

# Commercial Building Asset Rating Program

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# **PRE-DECISIONAL**

**Information included in this document is for discussion purposes and does not constitute the final program design.**

# **FOR INFORMATION ONLY**

# Outline

- Goals
- Scope & schedule
- Guiding principles
- Program design issues
  - Metrics
  - Rating method
  - Rating scale
  - Opportunities for efficiency improvement
  - Quality assurance

Please submit clarifying questions during today's webinar via the Q&A function of Live Meeting.

# National Building Rating Program Goals

- Facilitate cost-effective investment in energy efficiency and reduce energy use in the commercial building sector
- Establish a national standard for voluntary commercial building asset rating
- Create a tool to help building owners identify and implement actionable strategies to improve commercial building efficiency
  - Ensure that ratings are credible
  - Ensure that rating program is scalable

# Scope

- The asset rating (AR) program aims to evaluate the physical characteristics and as-built energy efficiency of commercial buildings, independent of their occupancy and operation, and taking into account the building envelope, mechanical and electrical systems, and other major energy-using equipment.
- The asset rating tool also aims to identify potential opportunities for energy efficiency improvement.
  - Not a replacement for an energy audit
- The asset rating aims to complement other building rating and benchmarking tools and DOE's other programs
  - ENERGY STAR Portfolio Manager
  - ASHRAE Building EQ
  - Green building rating systems

DOE does not aim to undermine the work of others in the area of building rating. We believe that a voluntary national asset rating program can complement these other efforts and provide additional value to the market.

# Schedule

The asset rating program is still in the early stages of development. Public comments now will be instrumental in shaping the program.

September, 2011: Request for Information on asset rating (AR) program

February 2012: Asset rating tool v1.0

Spring 2012: Pilot testing of asset rating program

Fall 2012: Full launch of asset rating program

# Potential Benefits of Asset Rating

- Owners and operators can benchmark their building against peers
  - Evaluate a building's installed systems with standardized operating assumptions
- Owners, lenders, and buyers gain insight into building's value
  - Distinct from maintenance and occupant behavior
- Owners gain insight into potential for capital improvements to increase energy efficiency & reduce costs
- Operators can better understand quality of operations (when asset rating is used in conjunction with operational rating)
- Operators gain insight into potential for operating improvements to increase energy efficiency & reduce costs (when asset rating is used in conjunction with operational rating)
- Potential tenants gain insight into relative long-term costs of buildings

# Guiding Principles

- Information must be credible, reliable, and replicable.
- Information must be transparent and easy to understand.
- Collecting information and generating a rating must be affordable.
- Opportunities identified must be relevant and practical.
- Program must include effective quality assurance.
- Rating must recognize building energy performance across the full range of building efficiency.



# Target Audience

- Primary audience: Stakeholders with a direct interest in the efficiency of a building can use asset ratings:
  - Owners
  - Operators
  - Investors, lenders, and appraisers
  - Tenants
  - Building designers
- Secondary audience: stakeholders who may wish to incorporate asset ratings into other programs:
  - Local governments
  - Utilities
  - Green building rating systems

# Program Design

- The asset rating aims to provide an easy-to-understand rating that can convey building energy efficiency information to various stakeholders with varying levels of knowledge about building efficiency.
- The asset rating tool also aims to provide technical information and identified opportunities to building professionals who will be implementing the recommendations.
  - Aiming for speed, accuracy, and cost: the asset rating tool aims to provide a value-add to the first step of assessment of a building and describe some possible upgrades.
  - The asset rating web tool and resulting report are NOT intended to replace a building energy audit, but to provide standardized analysis.
- The asset rating tool will be designed for users who have basic knowledge of building systems, such as building engineers, facility managers, or contractors.
  - DOE is considering approaches to quality assurance, such as requiring submission from a qualified energy auditor to award an “official” rating.

# Building Types

- The asset rating (AR) tool development will first focus on building types that do not have special internal load requirements and have adequate information sources to establish a reliable rating system. Building types would be included in the rating system beginning with simpler types and later including more complex types:
  - Tier 1: office, school, retail, warehouse, and assembly
  - Tier 2: Mixed-use buildings, lodging, health care, food service, food sales
  - Tier 3: Data center, laboratory, refrigerated warehouse

# Basic Metrics

- Energy Metric (Primary)
  - DOE is considering using “source” energy use intensity (EUI, national site-source conversion factor) as the primary performance metric to generate a rating.
  - The asset rating report will likely display site energy use, separated by fuel
- Cost Metric
  - Due to geographic and temporal variation in energy costs, DOE does not intend to use cost as the primary metric.
  - The asset rating report may display some estimated cost (potentially a range)
- Greenhouse Gas Metric
  - The asset rating report may display a greenhouse gas (GHG) metric.

# Rating Method

- Step 1: User defines key building characteristics using a web-based AR Tool
  - Facility owners, managers or others can provide the minimum information to receive a preliminary rating
  - To receive an official rating, all data fields must be filled in and verified
- Step 2: Automated centralized energy simulation
- Step 3: User receives *asset rating* (preliminary or official), *potential asset rating*, and an *asset rating report* (more detailed energy simulation results and identified opportunities)
- User can submit updated information about a building and receive a new asset rating if any improvements are made.

# Scales

- The following scales are being evaluated:
  - Numeric scale reflecting physical units (similar to MPG): kBtu/ft<sup>2</sup>
  - Numeric scale converting physical units into score system
    - 100-point “statistical” scale comparing a building to a population, like that used by ENERGY STAR Portfolio Manager
    - 100-point “technical” (or interval) scale directly converting kBtu/ft<sup>2</sup> into points
  - Bin-based technical scale in other formats
    - 10-point scale
    - Letter grades used by ASHRAE EQ and the EU labels
    - Stars, Check marks or other symbols
- DOE is considering a 100-point based technical scale and welcomes stakeholder’s comments
  - Different building types and climate zones converted to a common numerical scale
  - Not dependent on available data on building population (e.g. CBECS)

# Asset Rating Report

- DOE is considering including the following information on the *asset rating report*:
  - Basic building information to understand the building and facilitate comparison among similar buildings:
    - Building address
    - Year built
    - Climate zone
    - Building type (may need to adjust for mixed-use)
    - Year rating is awarded
    - Rating serial number (for tracking purposes)
  - Analysis results that are displayed clearly and formatted for easy reading and understanding:
    - Building asset rating based on calculated energy use
    - Potential rating that can be achieved with identified upgrades
    - Energy savings (and possibly \$ savings) associated with upgrading the building to achieve the potential rating

# Asset Rating Report (continued)

- Additional information may be provided to help the user understand the building compared to important benchmarks.
  - A reference point to help users understand how their building scores compare to a chosen energy code.
  - Indication of whether the building has systems to provide a certain amount of energy from on-site renewables.
  - Indication of a building's past score
  - Possibly split upgrade measures into “basic” and “advanced” packages of recommendations.

The asset rating report is still under development and DOE welcomes input on what information would be most useful to include.



# Identifying Opportunities for Efficiency Improvement

- The AR tool aims to identify opportunities for improving the energy efficiency of:
  - heating, cooling, and ventilation equipment,
  - envelope insulation,
  - service hot water,
  - lighting,
  - electric motors, and
  - other major energy-use equipment.
- Fuel switching may be considered only when alternative fuels are available to the building.
- The asset rating tool is NOT intended to replace the engineering analysis required for complex building retrofit projects.

# Quality Assurance

- Technical Support
  - The asset rating tool will be clearly documented and a full version of its protocol will be available online for public review.
  - A user’s manual, data checklists, and FAQs will be available to assist owners, operators, and service providers in using the asset rating tool.
- Asset Rating Tool Requirements
  - Where possible, DOE will recommend the use of established standard methods to direct data collection and input, and generate identified opportunities.
  - The user interface will include some automated checks and provide a warning when entered data seems to be incorrect or incomplete.
- DOE is considering additional approaches to quality assurance, such as requiring that data be submitted by a qualified energy auditor in order for a building to receive an “official” rating.
- Third Party Verification
  - The Department is considering establishing verification standards and approving qualified third-party organizations.

# Thank you

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All comments are due by September 22, 2011, and must be submitted through the procedure described in the RFI:

<http://www.gpo.gov/fdsys/pkg/FR-2011-08-08/pdf/2011-20014.pdf>

## Questions?