Benchmarking Your Building's Energy Using EPA's ENERGY STAR Portfolio Manager

Please call in to the audio portion:

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**Presenter:** Peter Flippen  
**Date:** August 11, 2010  
**Time:** 12 PM – 1:30 PM EDT
Agenda

• Overview of ENERGY STAR and Portfolio Manager

• Portfolio Manager: Live Demonstration
What is ENERGY STAR?

- EPA voluntary climate protection partnership with energy users and service and product providers
- Strategic approach to energy management, promoting energy efficient products and practices
- Helps organizations measure, track and improve energy performance
- Helps organizations save energy and money and protect the environment
- Brand recognition - 75% of Americans
Portfolio Manager Growth
Cumulative Floor Space of Rated Buildings

<table>
<thead>
<tr>
<th>Year</th>
<th>Millions of Square Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>1,579</td>
</tr>
<tr>
<td>2002</td>
<td>2,536</td>
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<tr>
<td>2003</td>
<td>3,268</td>
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<tr>
<td>2004</td>
<td>3,844</td>
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<tr>
<td>2005</td>
<td>4,598</td>
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<tr>
<td>2006</td>
<td>5,090</td>
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<tr>
<td>2007</td>
<td>7,776</td>
</tr>
<tr>
<td>2008</td>
<td>11,664</td>
</tr>
<tr>
<td>2009</td>
<td>14,724</td>
</tr>
</tbody>
</table>

2001 2002 2003 2004 2005 2006 2007 2008 2009
0 2,000 4,000 6,000 8,000 10,000 12,000 14,000 16,000
Millions of Square Feet
ENERGY STAR Label Growth
Cumulative Number of Labeled Buildings

![Graph showing the cumulative number of labeled buildings from 2001 to 2009, with data points for each year.]

- 2001: 836 labeled buildings
- 2002: 1,075 labeled buildings
- 2003: 1,387 labeled buildings
- 2004: 1,964 labeled buildings
- 2005: 2,585 labeled buildings
- 2006: 3,226 labeled buildings
- 2007: 4,056 labeled buildings
- 2008: 6,205 labeled buildings
- 2009: 8,741 labeled buildings
Top performing buildings use 3 to 4 times less energy per ft$^2$ than the worst performers.

Newer buildings are equally represented across all quartiles.

Based on a sample of 4,000 buildings nationwide.

39% of buildings with a rating of 75 or better are less than 25 years old.

42% of buildings with a rating between 25 and 74 are less than 25 years old.

35% of buildings with a rating between 0 and 24 are less than 25 years old.

"New" Doesn’t Always Mean "Efficient"
What is Portfolio Manager

- Free, online, benchmarking tool for existing buildings
- Whole-building ACTUAL Energy Performance Score and benchmarking data
- Measures and Tracks energy intensity, cost, emissions
- Normalizes for weather, operating hours, occupant density, plug load
- Provides ENERGY STAR Label for Buildings
Is 60 MPG high or low for this automobile?

Fuel Efficiency:

MPG

Is 90 kBtu/SF/YR high or low for this building?

Energy Performance Rating: 1 to 100
User-Friendly Inputs

**All Space Types**
- Address
- Year Built
- At least 12 months energy data

**K-12 School**
- SF
- # Walk-in refrigerator freezer units
- # PC's
- Open weekends Y/N
- Cooking Y/N
- High School Y/N
- % Heated
- % AC

**Office**
- SF
- # Workers
- Op. hrs.
- # PC’s
- % Heated
- % AC

**Supermarket Grocery**
- SF
- # Workers
- Op. hrs
- # Walk-in refrigerator freezer units
- Cooking Y/N
- % Heated
- % AC

Examples
Valuable for *ALL* Commercial Buildings

- Such as:
  - Police Stations
  - Fire Stations
  - Assisted Living Facilities
  - Convention Centers
  - Laboratories
  - Libraries
  - Malls
  - Movie Theatres
  - Restaurants
  - Stadiums and Arenas
Identify Best Opportunities for Improvements

- Identify under-performing buildings to target for energy efficiency improvements.
- Establish baselines to set goals and measure progress.

Prioritize efforts by identifying under-performing buildings.
Why EPA’s Rating System?

Free simple analytical tool
Web-based, no cost, easily understood, 1-100 scale, weather normalized EUI

Industry standard
More than 140,000 commercial and institutional buildings benchmarked in Portfolio Manager
Over 10,000 buildings receiving a label

Comprehensive development process
Extensive research and data base
EPA, DOE, NOAA

Symbol of superior energy performance
Recognized by 75% of Americans
Streamline reporting process & quantify results in Portfolio Manager

- A consistent platform to and accurately demonstrate savings with *transparency* and *accountability*:
  - Whole building energy performance
  - Improvements over a baseline
  - GHG emissions
  - Water use

- Reporting Feature: Create custom reports and receive results through PM:
  - Create custom reports by choosing from key energy, environmental, and/or cost performance indicators
  - Easily request and collect benchmarking results from multiple building owners/grantees using the PM interface
  - Download data in Excel, CSV, PDF, and XML formats for analysis
Benefits of Portfolio Manager

- Participate in corporate or state/local energy benchmarking initiatives
- Conduct low cost “pre-audits” of building energy use
- Identify opportunities for improvement
- Set priorities, goals for upgrades
- Gain Valuable Recognition for Clients
ARRA-Funded Programs

• Measuring and reporting performance required for ARRA funded programs and some programs require or encourage the use of Portfolio Manager
  – Iowa SEP Grant Program
  – Efficiency Maine Commercial Project EECBG Grant Program
  – New York Energy Efficiency Program
  – Pennsylvania Conservation Works! Program
  – Utah Advanced Energy Efficiency Strategies for Buildings Program
  – New Hampshire Office of Energy and Planning EECBG Grant Program
<table>
<thead>
<tr>
<th>Location</th>
<th>Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Albuquerque</td>
<td>Green Path Program</td>
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<tr>
<td>City of Chicago</td>
<td>Chicago Green Office Challenge</td>
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<tr>
<td>State of WI</td>
<td>Lt. Governor ENERGY STAR School Challenge</td>
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<tr>
<td>City of Louisville</td>
<td>Louisville Kilowatt Crackdown</td>
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<tr>
<td>City of Portland</td>
<td>Portland Energy Showdown</td>
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<tr>
<td>State of PA</td>
<td>Conservation Works and Small Business Energy Efficiency</td>
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<tr>
<td>New England EPA Region 1</td>
<td>Community Energy Challenge</td>
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<tr>
<td>State of NM</td>
<td>HB 534: Sustainable Building Tax Credits</td>
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<tr>
<td>City of Seattle</td>
<td>Seattle Kilowatt Crackdown</td>
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<tr>
<td>State of NJ</td>
<td>NJ Pay for Performance and NJ Local Government Energy</td>
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<tr>
<td>City of San Francisco</td>
<td>Earth Hour 24x7 Energy Challenge</td>
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Voluntary State/Local Initiatives

- **City of Chicago** - Participants in the Chicago Green Office Challenge will use EPA’s Portfolio Manager.

- **State of New Jersey** – Two programs, Pay for Performance for commercial building owners and Local Government Energy Audit Program, use Portfolio Manager to measure progress.

- **State of Wisconsin** - Challenge for 100 new WI school districts to reduce energy use by 10 percent and track in Portfolio Manager.

- **City of Portland, OR** - Holding Portland Energy Showdown for buildings to track and work to improve their building’s energy use in Portfolio Manager. Winners are awarded cash prizes.

- **City of Louisville** - Participants in the Louisville Kilowatt Crackdown will track and work to improve their building’s energy use in EPA’s Portfolio Manager.
How is Data Entered?

- **Single Building Manual Entry**
  - Enter building and energy consumption information into Portfolio Manager.

- **Bulk Data Upload**
  - Upload large sets of building data in Portfolio Manager using an Excel template.

- **Automated Benchmarking Services**
  - Use Service and Product Provider to have the rating automatically integrated into your energy information and bill handling system

**Utility-based Automated Benchmarking**
- Option 1: Provide utility data
- Option 2: Provide automated benchmarking services
## Service Providers Offer Automated Benchmarking with PM

- Advantage IQ
- Angus Systems
- ComEd
- EduCon
- ei3
- Energard Technologies
- Energy Print
- Energy Watchdog
- EnergyCAP, Inc.
- EnergySolve
- IBS, Inc.
- Johnson Controls
- LPB Energy Management
- New Energy Technology
- NISC
- NorthWrite
- Pacific Gas & Electric
- Performance Systems Development
- San Diego Gas & Electric
- Siemens
- Southern California Edison
- Southern California Gas Company
- Summit Energy
- The E Group
- UtilityAccounts.com

More information at [www.energystar.gov/abs](http://www.energystar.gov/abs)
### Statement of Energy Performance

**Facility:** Tensile-Sample Facility 12045 Ave Stude New York, NY 10019

**Portfolio Manager Building ID:** 15071122

#### General Information

- **Statement Date:** April 20, 2010
- **Portfolio Manager:** Franchesca@energy.gov

#### Facility Information

- **Primary Contact for this Facility:** 310-220-7127
- **Primary Contact Email:** Franchesca@energy.gov

#### Site Information

- **Energy Performance Rating:** 110
- **Site Energy Use Summary:** 238,840 kWh
- **Natural Gas Usage:** 82,482 therms
- **Total Energy (kWh):** 238,840
- **Energy Intensity:** 315,17/ MMBtu
- **Electricity (kWh):** 40
- **Emissions Intensity (lb of CO2/MMBtu):** 34

#### Electric Distribution Utility

- **Virginia Electric Co. Power Co:**

<table>
<thead>
<tr>
<th>National Average Source EUI</th>
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<tbody>
<tr>
<td>119</td>
<td>116</td>
<td>116</td>
</tr>
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</table>

#### Energy Performance Comparison

- **Energy Efficiency Rating:** 55
- **Energy Intensity:** 107
- **Energy Use:** 238,840 kWh

#### Energy Use Summary

- **Space Heating:** 20,000 Btu
- **Water Heating:** 80
- **Equipment:** 58
- **Transportation:** 32
- **Refrigeration:** 31
- **Monitoring and Controls:** 20,000 Btu

#### Facility Space Use Summary

- **Space Type:** Office
- **Space Use:** 2000 sq ft

#### Energy Performance Recommendations

- **Conventional Technologies:**
  - **Efficiency:** 40
  - **Potential Savings:** 83

#### Facility Information

- **Number of Employees:** 10
- **Total Floor Area:** 20,000 sq ft

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*Note: This building uses 55 kWh of energy per square foot per year.*

**EPA Energy Star score:**

- **Building Score:** 55
- **Most Efficient Buildings with a score of 80 or higher:**

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*Based on average energy intensity for the 12-month period ending April 2009*
• National recognition for top energy performance of commercial buildings.
  – Over 10,000 buildings have earned the ENERGY STAR to date.

Percentile of Commercial Building Population in terms of Energy Performance
Commercial Real Estate properties that earn the ENERGY STAR label:

• Save $.50 sq/ft (on average)
• Consume 35% less energy

AND

• Savings persist over time
• Occupancy/tenant retention is higher
• Savings leveraged into higher asset value upon disposition

Kats & Perlman, 2006
Earn Recognition for Superior and Improved Energy Performance

- **ENERGY STAR Leaders** for portfolio-wide improvements
  - Benchmark portfolio of buildings
  - Show improvement of 10%, 20%, 30%, etc.
  - Average portfolio score of 75 or higher
• Overview of ENERGY STAR and Portfolio Manager

• Portfolio Manager: Live Demonstration
Live Portfolio Manager Demonstration

www.energystar.gov/istar/pmpam

http://apps1.eere.energy.gov/buildings/tools_directory/
Thank you!

ENERGY STAR Web site:
www.energystar.gov/benchmark

DOE Solution Center:
www.eere.energy.gov/wip/solutioncenter

DOE Technical Assistance Center:
https://tac.eecleanenergy.org/

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Leslie Cook, cook.leslie@epa.gov, ENERGY STAR Public Sector Program Manager