



The Parker Ranch installation in Hawaii

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

Peter Flippen
ICF International

October 28, 2010

What is TAP?

DOE's Technical Assistance Program (TAP) supports the Energy Efficiency and Conservation Block Grant Program (EECBG) and the State Energy Program (SEP) by providing state, local, and tribal officials the tools and resources needed to implement successful and sustainable clean energy programs.



TAP offers:

- One-on-one assistance
- Extensive online resource library, including:
 - Webinars
 - Events calendar
 - TAP Blog
 - Best practices and project resources
- Facilitation of peer exchange

On topics including:

- Energy efficiency and renewable energy technologies
- Program design and implementation
- Financing
- Performance contracting
- State and local capacity building

Access the TAP Blog!
<http://www.eereblogs.energy.gov/tap/>

Provides a platform for state, local, and tribal government officials and DOE's network of technical and programmatic experts to connect and share best practices on a variety of topics.



Technical Assistance Program Blog



Local Energy Rebate Programs

June 11, 2010 11:19 | [Comments \(1\)](#)

Maggie from Florida asks: Anyone implement an energy rebate program at a local level? Is it being managed by staff or was it contracted out competitively? Any advice on how to best implement/manage such a program?

The TAP Team responds: There are quite a few good examples of energy programs offered at a local level that offer rebates, technical assistance and other incentives. A few of these include the following:

- The City of Charlottesville and Albemarle County in Virginia jointly formed the Local Energy Alliance Program (LEAP) which is creating and administering energy efficiency (EE) programs for the residential sector. The Southeast EE Alliance (SEEA) seed funded the creation of LEAP in 2009 and the county and city have each allocated EECBG funds for LEAP to take programs to scale. They are currently working on rebates, incentives, and a local contractor network to deliver services to the residential sector. LEAP site- www.leap-va.org
- The town of Babylon, New York has rolled out the Long Island Green Homes Program in which residents can make energy efficient improvements to their homes at little or no cost and without assuming new debt through some innovative municipality-based financing initiatives. <http://www.townofbabylon.com/whatsnew.cfm?id=252>
- The Cambridge (Massachusetts) Energy Alliance is a not-for-profit organization created to save residents money, while reducing Cambridge's carbon footprint. The Alliance is working with homeowners, businesses and institutions across the city to achieve unprecedented levels of energy savings and to expand clean energy sources. They offer:
 - Comprehensive energy assessments/audits for Cambridge buildings, generally for free
 - Up to 30% reductions in energy bills
 - Energy efficiency upgrades with no up front cash required
 - A one-stop energy solution with guaranteed quality
 - See: <http://cambridgeenergyalliance.org/>
- The ClimateSmart programs are run by the City of Boulder, Colorado's Office of Environmental Affairs. For information on Boulder's programs, see: http://www.bouldercolorado.gov/index.php?option=com_content&view=article&id=1058&Itemid=336

The management of these programs varies. The municipalities listed above include both municipal staff tasked with running these programs and others that have an outside non-profit organization providing services on behalf of the municipality. There are other examples of municipalities that outsource these services to for-profit consulting firms (Charleston, SC is about to put out an RFP to hire one).

There is not one best way to go on implementing/managing municipal EE programs. There are good reasons and justifications for each of these three models. If the municipality is

BLOG HOME

PAGES

- [TAP Blog Policy](#)

ABOUT THE BLOG

The [Technical Assistance Program Blog](#) provides a platform for state, local, and tribal government officials that receive funding from the DOE State Energy Program and Energy Efficiency and Conservation Block Grants to connect with technical and programmatic experts and share best practices about their renewable energy and energy efficiency programs. Can't find what you're looking for? Contact the TAP Blog Team via email to suggest a topic or submit materials you'd like to share.

RELATED LINKS

- [Energy Information Center](#)
- [Office of Energy Efficiency and Renewable Energy](#)
- [Weatherization & Intergovernmental Program](#)
- [Technical Assistance Program](#)
- [Solution Center](#)

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Include comments in search

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CATEGORIES

- [Buy American](#)
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- [Financing](#)
- [Historic Preservation](#)
- [Webinar](#)

ARCHIVES

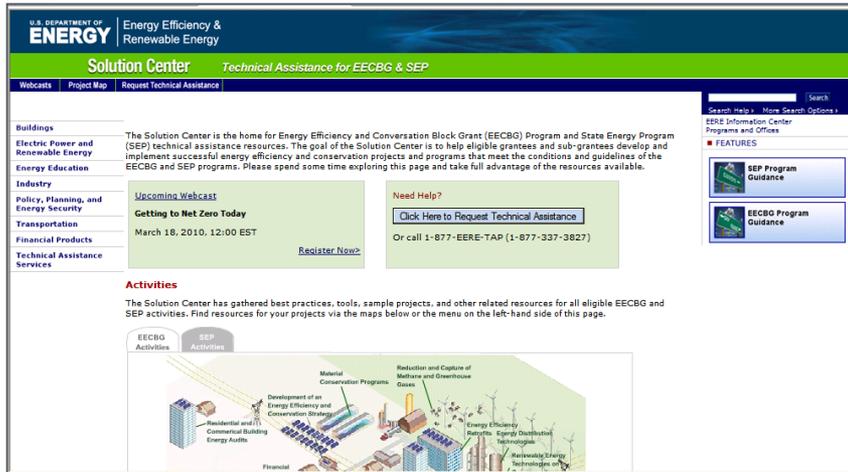
- 2010
 - [June \(1\)](#)
 - [May \(6\)](#)
 - [April \(1\)](#)
 - [March \(1\)](#)
 - [January \(1\)](#)
- 2009
 - [December \(1\)](#)
 - [November \(1\)](#)
 - [October \(1\)](#)
 - [August \(1\)](#)
 - [July \(1\)](#)
 - [June \(1\)](#)
 - [May \(1\)](#)
 - [April \(1\)](#)

META

- [Sign in](#)

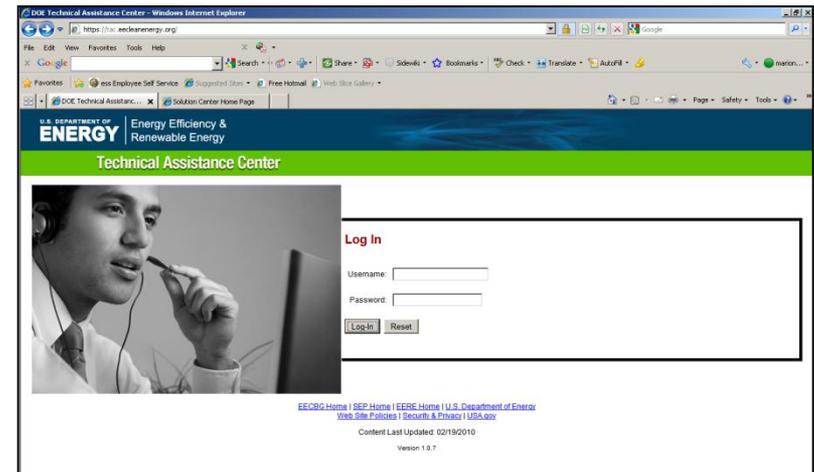
We encourage you to:

1) Explore our online resources via the [Solution Center](#)



The screenshot shows the 'Solution Center' page for the U.S. Department of Energy. The header includes the department logo and the text 'Energy Efficiency & Renewable Energy'. Below the header, there are navigation tabs for 'Webcasts', 'Project Map', and 'Request Technical Assistance'. The main content area is divided into several sections: 'Buildings' with a description of the Solution Center's purpose; 'Energy Education' with a link to 'Upcoming Webcast' for 'Getting to Net Zero Today' on March 18, 2010; 'Industry' with a 'Need Help?' section and a 'Click Here to Request Technical Assistance' button; and 'Activities' with a description and a diagram showing various energy efficiency and conservation strategies like 'Material Conservation Programs', 'Reduction and Capture of Methane and Greenhouse Gases', and 'Energy Efficient Retrofits, Energy Distribution, and Emerging Energy Technologies'.

2) Submit a request via the [Technical Assistance Center](#)



The screenshot shows the 'Technical Assistance Center' page in a Windows Internet Explorer browser. The browser address bar shows 'https://ee.eere.energy.org'. The page header includes the U.S. Department of Energy logo and 'Energy Efficiency & Renewable Energy'. The main content area features a 'Log In' section with 'Username:' and 'Password:' input fields, and 'Log In' and 'Reset' buttons. Below the login section, there are links for 'EERE Home', 'SEP Home', 'EERE Home | U.S. Department of Energy', 'Web Site Policies | Security & Privacy | USA.gov', and 'Content Last Updated: 02/19/2010'. The footer indicates 'Version 1.0.7'.

3) Ask questions via our call center at 1-877-337-3827 or email us at solutioncenter@ee.doe.gov

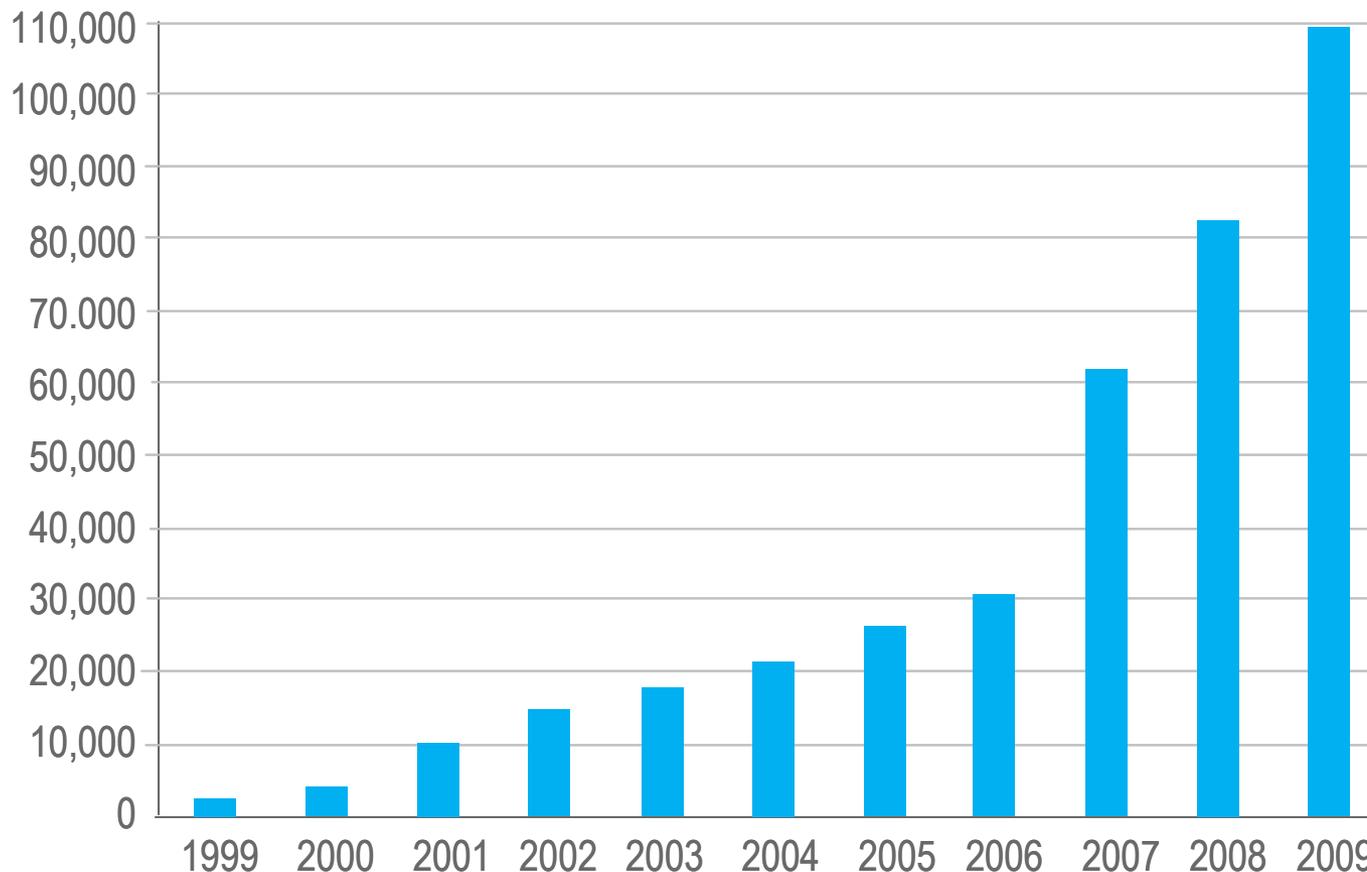
- Overview of ENERGY STAR and Portfolio Manager
- Portfolio Manager: Live Demonstration



- 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

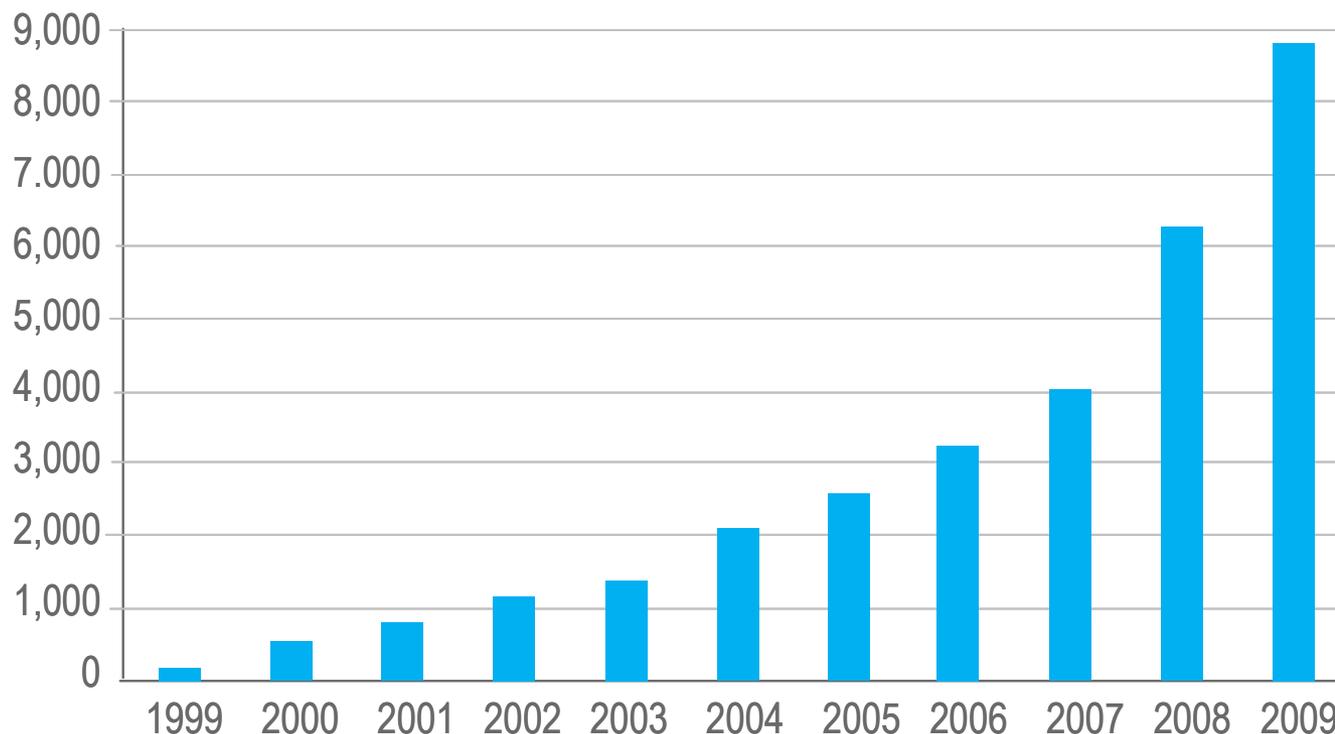
Benchmarking Activity Continues to Increase

Commercial Buildings Rated - Cumulative



www.energystar.gov/decade

ENERGY STAR Labeled Buildings - Cumulative



www.energystar.gov/decade

- 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?

STATEMENT OF ENERGY PERFORMANCE
Margrave High School
 Building ID: 102110
 For 12-month Period Ending: January 31, 2014*
 Date SEP Generated: March 10, 2014

Margrave High School
 2305 Hwy 26
 Longwood VA 22080
 Gross Building Area: 341,265 SF
 Year Built: 1981

Client: Fairfax County
 Contact: John Dow
 1501 North Fort Meade Drive
 Suite 501
 Arlington VA 22204
 (703) 461-6500

Space Type	Area(SF)	Number of Students	Number of PCs	Cooling Percent
Computer Data Center	158	NA	NA	NA
K-12 Schools	351221	1,021	420	100

Site Energy Use Summary	Professional Verification
Electricity (kBtu)	5,680,861
Propane (kBtu)	320,812
Natural Gas (kBtu)	0
Total Energy (kBtu)	5,979,229

Results

Energy Performance Rating* (1-100): 94

Energy Intensity*
 Site (kBtu/SF-yr): 17
 Source (kBtu/SF-yr): 45.4

Exhaustion
 CO₂ (1000 lbs/yr): 6,791
 SO₂ (1000 lbs/yr): 260
 NO_x (1000 lbs/yr): 21

Energy Cost
 Cost (\$/yr): \$214,440
 Intensity (\$/SF-yr): \$0.62

Indoor Environment Criteria*
 Indoor air pollutants controlled? Yes
 Adequate ventilation provided? Yes
 Thermal conditions met? Yes
 Adequate illumination provided? Yes

Notes:
 *Based on the conditions observed at the time of the visit to this building. Verify that the information contained on this statement is accurate.

Professional Engineer Stamp
 Based on the conditions observed at the time of my visit to this building, I certify that the information contained on this statement is accurate.

Handbook for lighting quality
 P206-40202001010442

Energy Performance
Rating: **1 to 100**

All Space Types	K-12 School	Office	Supermarket Grocery
<ul style="list-style-type: none">• Address• Year Built• At least 12 months energy data	<ul style="list-style-type: none">• SF• # Walk-in refrigerator freezer units• # PC's• Open weekends Y/N• Cooking Y/N• High School Y/N• % Heated• % AC	<ul style="list-style-type: none">• SF• # Workers• Op. hrs.• # PC's• % Heated• % AC	<ul style="list-style-type: none">• SF• # Workers• Op. hrs• # Walk-in refrigerator freezer units• Cooking Y/N• % Heated• % AC



Examples

ENERGY STAR Score Eligible Building Types



Bank/Financial Institutions



Courthouses



Data Centers



Dormitories



Hospitals



Hotels



Houses of Worship



K-12 Schools



Medical Offices



Office Buildings



Retail Stores



Supermarkets

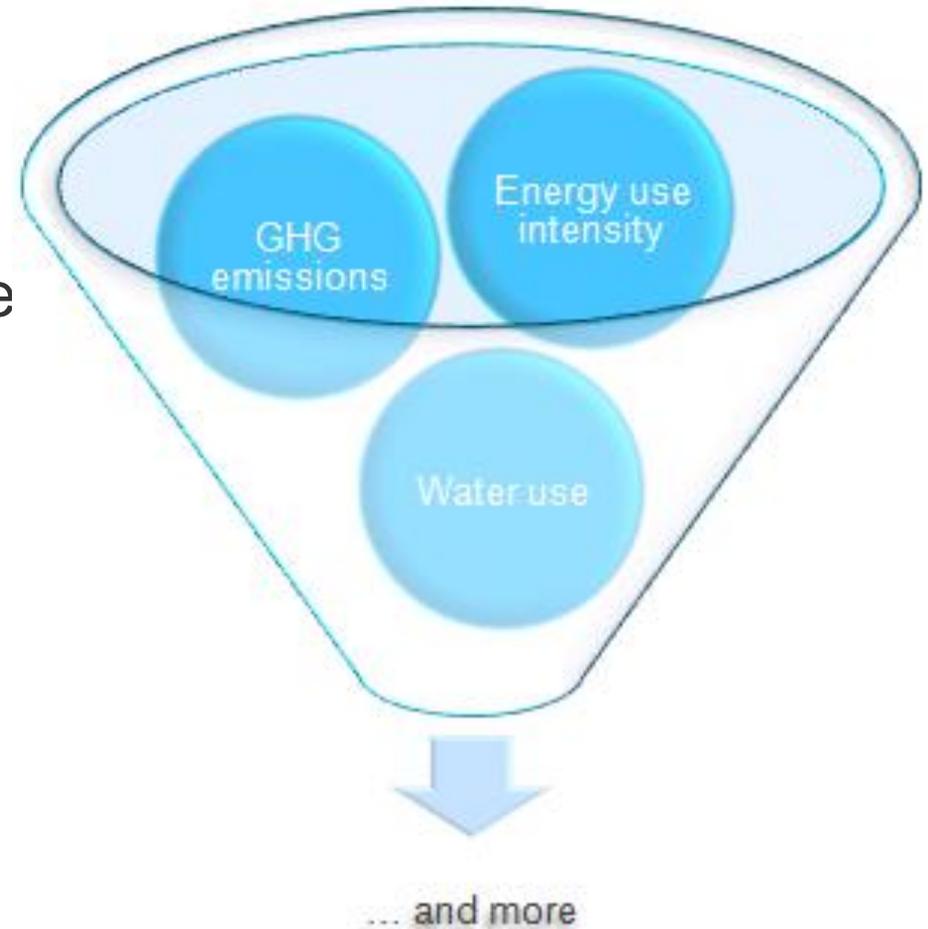


Warehouses



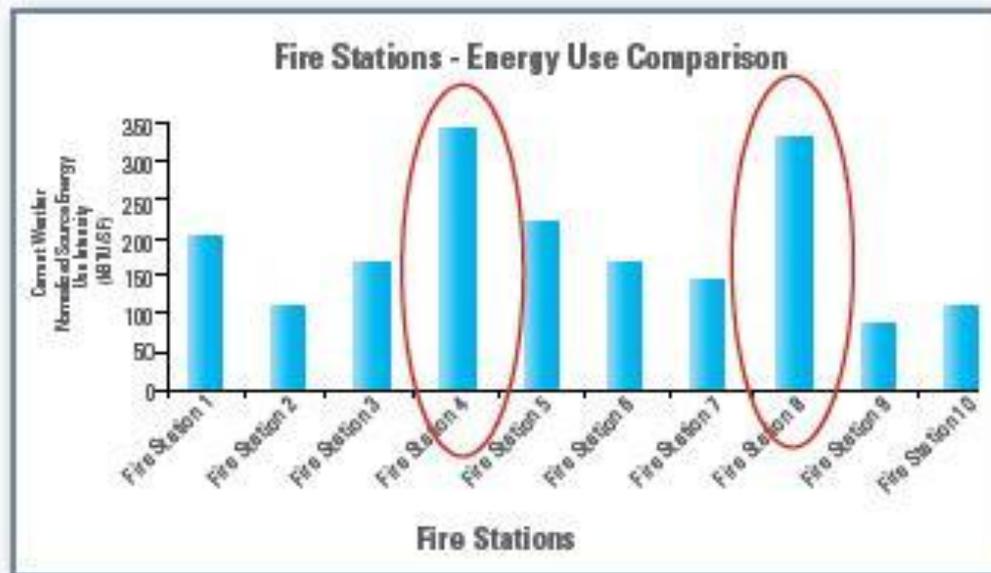
Wastewater Treatment Plants

- 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
- Conduct low cost “pre-audits” of building energy use



Prioritize efforts by identifying under-performing buildings.

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

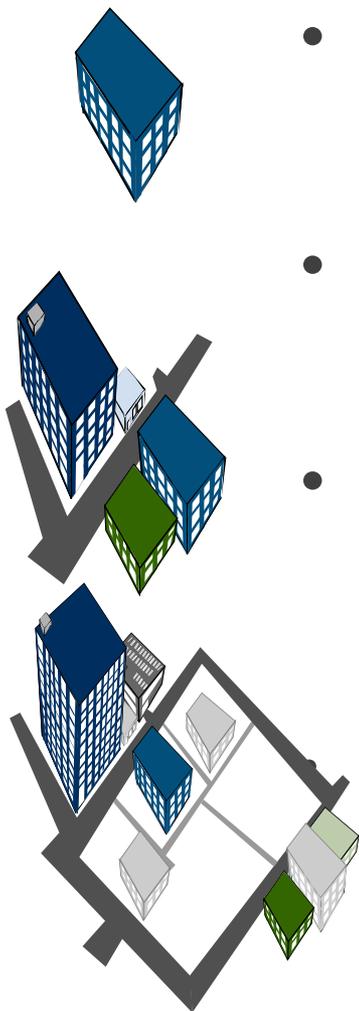
Symbol of superior energy performance

Recognized by 75% of Americans

- A consistent platform to and accurately demonstrate savings with *transparency* and *accountability*:
 - Efficiency improvements over a baseline
 - GHG emissions
 - Water use
- Reporting Feature: Create custom reports and receive results:
 - Create custom reports by choosing from key energy, environmental, and/or cost performance indicators
 - Request benchmarking results from multiple building owners/grantees
 - Download data in Excel, CSV, PDF, and XML formats for analysis

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](#)



- **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

Document and Communicate Improvements

OMB No. 2060-0847



STATEMENT OF ENERGY PERFORMANCE Sample Facility

Building ID: 1275018
For 12-month Period Ending: April 30, 2009*
Date SEP becomes Ineligible: August 29, 2009

Date SEP Generated: May 29, 2009

Facility
Sample Facility
123 ABC Street
Arlington, VA 22201

Facility Owner
Test Building Owner
789 ABC Street
Fairfax, VA 22031
310-351-3787

Primary Contact for this Facility
A S
789 ABC Street
Fairfax, VA 22031
310-351-3787
khananusi@gmail.com

Year Built: 1990
Gross Floor Area (ft²): 20,000

Energy Performance Rating² (1-100) 100

Site Energy Use Summary³
Electricity (kBtu) 238,840
Natural Gas (kBtu)⁴ 0
Total Energy (kBtu) 238,840

Energy Intensity⁵
Site (kBtu/ft²/yr) 12
Source (kBtu/ft²/yr) 40

Emissions (based on site energy use)
Greenhouse Gas Emissions (MTCO₂e/year) 36

Electric Distribution Utility
Virginia Electric & Power Co

National Average Comparison
National Average Site EUI 60
National Average Source EUI 166
% Difference from National Average Source EUI -76%
Building Type Office

Meets Industry Standards⁶ for Indoor Environmental Conditions:
Ventilation for Acceptable Indoor Air Quality **Yes**
Acceptable Thermal Environmental Conditions **Yes**
Adequate Illumination **Yes**

Professional Engineer
Signature: _____
Based on the time of my visit, the information in this statement is in accordance with the information provided to me.

Professional Engineer License Number
State: VA
P.E.
2251 Plimmit
Falls Church, VA
703-934-3077

Notes:
1. Application for the ENERGY STAR must be submitted to EPA within 6 months of the Period Ending date. Award of the ENERGY STAR is not guaranteed.
2. The EPA Energy Performance Rating is based on total source energy. A rating of 70 is the minimum to be eligible for the ENERGY STAR.
3. Values represent energy consumption, not savings or a 12-month period.
4. Natural Gas values in cubic feet are converted to kBtu with adjustment made for elevation based on Facility zip code.
5. Values represent energy intensity, measured over a 12-month period.
6. Based on meeting ASHRAE Standard 55 for ventilation for acceptable indoor air quality, ASHRAE Standard 55 for thermal comfort, and ASHRAE Standard 90.1 for energy efficiency.

FOR YOUR RECORDS ONLY. DO NOT SUBMIT TO EPA.

Please keep this Facility Summary for your own records; do not submit it to EPA. Only the Statement of Energy Performance (SEP), Data Checklist and Letter of Agreement need to be submitted to EPA when applying for the ENERGY STAR.

Facility
Sample Facility
123 ABC Street
Arlington, VA 22201

Facility Owner
Test Building Owner
789 ABC Street
Fairfax, VA 22031
310-351-3787

Primary Contact for this Facility
A S
789 ABC Street
Fairfax, VA 22031
310-351-3787
khananusi@gmail.com

General Information

Sample Facility	
Gross Floor Area Excluding Parking (ft ²)	20,000
Year Built	1990
For 12-month Evaluation Period Ending Date:	April 30, 2009

Facility Space Use Summary

Sample Space Name	
Space Type	Office
Gross Floor Area (ft ²)	20,000
Weekly operating hours	60
Workers on Main Shift	35
Number of PCs	32
Percent Cooled	50% or more
Percent Heated	Less than 50%

Energy Performance Comparison

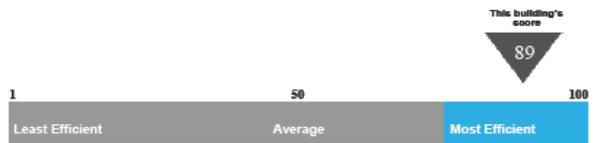
Performance Metrics	Evaluation Periods		Comparisons		
	Current (Ending Date 04/30/2009)	Baseline	Rating of 75	Target	National Average
Energy Performance Rating	100		75	N/A	50
Energy Intensity	Site (kBtu/ft ²)	12	N/A	37	50
	Source (kBtu/ft ²)	40	N/A	123	166
Energy Cost	\$/year	N/A	N/A	N/A	N/A
	¢/ft ² /year	N/A	N/A	N/A	N/A
Greenhouse Gas Emissions	MTCO ₂ /year	36	N/A	111	155
	kgCO ₂ e/ft ² /year	2	N/A	6	8

More than 50% of your building is defined as Office. Please note that your rating accounts for all of the spaces listed. The National Average column presents energy performance data your building would have if your building had an average rating of 50.
Notes:
o - This attribute is optional.
d - A default value has been supplied by Portfolio Manager.

Statement of Energy Performance

2009
Test-Sample Facility
12434 Any Street
New York, NY 10288
Portfolio Manager Building ID: 1677122

The energy use of this building has been measured and compared to other similar buildings using the Environmental Protection Agency's (EPA's) Energy Performance Scale of 1-100, with 1 being the least energy efficient and 100 the most energy efficient. For more information, visit energystar.gov/benchmark.



This building uses 156 kBtu per square foot per year.*
Buildings with a score of 75 or higher may qualify for EPA's ENERGY STAR.

*Based on source energy intensity for the 12 month period ending April 2009

I certify that the information contained within this statement is accurate and in accordance with U.S. Environmental Protection Agency's measurement standards, found at energystar.gov

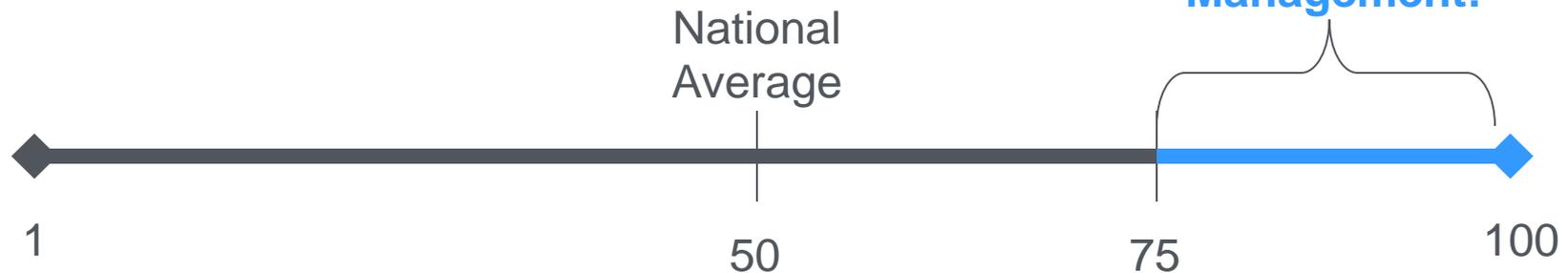


ENERGY STAR Label for Commercial Buildings

- National recognition for top energy performance of commercial buildings.
 - Over 10,000 buildings have earned the ENERGY STAR to date.



Superior Energy Management!



Percentile of Commercial Building Population
in terms of Energy Performance

- 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/

- Review [online listing](#) of state and local government benchmarking initiatives for ideas for ARRA funded activities.
- Consider incorporating Portfolio Manager benchmarking into current commercial building efficiency projects to promote transparency and accountability.
- Work with your organization's facility or energy management department to benchmark public facilities to show leadership in the state/city/community.
- Complete a DOE technical assistance request for additional support needed to incorporate benchmarking into projects.

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/>

Peter Flippen, pflippen@icfi.com, Technical Assistance Support
Contractor for the Department of Energy

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

Please join us again:

Title: Designing Effective Incentives to Drive Residential Retrofit Program Participation

Date: October 29, 2010

Time: 2:00 - 3:00pm EDT

Title: How to Design a Community Energy Alliance

Date: November 1, 2010

Time: 2:00 - 3:15pm EDT

Title: Preparing for the Arrival of Electric Vehicle

Date: November 3, 2010

Time: 2:00 - 3:00pm EDT

Title: Effective O&M Policy in Public Buildings

Date: November 4, 2010

Time: 2:00 - 3:00pm EDT

Title: Local Power Empowers: CHP and District Energy

Date: November 8, 2010

Time: 2:00 - 3:00pm EDT

Title: Driving Demand: Working With and Learning from Contractors

Date: November 9, 2010

Time: 2:00 - 3:15pm EST

Title: EM&V 101: General Approaches to Tracking Data and Estimating Savings

Date: November 10, 2010

Time: 2:00 - 3:00pm EST

Title: Energy Efficiency Rebate Programs 101

Date: November 15, 2010

Time: 12:00 - 2:00pm EST

Title: State Clean Energy Policy Impact

Date: November 17, 2010

Time: 3:00 - 4:15pm EST

Webcast page: www.wip.energy.gov/solutioncenter/webcasts