Overview of Federal High Performance Building Design Goals

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Outline of Presentation

• Legislative Drivers
  – Federal Rulemaking

• Executive Orders
  – Memorandum of Understanding
  – Guiding Principles

• Coordination
Legislative Drivers

• Energy Independence and Security Act of 2007 (EISA 2007)
Energy Policy Act of 2005

• Section 102 – Energy Management Requirements
• Section 103 – Energy Use Measurement and Accountability
• Section 104 – Procurement of Energy Efficient Products
• Section 109 – Federal Building Performance Standards
Section 102 – Energy Management Requirements

• Mandate – 2% reduction per year in energy consumption per gross square foot for all Federal buildings as compared with the reported 2003 values
Section 103 – Energy Use
Measurement and Accountability

• Mandate – all Federal buildings, for the purpose of efficient use of energy and reduction in the cost of electricity used in such buildings, shall be metered
Section 104 – Procurement of Energy Efficient Products

• Mandate – to meet the requirements of an agency for an energy-consuming product, the head of the agency shall procure an Energy Star or a FEMP designated product
Section 105 – Energy Saving Performance Contracting

- Reauthorizes use of Energy Saving Performance Contracting through 2016
Section 109 – Federal Building Performance Standards

• Mandate –
  – New Federal buildings must achieve savings of at least 30% below ASHRAE Standard 90.1-2004 or the 2004 IECC if cost-effective.
  – Buildings must also use sustainable design principles for siting, design, and construction, if cost-effective.
  – If water is used to achieve energy efficiency, water conservation technologies shall be applied, if cost-effective.
Bottom line for EPACT 2005

• Energy use reduction
• Better energy measurement and accountability
• More energy-efficient products
• More energy-efficient and sustainably designed buildings

• Section 431 – Energy Reduction Goals for Federal Buildings
• Section 432 – Management of Energy and Water Efficiency in Federal Buildings
• Section 433 – Federal Building Energy Efficiency Performance Standards
• Section 434 – Management of Federal Building Efficiency
Energy Independence and Security Act of 2007 (continued)

- Section 435 - Leasing
- Section 436 – High Performance Green Federal Buildings
- Section 437 – Federal Green Building Performance
- Section 441 – Public-Building Life Cycle Costs
- Section 523 – Standard Relating to Solar Hot Water
Section 431 – Energy Reduction Goals for Federal Buildings

- Strengthens energy reduction goals for Federal agencies over requirements in EPACT 2005
- Not a design requirement – overall energy management requirement
Section 432 – Management of Energy and Water Efficiency in Federal Buildings

- Requires energy managers
- Requires energy and water evaluations
- Requires consideration of re-commissioning and/or retro-commissioning
Section 433 – Federal Building Energy Efficiency Performance Standards

- Requires steep reduction in fossil fuel energy relative to usage in DOE’s Commercial Building Energy Consumption Survey (CBECS) or Residential Energy Consumption Survey (RECS)
- Applies only to public buildings, buildings with $2.5 million in annual costs, or buildings for which GSA must file a prospectus to Congress
- New construction and major renovations
Section 434 – Management of Federal Building Efficiency

• Requires that large capital energy investments that are not major renovations be life cycle cost effective

• Also requires installation of steam and natural gas meters in 2016
Section 435 - Leasing

• Requires Federal government to lease Energy Star buildings or buildings that been renovated for all life-cycle cost-effective energy improvements
Section 436 – High Performance Green Federal Buildings

• Sets up office of High Performance Green Federal buildings in GSA
Section 437 – Federal Green Building Performance

• Provides for audits of Federal green building performance
Section 441 – Public-Building Life Cycle Costs

• Changes life-cycle cost period from 25 to 40 years
Section 523 – Standard Relating to Solar Hot Water

• if lifecycle cost-effective, as compared to other reasonably available technologies, not less than 30 percent of the hot water demand for each new Federal building or Federal building undergoing a major renovation be met through the installation and use of solar hot water heaters.
Bottom Line for EISA 2007

- Greener buildings
- Fossil fuel usage reduction
- More renewable energy
- More buildings addressed (includes leases)
- More alterations covered (includes large capital investment)
- More tracking of “green” in Federal agencies
- New oversight of high performance and green building activities
Federal Rulemakings

• Notice of Proposed Rulemaking on procurement of energy efficient products in Section 104 of EPACT 2005 – June 2007
• Notice of Proposed Rulemaking on sustainable design requirements and water conservation in Section 109 of EPACT 2005 – Summer/Fall 2008
• Notice of Proposed Rulemaking on fossil fuel reduction requirements in Section 433 of EISA 2007 – Fall/winter 2008
Executive Order 13423

- Reduce greenhouse gas emissions
- Increase renewable energy usage
- Reduce water consumption
- Procure sustainable and efficient products
- Ensure new construction follows Guiding Principles
Guiding Principles History

• Developed originally as sustainable design principles
• Developed by Federal interagency working group and signed by all agencies as a memorandum of understanding
• Later made mandatory for Federal buildings in EO13423
Guiding Principles Content

• Employ Integrated Design Principles
• Optimize Energy Performance
• Protect and Conserve Water
• Enhance Indoor Environmental Quality
• Reduce Environmental Impact of Materials
Coordination

• Rulemakings must follow legislative mandates
• Executive orders (and Guiding Principles) originate in Executive branch and agencies
• FEMP is involved on both sides to minimize conflict
• FEMP is using Guiding Principles as template for Federal sustainable design rulemaking
Fortunately, conflict is minimal

- All guidance is pointing in the same direction for Federal buildings
  - More energy efficiency, both in building design and in procured products
  - More water efficiency
  - Sustainable design
Looking forward to 2030

- Federal agencies will use at least 30% less energy for buildings than they did in 2003
- New Federal buildings will use 100% less fossil fuel than similar buildings in 2003
- Every Federal building will have an active and knowledgeable energy manager
- Every Federal building will be metered for all energy uses
- Solar hot water systems will be widespread
Looking forward to 2030 (continued)

• Federal buildings will not only be energy efficient, but also sustainable with all the indoor air quality, materials, and water conservation that implies

• Federal agencies will be audited and held to all these requirements.
Looking forward to 2030?

• Net zero energy Federal buildings?
• Zero carbon Federal buildings?
• Extremely resource efficient Federal buildings?
  – Water, materials, site

• Yes, to all
Thank-You

• Questions?