responses for the Record
Richard Kidd, Program Manager,
Federal Energy Management Program,
U.S. Department of Energy

QUESTION FROM SENATOR CARPER

Q1. The metering example you mentioned at the hearing was intriguing. I note that the chart you presented showed savings could be realized in just months. I understand with advanced metering technology a facility manager can know in real time when there is a spike of energy use. "What gets measured, gets managed" is the phrase I have heard. Could you give some examples of federal buildings that employ advance metering?

A1. Example: **Fort Bragg Advanced Metering Program**

Located in Fayetteville, North Carolina, Fort Bragg is a major U.S. Army installation with nearly 30 million square feet of building floor space. In 1997, Fort Bragg entered into an Energy Savings Performance Contract (ESPC). While a wide range of Energy Conservation Measures (ECMs) have been employed as part of this ESPC, of particular interest is the application of advanced metering to enable energy management activities including customer billing, utility bill reconciliation, budgeting, energy efficiency opportunities identification (resulting in additional delivery orders), and energy performance monitoring and system optimization. And beyond energy efficiency, this advanced metering system is now becoming a part of the Base's security management program.

Deployment of the Fort Bragg Energy Information System (EIS) began around 2000 as part of the initial ESPC delivery order. The EIS has continued to grow over subsequent years through energy cost savings the Fort has chosen to reinvest into additional metering capabilities. As a result of approximately $3 million in total investments, the current metering system is extensive and includes main electrical distribution system meters and loads, gas meters, System Control and Data Acquisition (SCADA), and supporting software (real-time price management, load analysis, etc.). This system is being

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expanded to include Central Plant combined heat and power optimization and SCADA systems integration.

Example: **Automated Meter Reading ECM for General Services Administration (GSA) Denver Federal Center**

The Denver Federal Center (DFC) located in Lakewood, Colorado, is a campus of buildings housing a multitude of Federal agencies. The 99 buildings on the facility have a combined gross floor area of about 4,150,000 square feet. Two Super ESPC delivery orders (DOs) have been awarded for the DFC: The second DO, awarded in September 2001, was a comprehensive project (10 ECMs, $2.18M investment, 14 year term) including an ECM for automated electric and gas meter reading system to identify anomalous energy use and demand.

For this ECM, an automated meter reading system was installed in 38 buildings comprising 96 percent of the gross square footage of the DFC. A total of 70 electronic socket meters with memory and communications capability were installed, and 47 gas meter heads were modified to provide a pulse output. The meters were connected to data recorders with a phone modem and dedicated phone lines, with usage data downloaded to a front-end computer. The meter data for each building is reviewed monthly, anomalies are identified and investigated, and recommended operational strategies and/or minor equipment modifications to reduce electric and gas consumption are developed where possible. The system has been recently modified to include additional hardware and software which will allow all of the meters to be accessed and monitored by the General Services Administration's National Metering System.

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QUESTION FROM SENATOR CARPER

Q2. You mentioned in your testimony two interesting public-private partnership tools. Incentivizing private businesses to partner with the federal agencies is a useful approach, especially when the investments dollars come from the private sector. I understand that the Power Purchase Agreements allow the private sector to economically make use of military land to build solar power generators. And Energy Service Performance Contracts are a creative way to pay for energy efficiency projects such as more efficient heating and cooling units for buildings. Both can often mean no federal investment, but see savings for federal agencies. Is there opportunity to expand agency use of Power Purchasing Agreements, Energy Service Performance Contracts and other similar financial tools? Do you see any lessons learned from the DOD history from Power Purchase Agreements that is applicable to other federal agencies?

A2. We have looked at the limited experience of DOD with Power Purchase Agreements, as well as other similar financial tools. While these various agreements each have attractive aspects, each also has limitations. We will continue to explore how best to encourage broader use of clean renewable energy technologies in both the federal and private sectors.

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QUESTION FROM SENATOR CARPER

Q3. The private sector companies that have dedicated themselves to issues of sustainability have been pretty successful. For example, the DuPont Company made it a goal in 1999 to keep energy levels flat with what they were using in 1990. They have not only met that goal, but they've exceeded it. In 2008, they were down 7 percent overall from what they were using nearly 18 years before. How is the federal government sharing and learning from the successes of private sector companies like DuPont and others?

A3. Without a doubt, it is vital to consider energy management best practices from the private sector in the Federal Government, and vice versa. To accomplish that, the Department of Energy (and other agencies) have established various venues for information exchange. These include annual conferences (GovEnergy and Labs for the 21st Century) and interagency working groups on energy and sustainability where private sector engagement is highly encouraged. The government publishes best practice guides, highlighting case studies from the private sector that are applicable to Federal operations. The Federal rulemaking process also allows for a public comment period to ensure lessons learned from private companies can be incorporated.

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QUESTION FROM SENATOR CARPER

Q4. In your testimony you mentioned that energy efficiency measures can not only save energy and money, but also improve employee morale. Explain specifically what the connection is between energy efficiency and employee morale. Do you have examples?

A4. Energy efficiency efforts can be directly linked to employee morale and productivity in numerous ways, particularly in office environments. Much of a typical office building's energy consumption goes toward lighting and temperature controls. Energy efficiency measures, such as upgrades to heating, ventilation, and air conditioning (HVAC) systems and building insulation, directly affect the system's ability to maintain comfortable temperatures throughout the office. Offices with inefficient design tend to lose heat and throw off the temperature balance throughout the office. This requires HVAC systems to work harder (and draw more energy) to maintain the temperature balance. The result is often some areas of the building will be uncomfortably hot or cold, which affects the comfort level of the office employees.

Building designs that use natural light reduce the need for electric interior lighting, and numerous studies have shown employees feel more comfortable when exposed to natural daylight rather than artificial fluorescent lighting typical in many conventional building designs. There are also studies which document an overall better "feeling" among employees working in a building which contributes positively toward a better environment and a sustainable future. Other studies ascribe increases in employee morale to the "Hawthorne effect," which states that employees' morale and productivity improve simply because they see an effort by management to take their comfort into consideration.

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While drawing direct linkages between employee morale and building design presents some difficulty in analysis, many studies find statistically significant correlations between offices which employ sustainable design methodologies and decreases in the use of sick days, improved daytime productivity, and decreases in absenteeism. Given that the cost of labor typically makes up the majority of costs in office-based organizations, these findings make a compelling business case for employing sustainable methodologies such as energy efficiency to office environments.

The Federal Energy Management Program published a study, The *Business Case for Sustainable Design in Federal Facilities* as well. A detailed discussion of research studies on occupant health, comfort, and productivity can be found in Appendix F. Available at http://www1.eere.energy.gov/femp/program/sustainable_businesscase.html.

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QUESTION FROM SENATOR CARPER

Q5. In a report released in October 2009 titled "Federal Energy Management: Agencies Are Taking Steps to Meet High-Performance Federal Building Requirements, but Face Challenges," (GAO 10-22) the GAO said a serious challenge agencies face is "not having dedicated energy staff with appropriate expertise." Specifically they reported that, "agencies lacked dedicated, skilled energy managers." In your view, how can Congress help narrow this training gap?

A5. Some agencies are experiencing difficulties finding and retaining sufficient, qualified personnel to operate increasingly complex energy systems. The Federal workforce responsible for energy management will need to ensure its skills and knowledge keeps pace with the ever evolving technical environment. This is one of the reasons that the Federal Energy Management Program (FEMP) has worked to expand its training programs which include:

- Introduction to Executive Order 13514;
- Energy 101;
- Water Efficiency Planning and Implementation;
- Federal Greenhouse Gas Accounting and Reporting;
- Advanced Metering Requirements and Best Practices; and
- Operations, Maintenance, and Commissioning.

FEMP also offers advanced training workshops in Energy Saving Performance Contract and Utility Energy Services Contract implementation, and hosts online training on its web site. These training sessions are available on-demand to Federal agencies.

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QUESTION FROM SENATOR MCCAIN

Q1. The Executive Order 13514 sets reduction targets specifically for items such as water, waste, and petroleum. Are these reduction targets any more or less ambitious than reduction targets set in prior legislation or Executive Orders? Will the additional funding for sustainability initiatives provided by the Recovery Act be the most significant factor to achieving the reduction targets required by the most recent Executive Order?

A1. For water reduction, Executive Order (E.O.) 13514 extends the already ambitious goal for agencies to reduce potable water intensity (gallons per square foot of facility space) by 2 percent per year from the 2007 base year through fiscal year 2020, for a total 26 percent reduction. Under the previous E.O. 13423this goal required a cumulative reduction of 16 percent by the end of fiscal year 2015. E.O. 13514 extends the period for the goal through fiscal year 2020 for a 26 percent reduction in potable water use intensity. E.O. 13514 also adds an additional requirement for reducing non-potable industrial, agricultural, and landscaping water use by 20 percent by the end of fiscal year 2020 relative to fiscal year 2010 baseline use.

E.O. 13514 requirements for non-hazardous solid waste reduction are more ambitious than the prior E.O. 13423 which only required agencies to increase diversion of solid waste as appropriate. E.O. 13514 requires agencies to divert at least 50 percent of non-hazardous solid waste, and divert at least 50 percent of construction and demolition debris, by the end of fiscal year 2015.

Similarly, E.O. 13514 extends the petroleum reduction goal for covered vehicle fleets to 30 percent in 2020 compared to the 2005 base year. This extends the period for the 2 percent per year reduction beyond the 20 percent reduction required for 2015.
The Recovery Act will contribute significantly in the short term (2-4 years), but these funds for infrastructure improvement were not distributed to all agencies, nor assigned proportional to energy or water consumption. All agencies are going to have to make sustained, long-term commitments in terms of management effort, staff and resources.

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QUESTION FROM SENATOR MCCAIN

Q2. The Congressional Research Service (CRS) recently issued a report (R41040 on 01/25/10) on the incentives for and barriers to federal agencies achieving the energy efficiency goals outlined in recent laws and Executive Orders. Specifically, it mentions that as a result of complying with previous law, many agencies have already addressed some of the more easily achievable, low-cost improvements such as changing light bulbs and installing insulation. Since many of these improvements provided significant energy reduction early, CRS has concluded that future reductions may be more difficult to achieve and future budget reductions may be low as a result. Do you think that most agencies have already fully exploited these more easily achievable solutions? Are you concerned that as those options are exhausted, future solutions will require investments with less opportunity for significant savings? Are you concerned that it will be more difficult to achieve further annual reductions in emissions and other related reduction goals? If so, will this cause agencies to have difficulty reaching the non-green house gas related reduction targets established by the Executive Order?

A2. While Federal agencies have been investing in energy efficiency improvements and improving the energy intensity of Federal facilities for over 20 years, the suite of cost-effective technologies has continued to improve. As the operational life of past improvements is approached, new advanced replacement technologies, both evolutionary and transformational, are being developed and will become available for the next wave of investment. While some improvements, like building shell replacement during full rehabilitation projects create 40 to 50 years solutions, heating, cooling, lighting, information technology systems, and sensors and controls have shorter service lives and are replaced at regular intervals. Along with advancing technological performance, advances in management, diagnostics, operation and maintenance tools and processes are being applied to assure that buildings, fleets, and industrial processes continue to perform at near design efficiency levels. For example, Solid Sate Lighting (SSL) is a transformational technology with the promise of halving the energy consumption of today's best fluorescent lighting, with ten times the service life, superior color rendition

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and controllability, and low maintenance requirements. While rapid progress in making the SSL promise a reality, office fluorescent lighting has continued to make incremental improvements worth implementing. Technology improvements are driven by both economic and environmental imperatives, supported by the expansion of scientific knowledge, and we anticipate that innovations will continue to be developed to meet the current and future needs of society.

Continued basic science research, technology development, and activities to accelerate those results into the market place may enable the development of further cost-effective technologies, tools and practices to meet the current and future challenges for Federal agencies and the Nation as a whole.

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QUESTION FROM SENATOR MCCAIN

Q3. In your testimony, you highlight that energy consumption for the federal government in fiscal year 2008 was 23.5% less than in fiscal year 1985. Since 1985, has the annual percentage reduction remained steady or has it fluctuated from year to year? What factors can cause these fluctuations?

A3. Year to year, this reduction has fluctuated somewhat, but over time the downward trend is very clear. When measured in terms of energy delivered to the point of use or site-delivered energy consumption, the Government consumed about 1.1 quadrillion Btu during FY 2008 in buildings and mobility operations to provide essential services to its citizens, including the defense of the Nation. The total energy consumption in FY 2008 was 23.5 percent less than in FY 1985, 2.3 percent less than in FY 2003, and 2.2 percent more than in FY 2007. The increase from FY 2007 was largely attributable to increased utilization of military aircraft and vehicles by the Department of Defense.

Factors affecting Federal energy use include, first and foremost changes in mission requirements, particularly related to operational energy use by the Department of Defense. Other factors include changes in facility square footage, building stock, weather, energy efficiency investments, fuel mix, and vehicle, naval, and aircraft fleet composition.

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QUESTION FROM SENATOR MCCAIN

Q4. In your testimony you say there are social benefits associated with greenhouse gas reductions. Did DOE issue guidance on how agencies account for "social costs"? How will personal values or selective judgment enter the solution evaluation process if social costs are considered?

A4. On February 22, 2010, the Department of Energy (DOE) issued a final rule on Energy Conservation Standards for Small Electric Motors. Appendix 15A of this rule established the "Social Cost of Carbon for Regulatory Impact Analysis under Executive Order 12866." The purpose of the "social cost of carbon" (SCC) estimates presented in this document is to allow agencies to incorporate the social benefits of reducing carbon dioxide (CO2) emissions into cost-benefit analyses of regulatory actions that have small, or "marginal," impacts on cumulative global emissions.

The rule presents a summary of the interagency process that identified the range of SCC estimates. Technical experts from numerous agencies met on a regular basis to consider public comments, explore the technical literature in relevant fields, and discuss key model inputs and assumptions. The main objective of this process was to identify a range of SCC values using three peer-reviewed models. The estimates in the rule are presented with an acknowledgement of the many uncertainties involved and with a clear understanding that they should be updated over time to reflect increasing knowledge of the science and economics of climate impacts.

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QUESTION FROM SENATOR MCCAIN

Q5. During the hearing, it was noted that the by using Energy Savings Purchasing Contracts (ESPC) an agency is actually paying about 2.4 times the cost of an investment had the agency paid the capital costs up front. In the long term, does this make using ESPC's cost effective for the government? Why or why not?

A5. Recent statutory and executive order mandates have required Federal agencies to make deep cuts in energy use—and particularly in the use of fossil fuels.

Federal ESPCs are necessarily cost-effective in that the energy improvements in a project must pay for themselves—including all interest and other ancillary costs—each year of the contract term as well as over the life of the contract. Once the investment and financing costs are paid, the full benefits of all savings accrue to the Federal Government.

The question remains as to whether ESPCs are the most cost-effective option for achieving these energy savings. Under an ESPC, it is correct that due to interest and other costs, an agency can pay on the order of 2.4 times the cost of an investment had the agency paid the capital costs up front. Given that the contractors borrow the money for Federal ESPC projects at interest rates considerably higher than the Government's borrowing rates, it would be less expensive for the Government to fund these projects directly (assuming the project quality and savings assurance were equal).

The true cost of relying solely on appropriated funds must also be considered. A 2002 report by Oak Ridge National Laboratory[1] showed that in some cases, the life-cycle cost of using appropriations could be higher than the life-cycle cost of using ESPCs. With

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an ESPC, an Energy Services Company (ESCO) provides funding for economically feasible projects on a much shorter time frame than may be possible through the use of appropriated funds. When projects are delayed, inefficient equipment stays in service longer, using more energy and resulting in higher costs to the government than would be incurred were the equipment replaced. The question of which funding source is more cost-effective—ESPC or appropriations—was found to depend on a number of factors including ESPC interest rates, the delays associated with appropriated funding, and the overhead costs of the surveys and studies agencies require sites to submit in order to select the projects to receive the limited appropriations. Given the data available from an appropriations-funded energy management program at one large agency, the report found that ESPC funding had a lower life-cycle cost than appropriations, given a typical energy efficiency project and the interest rates that prevailed at the time.

In summary, ESPCs are cost effective. There is no doubt that projects funded directly with appropriations—delivered to agency sites in a timely manner and with minimal overhead costs—have the lowest life-cycle cost, since projects funded in this manner do not incur the interest charges associated with ESPCs.

[1] Evaluation of Federal Energy Savings Performance Contracting-Methodology for Comparing Processes and Costs of ESPC and Appropriations-Funded Energy Projects, Hughes et al., ORNL/TM-2002/150

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QUESTION FROM SENATOR COLLINS

Q1. In your testimony, you advocated for the Federal government to increase its use of contracts paid over time from future energy savings to fund energy efficient projects, such as Energy Savings Performance Contracts (ESPCs). You stated that these performance-based, third-party financed contracts are used to provide investment capital to improve Federal facilities and reduce their energy use in a timely manner and that Federal facilities can be more efficient and productive through building improvements financed this way.

Approximately $2.3 billion has been invested in Federal facilities through ESPC-funded projects, which you stated in your testimony contain guarantees that will result in $6 billion in avoided energy costs over the life of the contracts.

The Department of Energy (DOE) Inspector General (IG), however, issued a report last September, which concluded that DOE may risk spending up to $17.3 million more than it will realize in energy savings on four ESPCs the IG reviewed. The IG attributed the additional expenses to the fact that DOE had not always effectively used ESPC orders to achieve energy savings and that it had not ensured that the government's interests were adequately protected in this process.

In light of the IG's report, please explain how the government can prevent this type of additional cost when using ESPCs?

A1. The Department of Energy's (DOE) Inspector General's (IG's) findings indicate that Energy Savings Performance Contracts (ESPCs) are complex, multi-year contractual implements that require sustained management attention if their full value is to be realized over what might be a 10, 15 or even 20 year time period. To date, FEMP has concentrated its resources and efforts on developing technologically and contractually sound agreements at the time of signing. Even before the IG's findings, the Department realized the need to provide more "life of contract" support services. The Department is taking a very specific approach which includes: life-of-contract services for all active and future DOE ESPC projects, including refresher training aimed specifically at the needs of post award project managers and Contracting Officers (CO); annual HQ review of each field project and HQ visits to each site at least once every three years; and have greatly

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increased our emphasis on measurement and verification of savings and on rigorous attention to the area of risks and responsibilities. The Department strongly encourages Energy Savings Companies (ESCOs) to seek at least four competitive financing offers per task order/project. Additionally, DOE has expanded training opportunities for other Federal agencies and are sharing with them lessons learned. The Department now provides ESPC training, government wide to 800 – 1,000 COs, site, project, and energy managers annually.

While DOE management agreed with the essence of the IG's findings, the $17.3 million dollar figure noted represents the maximum extent of lost savings and this amount does not necessarily mean the ESPC's reviewed by the IG failed to generate positive savings.

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QUESTION FROM SENATOR COLLINS

Q2. In your testimony you also advocate for agencies' authority to enter into power purchase agreements for periods longer than the 10 years allowed under the current law. Power purchase agreements are another method through which Federal agencies are able to implement on-site renewable energy projects without up-front government financing. The legislation needed to make this change will produce a hefty score from the Congressional Budget Office (CBO).

How do you reconcile the significant CBO score that this authorization would produce against the cost savings you believe would accrue to the federal government through the expanded agreement period for power purchase agreements? How can you limit the risk associated with these long-term financial agreements?

A2. We recognize the heightened risk factor in longer-term financial agreements and continue to explore how we might limit such risk even as we encourage growth in renewable energy. We also recognize that as renewable energy gains a larger share of the commercial market, the risk associated with longer-term agreements is likely to lessen.

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QUESTION FROM SENATOR VOINOVICH

Q1. In my opinion, one of the primary messages of the Executive Order is that if we are to successfully and efficiently improve the energy efficiency of Federal buildings, we need to do it in a comprehensive and integrated way. How will your agency's sustainability performance plan take this lesson into account, both in the design and construction of new buildings, and the retrofit of existing ones?

A1. Improving the energy efficiency of Federal buildings is one of the primary ways to reduce the carbon footprint of the Federal government. This must be done in a comprehensive and integrated way in order to be successful and make a significant impact. The Department of Energy (DOE) is addressing this issue in the strategic sustainability performance plan for both the design and construction of new buildings and operations and retrofitting of existing buildings.

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QUESTION FROM SENATOR VOINOVICH

Q2. I understand that by addressing the building envelope (roofing, windows, cladding, etc.) in an integrated fashion, it is possible to produce significant energy savings with the use off-the-shelf technology. Is your agency incorporating this approach into its plans?

A2. Addressing the building envelope in an integrated fashion can produce significant energy savings with off-the-shelf, or commercially available, technology. Energy-efficient components of the building envelope, such as the roof and windows, are available in the marketplace today. The important factor in addressing the building envelope is to specify these products early in the design phase of a new project or retrofit, for cost, design, and integration requirements. Also, just because a building material is "off-the-shelf" does not mean that it always has the same upfront cost. The concept of life-cycle costing often needs to be integrated into budget decisions in order for certain energy-efficient products and technologies to be economically viable for a project.

For existing buildings, retrofitting windows can produce significant energy savings but often has a higher upfront cost. Typically the Department of Energy (DOE) would look at all energy saving opportunities for a retrofit project and prioritize based on energy saving potential and economic feasibility; and components of the building envelope are included in that analysis. DOE's sustainability plan will be incorporating these approaches.

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CHARRTS No.: SG-01-001
Senate Committee on Governmental Affairs
Hearing Date: January 27, 2010
Subject: Cutting the Federal Government's Energy Bill: An examination of the Sustainable Federal Government Executive Order
Witness: Dr. Robyn
Senator: Senator Carper
Question: #1

Question. The hearing testimony clearly showed the opportunity for the use of advanced metering technology to monitor energy use in federal building, and thereby reap substantial savings in a relatively short period of time. However, I understand that the Department of Defense and the Services have not yet moved to adopt net metering in its buildings. Has the DOD studied the opportunities and challenges of advanced metering as a way to better manage energy use and save money? Could you provide the status of any current plans to install advanced metering technology in DOD buildings? Has the DOD or the Services launched, or is considering the launch, of any advanced metering pilot projects?

Answer. DoD recognizes that advanced meters assist our energy plans by monitoring, measuring, managing and maintaining energy equipment and systems in optimal performance ranges. The Department is aggressively installing advanced meters that record real-time energy use, aggregate the data, and transmit to a local server for installation-wide analysis and reporting. To date, DoD has installed 63% of the meters required by the Energy Policy Act of 2005, which requires advanced electrical meters on all facilities where cost effective by 2012. Additionally, DoD is on-track to complete gas and steam meters by 2016 as required by the Energy Independence and Security Act 2007.

DoD is not currently using net-metering. Users of net metering have the capability to generate more electricity than they consume and therefore meter whether they consume power from the grid or contribute power to the grid. Individual DoD facilities generally do not export electrical power to the grid. Therefore, we are not using net metering.

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CHARRTS No.: SG-01-002
Senate Committee on Governmental Affairs
Hearing Date: January 27, 2010
Subject: Cutting the Federal Government's Energy Bill: An examination of the Sustainable Federal Government Executive Order
Witness: Dr. Robyn
Senator: Senator Carper
Question: #2

Question. Incentivizing private businesses to partner with the federal agencies is a useful approach, especially when the investment dollars come from the private sector. The Department of Defense is a leader within the federal government of power purchasing agreements. The hearing described the DOD's successful history with such agreements. And Energy Service Performance Contracts are an additional creative way to pay for energy efficiency projects such as more efficient heating and cooling units for buildings. Does the DOD plan to expand its use of Power Purchasing Agreements, as well as the Energy Service Performance Contracts and similar financial tools? What are some of the lessons learned by DOD in the use of Power Purchase Agreements that could prove useful to other agencies, especially if the Congress decides to allow agencies to extend the agreement time beyond ten years?

Answer. The Department plans to expand our use of Power Purchasing Agreements (PPAs) as we link on-site or near-installation renewable energy generation sources to utility commodity contracts 20-30 years in duration. The 2007 National Defense Authorization Act requires DoD to consume or produce 25% of the electrical energy it consumes from renewable sources by the year 2025. PPAs give DoD guaranteed renewable energy at long-term cost effective rates that energy developers can use to guarantee project financers a long-term revenue stream.

The Department has made wide use of third-party financed energy conservation projects accomplished through vehicles such as Energy Savings Performance Contracts (ESPCs) and Utility Energy Services Contracts (UESCs), which allow DoD to use industry funding to pay for equipment to reduce life cycle costs of facilities and pay it back from the accrued savings. ESPCs and UESCs typically generate 15-20% of all DoD facility energy savings. In 2009, DoD ESPCs and UESCs reached an award value over $258 million. DoD annual energy savings from these contracts are expected to reach nearly 1.2 billion BTUs, which, although significant, represent slightly more than one half of one percent (0.5%) of the DoD's annual consumption. Third-party financed contracts are a valuable tool in our "energy tool box" towards reduced energy demand.

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CHARRTS No.: SG-01-003
Senate Committee on Governmental Affairs
Hearing Date: January 27, 2010
Subject: Cutting the Federal Government's Energy Bill: An examination of the Sustainable Federal Government Executive Order
Witness: Dr. Robyn
Senator: Senator Carper
Question: #3

Question. The private sector companies that have dedicated themselves to issues of sustainability have been pretty successful. For example, the DuPont Company made it a goal in 1999 to keep energy levels flat with what they were using in 1990. They have not only met that goal, but they've exceeded it. In 2008, they were down 7 percent overall from what they were using nearly 18 years before. How is the federal government sharing and learning from the successes of private sector companies like DuPont and others?

Answer. The Department is always interested in private sector and public sector energy savings success stories and application of technologies that yield reduced energy demand and increased energy supply. DoD benefits from the dozens of energy related conferences and seminars held annually nationwide. The opportunities for DoD installation energy managers and leaders to attend these energy forums and exchange energy success stories grow with each year. One of the primary DoD energy training and trade show events is "GovEnergy". In its 14th year, GovEnergy is co-sponsored by seven federal agencies (DoD, DOE, VA, GSA, DHS, EPA and USDA) in cooperation with industry to produce a premier 3-day training event for thousands of federal energy managers and leaders. The GovEnergy workshop and trade show serves to provide effective energy management training to federal employees and their associated stakeholders. In doing so, it fosters opportunities to further educate and encourage the best application of practices, products, and services as they relate to energy efficiency, renewable energy, and water efficiency.

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56839.066

CHARRTS No.: SG-01-004
Senate Committee on Governmental Affairs
Hearing Date: January 27, 2010
Subject: Cutting the Federal Government's Energy Bill: An examination of the Sustainable Federal Government Executive Order
Witness: Dr. Robyn
Senator: Senator Carper
Question: #4

Question. I understand that the Department of Defense and the Services are examining whether wind power systems may have an adverse impact on radar systems. Who is responsible for determining whether proposed wind turbine generating facilities are likely to interfere with Department of Defense Radar Systems? What research needs to be done to determine more accurately under which conditions wind turbines are likely to degrade unacceptably Department of Defense Radar Systems? Is the process through which wind farm developers learn of Department of Defense concerns about radar interference still the Federal Aviation Administration Obstruction Evaluation?

Answer. At present, DoD relies on the Federal Aviation Administration (FAA) obstruction evaluation process to evaluate and mitigate the impact of wind energy projects on the DoD test, training and operational missions. We recognize that this process requires improvement. FAA requires a fairly mature design in order to evaluate wind energy projects and therefore receives input from developers after significant capital investment. Both DoD and developers would benefit if the Department could evaluate impacts and mitigation measures much earlier in the process, before the investment of significant capital. Two problems the Department faces are authority to evaluate and require mitigation that are not on Federal land and that are not federally funded and our capacity to evaluate the growing number of alternative energy projects around the country. We fully support research into wind technologies that reduce or eliminate impacts to our mission, and we are working internally and externally to find a way to address these and other problems with the current process in order to protect our ability to test, train, and operate in the defense of our nation.

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56839.067

CHARRTS No.: SG-01-005
Senate Committee on Governmental Affairs
Hearing Date: January 27, 2010
Subject: Cutting the Federal Government's Energy Bill: An examination of the Sustainable Federal Government Executive Order
Witness: Dr. Robyn
Senator: Senator Carper
Question: #5

Question. I understand that the Defense Department and the services are obligated to increase renewable generation. In many cases. Roof-top photovoltaic is a technology use that is less likely to interfere with the military mission and likely to fit into existing transmission capacity. While many military bases are also suitable for centralized solar, wind, and geothermal power generation, sometime these projects raise environmental issues and usually take longer to win approval. I understand that the Defense of Department and the Services are considering the installing of photovoltaic systems on military rooftops or parking canopies at many facilities. Has the Department considered a policy of requiring bases to evaluate their rooftops for photovoltaic installation and create an inventory of buildings that meet screening criteria? Would this prove useful in fostering the use of solar power at military facilities?

Answer. The integration of solar photovoltaic (PV) systems into building electrical energy supply is being done on a limited basis on rooftops and vehicle parking canopies within DoD. The Department has not made roof-top PV a policy because an evaluation of the inventory has not been accomplished to date. Under EISA 2007, Section 432, energy audits are to be conducted on 25% of DoD covered facilities annually. These audits should evaluate a building's features and energy consumption to determine efficiency upgrades necessary and the potential for building-integrated renewable generation sources (PV and solar-thermal for heating hot water). All analyses of roofs should include the structural integrity of the roof system to accept and carry a PV system; the type of existing roof covering (shingles, build-up roofing, metal, etc.); the compatibility of the PV array to the roof covering system; any history of leaks; the solar radiation factor for the geographic area; and the cost feasibility of the PV investment. While an inventory of acceptable roof-mounted PV buildings may prove useful, the key factor today is that small-scale PV arrays are not cost-effective across DoD installations. However, as more efficient PV solar cells and lower cost invertors enter the market, it may improve the cost effectiveness of these investments.

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CHARRTS No.: SG-01-006
Senate Committee on Governmental Affairs
Hearing Date: January 27, 2010
Subject: Cutting the Federal Government's Energy Bill: An examination of the Sustainable Federal Government Executive Order
Witness: Dr. Robyn
Senator: Senator McCain
Question: #6

Question. Several recent Congressional Research Service reports and witness testimony during the hearing mention that there is high economic payback and effectiveness in easily achievable, low-cost measures such as changing light bulbs and inflating tires on fleet vehicles.A. How difficult is it to monitor the implementation and success of these measures at DoD?B. What have been the challenges to implementing such energy efficiency policies down the chain of command?C. Has DoD been more focused on large scale investments such as renewable energy generation or the easy fixes as mentioned above?

Answer. (A) With regard to light bulb upgrades, ENERGY STAR *OPERATION CHANGE OUT* — THE MILITARY CHALLENGE, a joint effort of the U.S. Department of Energy, (DOE), and the U.S. Department of Defense, (DoD), is the first national, military-focused energy-efficiency campaign to encourage every serviceman and woman to save energy, money, and protect the environment by replacing their inefficient, incandescent light bulbs with ENERGY STAR qualified bulbs. The overarching goal of *OPERATION CHANGE OUT* is to replace at least one incandescent light bulb with an ENERGY STAR qualified model in each residential unit at participating military installations. Some bases may change more than one bulb per unit reporting the total verifiable number of bulbs changed in all base locations. There are over 150 DoD installations participating. The website for *OPERATION CHANGE OUT is* www.energystar.gov/OCO.

In addition, DoD has initiated multiple complete facility re-lamping projects with ENERGY STAR qualified bulbs and lamps. The energy savings is a function of the number of hours of usage times the wattage. The energy savings over the incandescent bulb over the same use-rate is equal to the wattage reduction percentage. For example a 60 watt incandescent bulb compared to a 13-watt compact fluorescent lamp is 78%.

To date, tire-inflation data translating into reduced fuel economy is not tracked by the Department.

(B) DoD requires the replacement of bulbs and lamps with ENERGY STAR qualified bulbs during facility renovations. Our energy managers are educating building managers to swap-out incandescent bulbs with compact fluorescent lamps during maintenance replacement cycles. In most cases energy savings and return on investment can be measured in months. The biggest challenge is creating a culture that causes a behavioral change to save energy.

(C) DoD is making energy investments everywhere that is life-cycle-cost effective. While large-scale renewable energy projects capture the headlines there are hundreds of energy efficiency projects under design and construction across DoD. We use every contract vehicle available to deliver these projects including direct appropriations and third-party financed energy saving performance contracts.

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CHARRTS No.: SG-01-007
Senate Committee on Governmental Affairs
Hearing Date: January 27, 2010
Subject: Cutting the Federal Government's Energy Bill: An examination of the Sustainable Federal Government Executive Order
Witness: Dr. Robyn
Senator: Senator McCain
Question: #7

Question. In your testimony, you highlighted that DoD reduced the energy consumption of its facilities by 11% through conservation and investment in energy efficiency. A. Is this reduction DoD wide? B. Which service has been the most successful and what has been their key to success? C. How can their success be transferred to the other services and to the larger federal government as a whole?

Answer.

(A) The reduction figure is DoD wide.

(B) The Air Force and the Navy had nearly equal energy intensity reductions in 2009 (15%). In 2009, the Army increased energy intensity by 8%. The services are successful when they focus on energy efficiency upgrades as the primary way to reduce demand.

(C) Although the overall Army energy intensity reduction was less than that of Navy and Air Force, Army has been dealing with large mission changes (i.e., increased military activities, global defense posture realignment and increased troop strength) and use of millions of square feet of energy inefficient temporary facilities. These Army transformation initiatives will continue over the next few years and we don't expect to see improvement in their overall energy intensity numbers for a while. Many areas within Army, however, have shown their energy investments are indeed improving energy efficiencies and reducing energy intensity. In short, Army has shown considerable success in reducing energy intensity where possible, and their efforts will continue to expand as conditions allow.

The diversity of DoD facilities and the types of energy technologies DoD employs to reduce demand can be a model for other federal agencies. DoD can be the test-bed for other federal agencies to see which cost effective building upgrades can be used in other non-DoD facilities. Conferences such as "GovEnergy" enable the transfer of success throughout the government.

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CHARRTS No.: SG-01-008
Senate Committee on Governmental Affairs
Hearing Date: January 27, 2010
Subject: Cutting the Federal Government's Energy Bill: An examination of the Sustainable Federal Government Executive Order
Witness: Dr. Robyn
Senator: Senator McCain
Question: #8

Question. You detailed in your testimony that in addition to Energy Savings Purchasing Contacts, DoD has pursued other special financing mechanisms, such as Enhanced Use Leases and Power Purchase Agreements to finance the substantial capital costs of large renewable energy projects.A. With the exception of the few projects mentioned in your testimony, how extensively is DoD using these financing mechanisms versus using direct appropriations to fund energy projects?B. Considering that many military facilities are either in remote locations or are subject to vulnerabilities inherent to dependence on the civilian grid, will DoD be looking to expand its use of such arrangements in the future? If so, to what extent (please explain)?C. What have been the most significant challenges and drawbacks to entering into Enhanced Use Leases or Power Purchase Agreements for funding large renewable energy projects?

Answer.

(A) The development of large-scale renewable energy projects on DoD-controlled lands typically involves an exchange of under-utilized DoD land to build the renewable energy infrastructure for reduced energy commodity rates per kilowatt-hour over time. This rate will be contracted for using a Power Purchase Agreement (PPA) over a term of 10-30 years. However, DoD is not using EULs and PPAs extensively since the land must be designated as under-utilized. Rather, most of our investment in renewable energy projects comes from military construction funds. This includes the Energy Conservation Improvement Program (ECIP), new construction and sustainment, modernization and restoration projects.

(B) DoD wants to exploit renewable energy infrastructure everywhere it enhances energy security and is cost-effective. Therefore, we will continue to use both military construction funds and, where possible, private capital to build on-site renewable energy generation.

(C) The biggest challenges are the extra costs of building transmission lines and distribution networks from the DoD available land to a grid connection location. The contracts for the transmission lines and distribution networks may not be available on the same terms as the renewable power contracts. In addition, many renewable resources are intermittent and require supplementation and integration with other sources to match demand requirements. The price for such supplementation and integration is uncertain and difficult to fix in long-term contracts.

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CHARRTS No.: SG-01-009
Senate Committee on Governmental Affairs
Hearing Date: January 27, 2010
Subject: Cutting the Federal Government's Energy Bill: An examination of the Sustainable Federal Government Executive Order
Witness: Dr. Robyn
Senator: Senator Voinovich
Question: #9

Question. In my opinion, one of the primary messages of the Executive Order is that if we are to successfully and efficiently improve the energy efficiency of Federal buildings, we need to do it in a comprehensive and integrated way. How will your agency's sustainability performance plan take this lesson into account, both in the design and construction of new buildings, and the retrofit of existing ones?

Answer. DoD agrees with your assessment of the importance of a "comprehensive and integrated" approach to building energy efficiency. We know success in meeting EO goals will demand investment that maximizes reductions in energy use and greenhouse gas (GHG) emissions while minimizing cost throughout the lifecycle of our buildings. This is a challenge considering our large building portfolio, more than 307,000 buildings making up roughly 75% of the total Federal building inventory.

To better integrate DoD efforts in the construction of new buildings and renovation of existing ones, our Strategic Sustainability Performance Plan (SSPP) will capitalize on a link between two EO goals: (1) Reduce greenhouse gas (GHG) emissions through building energy intensity reduction, and (2) Implement sustainable building construction and operations practices that comply with the *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings*. One of the five *Guiding Principles* specifically addresses energy conservation. As we work to reduce energy intensity and GHG emissions, we simultaneously work towards compliance with the *Guiding Principles*.

To quantify progress toward EO goals we will continue to measure (1) overall DoD facility energy intensity and (2) the percentage of DoD buildings in compliance with the *Guiding Principles*.

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CHARRTS No.: SG-01-010
Senate Committee on Governmental Affairs
Hearing Date: January 27, 2010
Subject: Cutting the Federal Government's Energy Bill: An examination of the Sustainable Federal Government Executive Order
Witness: Dr. Robyn
Senator: Senator Voinovich
Question: #10

Question. I understand that by addressing the building envelope (roofing, windows, cladding, etc.) in an integrated fashion, it is possible to produce significant energy savings with the use off-the-shelf technology. Is your agency incorporating this approach into its plans?

Answer. The DoD Components have actively incorporated the use of "off-the-shelf" technology into current plans and guidance to produce energy savings. In 2007, the DoD Components codified this requirement in the Unified Facilities Criteria (UFC) system (DoD's "building codes"). Specifically, UFC 4-030-01 identifies the *Guiding Principles* and the U.S. Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) green building rating system as the framework for meeting sustainability goals in new construction and existing building renovation activities. LEED particularly emphasizes building energy performance which subsequently drives the selection of exterior and interior building systems and materials, such as the examples you mentioned, to produce enhanced energy performance.

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Questions for the Record

Submitted to Samuel M. Pulcrano
From Senator Thomas R. Carper

"Cutting the Federal Government's Energy Bill: An Examination of the Sustainable Federal Government Executive Order"

April 7, 2010

Q1. The private sector companies that have dedicated themselves to issues of sustainability have been pretty successful. For example, the DuPont Company made it a goal in 1999 to keep energy levels flat with what they were using in 1990. They have not only met that goal, but they've exceeded it. In 2008, they were down 7 percent overall from what they were using nearly 18 years before. How is the U.S. Post Office sharing and learning from the successes of private sector companies like DuPont and others?

The Postal Service has and continues to review private sector energy practices. We have been learning and leveraging their experience in energy and sustainability. In addition, we have been sharing our own experience and success. We have presented at national conferences such as the World Energy Engineering Congress and the National Postal Forum. As with the private sector, we are making decisions driven by the financial value of the opportunities. To date we have reduced our building energy intensity by over 21 percent compared with the 2003 baseline and are working to continue that downward trend.

Q2. In your testimony you mentioned that energy efficiency measures can not only save energy and money, but also improve employee morale. Explain specifically what the connection is between energy efficiency and employee morale.

At a number of our buildings we have updated the lighting and HVAC control systems. In addition to significant energy savings, we also now have better lighting quality and temperature control. Both of which have been received well by the local employees. We have also improved our communication efforts in the organization sharing established goals and Area energy performance metrics. As a result, employee morale has increased as they become active participants and are empowered to help save energy to reach established goals.

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