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A River of Energy Solutions

Federal Mandates – Part 2

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Agenda

- What are the Drivers?
- Highlight of Overall Goals/Mandates
- Metering Goals
- Water Goals
- New Construction/Major Renovation
- Helpful Tips

The Drivers

- Executive Order 13514 – *Federal Leadership in Environmental, Energy, and Economic Performance* (2009)
- **Energy Independence and Security Act (EISA) of 2007**
- Executive Order 13423 – *Strengthening Federal Environmental, Energy, and Transportation Management* (2007)

The Drivers (Continued)

- Energy Policy Act of 2005
- Energy Policy Act of 1992
- National Energy Conservation Policy Act of 1978, as amended

Highlights of all Goals/Mandates

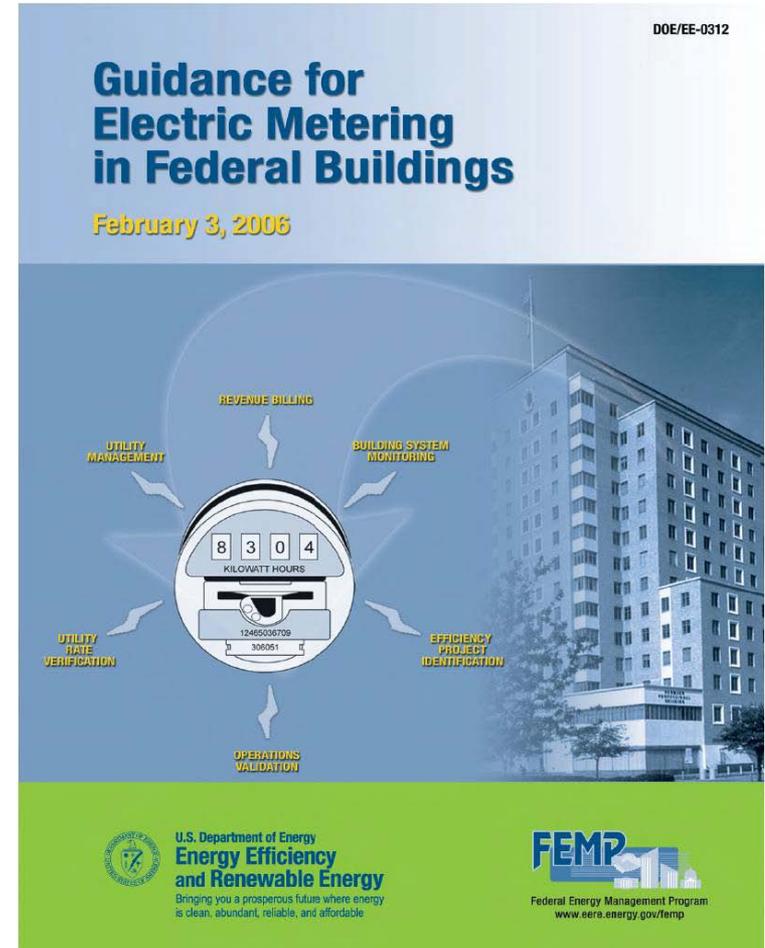
- There are many goals in place that need to be addressed
- Goals are:
 - *Aggressive*
 - *Interrelated, but sometimes overlapping*
 - *Resource Intensive*
- Goals generally reflect or support best practices
- This presentation will focus on **metering, water conservation, and new construction/major renovations** with a focus on fossil fuel reduction.

Goal: Metering for Existing Buildings

- Metering: Electric (EPA Act 2005)
 - By 10/1/12, all Federal buildings shall be metered
 - Use advanced meters or advanced metering devices to the maximum extent practicable
 - Provide data daily and measure at least hourly consumption
 - Incorporate data into (agency) energy tracking system
- Metering: Natural Gas and Steam (EISA)
 - Meter all buildings by 10/1/16 using guidelines for electric metering
- Metering: Water
 - Not required, but recommended
- Information is needed to support benchmarking and other activities

Useful Information – Metering Guidance

- Required by EAct 2005
- Initially only apply to electric metering, but concepts apply to gas and steam metering
- Defines concept of “maximum extent practicable”
- Concept of “cost-effectiveness”
- Establish exclusion from metering requirement based on the minimum annual electric bill of the Federal building
- Provides information to develop agency metering plans



What is “Maximum Extent Practicable”

- You have the ability to install metering and advanced metering wherever feasible
- System has capability to provide data that leads to improved energy management practices or O&M savings resulting in energy/energy-related savings
- System utilizes sensible application of metering technology

What are the conditions for “cost-effectiveness”

- Based on maximum of a 10 year simple payback
- Assumes resulting annual savings of at least 2%, but expected to be more
- Based on the use of metered data to implement energy savings and other cost savings measures
- Overall cost to design, purchase, install, maintain, store data; operate the system; and analyze the data need to be considered

Methods to Prioritize Buildings

- Primary Considerations
 - The amount of electric, gas, or steam used
 - The unit cost and some indication of future cost
 - Expected/estimated benefits from program
- Potential exclusions
 - Low energy intensity buildings
 - Small buildings
 - Leased buildings
- Need to revisit building list as technology and economics change

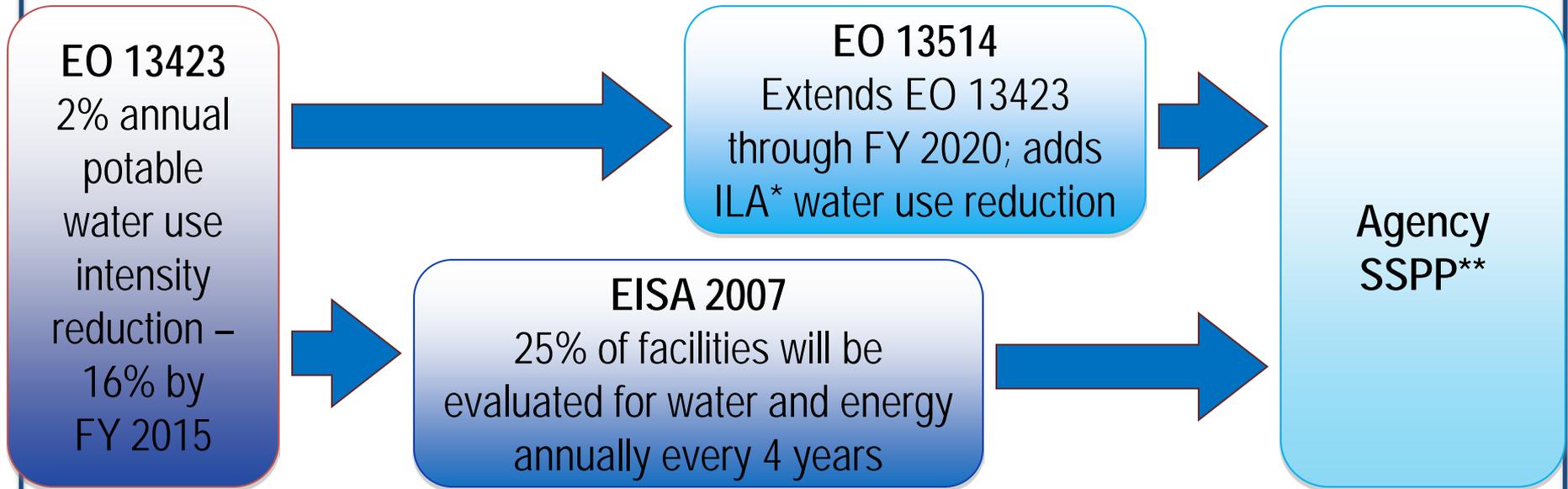
Useful Information - Metering

- NEW: Release 2.0 available this week – hopefully!
- Product of IATF O&M Working Group
- Information on gas, steam, and water metering economics
- Updated cost information
- Provides additional case studies
- Additional topics covered per request of Working Group



Goal: Water Use and Management

Reduce Federal Water Use



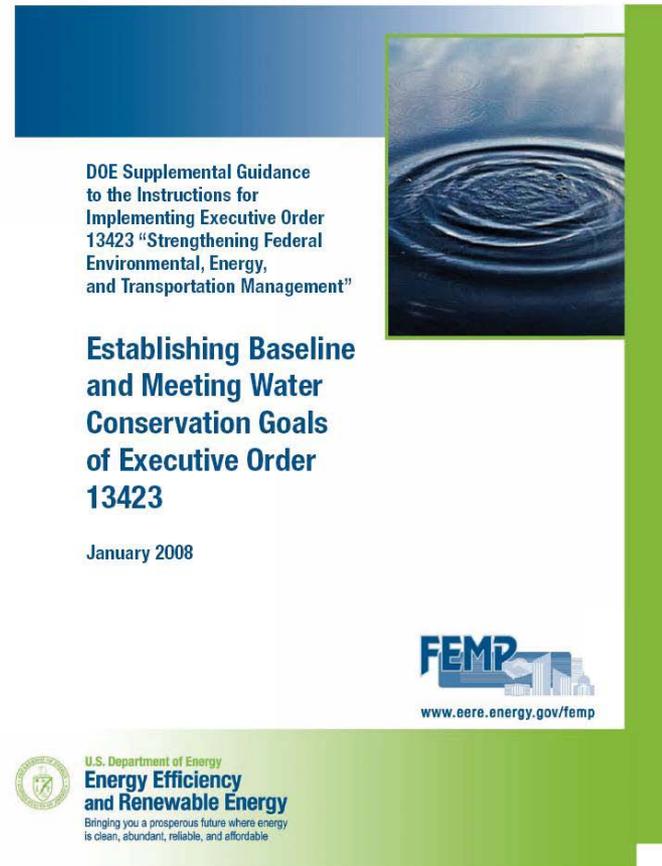
2007

2009

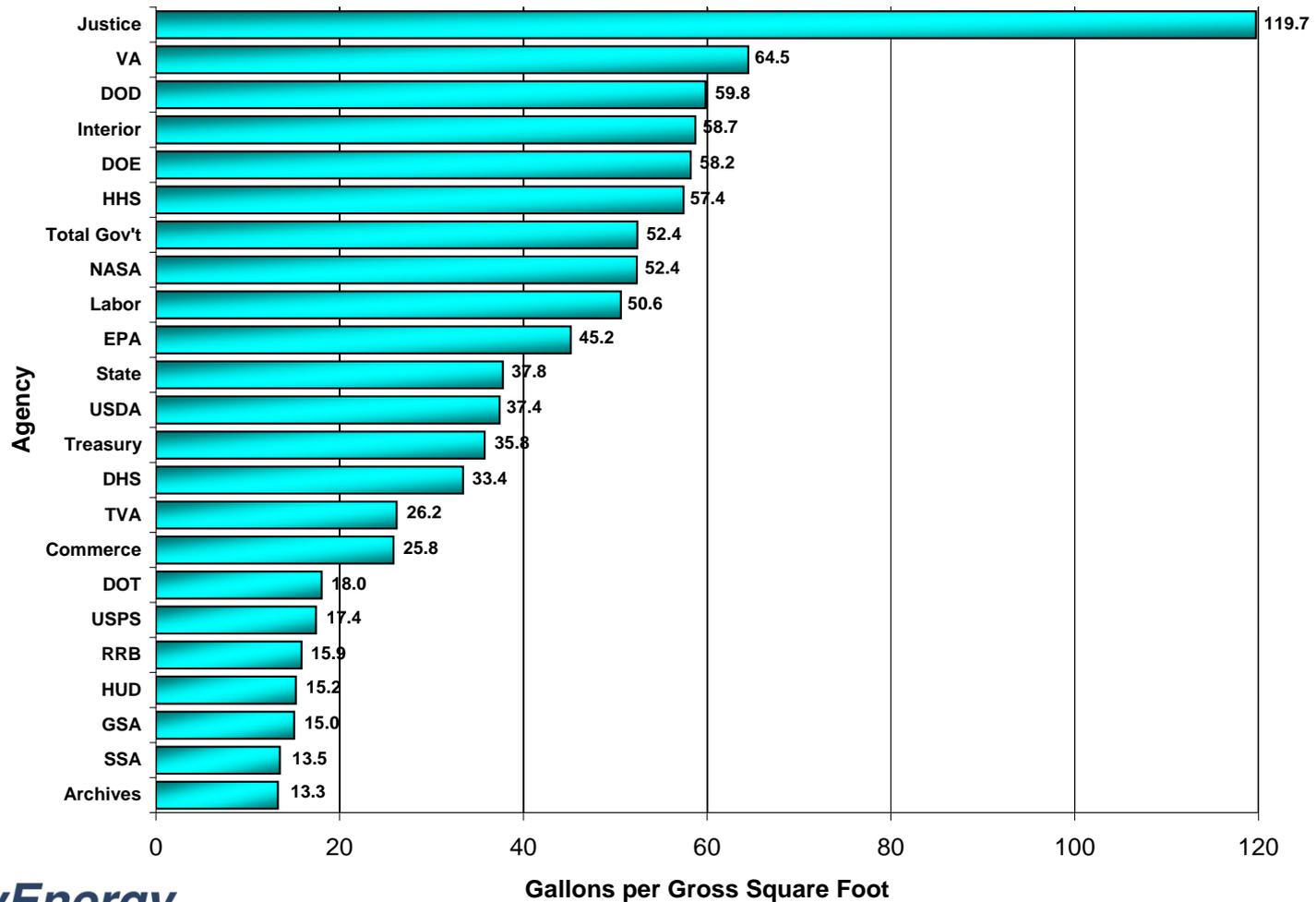
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Useful Information – Original Baseline Development Guidance

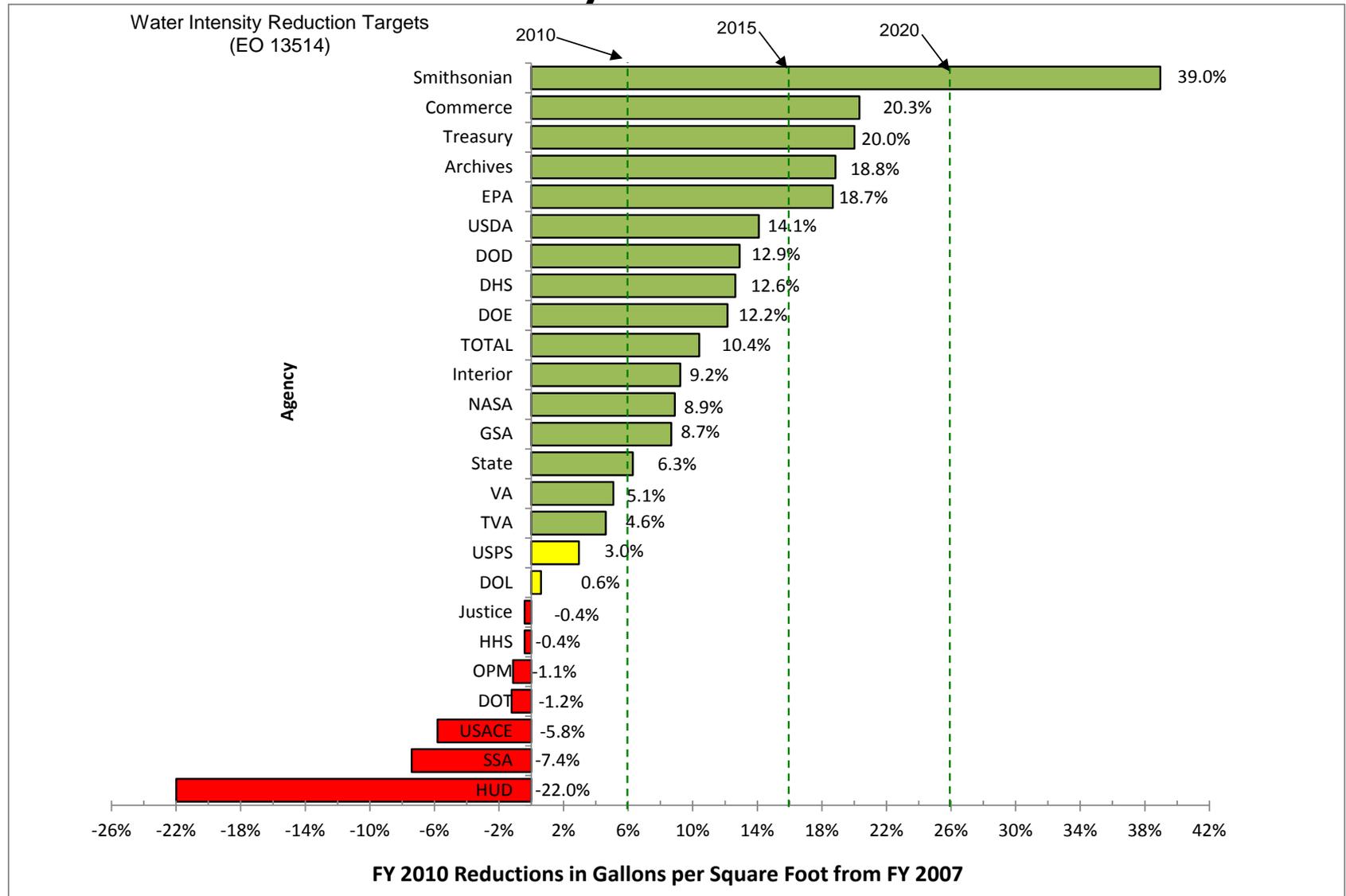
- Provides clarification and guidance for:
 - Baseline development
 - Efficiency identification
 - Reporting
- For each area:
 - EO interpretation
 - Path forward
 - Resources/additional information



Agency Potable Water Baseline - 2007



Water Intensity Reduction – FY10



Useful Information – EO 13514

Guidance for Expanded Water Goals

- Product of IATF Water Working Group
- Identifies challenges meeting EO goals
- Updated and expanded baseline develop process
- Contains information regarding reuse and alternative sources
- Further defines reporting requirements

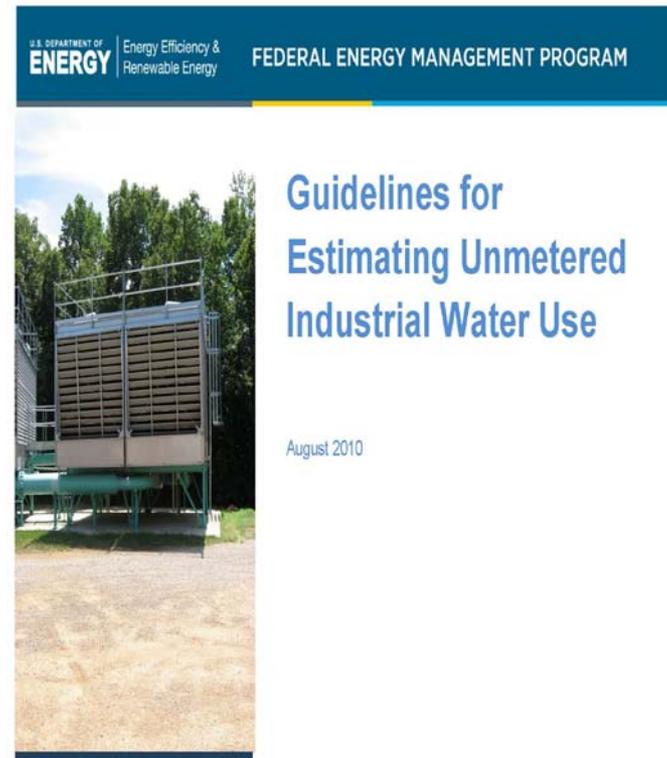
Recommendations for Water Efficiency
Guidance to Implement Associated
Provisions of Executive Order 13514

*Submitted by an Interagency Water Working Group
Department of Energy, co-chair
Environmental Protection Agency, co-chair*

March 2011

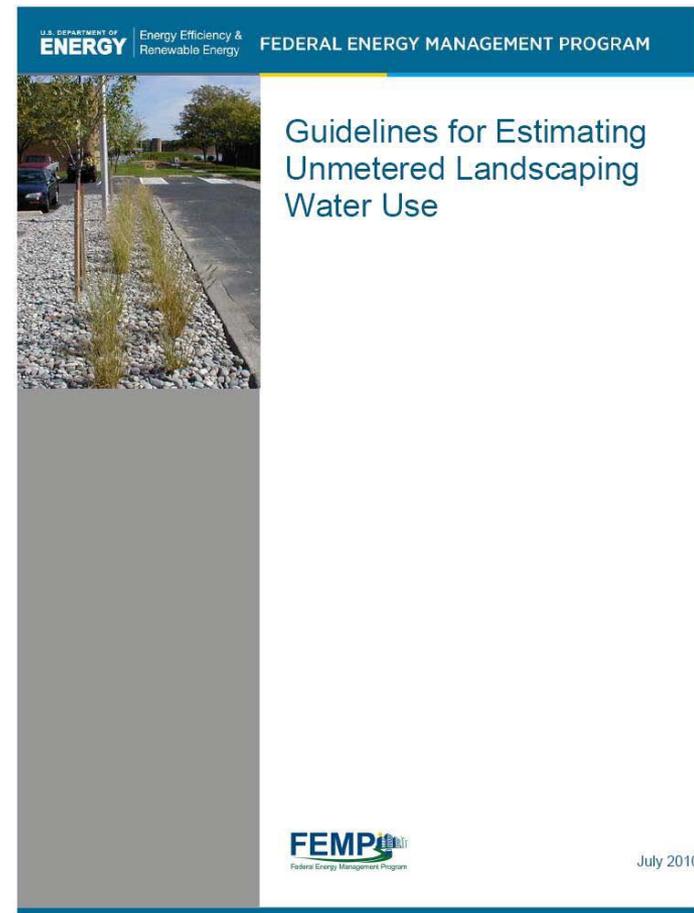
Useful Information – Unmetered Industrial Water Use

- Provides engineering estimates for:
 - Open re-circulating cooling
 - Steam systems
 - Wash systems
- Available on FEMP website



Useful Information – Unmetered Landscaping Water Use

- Provides information on estimating landscaping water use via two methods:
 - Evapotranspiration (ET)
 - Irrigation Audit
- Addresses subsequent reporting years



Other Important *GovEnergy* Presentations:
Water Track - Room 202/203
Sustainability – Room 260/261/263

- *Water Efficient Technologies* (Session 2)
- *Federal Water Efficiency Requirements* (Session 4)
- *Water and Our Future – 2030* (Session 8)

Goal: New Construction/Major Renovations (EPAAct 2005, EISA and EO 13514)

- All buildings must achieve performance of 30% beyond ASHRAE 90.1-2004 (EPAAct Section 109)
- Establish, by rule, revised performance standards so new Federal buildings and buildings undergoing major renovations are designed to reduce fossil fuel generated energy consumption to 100% by 2030 (EISA Section 433)
- By 2030, achieve zero-net-energy in buildings entering the planning process after 2020 (EO 13513)

Goal: Fossil Fuel Reduction

- Establish, by rule, revised Federal building energy efficiency performance standards that include fossil fuel reduction
- New Federal buildings and buildings undergoing major renovation shall be designed so fossil fuel-generated energy consumption is reduced by the following:
 - FY 2010 55%
 - FY 2015 65%
 - FY 2020 80%
 - FY 2025 90%
 - FY 2030 100%
- Sustainable design principles shall be applied to the siting, design, and construction of these buildings

Goal: Fossil Fuel Reduction

- Agency may petition to adjust the reduction downward with respect to a specific building, if the agency head certifies in writing that:
 - Requirement would be technically impracticable based on functional need of that building
 - Obtains concurrence from the Secretary of Energy

Goal: Fossil Fuel Reduction

- Notice of Proposed Rulemaking published 10/15/2010 (FR 75:63404)
- Final rule expected to be published Fall 2011
- Provides equation to calculate consumption of a proposed design that allows for renewable energy deduction, electricity source factor, and other fuel source multiplier
- Final rule will provide tables of maximum allowable energy consumption (kBtu/yr-sqft) by building type (covered by CBEC including mixed building use), by climate zone
- Tables are provided for specific FY time periods: 13-14, 15-19, 20-24, 25-29
- Provides specifications for downward adjustment. Rule assigns authority for approval to the FEMP program manager

Goal: Fossil Fuel Reduction

- Agency head must demonstrate the requested adjustment is the largest feasible reduction in consumption that can be achieved by providing:
 - Documentation that all life-cycle cost-effective energy efficiency measures and on-site renewable energy measures have been included in the design
 - A description of the technologies and practices that were evaluated and rejected, and
 - Any other information that would support the request

Helpful Hints – Fossil Fuel Reduction

- Understand the fuel mix for your delivery sources of any purchased energy; this is generally widely available information
- Using a regional fuel mix could require unnecessary efforts to comply
- FEMP will be providing either a free webinar or First Thursday seminar to discuss the final rule and ways it can be accomplished.
- Webinars or seminar should be available in either the first or second quarter of FY-12

Helpful Tips - Planning

- Meeting the goals will require a plan that:
 - Is documented, but allows flexibility
 - Anticipates changes in mission, staff, and goals
 - Is aggressive, yet achievable
 - Calls for outreach and sharing of progress (success creates more collaboration from participants)
 - Acknowledges the need to learn from others

Laws to Consider in Planning and Implementation

- Law 1 – “1000>>10”
 - Be creative in requesting information and completing analytical activities; automate and use appropriate technology
- Law 2 – **“It’s easier to recover from bad analysis than bad data”**
 - Know the data is correct; check and confirm
- Law 3 – **“People are not noise”**
 - Buildings don’t care if they are hot or cold; people do

Questions ??

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