

# Commercial Building Energy Asset Score: 2013 Pilot Overview

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Joan Glickman, DOE  
Patty Kappaz, SRA

- Team Introduction
  
- Commercial Building Energy Asset Score Update
  - Program overview
  - Progress to date
  - Objectives of the 2013 Pilot
  - Future plans
  
- Process for Pilot Participation

# Meet the Team

## **U.S. Department of Energy (DOE)**

- Project oversight
- Strategic direction
- Policy perspective

## **Pacific Northwest National Laboratory (PNNL)**

- Technical lead
- Scoring Tool development and maintenance

## **SRA International (SRA)**

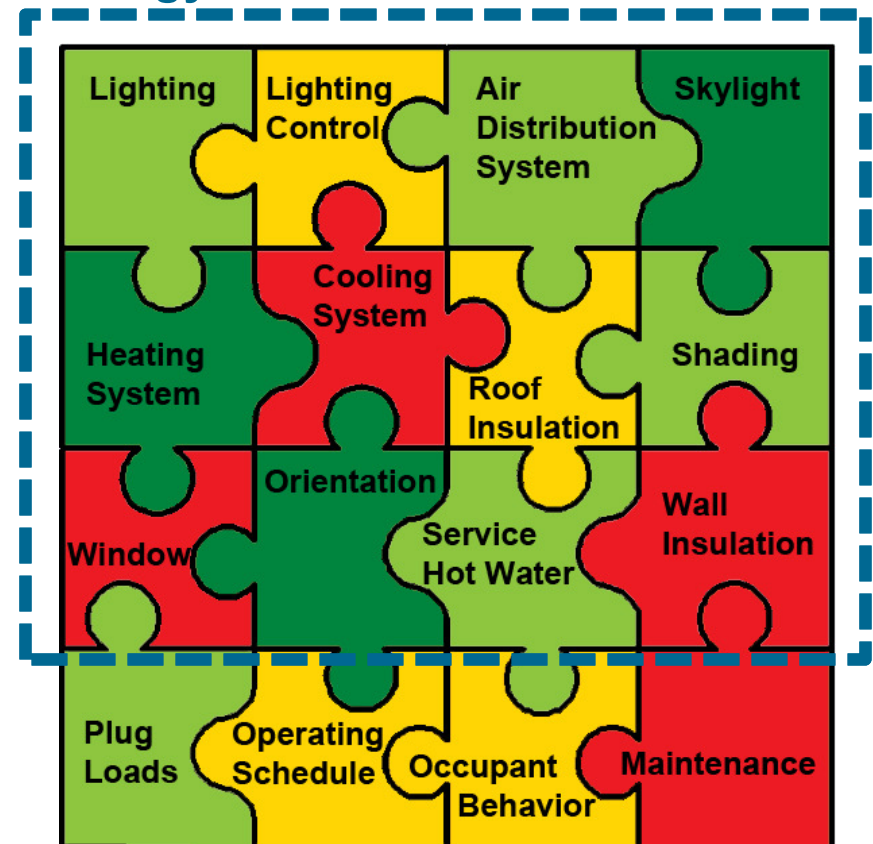
- Pilot management
- Outreach and communications

- **Develop a national energy asset rating to --**
  - Encourage investment in energy efficiency, and
  - Reduce energy use in the commercial building sector.
- **Provide useful information through simplified scoring tool**
  - Highlight a building's as-built efficiency and its potential efficiency
  - Differentiate installed system efficiency from O&M issues and occupant behavior
  - Provide insight into the performance potential of individual energy systems
  - Identify short-term and long-term capital investment needs

# Energy Asset Score

- **Energy asset score reflects the as-built physical characteristics of a building** and its overall energy efficiency, independent of occupancy and operational choices.
- **The physical characteristics include**
  - Building envelope (window, wall, roof)
  - HVAC system (heating, cooling, air distribution)
  - Lighting system (luminaire and lighting control systems)
  - Service hot water system
  - Other major energy-using equipment (e.g. commercial refrigerator, commercial kitchen appliances, etc.)

## Energy Asset Score

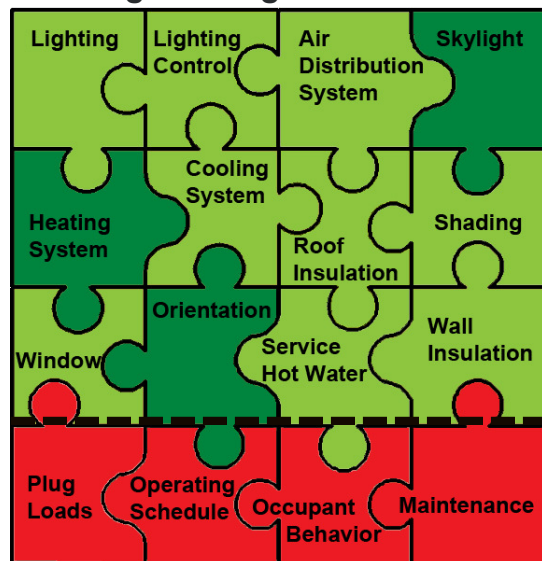


*Building energy use is affected by many factors.*

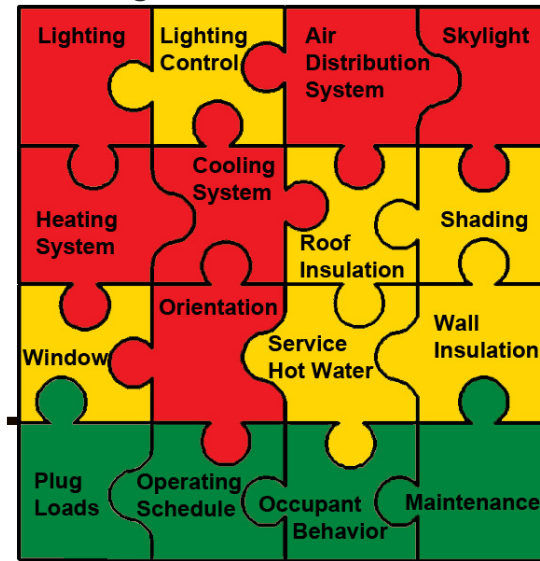
# Relevance of Asset Score

- Buildings #1 and #2 have similar ENERGY STAR scores, but widely divergent asset scores.
- Used together, an energy asset score and an energy benchmark can inform the decisions of a building owner, operator, buyer, or lessee.

**Building #1: High Asset Score**



**Building #2: Low Asset Score**



Equivalent  
ENERGY STAR  
Portfolio  
Manager  
Score

Energy Assets  
O&M/  
Occupant Behavior

- **Good energy assets**
- **Poor operation**
- **May be a candidate for low-cost operational improvements.**

- **Poor energy assets**
- **Good operation**
- **Low asset score may highlight need to replace outdated equipment or prepare for replacement costs in the near future.**

# Energy Asset Scoring Tool

COMMERCIAL BUILDING

## Energy Asset Score

na.wang@pnnl.gov

← My Buildings

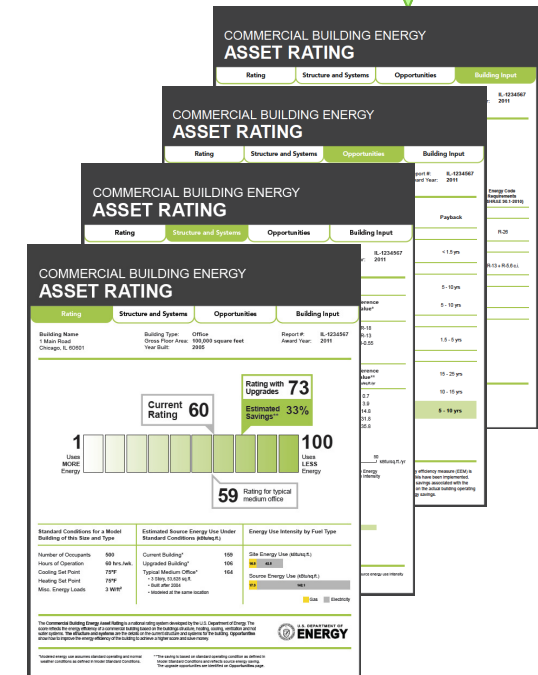
Test 2

Save

Score Building →


User clicks “Score Building” and receives Energy Asset Score Report

- EnergyPlus engine used to estimate energy use intensity (EUI) and generate an asset score based on the building envelope, mechanical and electrical systems, and other major energy-using equipment.
- Provides building system evaluations for building envelope, service hot water, HVAC, and lighting systems.
- Identifies cost-effective improvements.
- Provides an additional “after upgrades” score that demonstrates the potential energy impact of the recommendations.



# Data Requirements

- Users can enter different amounts of data to receive results of varying degrees of specificity for their building.



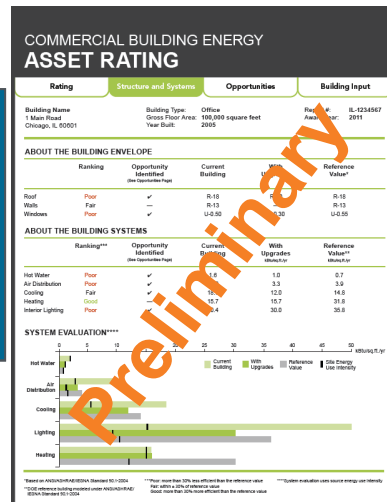
<b>Verified</b> <ul style="list-style-type: none"><li>• Not available during pilot</li><li>• Requirements still TBD</li></ul>	<ul style="list-style-type: none"><li>• Detailed inputs with validation by qualified party</li></ul>	<ul style="list-style-type: none"><li>• Will likely require a qualified professional to verify and submit the data</li><li>• Intended to support public statements about building asset</li></ul>
<b>Advanced</b>	<ul style="list-style-type: none"><li>• More detailed input set</li></ul>	<ul style="list-style-type: none"><li>• Users provide data for as many of the additional fields as they choose</li></ul>
<b>Simple</b>	<ul style="list-style-type: none"><li>• Basic minimum data needed</li></ul>	<ul style="list-style-type: none"><li>• Required to generate score and report</li><li>• Inference engine generates default values for a few fields</li></ul>



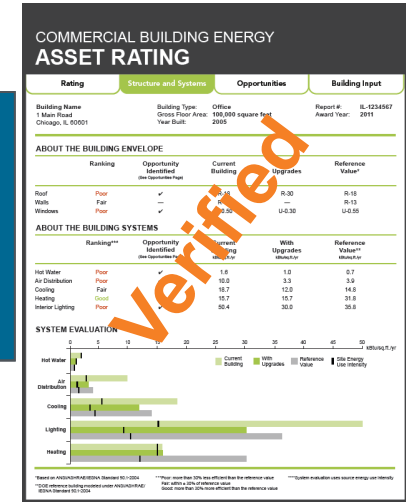
# Levels of Use

	Simple or Advanced Level	Verified Level (still under development)
<b>Step 1</b>	Collect & input data using energy asset scoring tool	Will require <b>greater amount of data</b> as well as <b>verification by a qualified professional</b>
<b>Step 2</b>	Submit data online	Submit for rating online
<b>Step 3</b>	System infers values that user leaves blank	<b>Limited</b> inferences allowed.
<b>Step 4</b>	Receive <b>preliminary</b> energy asset score report	Receive <b>verified</b> energy asset score report

For building owner or operator's information



For appraisal, real estate transaction, or public display



# Recent Program & Scoring Tool Improvements

- Refined data requirements based on sensitivity analysis
- Redesigned user interface based on 2012 Pilot feedback and user-centered research
  - Added detailed on-screen user help throughout tool
- Created multi-block function for mixed-use buildings and buildings with complex geometries, envelope properties, and HVAC systems
- Added greater variety of use types
  - 2012 Pilot: office, school, retail, warehouse only
  - 2013 Pilot: 2012 Pilot use types + lodging, multifamily, library, courthouse, mixed use (can also include senior center, city hall, post office, medical office)
- Expanded HVAC options
- Developed application programming interface (API) for third-party tools
- Added a link to Energy Star Portfolio Manager (ESPM)
  - Allows user to download building info directly from ESPM
- Improved weather adjustment methodology
  - Separately adjust for heating and cooling

## Objectives

- Test new user interface including multi-block feature
- Collect data on wide range of buildings to assess 100-point scale and its application to different building types and climates
- Gather feedback on the data collection process and Asset Score Report
- Follow up with 2012 Pilot Participants on impressions of new Asset Score Report
  - All 2012 Pilot Participants will receive updated Asset Score reports for their buildings
  - 2012 Pilot Participants are welcome to add data and/or buildings as part of the 2013 Pilot
- Test API codes with third-party software developers

## Timeline

- Jul 1 – Sep 30: Pilot Participants collect data & score buildings using Scoring Tool
  - Throughout process, Pilot Participants are strongly encouraged to provide feedback to DOE via informal discussions, webinars, and on-line questionnaire
- Oct 1 – Dec 31: DOE analyzes data
- January 2014: DOE presents Pilot findings
- TBD 2014: DOE releases new version of Scoring Tool

# Anticipated Program & Tool Updates (post 2013 Pilot)

## High Priority

- Improve user interface, scoring methodology, Asset Score Report, etc. based on 2013 Pilot feedback
- Allow users to pick energy efficiency measures and test how different scenarios affect “score with improvements”
  - Link to NREL Building Component Library
- Add Phase III use types
  - Focus on parking garage, food service; potentially include food sale and data center
- Customize user interface based on climate and use type
- Continue expanding list of HVAC systems and controls
- Add renewable energy data fields and calculations
- Continue to refine recommendations
  - Incorporate findings from Spring 2013 evaluation which compared the Scoring Tool’s recommendations with those of 2 professional auditors following onsite audits of 4 different buildings

## Secondary Improvements

- Allow users to enter their utility rates to evaluate efficiency upgrade options
- Add advanced lighting controls
- Develop user interface for utility program administrators
- Develop user interface for qualified assessors who provided “verified” score
- Link to other tools/database (DSIRE, OpenEI, Google Geocode, Google Map, Portfolio Manager)

# Process for Pilot Participation

# Pilot Participation Process

1. Sign the Pilot Participation Agreement by June 26
2. Provide DOE with points of contact for lead project coordinator and data collector(s)/tool user(s) by June 26
3. DOE provides Pilot Participants with username and password to access the Asset Scoring Tool ([buildingenergyscore.energy.gov/](https://buildingenergyscore.energy.gov/))
4. DOE assigns each Pilot Participant an Account Manager
5. Account Manager stays in regular communication with Pilot Participants to provide assistance and obtain feedback
6. Pilot Participants (project coordinators AND Scoring Tool users) complete Pilot questionnaire

# Account Manager Role

- Serves as primary contact for Pilot Participants throughout the Pilot
- Ensures Pilot Participants have all the information and materials they need to begin scoring buildings
- Helps trouble shoot issues with the Scoring Tool
- Refers Pilot Participants to technical team as needed
- Gathers feedback on:
  - Ease of use of data collection sheet and Scoring Tool
  - Usefulness/value of the Asset Score Report
  - Data collection and entry time requirements
  - Recommendations for improvements to the Scoring Tool, Report, other program features

# Next Steps

- June 18 Pilot Webinar (12pm ET): Using the Asset Scoring Tool
- Send Pilot Participation Agreement to [asset.score@ee.doe.gov](mailto:asset.score@ee.doe.gov) by June 26
- Provide POCs for project coordinator and Scoring Tool users by June 26
- Let us know ASAP if you no longer plan to participate in the Pilot
- **Please email us at [asset.score@ee.doe.gov](mailto:asset.score@ee.doe.gov) with any questions or for more information.**



# Useful Links

- **Energy Asset Score website**  
<http://www1.eere.energy.gov/buildings/commercial/assetscore.html>
- **Energy Asset Scoring Tool**  
[buildingenergyscore.energy.gov/](http://buildingenergyscore.energy.gov/)
- **Asset Score Email Box**  
[asset.score@ee.doe.gov](mailto:asset.score@ee.doe.gov)

The screenshot shows the 'Building Technologies Program' website. The header includes the U.S. Department of Energy logo and navigation links for HOME, ABOUT, ENERGY EFFICIENT TECHNOLOGIES, RESIDENTIAL BUILDINGS, COMMERCIAL BUILDINGS (highlighted), APPLIANCE & EQUIPMENT STANDARDS, and BUILDING ENERGY CODES. The main content area is titled 'Commercial Building Energy Asset Score' and includes an introduction, a 'Log In' form with fields for email address and password, and a list of 'Pilot Program Information' links such as 'Pilot building information form', 'Participant checklist', 'Data collection form', 'Pre-score questionnaire', 'Additional Building Information form (Partner Only)', 'Pilot program overview', and 'Program factsheet'. A yellow warning box states: 'Remember: All the scores generated during this pilot program are preliminary. To receive your final score you will need to re-score your building once the pilot program is completed.'