STATEMENT OF

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Chairman Broun, Ranking Member Tonko, and Members of the Subcommittee, thank you for the opportunity to discuss the Department of Energy (DOE) initiatives to promote energy efficient and sustainable buildings.

As Deputy Assistant Secretary for Energy Efficiency in the Office of Energy Efficiency and Renewable Energy (EERE), I am responsible for overseeing DOE's portfolio of energy efficiency research, development, demonstration and deployment activities, including DOE's efforts to improve energy efficiency of buildings in the public and private sectors.

Improving energy efficiency in our buildings offers a tremendous opportunity to create well-paying jobs, save money for businesses and consumers, and make our air cleaner. In the U.S., buildings consume 40 percent of the Nation's total energy with an annual energy bill of more than $400 billion.[1] These energy bills can be cost-effectively reduced by twenty to fifty percent or more through various energy efficiency approaches.[2]

In pursuit of these energy savings, DOE supports the research and development of new and advanced technologies and pursues programs to accelerate market adoption of energy efficient products and services.

Today I will address the following areas:

1) The Federal government's progress in meeting its energy and sustainability goals for buildings;
2) DOE sustainability rulemakings in the Federal sector
3) DOE's advanced building technologies research and development activities; and,
4) Coordination of DOE's building-related research and development activities with those across the Federal government.

1. The Federal government's progress in meeting its energy and sustainability goals for buildings

The Federal government has the opportunity to significantly reduce its energy bills as well as to provide leadership in achieving these savings and meeting other sustainability goals. The Federal government owns or leases more than 3 billion square feet of building space, which represents 4 percent of the commercial square footage in the United States.[3] The annual energy bill to the Federal government is several billion dollars. For example, the Defense

[1] *Buildings Energy Data Book*, U.S. Department of Energy. March 2012 http://buildingsdatabook.eren.doe.gov/TableView.aspx?table=1.2.3.
[2] See, for example, DOE / ASHRAE's *Advanced Energy Design Guides* for commercial buildings (available at: http://www1.eere.energy.gov/buildings/commercial_initiative/guides.html) and DOE's Building America program (available at: http://www1.eere.energy.gov/buildings/building_america/index.html)
[3] Calculated using data from *AEO 2012 Early Release Overview,* Energy Information Administration. January 2012.

Department expended nearly $4 billion for facility energy costs in FY 2010. [4] The size of the government's investment in buildings—and the corresponding use of energy and other resources—has prompted Congress and the Executive Branch to set a number of energy management and other goals through a number of statutes and Executive Orders, including the Energy Independence and Security Act of 2007 (EISA) and Executive Order 13514.

DOE's Federal Energy Management Program (FEMP) was established to provide services, tools, and expertise to Federal agencies to help them achieve the statutory and Executive Order goals. FEMP offers technical assistance and guidance to agencies on energy efficiency, renewable energy and other energy management projects. FEMP also helps agencies use both appropriated funds and money leveraged through performance contracts to secure the financing necessary to implement these projects. FEMP also collects information from the agencies on their progress toward the goals, facilitates the Office of Management and Budget's (OMB) development of annual agency scorecards, and reports annually on progress.

The preliminary data from fiscal year 2010 (FY2010) indicate that the Federal government as a whole is making progress in achieving its buildings-related energy, water and sustainability goals. For example:

- The government achieved a 14.6 percent reduction in energy use per square foot as compared to FY2003, just shy of the 15 percent interim target. The government is required to reduce energy intensity by 30 percent by FY2015, under Section 431 of EISA.
- Renewable energy sources provided 5.2 percent of the government's electricity use, ahead of the target of 5 percent. In FY2013 and beyond, the government must derive at least 7.5 percent of its electricity from renewable sources to the extent economically feasible and technically practicable under Section 203 of the Energy Policy Act of 2005 (EPACT 2005).
- The government reduced its potable water intensity use by 10.4 percent as compared to FY2007. The target reduction for FY2010 was a 6 percent reduction, with a long-term goal of 26 percent reduction by FY2020 under Executive Order 13514.
- And, the government's emission of scope 1 and 2 greenhouse gases (GHG)—that is, all direct GHG emissions and indirect GHG emissions from the consumption of purchased electricity, heat or steam, the majority of which arise from building energy use—were reduced by 6.4 percent in FY2010 relative to FY2008. The government's aggregated long-term target is a 28 percent reduction.

[4] Department of Defense Annual Energy Report FY 2010, p9, issued 2011. Available at http://www.acq.osd.mil/ie/energy/DoD_AEMR_FY2010__July_2011

Since 2006, FEMP has assisted Federal agencies in saving over $5 billion in energy costs over the average life of efficiency measures implemented through energy savings performance contracts. FEMP is now working with Federal agencies to help them achieve the President's directive for federal agencies under the Better Buildings Initiative of engaging in an additional $2 billion or more in performance-based contracting by December 2013 and achieve substantial additional energy savings.[5]

Agencies are also working to meet additional goals for high performance and sustainable buildings which are outlined in Executive Order 13514 (signed in October, 2009). Several of the new federal building-related goals from E.O. 13514 follow:

- "beginning in 2020 and thereafter, ensuring that all new Federal buildings that enter the planning process are designed to achieve zero-net-energy by 2030;
- "ensuring that all new construction, major renovation, or repair and alteration of Federal buildings complies with the Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings, (Guiding Principles);
- "ensuring that at least 15 percent of the agency's existing buildings (above 5,000 gross square feet) and building leases (above 5,000 gross square feet) meet the Guiding Principles by fiscal year 2015 and that the agency makes annual progress toward 100-percent conformance with the Guiding Principles for its building inventory;
- "when adding assets to the agency's real property inventory, identifying opportunities to consolidate and dispose of existing assets, optimize the performance of the agency's real property portfolio, and reduce associated environmental impacts."

2. DOE sustainability rulemakings in the Federal sector

In addition to providing technical assistance to the Federal agencies, DOE is also responsible for issuing regulations and guidance to guide implementation of Congressional requirements. One rule specified in EISA Section 433 (Federal Building Energy Efficiency Performance Standards) pertains specifically to the sustainability of new construction or major renovations of covered Federal buildings.

In response to Section 433 of EISA, DOE has issued a proposed rule to (1) establish sustainable design standards for the siting, design, and construction of Federal buildings and (2) identify, in consultation with the General Services Administration (GSA) and DOD, a green building certification system and certification level to be used for Federal facilities.

[5] Presidential Memorandum -- Implementation of Energy Savings Projects and Performance-Based Contracting for energy savings. December 2, 2011. Available at: http://www.whitehouse.gov/the-press-office/2011/12/02/presidential-memorandum-implementation-energy-savings-projects-and-perfo

DOE was directed under EISA to consult with GSA and the Defense Department to "identify a certification system and level for green buildings" that is "most likely to encourage a comprehensive and environmentally sound approach to certification of green buildings." DOE's decision must be based in part on the results of a GSA-commissioned study of systems available in the market, required by EISA Section 436(h). The EISA criteria under which DOE must identify a building rating system are virtually identical to the criteria that GSA must apply in its study. These criteria are:

- the availability of independent auditors to verify metrics;
- the ability of the organization to collect and reflect public comment;
- the extent to which the system is consensus-based;
- criteria relating to the "robustness" of a high performance green building (i.e., how the system incorporates items such as the efficient use of energy and water resources, renewable energy sources, and indoor air quality); and
- whether the system has achieved a level of national recognition.[6]

DOE drafted a proposed rule and presented it before a public hearing in the summer of 2010. In the proposed rule, DOE did not propose to pick a particular third-party certification system, but preliminarily chose instead to allow Federal agencies to use any third-party certification system that met the statutory criteria (with the addition of a criterion that the certification system include a verification system for post-occupancy assessment). DOE is responding to public comments on the proposed rule and is developing a draft final rule for these certification criteria.

DOE, GSA, and the Defense Department are collaborating to review GSA's most recent study in support of EISA Section 436(h). This initial GSA report is at the beginning of the process of Federal agency and public review.

3. DOE's advanced buildings technologies research and development activities

Increasing the efficiency of our Nation's private sector building stock is also an important area of focus for DOE. The Department's Building Technologies Program (BTP), in partnership with industry, develops, promotes, and integrates energy technologies and practices to make buildings more efficient, affordable and comfortable. BTP research and development (R&D) activities focus on reducing building energy consumption through innovative building systems and components. DOE has goals to reduce the energy required to operate new commercial and residential buildings by 50 percent and to reduce the energy required to operate existing commercial and residential buildings by 40 percent and 50 percent, respectively. In addition,

[6] See 42 U.S.C. 6834(a)(3)(D)(iii).

DOE is working with organizations through the Better Buildings Challenge (BBC), a national leadership initiative calling on corporate chief executive officers, university presidents, and state and local leaders to make a significant commitment to building energy efficiency. The goal of the BBC is to work with organizations to improve the efficiency of their whole portfolio of buildings by 20 percent or more. As of December 2011, more than 60 private companies, hospitals, cities, states, colleges, and universities, among others, have committed $2 billion in financing and 1.6 billion square feet of property for energy efficiency improvements. Combined, these efforts could help save American consumers tens of billions of dollars per year.

BTP follows three interwoven pathways, each of which can result in lowering building energy use:

- Improve the performance and cost to manufacture and install building components (such as solid state lighting, windows, heating ventilation and cooling, building envelope, sensors and controls) through strategically identified, groundbreaking R&D; and develop whole building energy simulation programs that engineers, architects, and researchers can use to model energy use in buildings;
- Increase market pull for energy efficient products and solutions from private industry through cooperation with stakeholders, improvement of building design, development of operation and audit tools, and the creation of reliable efficiency benchmarks and databases to define efficiency's value-add to consumers; and,
- Raise the efficiency standards for new energy-consuming equipment and new buildings with cost-effective, continually-updated equipment and model building codes.

BTP will achieve its goals by working with its partners in industry, academia, the National Laboratories, DOE's Office of Science and Advanced Research Projects Agency-Energy (ARPA-E), and other stakeholders. BTP engages with the National Laboratories, industry and academia via lab-directed work and competitive solicitations, which are targeted at BTP's research, development, demonstration and deployment goals. Reviews of projects and awards are conducted annually or in phases of performance milestones, resulting in cancelling of projects, revisions and/or redirection as necessary to ensure an effective portfolio. Expert stakeholder and independent review panels assess the efficacy and quality of the processes used to solicit, review, recommend, monitor, and document proposal actions. Panels also assess the quality of the resulting portfolio, specifically the breadth and depth of portfolio elements, and the national and international standing of the elements.

4. Coordination of DOE's building-related R&D with those across the Federal government

DOE also coordinates with various Federal agencies such as DOD, the National Institute of Standards and Technology (NIST), the Department of Housing and Urban Development (HUD), and the Environmental Protection Agency (EPA), on R&D as well as technology deployment activities. The Agencies typically host meetings where information about project portfolios is shared and coordination plans are implemented. For instance, DOE staff has served on DOD solicitation review committees and helped evaluate the progress of specific projects. DOE and EPA also coordinate directly on the Energy Star Program. Coordination with NIST includes joint projects such as the development of low global warming potential working fluids for heating, ventilation and air conditioning equipment.

Finally, DOE—through FEMP—works in partnership with GSA's Office of Federal High Performance Green Buildings and with EPA to bring cutting edge technology, reporting tools, and best practices to the built Federal environment.

In summary, DOE is working to deliver on the promise of an energy-efficient, sustainable, built environment. Through FEMP, the Department is working to assist the entirety of the Federal family to meet our statutory and Executive Order-based energy and sustainability goals. By supporting energy efficient buildings activities, DOE helps create a market for new, energy efficient building technologies. We appreciate the opportunity to comment on DOE's progress towards addressing these high performance goals and achieving significant savings and other benefits. I will be happy to address your questions.