

MICHAEL ZATZ
Manager, ENERGY STAR Commercial Buildings Program
Climate Protection Partnerships Division
U.S. Environmental Protection Agency

Michael Zatz is the manager of the U.S. EPA's ENERGY STAR Commercial Buildings Program. In this role, Mr. Zatz oversees the development and implementation of activities aimed at improving the energy efficiency of a wide variety of building types, including offices, K-12 schools, higher education institutions, healthcare facilities, retail space, hotels, congregations, and others. Mr. Zatz also is responsible for oversight of the ongoing development and modification of ENERGY STAR's Portfolio Manager energy benchmarking tool, which has been used by over 60,000 buildings across the country to assess and track their energy use.

Mr. Zatz joined ENERGY STAR in February 2006, and prior to that he spent nearly 14 years with ICF Consulting, a private environmental and energy consulting firm. He has specific expertise in the development and implementation of voluntary public-private partnerships. Mike has an M.S. in Environmental Science and Policy from Johns Hopkins University, and a B.S. in Engineering and Public Policy from Washington University in St. Louis.



ENERGY STAR – Leading the Way to Energy Efficient Buildings

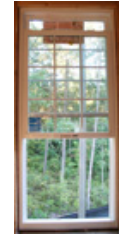
*Mike Zatz
Manager, ENERGY STAR Commercial Buildings
USDA RUS Engineering Seminar
February 2008*

ENERGY STAR – A Respected Name in Energy Efficiency



- The symbol of energy efficiency in consumer products and office equipment.
- Over 65% of Americans recognize the ENERGY STAR and equate it to energy efficiency.
- In 2006, American consumers and businesses, with the help of ENERGY STAR:
 - prevented the release of greenhouse gas emissions equivalent to those from 25 million automobiles
 - saved more than \$14 billion on energy bills

ENERGY STAR Products



ENERGY STAR Buildings



500 Boylston St.
Boston, MA



Albuquerque Indian Hospital
Albuquerque, NM



1001 Pennsylvania Ave.
Washington, DC



Westin San Francisco Airport
Millbrae, CA



Parkside Elementary School
Buffalo, MN



Blue Earth County Courthouse
Mankato, MN

Why Commercial Buildings?



- The buildings in which we work, shop, play, and educate our children use \$200 billion of electricity and natural gas each year.
- According to the U.S. Green Building Council, greenhouse gas emissions from commercial buildings are projected to grow faster than any other sector over the next 25 years – about 1.8 percent per year.
- Commercial buildings and industrial facilities generate nearly 50% of U.S. carbon dioxide emissions.
- 30% of energy consumed in commercial buildings is used unnecessarily or inefficiently.

What is ENERGY STAR for Buildings?



- U.S. Environmental Protection Agency energy management program.
- Provides proven solutions to help public and private sector building owners and managers reduce their energy consumption.
- Works in markets with a focus on:
 - Public sector (government, K-12, higher ed)
 - Commercial property (offices, retail, hotels)
 - Healthcare
 - Small business and congregations

What is ENERGY STAR for Buildings?



- Over 1,700 Partners operating more than 11 billion square feet of space (nearly 20% of space in the U.S.).
- Over 3,000 small business and congregation network participants.
- Nearly 100 utility and energy efficiency program sponsors.
- Over 1,400 service/product providers.
- Over 60,000 buildings, representing over 8 billion square feet of space, measure and track their energy performance with ENERGY STAR.

Who's Improving Energy Performance with ENERGY STAR



- **State and Local Governments** (California, Ohio, Washington DC, Louisville, Albuquerque)
- **Major corporations** (JC Penney, Marriott, McDonalds, Papa Johns, Food Lion, Staples)
- **Property owners and managers** (CB Richard Ellis, Hines, Jones Lang LaSalle, USAA Realty, Transwestern)
- **K-12 Schools** (Seaford School District, San Diego Schools)
- **Universities** (University of New Hampshire, City University of New York, University of Michigan)
- **Hospitals and health systems** (Providence Health, NY Presbyterian)

ENERGY STAR Partner Organizations



- US Conference of Mayors
- National Association of Counties (NACo)
- Building Owners and Managers Association (BOMA)
- International Facility Management Association (IFMA)
- Independent Community Bankers of America (ICBA)
- National Association of Evangelicals (NAE)
- National Small Business Association (NSBA)
- National Automobile Dealers Association (NADA)
- CoStar (Commercial Building Multiple Listing Service)
- American Society of Healthcare Engineers (ASHE)
- American Bar Association (ABA)

. . . and many more.

What is ENERGY STAR for Buildings?



- Free technical resources:
 - Tools to benchmark and track energy performance in buildings
 - Energy Management Guidelines
 - Assistance for architects on designing energy efficient buildings
 - Case studies and best practices from leaders
 - Calculators to track returns on energy efficiency investments
 - Training
 - Materials to communicate with citizens, employees, stakeholders, and the media about energy efficiency efforts.

What is ENERGY STAR for Buildings?



➤ National and Local Recognition

- ENERGY STAR Partner



- Designed to Earn the ENERGY STAR



- ENERGY STAR Label



- ENERGY STAR Leader

- ENERGY STAR Partner of the Year



The ENERGY STAR for Buildings



- Over 4,000 buildings have earned the ENERGY STAR label for energy efficiency.
- **ENERGY STAR labeled buildings use 35 percent less energy than average buildings.**



Financial Benefits of ENERGY STAR



- Leading companies realize that energy efficiency can have a high return-on-investment and is necessary in order to remain competitive.
- Businesses and organizations that are leaders in energy efficiency use about 30 percent less energy than their competitors.
- Financial benefits of energy efficiency include:
 - Operating costs for ENERGY STAR buildings are more than 50 cents per square foot less than for average buildings. This means savings of \$5,000 per year for every 10,000 square feet of typical office space.
 - Corporate real estate owners can lower operating costs by \$25,000 per year for every 50,000 square feet of typical office space.
 - Full-service hotels that improve energy efficiency by 10 percent see an increased average daily rate of \$1.35.
 - Every \$1 saved on energy at a nonprofit hospital is equivalent to generating \$20 in new revenue.
 - A 10 percent reduction in energy costs for the average full-line discount retailer can boost net profit margins by as much as 1.55 percent.

Environmental Benefits of ENERGY STAR



- If the energy efficiency of commercial and industrial buildings improved by just 10 percent, Americans would save about \$20 billion and reduce greenhouse gas emissions equal to the emissions from about 30 million vehicles.
- Commercial buildings and industrial facilities generate nearly 50% of U.S. carbon dioxide emissions.
- 30% of energy consumed in commercial buildings is used unnecessarily or inefficiently.
- According to the U.S. Green Building Council, GHG emissions from commercial buildings are projected to grow faster than any other sector over the next 25 years – about 1.8 percent per year.
- **IMMEDIATE, LOW-COST** emission reduction opportunities – EXISTING buildings.

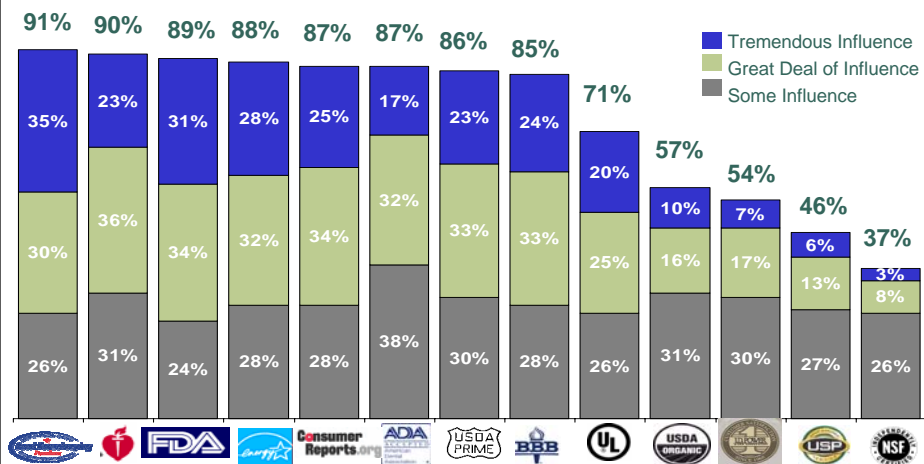
Public Relations Benefits of ENERGY STAR



- Americans' concerns about environmental issues have increased more than 10 percentage points between 2004 and 2006 (Gallup survey).
 - 88% of US adults responded that "energy efficient" was very important in their electronics, appliance, lighting, and heating/cooling equipment purchases
- 58% of Americans rank "dealing with the nation's energy problem" as a top priority in 2006, up from 40% in 2003 (Pew survey).
- 79% of Americans think global warming poses a serious threat to future generations (ABC News/Washington Post poll)
- ENERGY STAR is a trusted, proven and recognized brand
 - Aided recognition levels for ENERGY STAR are over 68%, according to latest survey results
- More than 60% of U.S. households reported being favorably influenced by the ENERGY STAR label
- According to 2003 study
 - 85% of 25-34 year-olds & 76% of 35-44 year-olds
 - 74% of those with household income of \$50,000+
 - 76% families with kids

....recognize the ENERGY STAR brand

ENERGY STAR – A Trusted Brand



Benchmarking – The Key to Energy Savings in Buildings

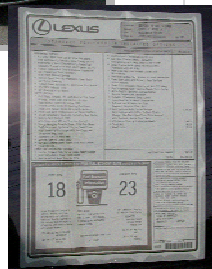


- Benchmarking through ENERGY STAR allows a building owner or operator to:
 - Compare one building against a national sample of similar buildings.
 - Compare all of their buildings of a similar type to each other.
 - Set priorities for use of limited staff time and/or investment capital.
- Why bother?

Is Your Building Performing Well?



Fuel Efficiency
MPG



Is 18 MPG high or low for an automobile?

Is 80 kBtu/SF/YR high or low for a building?

Energy Performance
EPA Benchmarking

STATEMENT OF ENERGY PERFORMANCE	
Morgan High School	
2012-2013 School Year	
Building Name	Morgan High School
Address	1000 Morgan Rd, Morgan, WV 26541
Year Built	1998
Building Type	Elementary School
Area	100,000 sq ft
Energy Use Intensity (EUI)	80 kBtu/SF/YR
Score	80
Energy Star Rating	Green

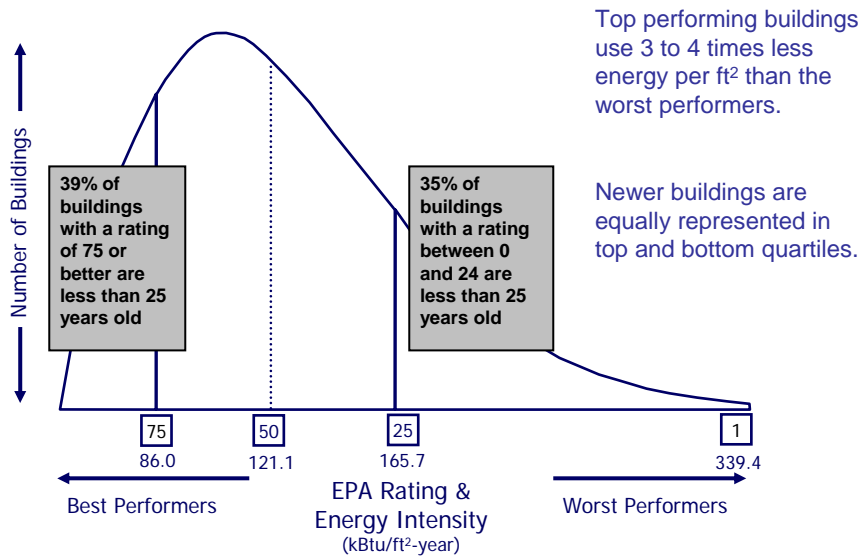


Myth #1: Age Matters



My building is new, so I know it's energy efficient.

New Doesn't Always Equal Efficient

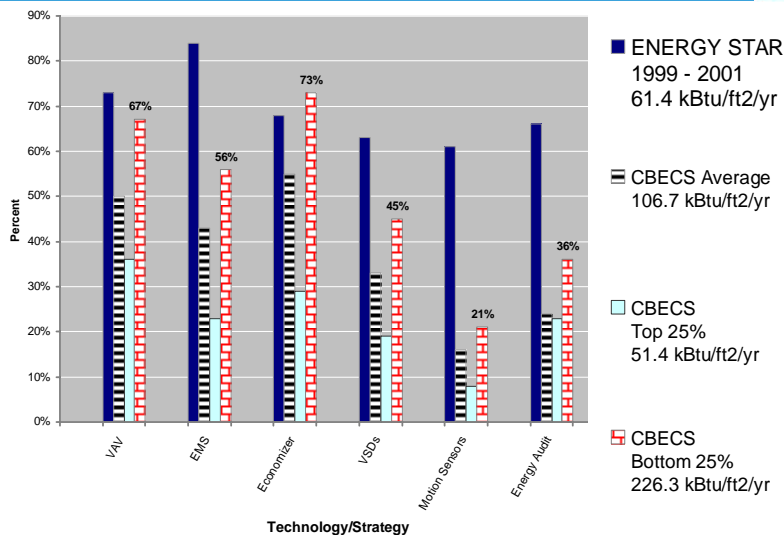


Myth #2: Technology Matters



I installed energy efficient technologies, so I know my building is energy efficient.

Technology Doesn't Always Equal Performance

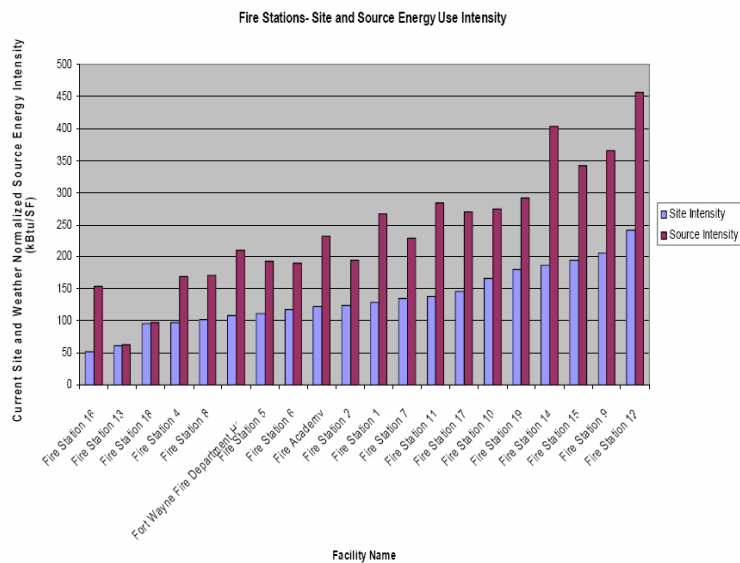


Note: CBECS = U.S. Department of Energy's Commercial Building Energy Consumption Survey



If you're still not convinced that benchmarking energy use is a good idea.

Fort Wayne Fire Stations 20 Similar Buildings – Different Energy Use



Portfolio Manager – Helping Buildings Track Energy Performance



- Free online tool where users can:
 - Benchmark the energy use of buildings – all will receive an EUI (energy use intensity) and some will receive ratings on a 1-100 scale.
 - Track changes in energy use over time in single buildings, groups of buildings, or entire portfolios.
 - Track cost savings and CO₂ reductions.
 - Apply for ENERGY STAR recognition.
 - Track water usage.
- Free on-line trainings offered monthly.
- <http://www.energystar.gov/benchmark>

EPA's Energy Performance Rating System for Commercial Buildings



- Accessed through Portfolio Manager.
- Provides a benchmark to compare a building's energy use against its peers nationwide.
- Uses a simple 1-100 scale, where 50 is an average building.
- Normalizes for factors such as weather, occupancy, operating hours, and other building-specific characteristics.
- Presents energy use in kBtu/ft²
- Available for about 70% of commercial buildings.

EPA's Energy Performance Rating System – Available Building Types



Offices



Retail



Hospitals



K-12 Schools



Supermarkets



Hotels



Medical Office Buildings



Wastewater Treatment Facilities



Also: Courthouses, Banks, Financial Centers, Warehouses, Residence Halls

How to Benchmark Energy Use With Portfolio Manager



- Create a secure account.
- Add a facility.
- Define each space type in a facility and provide characteristics of that space (e.g., office, data center, garage, etc.).
- Create meters for all fuels.
- Enter historical billing data for electricity, natural gas, and all other fuels. At least 12 months of data is required to receive a rating.
- Select two different dates to see a change in energy use over time. Track impacts of energy efficiency projects.

Find Portfolio Manager



1. Go to:
www.energystar.gov

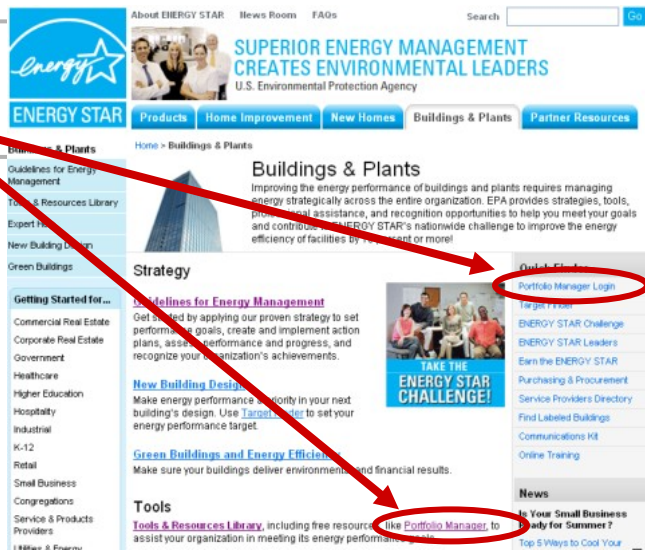
2. Click on:
Buildings and Plants



Find Portfolio Manager



3. Click on:
"Portfolio Manager"



Portfolio Manager



PORTFOLIO MANAGER
EPA's system for helping you track and improve energy efficiency across your entire portfolio of buildings.

Home > My Portfolio

Welcome to Portfolio Manager

John Gorley [Access My Portfolio >](#)

Skip this page on next login

You're in good company when you use EPA's Portfolio Manager to manage the energy performance of properties you own, manage, or hold for investment. Thousands of organizations have used Portfolio Manager to benchmark the energy performance of their buildings, track improvement, and apply for recognition from EPA.

- Top-performing buildings can earn the ENERGY STAR, the national symbol for protecting the environment through energy efficiency, and
- Organizations with building portfolios that show a 10%, 20%, 30% (or more) reduction in normalized energy use or achieve a 75 rating average, can earn ENERGY STAR Leaders recognition.

Portfolio Manager provides a secure environment for centralized and decentralized organizations to share facility-specific energy information, with features that allow you to group buildings, view average ratings across a group, control access to building data, and more.

Building Types eligible for energy performance rating include:

- Offices (general offices, financial centers, bank branches, and courthouses)
- K-12 Schools
- Hospitals (Acute Care and Children's)
- Hotels
- Supermarkets
- Residence Halls/Dormitories
- Warehouses
- Medical Offices

What's New in Portfolio Manager

Features

- [Accept or Reject Facilities Shared with You](#) (Released August 25, 2006)
- [Remove Access to a Facility Shared with You](#) (Released August 25, 2006)
- [Percent Energy Reduction](#) (Released July 26, 2006)
- [Water Meter Tracking](#) (Released June 9, 2006)

News and Announcements

ANNOUNCEMENT:

Updates in Views

Portfolio Manager now offers new fuel-specific Views. The views will display site energy electricity and Natural Gas consumption for the current and baseline periods. In addition, the Energy Performance Report is revised to include these fuel-specific metrics. The report will also include the source energy intensity (previously only site energy intensity was reported).

Now Available - ENERGY STAR Leaders Changes

Portfolio Manager Views



PORTFOLIO MANAGER
EPA's system for helping you track and improve energy efficiency across your entire portfolio of buildings.

Home > My Portfolio

Welcome: John Gorley

Summarized below are the facilities in your account. Groups and Views are provided below to help you customize the way in which you view your Portfolio. To improve system performance, users are strongly encouraged to create multiple Groups to help manage large Portfolios of facilities. **Select a facility to view or edit more detailed information about it.**

To view a column's definition, select the icon next to the column header.

Portfolio Average Rating

Base Line Rating: 25
Facilities Included: 12

Current Rating: 41
Facilities Included: 13

Portfolio Adjusted Percent Energy Reduction

11.8%
Facilities Included: 12

Averages are weighted by Total Floor Space.
[More about Baselines](#)
[More about Adjusted Percent Energy Reduction](#)

[Add Facility](#) | [ENERGY STAR Leaders](#) | [Share Facilities](#) | [Update Multiple Meters](#) | [Request Energy Performance Report](#) | [Download this View in Excel](#)

GROUP: All Facilities | Create Group | View All

VIEWS: Summary: Facilities | ENERGY STAR Recognition | Performance: Environmental | Performance: Financial | Performance: Rating/Improvement | Performance: Targets | Performance: Water Use | Summary: Energy Use | Community: Facilities

Results 1 - 13 of 13

Facility Name	Current Rating (1-100)	Adjusted Percent Energy Reduction	Total Floor Space (Sq. Ft.)	Energy Intensity (kBtu/Sq. Ft.)	Reporting Period	Reporting Date	Eligible for the ENERGY STAR	Last Modified
6th Street ES	100	0.0%	45,981	Data > 120 days old	12/31/2006		Not Eligible: Current period ending over 120 days ago (ENERGY STAR Eligibility Rules)	04/12/2007
Abelard Reynolds School #42	47	30.3%	68,276	Data > 120 days old	11/30/2006		Not Eligible: Rating must be 75 or above (ENERGY STAR Eligibility Rules)	02/08/2007
Abram Lansing ES	27	34.9%	43,000	Data > 120 days old	04/30/2006		Not Eligible: Rating must be 75 or above (ENERGY STAR Eligibility Rules)	06/22/2006

The Statement of Energy Performance



FORM NO. 200804*

STATEMENT OF ENERGY PERFORMANCE
Sample Facility
 Building ID: 123456
 For 12-month Period Ending: October 31, 2007
 Date SEP becomes available: February 29, 2008
 Date SEP Generated: November 10, 2008

Facility Being Labeled Sample Facility 1234 Main Street Springfield, VA, 10000	Facility Owner Sample Owner 4567 Peach Ave. Springfield, VA, 10000 555-555-5555	Primary Contact for this Facility Jane Smith 7890 Columbia Way Springfield, VA, 10000 555-555-5566 jsmith@sample.com
--	--	--

Year Built: 1000
Gross Building Area (ft²): 30,000
Energy Performance Rating¹ (1-100): 80

Space Type	Area (ft ²)	Occupants	Operating Hours	Number of PCs
Office	15,000	40	40	40
Office (General)	15,000	40	40	40

Site Energy Use Summary Electricity (kBtu) ² 123,456 Natural Gas (kBtu) ² 123,456 Total Energy (kBtu) 246,912 Energy Intensity ³ 8.2 Site (kBtu/ft ² /yr) Source (kBtu/ft ² /yr) 10.5 Emissions (based on site energy use) CO ₂ (1000kgyr) 283	 Professional Engineer Stamp I certify that the information contained within this statement is accurate and in accordance with the SE Codebook.
---	---

Indoor Environment Criteria⁴ Indoor air pollutants controlled? Yes Adequate ventilation provided? Yes Thermal conditions met? Yes Adequate illumination provided? Yes	Professional Engineer License Number: 3000001 State: VA John Doe 1234 Vineyard Lane Springfield, VA, 10000 555-555-7788
---	--

Notes:

1. Application for the ENERGY STAR must be submitted to EPA within 4 months of the final billing date. Award of the ENERGY STAR is at the discretion of EPA.
2. The EPA Energy Performance Index is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
3. Natural Gas values in units of volume (e.g. cubic feet) are converted to kBtu with adjustments made for elevation based on facility gas usage.
4. Values represent energy intensity, as defined in a 2005 ASHRAE Standard 90.1-2005.
5. Based on energy efficiency controls (EPC) from the ASHRAE Standard 90.1-1999 for thermal comfort, and ASHRAE Lighting Handbook for lighting quality.

Tracking Number: SEP2008010100001234

This document applies, but is not the reason to fill out this form. It is a form to be filled out for reporting energy data. All forms, instructions, and anything the EPA has submitted regarding reporting this year or other, also contains information that can be used to be printed. Contact: Stephen Chubb, U.S. EPA, 20257, 100 Pennsylvania Ave., NE, Washington, DC 20460
EPA Form 8820-08

Automated Benchmarking



- Allows users with multiple buildings to update utility bill data and receive new EUI/ratings monthly without manual data entry.
- Offered by more than a dozen independent utility bill service companies.
- Offered by utilities. Efforts underway to assist utilities in California, Ohio, New York City, and other areas in offering automated benchmarking to customers. Monthly usage data transferred directly from utility into customer's Portfolio Manager account.

How Utilities Can Benefit from Using ENERGY STAR



- Leverage success of ENERGY STAR as a business strategy for building owners and managers.
- Use ENERGY STAR credibility to sell energy efficiency.
- Engage and motivate customers.
- Enhance long-term relationship with customers.
- Reduce cost and time to develop and deliver programs.
- Monitor energy efficiency improvements of customers.
- Leverage customers already ENERGY STAR partners.

Opportunities for Utilities to Reduce Demand with ENERGY STAR



- Promote benchmarking of buildings to identify energy saving opportunities.
- Support benchmarking efforts by making past billing data easily accessible.
- Provide incentives for the purchase and installation of ENERGY STAR products.
- Provide incentives for improvements in EUI/ratings.
- Partner with local governments that are working with ENERGY STAR to promote energy efficiency to businesses and consumers.

Examples of Integrating ENERGY STAR Resources into Efficiency Programs



- Foundation for Program Delivery
 - PG&E: “More Than a Million” Initiative
 - Xcel Energy: Commercial Real Estate Efficiency
 - NSTAR and National Grid: Benchmarking Programs
- Benchmarking: Integrated Program Design Element
 - CA IOUs (PG&E, SCE, and SDG&E): Retrocommissioning Programs
 - Wisconsin Focus on Energy: Commercial Programs
 - Commonwealth Edison: *NEW – proposed in DSM plan filed 11/15/07!!!*
- Enhanced Customer Information
 - Xcel Energy: Energy Analysis Program
 - NYSERDA: Energy Smart Schools Program

Case Study – Xcel Energy CREE Program



- Program Design
 - Diagnosis:
 - 1) Benchmarking and Opportunity Summary
 - 2) Investment Grade Audit
 - Implementation:
 - 1) Retrocommissioning and capital improvements
- 30% bonus rebate for implementation of all measures w/ payback \leq 3 yrs

The screenshot shows the Xcel Energy website interface. The main heading is "Commercial Real Estate Efficiency". Below the heading, it states: "Extra rebate dollars and financial analysis tools for building owners and managers". The text describes the program as a "LIMITED-TIME PROGRAM" for commercial real estate customers, offering increased study funding, larger rebates, and enhanced energy expertise and financial analysis. It also mentions that participants can earn increased rebates for making energy-efficiency improvements covered under standard conservation programs. A section titled "SAVE UP TO 15% OR MORE ON ENERGY" states that participants could see energy savings of up to 15 percent or more by making all the efficiency-related capital and operational improvements recommended by the program. A "Save now" section lists three bullet points: "Program details", "Participate, assess and approve", and "Substantiate and receive application". A final bullet point reads: "Call back, request rebate application (for customers with a pre-visit completed study)".

Pilot Results: 43 buildings benchmarked; 18.5 M sq ft; 19 M kWh of savings identified; 500 measures identified

Case Study – Wisconsin Focus on Energy



- Promotes benchmarking as key first step to help customers identify “high opportunity” buildings for energy efficiency upgrades.
- Employs sector-based outreach/education.
- RCx Pilot launching in 2008:
 - Comprehensive Bonus boosts incentive from 50% to 80% of RCx costs. To qualify, customers must establish a baseline and adopt an energy management plan.
 - Obtaining a PM rating, maintaining that rating, and taking action to address a rating decrease is one way to earn the Comprehensive Bonus.

2007 Results: 50 buildings benchmarked; 5 M sq ft; 60 M kWh of electricity savings; 1.6 M therms of gas savings; 14 MW of peak demand reduction

Building Case Study: Whole Building Strategy - St. Francis Hospital



- 150,000 sq. ft hospital- Maryville, Missouri
 - Initial rating 51
 - Methodological review
 - Commissioning, lighting and ENERGY STAR procurement policy
 - Used \$ saved from right-sizing water pump to buy new boilers
 - Used \$ saved from new boilers to fund new DDC controls
 - In one year:
 - ❖ Score: 91
 - ❖ Gas bill cut in half
 - ❖ Electricity reduced 17%

“Benefits to patient comfort...
savings put into patient services”



Building Case Study: Operations and Maintenance - Hines



- 1900 K Street, Washington DC-1996 construction
 - 1999 scored 32
 - 2002 scored 70
 - By 2003 earned ENERGY STAR
 - Found quality construction with energy efficiency in mind, but oversized
 - VFDs on chillers to match measured demand
 - Improved operating standards- static pressure, set points
 - Tracked and managed energy use continuously
 - Improved lighting controls
 - Savings based on synergies and management practices
- “Did not really cost us anything to implement—just a change in the way things get done.”



Get Involved Now



- Join as an ENERGY STAR Partner:
www.energystar.gov/joinbuildings
- Check out Portfolio Manager:
www.energystar.gov/benchmark
- For more information:
Mike Zatz
E-mail: zatz.michael@epa.gov
Tel: 202-343-9152