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Sustainability "How-to Guide" Series

EPA's ENERGY STAR Measurement and Tracking Tool: Portfolio Manager

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2nd Edition

TABLE OF CONTENTS

Acknowledgements . . . 1

About the Authors . . . 2

Foreword . . . 3

Part 1: Executive Summary . . . 6

Part 2: Introduction . . . 7

- 2.1 Purpose . . . 7
- 2.2 Methodology . . . 7
- 2.3 Scope . . . 7

Part 3: Detailed Findings . . . 8

- 3.1 Energy Consumption Baseline and Tracking . . . 8
- 3.1.1 Initial Setup and Getting Started . . . 8
- 3.1.2 Setting Up a Facility . . . 9
- 3.1.3 Portfolio Manager Features . . . 12
- 3.1.4 Sharing Facilities . . . 13
- 3.1.5 Setting Up a Campus . . . 13
- 3.2 Generating an ENERGY STAR Score . . . 15
- 3.2.1 What Is the ENERGY STAR Score? . . . 15
- 3.2.2 Facilities Eligible to Receive a Score . . . 15
- 3.3 Submitting for the ENERGY STAR Certification . . . 17
- 3.4 Analyzing the Results . . . 18
- 3.4.1 Viewing a Facility's Performance . . . 18
- 3.4.2 Reporting the Data . . . 20
- 3.4.3 Understanding the Facility's Performance . . . 20
- 3.4.4 Setting Energy Performance Goals . . . 21
- 3.4.5 Interpreting the Results and Meeting Goals . . . 21
- 3.5 Other Recognition . . . 22
- 3.5.1 ENERGY STAR Partner . . . 22
- 3.5.2 IFMA Energy Challenge . . . 23
- 3.5.3 ENERGY STAR Leaders . . . 23
- 3.5.4 Partner of the Year . . . 23
- 3.5.5 Designed to Earn . . . 23
- 3.5.6 Mandatory and Voluntary Programs . . . 24
- 3.6 Other Tools . . . 24
- 3.6.1 Industries in Focus . . . 24
- 3.6.2 Measuring the Carbon Footprint . . . 25
- 3.6.3 Tracking Water Use Consumption . . . 26

Part 4: Making the Business Case . . . 27

- 4.1 Organization Drivers and Goals . . . 27
- 4.1.1 Establishing Goals . . . 27
- 4.1.2 Aligning Goals . . . 27
- 4.1.3 Results . . . 28
- 4.1.4 Example Energy Management Strategy . . . 29

Part 5: Case Study . . . 30

- 5.1 NEA . . . 30
- 5.1.1 Introduction . . . 30
- 5.1.2 The Effort . . . 30
- 5.1.3 Results . . . 30

Part 6: Appendices 32
6.1 Appendix A: References 32
6.2 Appendix B: Additional Resources 33
6.3 Appendix C: Glossary 34
6.4 Appendix D: Submitting for the ENERGY STAR Certification 37
6.5 Appendix E: The IFMA Energy Challenge: ENERGY STAR 40
6.5.1 Frequently Asked Questions 41

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FOREWORD

It is no secret that a focused, well-defined sustainability strategy is beneficial to an organization's bottom line, whether it is a federal, private-sector, military or nonprofit entity. Sustainable practices are not only the right thing to do for the environment; they also benefit the communities in which they are implemented. Sustainability is the business implementation of environmental responsibility.

Sustainability is all around us. Federal, state and local governments are increasingly applying regulatory constraints on design, construction and facility operations standards. Employees expect their employers to act responsibly, and vice versa. Going green is no longer a fad or a trend, but a course of action for individuals and businesses alike – benefiting the triple bottom line of people, planet and profit.

Today's facility manager needs to be able to clearly communicate the benefits and positive economic impact of sustainability and energy-efficient practices, not only to the public, but also to the C-suite. While there is a dramatic need for each of us – and our organizations – to care for the environment, it is just as important that we convey to executives and stakeholders how these initiatives can benefit our company's financial success.

The document in your hands is the result of a partnership between the IFMA Foundation and IFMA, through its Sustainability Committee, each working to fulfill the shared goal of furthering sustainability knowledge. Conducting research like this provides both IFMA and the foundation with great insight into what each can do as an organization to assist the facility management community at large.

It is my hope that you, as a facility professional, will join us in our mission of furthering sustainable practices. This resource is a good place to start.

Tony Keane, CAE
President and CEO
International Facility Management Association

FOREWORD

IFMA Sustainability Committee (ISC)

The IFMA Sustainablitiy Committee (ISC) is charged with developing and implementing strategic and tactical sustainability initiatives. A current initiative involves working with the IFMA Foundation on the development of a series of "How-to Guides" that will help educate facility management professionals and others with similar interests in a wide variety of topics associated with sustainability and the built environment.

The general objectives of these "How-to Guides" are as follows:

1. To provide data associated with a wide range of subjects related to sustainability, energy savings and the built environment

2. To provide practical information associated with how to implement the steps being recommended

3. To present a business case and return-on-investment (ROI) analysis, wherever possible, justifying each green initiative being discussed

4. To provide information on how to sell management on the implementation of the sustainability technology under discussion

5. To provide case studies of successful examples of implementing each green initiative

6. To provide references and additional resources (e.g., Web sites, articles, glossary) where readers can go for additional information

7. To work with other associations for the purpose of sharing and promoting sustainability content

The guides are reviewed by an editorial board, an advisory board and, in most cases, by invited external reviewers. Once the guides are completed, they are distributed via the IFMA Foundation's Web site (www.ifmafoundation.org) free of charge.

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The mission of the IFMA Foundation is to promote and support scholarships, educational and research opportunities for the advancement of facility management worldwide.

Established in 1990 as a nonprofit, 501(c)(3) corporation, the IFMA Foundation is supported by the generosity of a community of individuals – IFMA members, chapters, councils, corporate sponsors and private contributors – and is proud to be an instrument of information and opportunities for the profession and its representatives.

A separate entity from IFMA, the IFMA Foundation receives no funding from annual membership dues to carry out its mission. Supported by the generosity of the FM community, the IFMA Foundation provides education, research and scholarships for the benefit of FM professionals and students. Foundation contributors share the belief that education and research improve the FM profession.

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1 EXECUTIVE SUMMARY

'Expand knowledge of the built environment, in a changing world, through scholarships, education and research'

The Vision Statement of the IFMA Foundation

Energy management is an integral part of the day-to-day operations of facility managers and operators of existing facilities. Rising energy costs and increasing interest in sustainability are driving the need to scrutinize energy consumption in buildings and develop strategies for better management.

Successful energy management starts with understanding the units of energy and power, and becoming comfortable with the terminology. This guide will highlight essential terms and why they are important. In addition to knowing terminology, a building's monthly and annual energy consumption, and how it is changing over time, must be understood. How efficient is a building? How does a building's overall efficiency compare to a portfolio of buildings? Or, how does it compare to other similar buildings regionally, nationwide or internationally? This guide will help answer these questions as the authors walk through ENERGY STAR Measurement and Tracking Tool: Portfolio Manager, the online tool from the U.S. Environmental Protection Agency.

Portfolio Manager is a free online tool that is used to benchmark and track energy consumption, water consumption and greenhouse gas emissions within a single building or across a portfolio of buildings. Understanding energy consumption over time and comparing it to other buildings in a portfolio is an important part of an energy management strategy. All facilities can use the tool to track these items and compare their consumption year to year and building to building. By entering basic information about a facility and its energy consumption data, the tool calculates annual energy consumption, which can be compared to other similar facilities using the International Facility Management Association's (IFMA) benchmarking data. Some facilities that meet certain criteria can take this further and use the tool to benchmark energy usage against facilities across the nation and determine the building's ENERGY STAR score. This rating system is based on statistically representative models that, through a normalization process, can compare the energy consumption of a building to similar buildings nationwide.

By tracking energy consumption and using the Portfolio Manager tool to determine the energy utilization index (EUI), also referred to as the energy use intesity, consumption can be compared year to year and building to building within a portfolio. The authors will discuss the EUI further in this guide. EUI can be used to compare a building to other similar buildings by looking at IFMA's *Operations & Maintenance Benchmarks, Research Report #32* (IFMA 2009) or other benchmarking sources. If a building is eligible, an ENERGY STAR score allows for benchmarking energy consumption against buildings nationwide. Whether a building is eligible for an ENERGY STAR score or not, all of these analyses help determine a building's efficiency and assist in prioritizing energy conservation measures to improve overall energy efficiency.

LEARN MORE AT energystar.gov

2 INTRODUCTION

2.1 Purpose

The purpose of this guide is to show facility managers how ENERGY STAR Measurement and Tracking Tool: Portfolio Manager can assist in evaluating and tracking a facility's energy consumption, help identify underperforming facilities, generate an ENERGY STAR score, track energy savings from implementation of energy efficient measures, and evaluate potential energy saving measures for a facility. With the assistance of ENERGY STAR Measurement and Tracking Tool: Portfolio Manager, facility owners and managers can make more informed decisions on topics and matters that are based on the energy performance of their facility.

2.2 Methodology

The ENERGY STAR Measurement and Tracking Tool: Portfolio Manager "How-to Guide" details the steps to gaining a better understanding of a building's, or portfolio of buildings, energy consumption, which in turn helps an organization make informed decisions about operational issues. This guide walks the reader through Portfolio Manager, a valuable, easy to use, free tool that makes it easy to track a facility's energy performance.

After providing insight on how to navigate through and operate Portfolio Manager, the guide offers suggestions on some helpful features that can be found in the Portfolio Manager tool and within the ENERGY STAR Web site. These features help provide a better understanding of building performance and the value better-performing buildings offer an organization

This guide will also discuss how to use the features within Portfolio Manager along with some business methods, such as the triple bottom line and balanced scorecards, to help achieve performance goals.

2.3 Scope

This guide will show how to:

- Track a facility's energy consumption and establish an energy consumption baseline
- Generate an ENERGY STAR score and the criteria necessary to receive a score
- Submit for the ENERGY STAR certification
- Review and analyze a facility's performance
- Understand the performance of a facility and the steps and strategies necessary to improve performance
- Set energy performance targets
- Interpret the result to help meet targets and goals
- Obtain recognition within the industry
- Use other tools to help understand a facility's energy consumption
- Set and align goals within an organization

3 DETAILED FINDINGS

3.1 Energy Consumption Baseline and Tracking

3.1.1 Initial Setup and Getting Started

ENERGY STAR Measurement and Tracking Tool: Portfolio Manager is available free online. Registration is required and new users must set up an account within Portfolio Manager. To access Portfolio Manager, go to the main ENERGY STAR commercial buildings page at www.energystar.gov/buildings (Figure 1).

The Portfolio Manager login is located in the Quick Finder list of links (Figure 1). At the Portfolio Manager login, users can register and set up a new account, which includes creating a user name and password and providing additional information about the user's organization. From the same log-in pages, returning users can access their account simply by entering a user name and password.

ENERGY STAR 1-2-3

1. Register
2. Create a new facility
3. Add a space
4. Add utility data
5. Review energy consumption data
6. If score is 75 or higher, pursue ENERGY STAR certification

Once the account has been set up, the Portfolio Manager Quick Reference Guide can be used as a quick and easy way to become familiar with Portfolio Manager. This guide can be accessed from the Portfolio Manager Overview page at www.energystar.gov/benchmark, where it can be

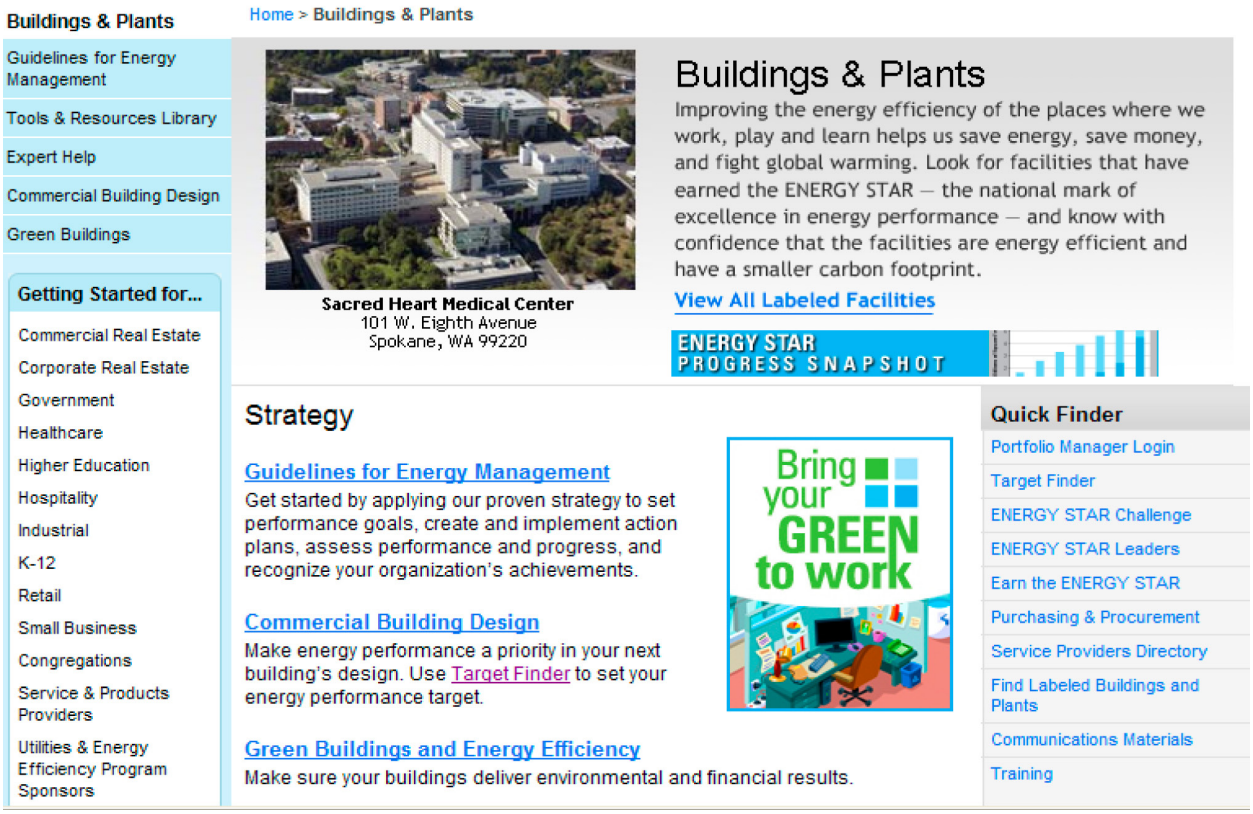


Figure 1: ENERGY STAR Buildings & Plants Web page

found in the Benchmarking Starter Kit (ENERGY STAR 2009). The Benchmarking Starter Kit includes the ENERGY STAR Measurement and Tracking Tool: Portfolio Manager data collection worksheet. This will help in identifying and gathering the data needed to benchmark the facility.

3.1.2 Setting Up a Facility

After registering as a Portfolio Manager user, the next step is to create a facility in Portfolio Manager and populate the necessary data. To begin, log into ENERGY STAR Measurement and Tracking Tool: Portfolio Manager and access a portfolio. Selecting a portfolio takes the user to the main portfolio page entitled My Portfolio, where all the facilities the user has created can be viewed. This is also where the process of adding a facility begins (Figure 2). Adding a facility requires answering a series of questions that include the location of the facility and the year that it was built.

Now that the facility has been created, it is time to input building operational characteristics and energy information. In order to properly model a facility, certain information needs to be collected. The ENERGY STAR Measurement and Tracking Tool: Portfolio Manager data collection worksheet can assist in collecting the required information. Certain types of facilities may have other specialty information that will need to be gathered.

Essential information that must be collected for a facility includes:

- Building address, including ZIP code
- Year built
- Building type (i.e., office, grocery store, retail, etc.)
- Floor area (gross square footage or square meters)
- Number of occupants
- Number of personal computers
- Operating hours per week (number of hours per week building is 75 percent occupied)
- Twelve months of monthly energy consumption data

A facility is added from the main portfolio page. The user then advances to the Facility Summary page, where the information about the facility needs to be added. There are several categories on this page: facility performance, space use, energy meters, water meters and renewable energy certificates.

The space use category is where the building type and operational characteristics of that specific building are defined. Data to be entered includes a space name, space type, date of construction and more detailed specifics, including floor area, operating hours, number of workers on main shift, and other information depending on space type selected (Figure 3). When defining the space

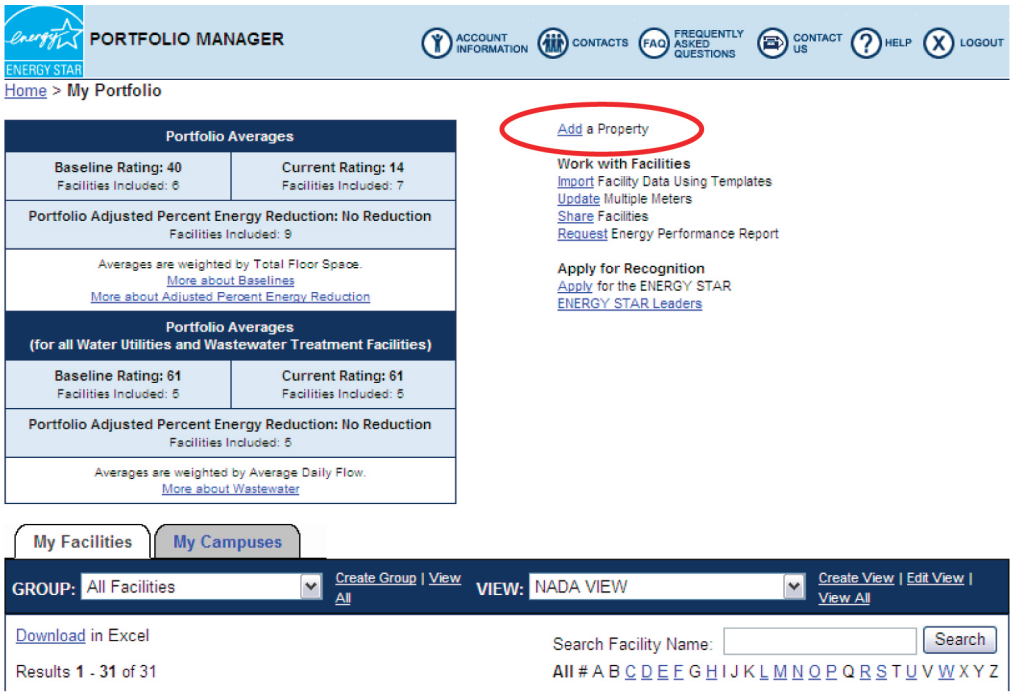


Figure 2: Portfolio Manager My Portfolio Web page

KEEP IT SIMPLE

Including more individual space types within a facility is not necessarily better. Only use the space types to define areas that operate differently in terms of energy use and operating hours.

EXAMPLE

For a 200,000 square foot (18,581 m²) office building with no specialty spaces, such as a data center, simply input one space type of 200,000 square feet. There is no need to separately break out storage rooms, lobby areas, or mechanical and electrical spaces.

uses within the building, the goal should be to use as few space types as possible. In other words, proceed from the "top down" rather than defining the building space-by-space, floor-by-floor or tenant-by-tenant. Begin by considering the entire facility (i.e., all square footage or square meters within the building envelope), and decide what Portfolio Manager space type best defines the primary activity at the building. Enter all the building area that falls under this dominant space use category. For details regarding what should be included within a given space use category, please visit www.energystar.gov/index.cfm?c=eligibility.bus_portfoliomanager_space_types, which links to Portfolio Manager space type definitions (ENERGY STAR 2009).

Once the primary building activity has been identified, then it is appropriate to "break out" space uses that are fundamentally different from the defined core building space. As noted earlier, try to define the building under one building type as much as possible. Breaking the building into multiple space types does not increase the accuracy of the building's rating or energy use intensity. A list of space types that can be used to define building operations is found at www.energystar.gov/index.cfm?c=eligibility.bus_portfoliomanager_space_types (ENERGY STAR 2009).

Please note the following:

- The aggregate area of the distinct space types defined must add up to the total area within the building envelope. Do not double count space. For instance, square footage defined as "computer data center" cannot also be included in the square footage defined as "office."
- The term "data center" applies to spaces specifically designed to handle high-density computing. These spaces often have an independent cooling system. Server and telecom closets do not meet the data center definition.
- "Other" should be used to define a space use that is not captured within the list of supported spaces, and that would not be reasonably expected to be found at an "average" property of this type, such as a laboratory space within an office building. For additional guidance on the use of the "other" space type, please visit www.energystar.gov/index.cfm?c=eligibility.bus_portfoliomanager_eligibility_other (ENERGY STAR 2009).

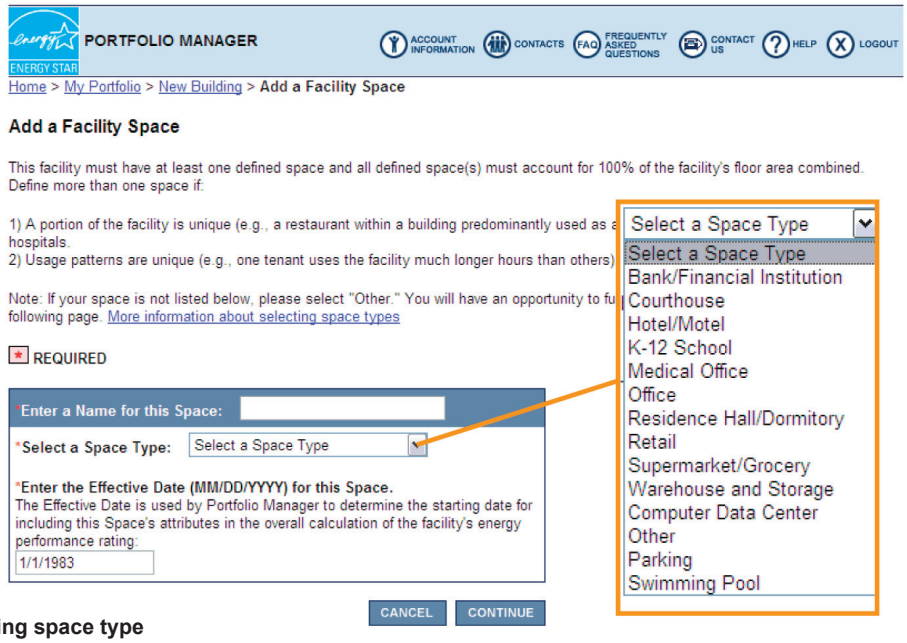


Figure 3: Selecting space type

- For detailed guidance on how to account for "retail" space in a mixed-use setting, please visit www.energystar.gov/index.cfm?c=eligibility.bus_portfoliomanager_eligibility_mixed (ENERGY STAR 2009).
- In a multitenant office building where some tenants have operating hours that are significantly different (+/- 10 hours) from the building average, the area defined as "office" can be split up to reflect these different operating hours. The number of personal computers (PCs) and number of occupants should add up to reflect the total number for the building.
- Vacant space within an office building should be input as a distinct entry for "office," with 0 PCs, 0 occupants and 0 weekly operating hours. Only break out vacant space if the average vacant space over the course of the year is more than 10 percent of the total area of the building.

The only time space outside the building should be accounted for is when:

- The space is used for parking
- The energy consumption of this space is included on the main building meter(s) and cannot otherwise be isolated through sub-metering

In the case of parking, create a space called "parking," and input the requested information regarding the different categories of parking area (i.e., open vs. partially enclosed vs. fully enclosed). If the parking area is sub-metered, then do not account for parking area square footage or energy consumption in the benchmarking analysis.

HELPFUL HINT

Many utility providers can now load energy consumption data directly into a Portfolio Manager account using the automated benchmarking tool. Check with the utility provider to see if this service is available. For additional information on automated benchmarking, please see www.energystar.gov/index.cfm?c=ci_program_sponsors.ci_program_sponsors_automated_benchmarking.

The next step involves entering energy consumption data into Portfolio Manager. This will be done in the Energy Meters category (Figure 4). In the Energy Meters category, 12 months of consecutive energy consumption data for all meters and fuel types are needed to accurately compute the energy performance of a facility. In the Energy Meters category, add a meter and then input what part of the facility the meter serves, the energy type, units of energy type, whether to add this meter to the total facility energy use and whether the meter is still active. If there is a sub-meter at the facility, do not include it in the total facility energy consumption to avoid duplication. Sub-meters do not need to be entered to compute the building's

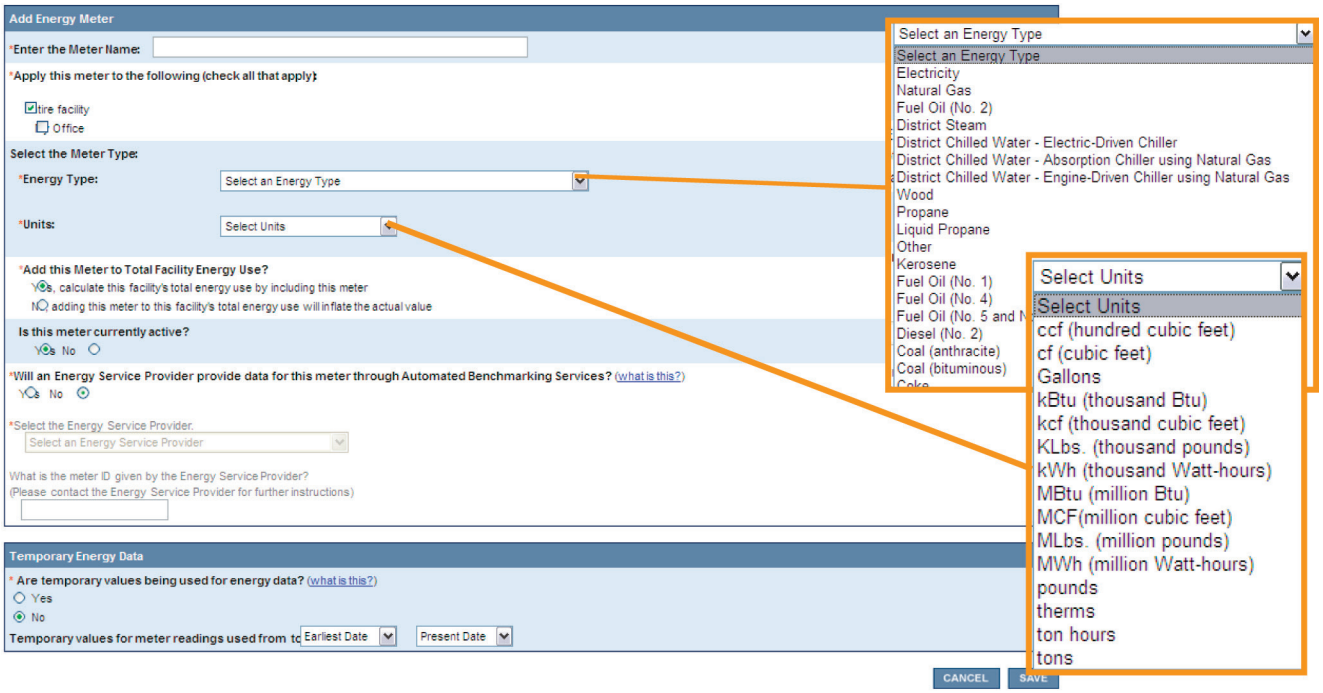


Figure 4: Selecting energy type

total energy consumption but are used for tracking purposes. On-site renewable energy, such as on-site solar and wind, needs to be accounted for, as well.

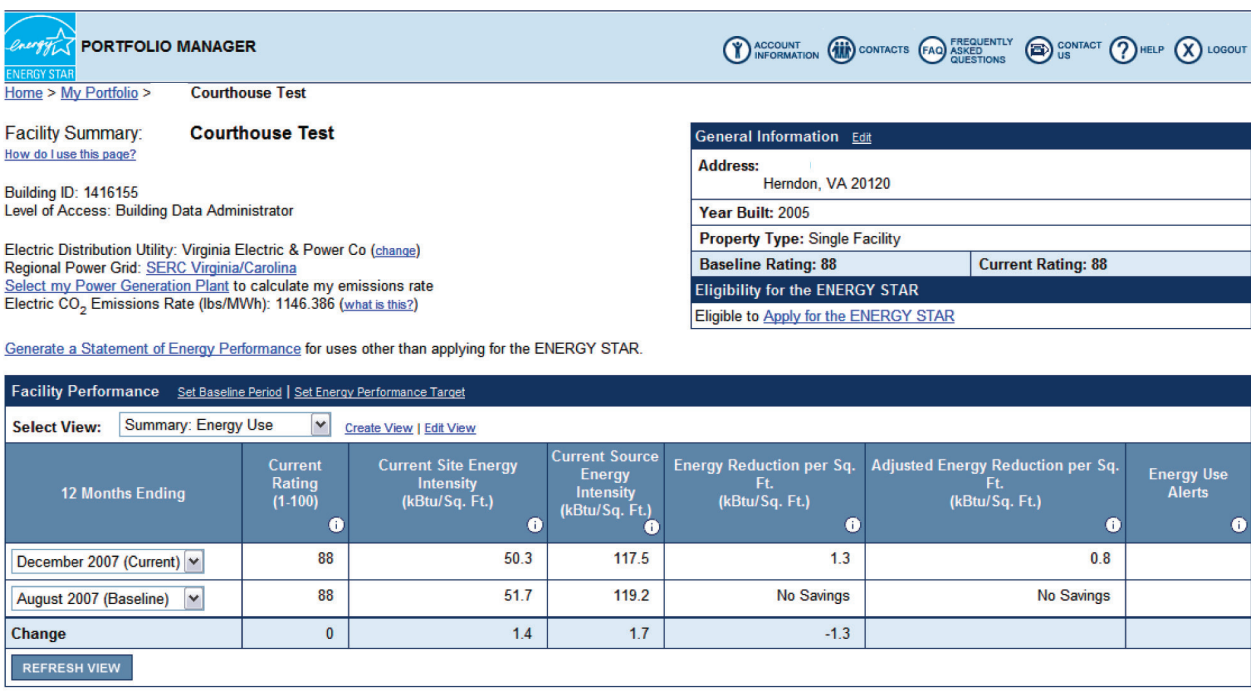
Once a meter is created, enter the energy use per month for that meter and adjust the start and end date of that meter's usage. There is also an option to enter the cost of that meter's energy usage per month (Figure 4). The cost does not need to be entered in order to track and benchmark energy usage but can be used to track utility costs of the facility. Portfolio Manager aggregates energy consumption data by fuel type, rather than meter-by-meter. Therefore, if there are 10 different electrical meters, either enter each meter individually or aggregate all the meters and enter the information in as one meter for electrical consumption. Either method can be used, and the method chosen really depends on what is easier and what level of energy consumption tracking is desired.

The Water Meters category, which is listed below the Energy Meters category on the Facility Summary page, can be used to document and track the facility's water usage but is not necessary to track and benchmark the energy usage of the facility. To track water usage, simply enter the required information in the Water Meters category.

The Renewable Energy Certificates (REC) category, which is listed below the Water Meter category on the Facility Summary page, can be used to document, track, and calculate the facility's avoided greenhouse gas (GHG) emissions. Avoided GHG emissions are based on the amount of energy chosen to be purchased through RECs to offset actual consumption.

3.1.3 Portfolio Manager Features

At this point, the information for the building has been completely entered into Portfolio Manager, setting up a baseline case. New information can be entered every month and compared to the baseline to determine improvement or lack thereof. The next step is to evaluate and analyze this information and the results that have been generated from the building's data. To see an overview of the performance of a facility based on the information and data entered, look at the Facility Performance section on the Facility Summary page. Within this category it is possible to view a summary of performance for different aspects of the facility, such as energy use, environmental, financial, greenhouse gas emissions and water use. The Summary: Energy Use view within the Facility Summary page allows for comparison between the baseline case and current performance (Figure 5). Certain "views" on the My Portfolio Facility Summary page can be selected to see an entire portfolio of buildings at once. Ways to perform more detailed analysis of the results will be explored later in this guide.



12 Months Ending	Current Rating (1-100)	Current Site Energy Intensity (kBtu/Sq. Ft.)	Current Source Energy Intensity (kBtu/Sq. Ft.)	Energy Reduction per Sq. Ft. (kBtu/Sq. Ft.)	Adjusted Energy Reduction per Sq. Ft. (kBtu/Sq. Ft.)	Energy Use Alerts
December 2007 (Current)	88	50.3	117.5	1.3	0.8	
August 2007 (Baseline)	88	51.7	119.2	No Savings	No Savings	
Change	0	1.4	1.7	-1.3		

Figure 5: Facility Summary page

Facilities can be grouped in Portfolio Manager to show how certain groups of facilities may be performing against an entire portfolio or within the group. For example, if the portfolio consists of office buildings and hotels, these different types of buildings can be grouped together, thus allowing comparison of a facility's performance against its specific group. Also, for buildings that are currently ineligible for the ENERGY STAR score, such as multifamily housing, enclosed malls, libraries and stadiums, this is a great feature to utilize when tracking and comparing weather-normalized energy use intensity (EUI) across a portfolio of similar building types.

3.1.4 Sharing Facilities

To share building information with others, use ENERGY STAR's Share Facilities feature. This feature allows users to delegate building access to others without having to share passwords. In addition, this feature has data security options that allow corporate entities, including organizations like IFMA, to establish master accounts through which individual buildings can share their data. The sharing process can be anything from allowing a user to simply view a facility in a read-only format or can provide a user with complete access and editing rights of a facility.

FACILITY PERFORMANCE

- **Environmental – Shows rating, EUI, change from baseline energy use, change from GHG emissions**
- **Financial – Shows annual cost of energy, water, cost/SF of energy and water**
- **GHG Emissions – Shows EUI, current GHG emissions, baseline GHG emissions, change from baseline**
- **Water Use – Shows water use, water cost, wastewater use, wastewater cost**
- **Energy Use – Shows rating, EUI, source EUI and change from baseline**

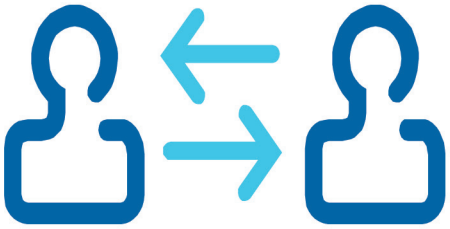
Facilities can be shared from the My Portfolio page under the heading Work with Facilities. Here users can share their facilities with another user or a master account. Once a user has chosen an account to share, the user will then be able to assign access rights to another user. There are four access roles to choose from, which are detailed in the Access Roles textbox.

ACCESS ROLES

1. **Facility/profile editor**
   - Edit all data for this facility
   - Generate a statement of energy performance
   - Submit an ENERGY STAR building application
   - Create/edit a building profile
2. **Facility editor**
   - Edit all data for this facility
   - Generate a statement of energy performance
   - Submit an ENERGY STAR building application
   - May not create/edit a building profile
3. **Profile editor**
   - Create/edit a building profile
   - May not edit any other data for this facility, generate a statement of energy performance or submit an ENERGY STAR building application
4. **Read only**
   - Read access only
   - May not edit any data for this facility, generate a statement of energy performance, submit an ENERGY STAR building application or create/edit a building profile

In the final step of the process, facilities that are to be shared are selected and the group in which to place the shared facilities is specified.

Join IFMA's ENERGY Challenge by sharing ENERGY STAR data.



See Appendix E to learn how.

3.1.5 Setting Up a Campus

Portfolio Manager allows a collection of facilities to be grouped into a campus. A campus is defined by Portfolio Manager as a collection of facilities that are located within the same geographical area and has energy and/or water meters that are shared across multiple facilities. Facilities that share energy meters need to be grouped together in Portfolio Manager in order to properly track and benchmark their energy consumption. The campus feature within Portfolio Manager provides energy managers with an overall view of all campus facilities and a calculated combined energy usage based on combined floor space. Energy usage for the campus can be derived from both campus-

level meters used by multiple facilities and separate meters for individual facilities. Examples of campuses include higher education/universities, office parks, retail campuses or strip malls. Hospitals that are composed of multiple facilities are not considered campuses for purposes of Portfolio Manager. Facilities cannot be part of more than one campus.

The first step in setting up facilities within a campus is to add a property, similar to creating a new facility, except this time select add a campus (Figure 6). A series of questions, depending on the specific type of campus selected, must then be answered. For example, if a higher education/university campus is selected, the series of questions covers enrollment, grant dollars, number of employees, number of students and the effective date of when these attributes were first true. This information is optional, but some users find it useful to track. Once a campus is set up, select the facilities to add to the campus. The data for each facility will then became part of the campus.

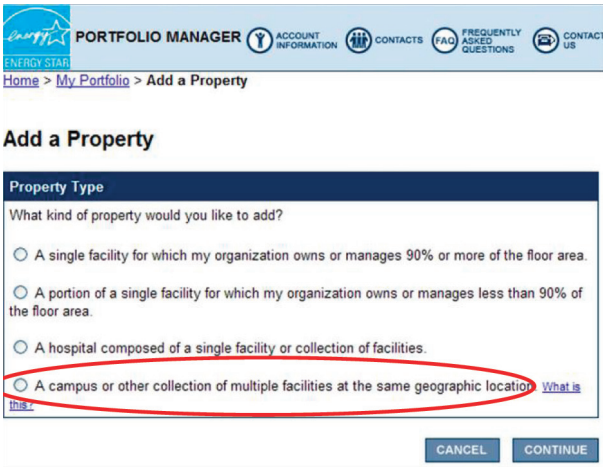


Figure 6: Add a campus

The next step includes adding meters to the campus (Figure 7). When assigning meters to the campus, indicate if any of the facility meters need to be added to the total campus energy consumption.

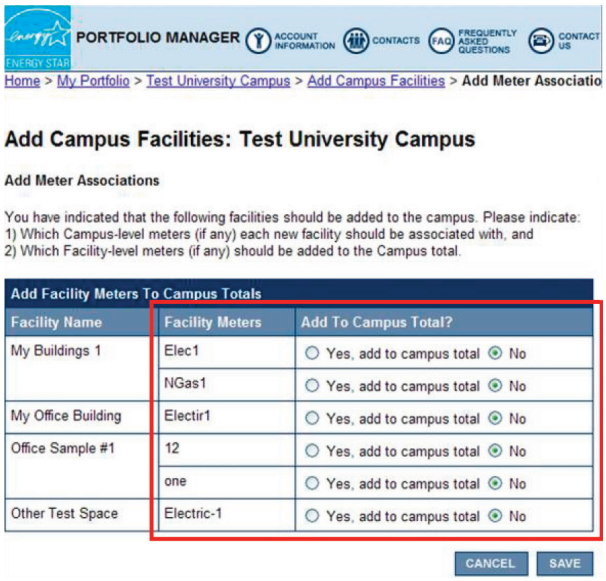


Figure 7: Add Meter Associations

While Portfolio Manager can provide benchmarking energy consumption information for campus facilities, it cannot provide an ENERGY STAR score. ENERGY STAR scores are only available for individual buildings. Building types that are part of a campus that are eligible to receive a score can be sub-metered and can be benchmarked separately. If these buildings are sub-metered they can receive a score within Portfolio Manager. Generally speaking, sub-metering is a better energy management strategy because it provides more specific information about the performance of the building than total campus energy consumption. In cases where it is too expensive

to sub-meter or the mechanical systems are configured in a certain way that sub-metering is not possible, then the campus feature should be used.

3.2 Generating an ENERGY STAR Score

3.2.1 What Is the ENERGY STAR Score?

Portfolio Manager can be used to help track and benchmark energy consumption of all facilities. Further, some facilities can rate their energy performance on a scale of 1-100 relative to similar buildings nationwide. If a facility meets the required criteria (see section 3.1.2 Setting Up a Facility), the building is eligible to receive an external benchmark rating that will compare the facility to similar facilities nationwide using the EPA's national energy performance rating system. It is not compared to other buildings within Portfolio Manager to determine its ENERGY STAR score. This rating system is based on statistically representative models that compare the energy consumption of a building to similar buildings from a national survey conducted by the United States Department of Energy every four years called the Commercial Building Energy Consumption Survey (CBECS). This survey collects data, such as building characteristics and energy usage, from buildings located across the United States. A building's peer group for comparison are those buildings in the CBECS survey that have similar building and operating characteristics. A score of 50 indicates that the building, from an energy consumption standpoint, performs better than 50 percent of all similar buildings nationwide, while a score of 75 indicates that the building performs better than 75 percent of all similar buildings nationwide. Every four years when the new market data is available, the EPA uses this information to update the scores in the tool and looks to see if more data is available to create scores for building types that do not currently have the 1-100 comparison. EPA is always working to develop scoring criteria for additional segments of the commercial building market. However, for those buildings that are not currently eligible to receive a score, most can receive a national average for comparison. These energy performance targets are not normalized for climate nor adjusted for activities that may affect energy use but are helpful in determining performance relative to the average for similar building types.

In short, taking the information entered into Portfolio Manager (square footage, location, number of occupants, etc.), the tool uses a statistical model to estimate the energy a building is predicted to use (given operational characteristics and size), compares that to what the building is actually using, and plots that ratio on the distribution of energy performance of the commercial building market. Ultimately, EPA expresses the rating on a 1-100 scale where 1 point on the scale represents 1 percentile of the commercial building market. Figure 8 illustrates where buildings typically fall within the rating system.

Generating an ENERGY STAR score is the first step in the ENERGY STAR building certification process. To be eligible for the ENERGY STAR certification, a building must first receive a score of 75 or higher. Generating a score is also one of the primary ways to demonstrate compliance with the requirements of the U.S. Green Building Council's (USGBC) Leadership in Energy and Environmental Design for Existing Buildings: Operations & Maintenance system (LEED-EBOM). For buildings that can be rated, a building must first receive a rating meeting or exceeding the minimum required by the USGBC's energy-related prerequisites. Additional points can be earned by achieving a higher rating.

If a facility is eligible for a score, the score will be located on the Facility Summary page under the Facility Performance category.

3.2.2 Facilities Eligible to Receive a Score

A facility must meet several criteria to be eligible for a score. The criteria that must be met are grouped into the following three categories:

- Building description
- Operating characteristics
- Energy data

Portfolio Manager compares a facility against peer facilities located across the country. To make a proper comparison, as it relates to the building description criteria category, a facility must fit into one of the categories. Definitions for these space types are located at www.energystar.gov/index.cfm?c=eligibility.bus_portfoliomanager_space_types (ENERGY STAR 2009).

To determine the peer group that a facility is compared to, at least 50 percent of the gross floor area must fit into one of the predefined building categories. This gross floor area excludes the area of parking lots and garages.

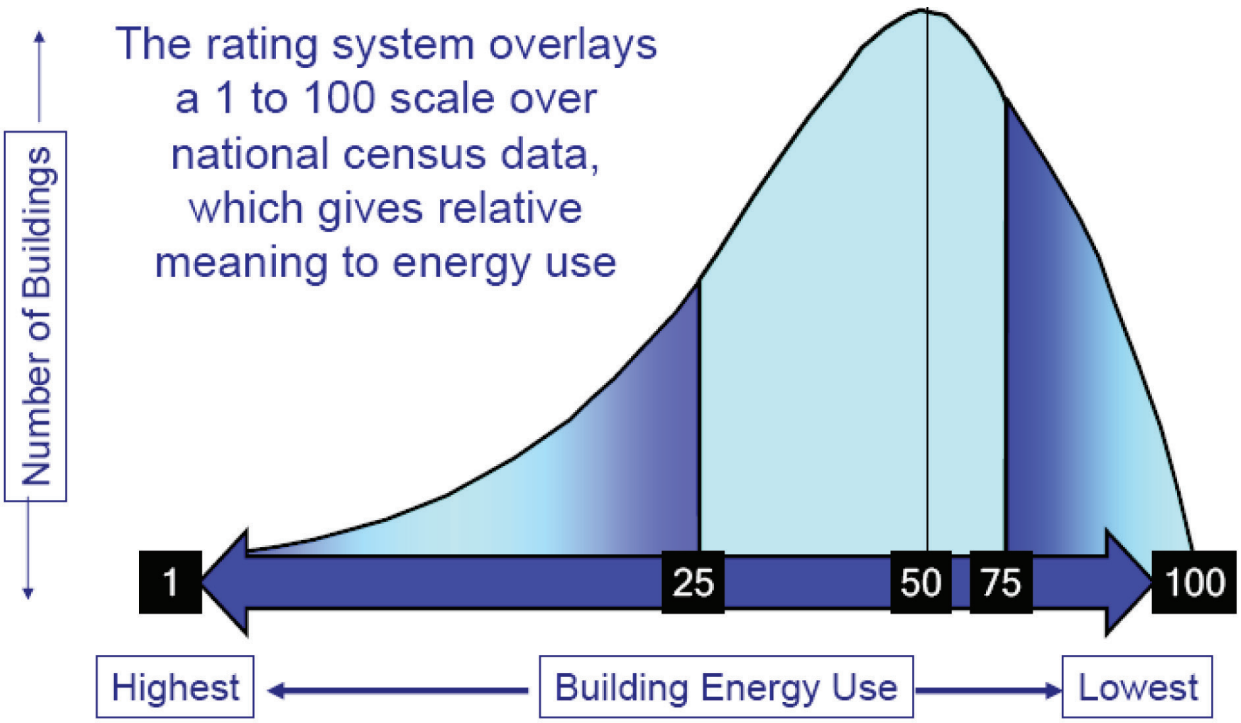


Figure 8: Energy performance rating system

The building operating characteristics must meet the minimum criteria, including hours of operation, floor area and minimum number of workers on main shift. The criteria for each building type can be found at www.energystar.gov/index.cfm?c=eligibility.bus_portfoliomanager_space_types (ENERGY STAR 2009). A criteria could be that a building must be occupied at least 30 hours per week and must consist of at least 5,000 square feet (464 square meters). This can change for different building types; just make sure to select the building type that most accurately represents the building's usage.

BUILDING CATEGORIES

- **Bank/financial institutions**
- **Courthouses**
- **Data centers**
- **Hospitals (acute care and children's)**
- **Hotels**
- **House of worship**
- **K-12 schools**
- **Medical offices**
- **Municipal wastewater treatment plants**
- **Offices**
- **Residence halls/dormitories**
- **Retail stores**
- **Senior care facilities**
- **Supermarkets**
- **Warehouses**

There are some additional criteria that must be met by the remaining spaces within the building that do not fit into the previously listed categories:

- The combined floor area of parking structures, whether enclosed or not enclosed, cannot exceed the total gross floor area of the building.
- The combined floor area of multifamily housing cannot exceed 10 percent of the total gross floor area of the facility.
- Hospital facilities can only be combined with computer data centers, other spaces, parking areas and swimming pools.
- Municipal wastewater treatment plants cannot be combined with any other space types.
- Retail space eligible to receive a score has to have an exterior entrance to the public. For example, enclosed malls or stores in enclosed malls, except anchor stores, are not eligible for a score, but freestanding stores and individual stores in strip centers are eligible.
- Spaces classified as "other" cannot have a combined floor area that exceeds 10 percent of the total gross floor area of the facility. This includes restaurants, cafeterias, recreation areas, libraries and self-storage areas.

Based on the information found in CBECS, Portfolio Manager will compare a facility to others with similar operating characteristics. If the operating characteristics of the facility cannot be properly

compared to similar types of facilities across the nation, then a score cannot be determined and assigned. By meeting the criteria set forth by the EPA, Portfolio Manager can accurately model and compare a facility to others.

What if a facility does not meet the minimum criteria?

If a facility cannot receive an ENERGY STAR score, Portfolio Manager can still be used to benchmark a facility against itself. For example, an office building that consists of only 4,000 square feet (37 m^2) is not currently able to receive an energy performance score. However, Portfolio Manager can still be used to establish a baseline and compare this baseline to future performance.

The final criteria category that must be met is the energy data. To receive a score, the utility meter readings for all energy types consumed by the facility must be input (Figure 9). Utility meters must be in place to monitor the facility's total consumption. If a building's energy consumption is monitored by a meter that supplies more than one building and there is no sub-meter, the building is not eligible for a rating. Additionally, at least 12 months of utility consumption data is required for each meter and no individual electrical meter reading can span more than 65 days.

3.3 Submitting for the ENERGY STAR Certification

Facilities achieving a score of at least 75 in Portfolio Manager are qualified to submit for the ENERGY STAR certification. To submit for an ENERGY STAR plaque, follow these simple steps:

- Generate an eligible statement of energy performance (SEP)
- Obtain a stamp and signature on the SEP from a licensed professional
- Obtain a signature on the data checklist from a licensed professional
- Complete the ENERGY STAR recognition form and verify SEP
- Download and sign the letter of agreement
- Mail the signed and stamped SEP and signed letter of agreement to the EPA for review

For the building to achieve the ENERGY STAR certification, the statement of energy performance must be validated by a licensed professional who is

Page 1 of 1

Account Number: 123456789

Sample Building — Total Amount Due 2/28/08 — $36,573.78
Issue Date: 2/1/08

Location: 123 Main Street
My Town, USA
Rate: GS-1

Usage History	Dates	Days	kWh/Day	$/Day
Billing Period	1/1/08 - 1/31/08	32	21,339.4	$1,727.09
Last Year	1/1/07 - 1/31/07	32	20,758.0	$1,679.50
Last Month	12/1/07 - 12/31/07	31	21,657.5	$1,758.53

ELECTRIC SERVICE CHARGES/CREDITS	USAGE	TYPE	RATE	TOTAL
Power Factor	0.8899			
Energy Charge	195,815	Winter Off Peak kWh @	0.062600	12258.02
Energy Charge	218,901	Winter On Peak kWh @	0.080200	17555.86
Subtotal Electricity Consumption	*414,716*			
Facilities Charge	2,146	Maximum kW @	3.150000	6759.90
TOTAL ELECTRIC SERVICE CHARGES/CREDITS				**36573.78**

GAS SERVICE CHARGES/CREDITS	USAGE (THERMS)	RATE	TOTAL
Gas Charges	4,637	0.79899	3704.92
TOTAL GAS SERVICE CHARGES/CREDITS			**3704.92**

Figure 9: Example energy bill

QUICK TIP

Save postage: SEPs, data checklists and letters of agreement for multiple facilities can be included in one mailing to the EPA.

familiar with building systems. The licensed professional will oversee the validation process, which consists of a field visit to the site. The site visit is intended to ensure that all information on the SEP is accurate. During the site visit, measurements will be taken to ensure the thermal comfort levels, minimum outside air and minimum lighting levels have not been compromised in the pursuit of energy efficiency. Once it has been determined that the building meets the criteria set forth for the ENERGY STAR certification, the licensed professional will stamp and sign the SEP with their seal and sign the data checklist. It is important to note that the licensed professional does not have to perform the site visit, but must oversee the validation process and be the individual who stamps and signs the SEP and signs the data checklist. The statement of energy performance and data checklist are easily printed from the Portfolio Manager Web site. The SEP and data checklist provide a summary of the data that has been previously entered, including building type, address, square footage and monthly energy consumption. To learn more about achieving the ENERGY STAR certification and steps necessary to achieve this certification, refer to section 6.4 Appendix D: Submitting for the ENERGY STAR Certification.

3.4 Analyzing the Results

3.4.1 Viewing a Facility's Performance

To analyze the results that have been generated from data added into Portfolio Manager, start at the Facility Summary page. To see an overview of the performance of a facility, look at the Facility Performance category on the Facility Summary page. Within this category it is possible to view a summary of performance data for different aspects of the facility, such as energy use, environmental, financial, greenhouse gas emissions and water use. The Facility Performance category allows comparison between the baseline and current performance. All of the different views within this category allow for comparison between the baseline and current situation, as well as comparison between any years for which energy data input has occurred (Figure 10).

The different views available within Facility Performance are:

- Summary: Energy Use: The Summary: Energy Use view shows the general energy performance of the facility. Located here are the facility's site energy intensity and source energy intensity, also known as site and source EUI. A facility's site energy intensity is the average energy use per square foot over the course of a year for a facility, as reflected by the utility bills. Site energy can be supplied in two forms: primary and secondary energy. Primary energy is raw fuel, such as natural gas or fuel oil, which is burned on site to create energy. Secondary energy is the energy product that was initially created from raw fuel but is being purchased by the facility from the grid or from a district system. Source energy

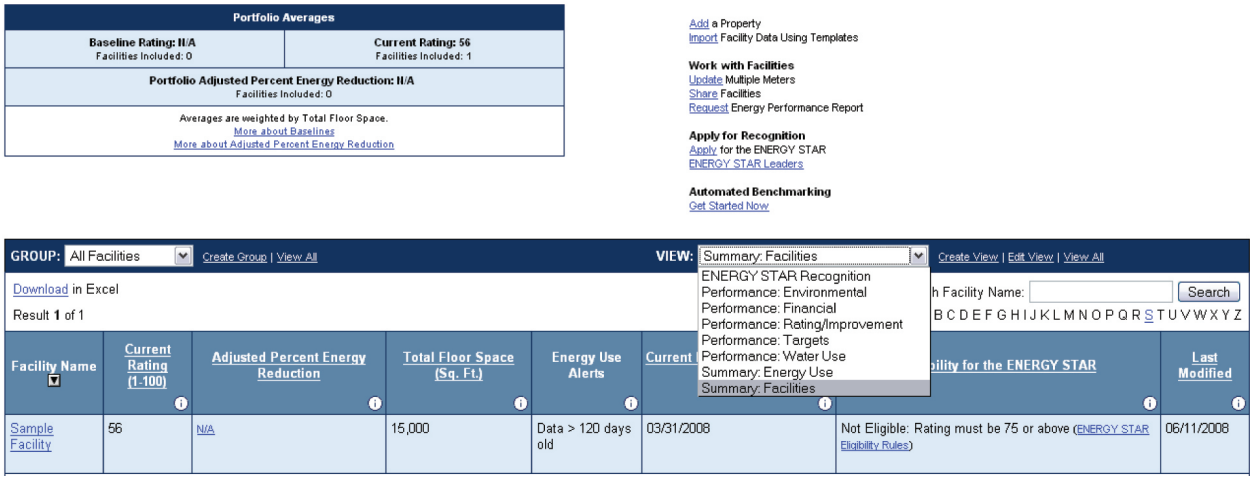


Figure 10: Facility performance

intensity is used by Portfolio Manager to help compare buildings nationwide that may use both primary and secondary energy. Primary and secondary energy are not comparable due to the different losses that are associated with both types of energy. When converting primary energy to source energy, Portfolio Manager accounts for the following losses:

- Primary energy: storage, transport and delivery of energy to the point of use
- Secondary energy: production, transmission and delivery of energy to the point of use

The EPA has determined the best way to compare facilities is through their source energy, and therefore a building's score is based on its source energy. For additional information and a technical description of this subject, please refer to the main Portfolio Manager Overview (www.energystar.gov/benchmark). Within the Rate Your Building's Energy Performance section of the page there is a link that provides further detail regarding the differences between site and source energy.

- Performance: Environmental: The Performance: Environmental view shows the site and source energy intensity and the greenhouse gas (GHG) emissions associated with the facility. The Performance GHG Emissions view shows more detailed information on the GHG emissions associated with the building and provides a better comparison between baseline and current GHG emissions. For a technical description of how Portfolio Manager calculates GHG emissions, please refer to the main Portfolio Manager Overview (www.energystar.gov/benchmark). Within the Estimate Your Carbon Footprint section of the page there is a link that further details GHG emissions calculations.
- Performance: Water Use: The Performance: Water Use view shows a facility's total indoor and outdoor water usage, total indoor and outdoor water cost, indoor water use per unit area, wastewater use and wastewater cost.
- Performance: Financial: The Performance: Financial view shows a facility's cumulative investment in facility upgrades, cumulative investment per unit area, annual energy cost, total energy cost per unit area, indoor water cost and outdoor water cost. This view provides an easy way to look at what the facility is costing to operate and allows the user to view how much money has been put into energy improvement upgrade projects. Since it is possible to view baseline and current cases, the user can see the energy savings and cost savings from the projects that have been implemented.

- Sample: The Sample view shows a facility's score, total site energy use, national average site energy use intensity (EUI), total energy cost per square foot, the state in which the building is located, and whether or not the building is eligible for the ENERGY STAR.

- Custom: Customized views can be created in Portfolio Manager. When creating a custom view, a series of options assist with the implementation. The user can select up to seven items that will be reported within the custom view.

3.4.2 Reporting the Data

The statement of energy performance summarizes the facility's energy performance rating over a selected 12-month period, total energy consumption, site and source energy use intensity (EUI), emissions, greenhouse gas emissions and a national average comparison. Another helpful comparison can be found in the Facility Summary, which provides an energy performance comparison that compares the energy intensity, energy cost and greenhouse gas emissions between baseline, current and the national average. This energy performance comparison also shows what energy intensity for the building is necessary to achieve a score of 75 and what is necessary to reach a target score if one has been selected previously.

In addition to documenting and reporting a building's performance, there is a simple and easy method to get an overview of an entire portfolio. From the My Portfolio page under the My Facilities or My Campuses tab, facility information can be downloaded into Microsoft Excel. An Excel spreadsheet that presents a general overview of the facility will be generated. This overview will include the current score of all the facilities, the percentage energy consumption has increased or decreased in comparison with the facilities' baseline, and the square footage of the facilities within the portfolio. This reporting method provides an easy to view general overview of the facility that can be presented to people who are not as familiar with Portfolio Manager.

The reporting and analysis tools located on the My Portfolio page offer ways to generate reports and graphs, request energy performance reports and compile federal sustainability reports for facilities. To assist with generating reports and graphs of facilities, ENERGY STAR provides quick reference guides that are linked to the Web page.

3.4.3 Understanding the Facility's Performance

Now that it is possible to view the many aspects of the performance of the facility, it is time to set some performance targets. If the facility was able to generate an ENERGY STAR score, it is important to understand what that score means. It was previously noted that an average facility has a score of 50 and a facility seeking the ENERGY STAR needs a score of at least 75 to be eligible, but how does one gain an understanding of the steps that need to be taken to improve the efficiency of the facility? Based on the facility's score, it will fall into one of three categories.

The first category is for facilities that are performing below average and typically receive an energy performance score between 1 and 49. If the facility receives a score within this range, it should be seen as a wake-up call, especially for facilities that have assumed they were performing well. These facilities are underperforming, and the steps to improvement may be more costly, likely requiring investment in energy-efficient equipment and implementing best practices for the maintenance and operation of the equipment. However, these facilities have the greatest potential for energy and greenhouse gas reductions.

The second category is for facilities that are performing at average or above average levels, but not at the level necessary to receive the ENERGY STAR. These facilities typically receive an energy performance score between 50 and 74. The steps for improvement in this category may not be as intensive as the first. The goal is to tighten up the operation of the facility in order to optimize the performance of the building's equipment to reduce energy consumption. In addition, some equipment upgrades may be necessary to further improve a facility's performance.

The third category is for facilities performing significantly better than their peers, and buildings in this category are eligible to receive the ENERGY STAR certification. These facilities typically receive an energy performance score between 75 and 100. A facility that receives a score within this category boasts current operations and equipment that has allowed it to reduce energy consumption and improve operating efficiency. From here, success can be built upon by using Portfolio Manager to track the facility to help further improve its efficiency and also discover problems that may occur with its operations.

SCORES

1 – 49	New equipment & best practices
50 – 74	Best practices & equipment upgrades
75 – 100	Build on success

Even if the facility was not eligible to generate an energy performance rating, its performance may be compared by using its site or source EUI. Port-

folio Manager offers the site and source EUI within the Facility Performance category under the Summary: Energy Use view. An important resource for using this EUI to compare facilities is the 2003 CBECS Report.

Please visit www.energystar.gov/ia/business/tools_resources/new_bldg_design/2003_CBECSPerformanceTargetsTable.pdf to view a table that helps to summarize the report (CBECS Report 2003).

The table has the national average site and source EUIs for different types of facilities. With this table it is possible to compare the EUI of the facility and determine where energy consumption falls in relation to the national average. Whether or not a score can be generated, Portfolio Manager allows for tracking and understanding performance and sets a baseline to improve upon.

3.4.4 Setting Energy Performance Goals

The next step is to set goals and targets for improving energy efficiency. Portfolio Manager has features that allow the user to set energy performance goals and estimate how much energy will need to be saved to meet those goals (Figure 11).

First go to the Facility Summary page and locate Set Energy Performance Target, which is under the Facility Performance category. To develop a performance target, a baseline period needs to be set. The baseline case allows goals to be compared to the selected baseline. Performance goals are set in one of two ways. Either choose to set a target score, or choose to set a target percentage of energy reduction. This target tool can be used to help set goals for the facility. For example, to earn the ENERGY STAR certification, which requires a score of 75 or higher, set the target score to 75. Portfolio Manager will calculate how much energy needs to be saved to meet this target, the estimated utility cost savings per year, and the percentage of energy reduction achieved if the target is met. Conversely, a target percentage energy reduction can also be set. Portfolio Manager will then calculate the energy and cost savings for the year, but this time will calculate the possible score of the facility if energy usage is decreased by the target percentage.

This feature allows reasonable goals and targets to be set for the facility and provides an estimate of how much energy must be saved to achieve the goals.

3.4.5 Interpreting the Results and Meeting Goals

Energy savings can be tracked as energy conservation measures are implemented. The impact of past energy-saving measures as a whole across the entire facility can also be estimated. Once energy performance improvements have been implemented, one would want to be able to evaluate how much energy these improvements have saved. If energy performance improvements have been implemented in the past, Portfolio Manager can also help in evaluating the savings received

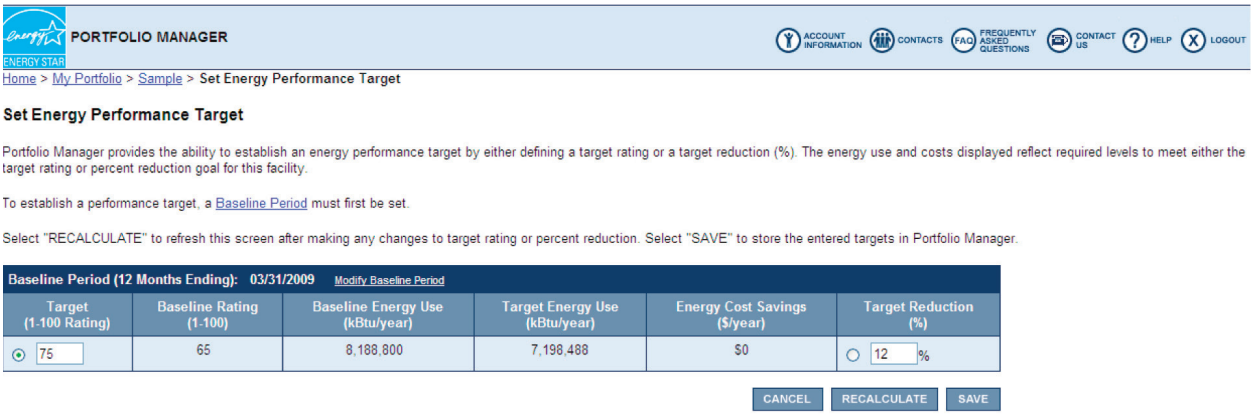


Figure 11: Set Energy Performance Target

from these improvements as a whole or over a period of time. Since Portfolio Manager allows the baseline period to be set, it is possible to set a baseline period that occurs right before an energy performance is implemented. If an energy performance improvement has been implemented recently, at least one month of data will need to be collected to see any change in performance. The full effect on the ENERGY STAR score will not be seen until the 12 consecutive months of utility data following the implementation of the improvement is accounted for in Portfolio Manager. It is important to understand that Portfolio Manager cannot specifically attribute a given amount of savings to a specific upgrade or energy improvement project. Since Portfolio Manager looks at energy consumption at the whole building level, there is no way to ensure direct causality between money invested and savings achieved for a specific project. However, the tool provides a general overview of the entire building and shows how much energy consumption has been reduced and how much was spent on energy performance improvements for the building as a whole.

To track energy efficiency improvements that have been implemented at the facility, the improvements should be documented in the Track Energy Performance section of the Facility Summary page. Track Energy Performance can be found within the General Facility Administration section. The Track Energy Performance Improvements section allows a user to document an improvement that has been implemented. Any past or present energy performance improvements can be added. Some questions about the improvement must be answered. These include identifying a category for classifying the improvement, such as lighting or retro-commissioning, the cost, short description of the improvement and a more detailed description. After documenting the improvement, the Performance Financial view on the Facility Summary page shows how much has been invested in the facility's energy performance improvements and the investment cost per unit area.

The point of tracking energy performance improvements in Portfolio Manager is to allow the user to create a record of an improvement and explain why the ENERGY STAR score may have changed.

By using the tracking tools discussed, continuously collecting information about the facility and setting new energy performance targets, goals can be achieved. No matter if the goals range from reducing energy costs by 10 percent in the coming year to earning the ENERGY STAR certification or becoming LEED certified, Portfolio Manager is the tool that can help in reaching those goals.

3.5 Other Recognition

Associations, financial analysts and other stakeholders can use the designations described below as an objective way to distinguish leading organizations from their peers. In addition, with more than 75 percent of American households recognizing ENERGY STAR as the national symbol for protecting the environment through energy efficiency, ENERGY STAR recognition can promote energy-efficiency improvements to building occupants, customers and clients.

3.5.1 ENERGY STAR Partner

Becoming an ENERGY STAR Partner is as simple as signing up. ENERGY STAR Partners are committed to continually improving energy efficiency.

To become a partner, an organization must agree to:

- Measure and track energy performance using Portfolio Manager
- Develop and implement a plan to improve energy performance
- Educate constituents about energy efficiency
- Take the ENERGY STAR Challenge to improve the building's energy efficiency by 10 percent or more

Once recognized as a partner, an organization can use the ENERGY STAR Partner mark, shown below, in accordance with the ENERGY STAR logo use guidelines. To sign up, go to www.energystar.gov/join and click on Commercial, Industrial and Government Organizations.

ENERGY STAR PARTNER

3.5.2 IFMA Energy Challenge

In 2010, IFMA launched the IFMA Energy Challenge. The IFMA Energy Challenge encourages all facility professionals to track their progress as they work toward a goal of reducing the measured energy use of facilities by 15 percent.

What does this mean? IFMA has partnered with ENERGY STAR to help facility managers benchmark buildings and save energy. IFMA has an ENERGY STAR master account to share building energy consumption data. By sharing this data with IFMA, IFMA can provide energy benchmarking reports for its members. To get started, follow these three simple steps:

1. Set up an ENERGY STAR Measurement and Tracking Tool: Portfolio Manager account
2. Add the facilities managed to the account.
3. Share the information with IFMA

For more information about the IFMA Energy Challenge, refer to section 6.5 Appendix E: The IFMA Energy Challenge: ENERGY STAR.

3.5.3 ENERGY STAR Leaders

ENERGY STAR Partners who demonstrate continuous improvement organizationwide, not just in individual buildings, can qualify for recognition as ENERGY STAR Leaders.

To be eligible for recognition as an ENERGY STAR Leader, a business or organization must be an ENERGY STAR Partner, own two or more facilities that are eligible to receive a score using the EPA's national energy performance scoring system found in Portfolio Manager, and have total ratable space comprising at least half of the total unit area owned.

Earning the ENERGY STAR Leader recognition is based on Portfolio Manager results. If an organization is an ENERGY STAR Partner and has achieved 10 percent or more portfoliowide energy efficiency improvements or an average rating of 75 or better portfoliowide, the organization can apply to be recognized as an ENERGY STAR Leader.

The EPA promotes ENERGY STAR Leaders by allowing visitors to the ENERGY STAR Web site easy access to the list of Leaders in the ENERGY STAR Partner database. Each year, EPA issues a national press release recognizing that year's group of ENERGY STAR Leaders for their accomplishments in improving the energy efficiency of their portfolios.

3.5.4 Partner of the Year

Each year, EPA recognizes ENERGY STAR Partners that demonstrate their commitment to environmental protection through superior organizationwide energy management that integrates the use of ENERGY STAR tools and resources. Typically, these organizations have instituted strategic energy management practices, achieved organizationwide improvements, and are promoting and communicating the role ENERGY STAR has had in their success.

3.5.5 Designed to Earn

What if a new building is being constructed? Designed to Earn the ENERGY STAR is a recognition offered to projects that can demonstrate energy efficiency as a core component of its design. Using the Target Finder Tool, an EPA energy performance rating can be generated for the building's design, as well as a statement of energy design intent, which shows the as-designed

rating. Design projects that receive a rating of 75 or higher are eligible for Designed to Earn the ENERGY STAR (ENERGY STAR 2009).

All eligible designs must be at least 95 percent complete with construction documents. Buildings that have generated utility bills are not eligible for Designed to Earn the ENERGY STAR and should apply for the ENERGY STAR building certification.

To learn more about Designed to Earn and find details concerning the application process, visit www.energystar.gov/index.cfm?c=new_bldg_design.new_bldg_design_benefits (ENERGY STAR 2009).

3.5.6 Mandatory and Voluntary Programs

States and cities around the US are beginning to mandate building rating and certification, with disclosure required at time of sale or lease, or posted on a public Web site, so that anyone can compare facility performance. These efforts are driven by the idea that by making energy efficiency visible to market participants, building owners will take a more active role in making their buildings perform efficiently to keep them competitive in the marketplace.

There is also a voluntary disclosure movement through greenhouse gas registries and annual corporate responsibility reports for both energy performance and the carbon footprint of buildings. City and state governments, corporations, universities and other organizations are using energy benchmarking as a core element of their sustainability and carbon reduction strategies.

If that sounds like one more thing facility managers must do, consider the following:

- Saving money saves energy
- Utility costs are not decreasing
- Benchmarking may already be a requirement

Mandatory programs are already in place in California, Hawaii, Michigan, Ohio, Washington, New York City, Washington, DC and Austin, Texas. For more information about what may be happening with ENERGY STAR benchmarking in a given locale, go to www.energystar.gov/ia/business/government/State_Local_Govts_Leveraging_ES.pdf.

3.6 Other Tools

3.6.1 Industries in Focus

For facilities in the manufacturing sector that cannot be accurately modeled within Portfolio Manager, the EPA offers another tool to help with external benchmarking and some guides to help run a more efficient facility. The EPA has organized ENERGY STAR industrial focuses. This is a voluntary program that companies can join to network and share ideas with peers. The EPA has generated an ENERGY STAR guide for each of the following industries' facilities:

- Breweries
- Cement manufacturing
- Corn refining
- Food processing
- Glass manufacturing
- Iron manufacturing
- Motor vehicle manufacturing
- Petroleum refining
- Petrochemical manufacturing
- Pharmaceutical manufacturing
- Pulp and paper manufacturing

These guides provide energy use trends within the specific industry, and identify opportunities for improvement that will help with developing plans

for improving facility energy performance.

The EPA also offers a tool called Plant Energy Performance Indicators (EPI) that allows for benchmarking within a designated industry. This tool is similar to Portfolio Manager, as operating data is input for a facility and the tool rates the facility on a scale of 1 to 100. This tool is currently available for the following industries:

- Cement manufacturing
- Container glass manufacturing plants
- Cookies and crackers bakeries
- Corn refining
- Flat glass manufacturing plants
- Frozen fried potato processing plants
- Juice processing plants
- Motor vehicle manufacturing
- Pharmaceutical manufacturing
- Pulp and paper manufacturing

The EPI tool and the guides for manufacturing plants discussed in this section are available free from the ENERGY STAR Web site at www.energystar.gov/index.cfm?c=in_focus.bus_industries_focus (ENERGY STAR 2009).

3.6.2 Measuring the Carbon Footprint

In order to estimate the environmental attributes of the electricity consumed in a building, Portfolio Manager locates the building in one of 26 subregions of the US power grid. These subregions are defined by the EPA's Emissions & Generation Resource Integrated Database (eGRID). An eGRID subregion represents a portion of the power grid that is contained within a single North America Electric Reliability Council (NERC) region, generally represents sections of the power grid that have similar emissions and resource mix characteristics, and may be partially isolated by transmission constraints (Figure 12).

These emissions factors are consistent with those used by major greenhouse gas reporting protocols, including the World Resources Institute and World Business Council for Sustainable Development greenhouse gas protocol. Portfolio Manager will calculate the greenhouse gas emissions related to a building's energy use, and it is a great starting point for calculating the overall carbon footprint. According to the EPA, ENERGY STAR qualified buildings in each of the 26 eGRID subregions are responsible for at least 26 percent less carbon than a typical office building.

With a direct purchase agreement, a specific plant can be entered in ENERGY STAR Measurement and Tracking Tool: Portfolio Manager. After selecting the correct facility, click on the Select My Power Generation Plant link and choose the correct plant from the dropdown.

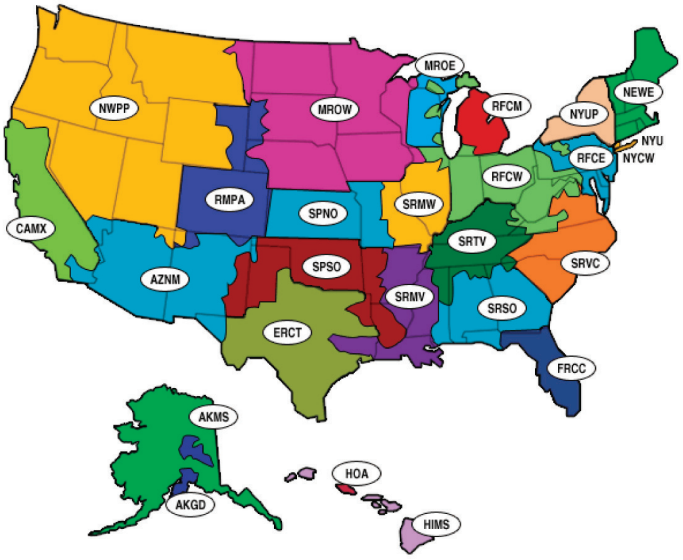
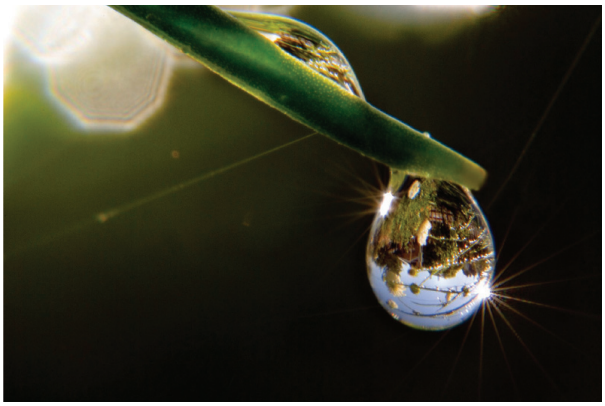


Figure 12: eGRID subregion representational map

3.6.3 Tracking Water Use Consumption

Similar to tracking energy consumption, Portfolio Manager allows for tracking of water use on a meter by meter basis. Portfolio Manager allows water consumption data monitoring from any meter on the property. Indoor usage, outdoor usage and sewer meters can be monitored. Units of measurement include cubic feet and gallons. There is also a place to input the cost associated with the water monitored by the meter. By using this tool, water consumption can be tracked over time and can illustrate water and cost savings associated with any water efficiency projects.



4 MAKING THE BUSINESS CASE

4.1 Organization Drivers and Goals

4.1.1 Establishing Goals

Energy management and sustainability are not new concepts. They are at the core of what those who run buildings do every day. Facility managers and building engineers are tasked with running buildings efficiently and keeping operating costs as low as possible – that is, energy management and sustainability. More often facility managers are being asked to operate facilities on smaller budgets and make the facilities sustainable or certified. How can one take what is already being done and make it sustainable? Or even better, what improvements can be implemented to processes and facilities to make them more efficient and sustainable?

STEPS TO SUCCESS

- **Develop a set of strategic objectives that align with the organization**
- **Identify resources available to achieve the objectives**
- **Form a sustainability team**
- **Determine baseline**
- **Set goals**
- **Track progress**
- **Recognize achievements**

Before starting energy conservation efforts in a facility, it is important to take a step back and determine what the organization's drivers and goals are. Is the main driver decreasing operating costs, thus improving economics? Or is the main goal to decrease environmental impact and reduce the facility's carbon footprint, thus viewing this effort from an environmental perspective?

Energy management is one aspect of sustainability and is often performed in concert with overall sustainability efforts. Sustainability focuses on the triple bottom line: the balance and benefits of the social, environmental and economic aspects of the built environment (Figure 13). All of the aspects of the triple bottom line can be linked to saving something in the end. It may not always be money; it may be resources, energy, time or a host of other benefits. Strategic sustainability planning will help determine the primary motivating factors for the organization. The sustainability team can then use the triple bottom line as a guide when evaluating options for energy improvements. Determining an organization's drivers ultimately helps frame the initiatives and funding requests in a manner that makes it easier to sell into decision makers.

Examining the mission and vision of an organization provides insight into the motivational factors driving the overall organizational strategy. Energy or sustainability objectives must be developed with the organization's overall goals in mind. By aligning energy and sustainability objectives with the organization's goals, all goals are directly linked. This ensures a direct tie to the C-suite and highlights the importance of energy and sustainability initiatives in the organization.

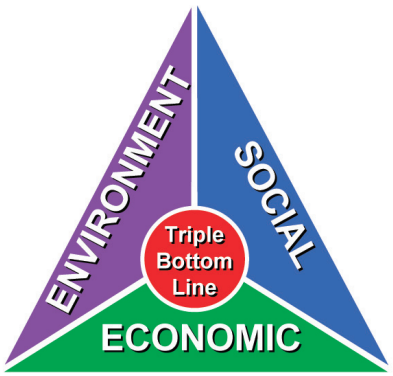


Figure 13: Triple bottom line (Hodges 2009)

4.1.2 Aligning Goals

An effective approach to ensure objectives align with the organizational goals is to use a balanced scorecard approach. Figure 14 is an example of a balanced scorecard that illustrates how the energy goals tie directly back to the organization's goal of operating efficiently.

In this example, the energy initiatives were developed with an environmental motivation. The objectives include carbon footprint goals and an overall decrease in energy consumption.

Internal Process	Organizational Goals	Sustainability Objectives	Initiatives	Measures	Targets	Current Status
	1. Increase Operational Efficiency 2. Conserve Resources	1. Become Carbon Neutral	1. Calculate Emissions Inventory 2. Purchase Energy Star Equipment 3. Purchase Offsets	Decrease in Carbon Emissions	15% Decrease	12%
		2. Decrease Water Consumption	1. Install waterless urinals 2. Install automatic flushers.	Decrease in Water Consumption	10% Decrease	0%
		3. Achieve Energy Star Certification	1. Lighting retrofit project. 2. Perform an energy audit. 3. Purchase energy star products.	Decrease in Energy Consumption	20% Decrease	22%
		4. Decrease Waste	1. Institute a double sided printing policy. 2. Provide recycling bins at every desk.	Decrease waste to landfill	10% Decrease	12%

Figure 14: Balanced scorecard

Decreasing energy consumption will ultimately decrease operating costs; that is obvious. However, in this example, where the motivating factor for this organization is environmental, the initiatives are identified in a way that highlights the environmental factors. For example, one of the goals is to become carbon neutral. The energy initiatives include decreasing energy consumption and decreasing greenhouse gas emissions.

When pursuing funding requests, framing requests to match the organization's motivation usually yields a higher success rate in receiving funding. For example, when requesting funding for energy improvements, highlight the potential cost savings and return on investment to meet economic motivational factors. However, if the motivational factor for the organization is environmental, what impact would it have if the request was framed in terms of how the same energy improvements decrease the organization's carbon footprint? As discussed earlier in this guide, with ENERGY STAR's Measurement and Tracking Tool: Portfolio Manager tool, that is easy to do.

4.1.3 Results

What will benchmarking a facility through ENERGY STAR's Measurement and Tracking Tool: Portfolio Manager do for the facility? The obvious answer is saving energy saves money. In addition, as discussed throughout this guide, the Portfolio Manager tool is important for developing an energy management strategy and achieving energy management goals. Using the tool to evaluate and prioritize energy conservation initiatives will ultimately save time as well as money. Further, if a building is eligible for the ENERGY STAR certification, it will be part of the pool of buildings (Figure 15) that achieve the following:

- Through the end of 2009, labeled buildings and plants reflected an overall annual utility savings of more than $1.7 billion
- Prevented greenhouse gas emissions equivalent of more than 30 million vehicles

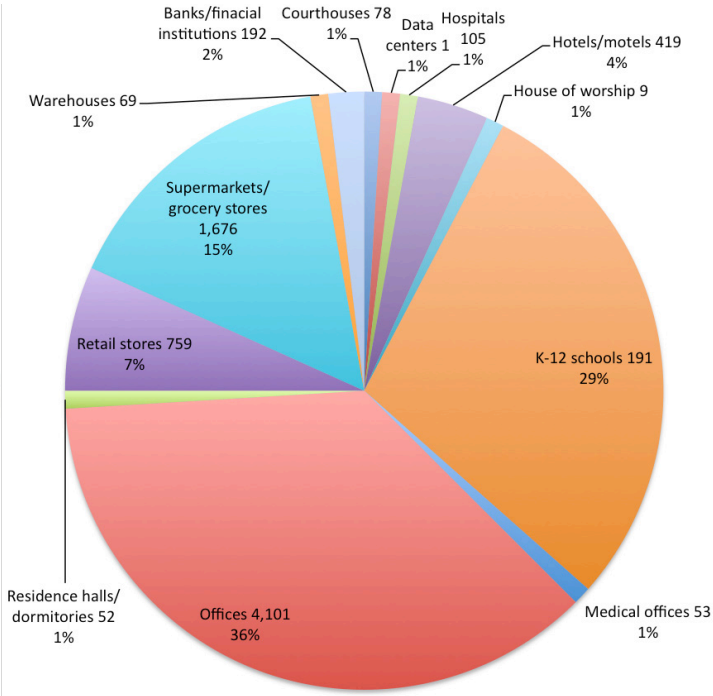


Figure 15: Number and percentage by building type of ENERGY STAR certified buildings (as of June 30, 2010)

4.1.4 Example Energy Management Strategy

Goals:

- Improve energy efficiency at facilities
- Capture future savings to fund projects
- Look long-term and utilize total cost of ownership perspective
- Inspire a mindset change in operators and building users/occupants
- Demonstrate performance excellence in the form of certification or other appropriate designation

Benefits:

- Decreased energy consumption
- Reduced cost of operations related to energy efficiency measures
- Reduced greenhouse gas (GHG) emissions as related to building energy savings

Strategy:

1. Educate
    - Identify individuals that will champion the assessment and evaluation effort
    - Identify training needed
    - Provide training for key individuals
2. Evaluate
    - Perform ENERGY STAR evaluations of buildings to determine annual energy consumption and energy utilization index (EUI)
    - Determine which buildings will be evaluated
    - Collect data, including building occupancy operating parameters and utility data
    - Set up Portfolio Manager
    - Enter building data for each building identified
    - Generate rating, if applicable
3. Prioritize based on the EUI or ENERGY STAR score; identify top candidates for energy savings opportunities
4. Implement by working toward increasing energy efficiency through the use of energy audits, condition assessments and implementation of energy conservation measures
5. Monitor energy consumption using Portfolio Manager

5 CASE STUDY

Great Public Schools for Every Student

5.1 NEA

5.1.1 Introduction

The National Education Association (NEA) is a nonprofit organization that serves a variety of distinct groups of education professionals. NEA headquarters is located in downtown Washington, DC, in a 470,000 square foot (43,663 square meters) facility, including the parking garage, and was originally built in 1957. The building was renovated in 1991 and consists of several ageing building systems that posed a challenge to sustainability efforts

Figure 16: National Education Association building

5.1.2 The Effort

The effort to make this existing building more efficient started many years ago, before sustainability became commonplace. In the late 1990s, NEA started focusing on energy savings and upgrading mechanical, electrical and control systems to reduce consumption. The primary motivation for this was to reduce operational cost. Since 2006, environmental awareness among NEA's constituents increased, and the motivation changed from being primarily cost driven, to being "the right thing to do." The facility managers at NEA have taken on the task of driving the sustainability initiatives within their organization. Starting small, budgeting incremental improvements and raising building awareness has been the primary strategy of the facility management group at NEA.

Despite NEA's energy-savings efforts, energy consumption was still high, and its ENERGY STAR score was low. At the end of 2007, its ENERGY STAR score was calculated at 61. In order to identify and prioritize energy conservation initiatives, a consultant was hired to do an energy audit. The energy audit identified 10 low-cost/no-cost operational improvements and several capital intensive projects. Over 2008 and 2009, using a combination of operational and capital expenditure efficiency improvements, NEA successfully reduced the building energy consumption further and raised its ENERGY STAR score. Specifically, NEA implemented the following energy conservation measures:

- Set up schedules within the building control system to shut the air handling units off when zones within the building were unoccupied
- Used economizer mode on air handling units during cooler weather to avoid running the chiller plant
- Minimized/eliminated use of steam humidifiers within 19 air handling units
- Rebuilt/replaced steam traps
- Purchased ENERGY STAR equipment
- Installed variable frequency drives to control cooling tower fans
- Installed motion sensors in restrooms in the east wing of the building

5.1.3 Results

NEA established an energy savings goal of a 10 percent reduction in annual utility costs. In its first year after establishing the goal, the NEA achieved

a 19 percent reduction in utility cost. Since the energy audit that was performed in October 2007, its ENERGY STAR score has increased incrementally over this time period to reach a score of 76 in June of 2009, enabling the NEA to earn an ENERGY STAR certification. NEA has continued to improve in energy efficiency and its ENERGY STAR score as of November 2010 was 82 (Table 1), earning an ENERGY STAR certification for 2010. The savings noted in Table 1 are calculated using the annual energy cost data as the baseline.

NEA was able to achieve these results with minimal capital expenditure outside of planned upgrades. Aside from the installation of variable frequency drives, most of its efforts have been in the low- to no-cost category, coupled with a strong employee education program, revision of policies and practices, and frequent updates to, involvement of, and encouragement from senior management. NEA has developed a bulb replacement strategy, instituted policies of turning off window air conditioning units and lights when spaces are unoccupied, and building occupants celebrate Earth Day annually. Tracking energy consumption through the ENERGY STAR Measurement and Tracking Tool: Portfolio Manager allowed NEA to see how energy conservation measures affected the energy utilization index and ENERGY STAR score.

Table 1: Summary of NEA costs and ENERGY STAR scores

Year	Annnual energy costs	Annual energy savings	ENERGY STAR score
2007	$1,287,769		63
2008	$1,161,042	$126,727	70
2009	$1,050,503	$237,266	77
2010 (Estimated)	$913,764	$374,005	87
Total Savings	$737,998		

In addition, NEA received LEED Gold Certification under the U.S. Green Building Council Leadership in Energy and Environmental Design (LEED) for Existing Buildings in 2010.

Figure 17: National Education Association atrium

6 APPENDICES

6.1 Appendix A: References

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6.2 Appendix B: Additional Resources

ASHRAE Standard 55- 2004 Thermal Environmental Conditions for Human Occupancy. American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., Atlanta, Ga.

ASHRAE Standard 90.1- 2007 Energy Standard for Buildings, Except Low-Rise Residential Buildings. American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., Atlanta, Ga.

ASHRAE Standard 62.1 Ventilation for Acceptable Indoor Air Quality. American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., Atlanta, GA.

Building Owners and Managers Association (BOMA) Energy Efficiency Program (BEEP®): www.boma.org/TrainingAndEducation/BEEP/Pages/default.aspx

2010 Licensed Professional's Guide to the ENERGY STAR® Certification for Commercial Building: www.energystar.gov/ia/business/evaluate_performance/pm_lp_guide.pdf

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6.3 Appendix C: Glossary

Balanced scorecard: A strategic performance measurement tool for measuring whether the smaller-scale operational activities of a company are aligned with its larger-scale objectives in terms of vision and strategy.

Baseline: A calculation of a building energy performance used for the purposes of comparison.

Baseline case: The specific building or campus being studied.

Baseline period: A period of time at least 12 months in length in which the baseline is calculated.

Benchmark: A standard building or facility by which other similar buildings can be compared or judged.

Campus: A collection of facilities that are located within the same geographical area and have energy and/or water meters that are shared across multiple facilities.

Commercial Buildings Energy Consumption Survey (CBECS): A national survey conducted by the U.S. Department of Energy every four years. The survey collects data, such as building characteristics and energy usage, from buildings located across the United States (www.eia.doe.gov/emeu/cbecs).

C-suite: The group of officers of a business organization who have the word chief in their titles; also known as management.

Designed to Earn: A seal given to projects that have energy efficient design concepts as part of the project and have ENERGY STAR appliances within the design specifications.

eGRID: United States Environmental Protection Agency's Emissions and Generation Resource Integrated Database.

Environmental Protection Agency (EPA): An independent US government agency that is in charge of protecting the environment and reducing pollution.

Energy Performance Indicators (EPI): A tool created by the EPA that will rate the energy performance of manufacturing facilities and compares them on a 1 to 100 scale.

ENERGY STAR: A government program created by the U.S. Environmental Protection Agency and the U.S. Department of Energy that helps people and organizations reduce energy consumption, reduce greenhouse gas emissions, and save money through energy efficient products, practices and buildings.

Energy utilization index (EUI): The average energy use per square foot over the course of a year for a facility, as reflected by the utility bills; also referred to as energy use intensity. This is also known as the energy use intensity and energy intensity in Portfolio Manager.

Energy performance targets: Specific goals related to a building's energy consumption, such as target energy use, energy cost savings or target percentage energy reduction.

ENERGY STAR Partner: A designation given to facilities that have not obtained the Energy Star but are continually committed to improving energy efficiency.

ENERGY STAR Leader: A designation given to ENERGY STAR Partners who demonstrate continuous improvement in energy savings across an organization and can meet the energy savings requirements established by ENERGY STAR.

Greenhouse gas (GHG): Gases found in the atmosphere that allow for solar radiation to enter the atmosphere but absorb radiation reflected by the earth.

Gross square footage (GSF): The total square footage of the building, including machine rooms, janitor closets, restrooms, leasable space, etc.

International Facility Management Association (IFMA): IFMA is the world's largest and most widely recognized international association for professional facility managers, supporting more than 19,500 members in 60 countries. The association's members, represented in 125 chapters and 16 councils worldwide, manage more than 37 billion square feet (3.4 billion square meters) of property and annually purchase more than US$100 billion in products and services.

Leadership in Engineering and Environmental Design (LEED®): A building certification program of the U.S. Green Building Council that measures building design, construction and performance against a specific set of environmental performance standards.

Letter of agreement: After applying for ENERGY STAR an official letter of agreement will be provided for download in Portfolio Manager. Please do not use company letterhead to print the letter of agreement.

Model: An analytical tool to represent a building's performance.

North America Electric Reliability Council (NERC): A council founded to ensure the reliability of the North American power system.

Normalization: A process used by engineers and designers to minimize statistical error in a data set.

Primary energy: Raw fuel, such as natural gas or fuel oil, which is burned on site to create energy.

Renewable energy certificates (REC): Documents received when renewable energy is purchased in areas where utility companies do not offer renewable energy.

Secondary energy: Energy product that was initially created from raw fuel but is being purchased by the facility from the grid or from a district steam system.

Statement of energy performance (SEP): A document that summarizes a facility's energy performance rating over a selected 12-month period, total energy consumption, site and source energy use intensity (EUI), emissions, greenhouse gas emissions and a national average comparison.

Site energy use intensity: The average energy use per square foot (square meter) over the course of a year with consideration given only to energy consumed by the building.

Source energy use intensity: The average energy use per square foot (square meter) over the course of a year giving consideration to the production of and distribution of consumed energy.

Sub-meter: A utility meter that separately meters a specific portion of a facility.

Target energy use: A performance target that specifies a desired reduction of energy consumption resulting from energy efficient measures performed.

Target energy cost savings: A performance target that specifies a desired reduction of energy costs resulting from energy efficient measures performed.

Target Finder: A tool provided by ENERGY STAR to allow architects and building owners to establish energy consumption goals and receive an ENERGY STAR score during the construction phase of a building.

Triple bottom line (TBL): An expanded spectrum of values and criteria for measuring organizational (and societal) success: economic, ecological and social. Also known as the balance of social, economic and environmental effects of what we do, or "people, planet, profit." TBL is also abbreviated as 3BL.

United States Green Building Council (USGBC): A nonprofit community of leaders with a mission to make green buildings available to everyone within a generation.

6.4 Appendix D: Submitting for the ENERGY STAR Certification

This appendix is intended to give step-by-step instructions on how to submit for the ENERGY STAR certification. Further detail on the ENERGY STAR certification can be found in section 3.3 Submitting for the ENERGY STAR Certification.

1. **Generate an eligible statement of energy performance (SEP)**
    a. From the My Portfolio page, select the name of the facility for which a SEP is to be created. The facility's summary page will open.
    b. Select the Apply for the ENERGY STAR link located on the right side of the page in the Applying for the ENERGY STAR section. The Apply for the ENERGY STAR page will open.
    c. Complete the SEP and data checklist forms. All information is required.
    Note: Only period ending dates are valid for applying for the ENERGY STAR. For example, up to 120 days old and including 11 full months of energy data will display in the period ending date dropdown menu. The year for the ENERGY STAR application is the same year of the period ending date selected.
    d. Select a licensed professional (professional engineer or registered architect). If there is not a licensed professional shown in the dropdown list, select the Add/Edit Contacts link and add the licensed professional. The professional license number and state of licensure must be provided.
    e. Select the Save and Exit button to return to the Facility Summary page. All SEP and data checklist Information entered into the form will be saved; or select the Continue button to download a hard copy version of the SEP and data checklist.
    Note: When selecting Save and Exit or Continue, Portfolio Manager checks to see if there are any ENERGY STAR eligibility alerts. If so, complete the ENERGY STAR Eligibility Alerts page before exiting or continuing. If Exit to Facility Summary is selected from this page, the SEP will not be saved.
    f. Select the Continue button. The SEP and Data Checklist Generated page opens. Note the number of days the SEP and data checklist are eligible and the corresponding ineligible date.
    g. Select the Download the SEP and Data Checklist button to download a hard copy of the SEP to present to the licensed professional.
    Note: Once a SEP is generated, it must be used with an ENERGY STAR application within 120 days. The number of days is determined by the date selected as the SEP 12 months ending date (the period ending date) when generating the SEP. If a SEP has previously been generated, select the view status of ENERGY STAR applications located on the right side of the page in the Applying for ENERGY STAR section. The ENERGY STAR Application Status history page will open. Select the Generate New SEP link. For example, a SEP generated for the 12-month period ending December 31, 2009, the user will have 120 days, roughly until April 30, 2010, to complete and submit the certification application. This deadline holds whether the SEP was generated on January 1, 2010 or April 28, 2020.
    h. Select the Continue button to complete the ENERGY STAR Recognition form or the Exit to Facility Summary button to return to the Facility Summary page.
2. **Obtain a stamp and signature on the SEP and a signature on the data checklist from a licensed professional.**

    Once the SEP and data checklist have been generated and printed, their content must be verified, and both documents must be signed and stamped (SEP only) by a licensed professional. The licensed professional should have working knowledge of commercial building systems, ASHRAE Standard 55, ASHRAE Standard 62.1 and the IESNA Lighting Handbook. The official licensed professional's guide to the ENERGY STAR certification for commercial buildings is a great resource

for the licensed professional, and will assist the licensed professional in properly determining if a building meets the requirements necessary to receive the ENERGY STAR certification. The guide describes all the licensed professional's responsibilities in carrying out certification verification and can be found at www.energystar.gov/ia/business/evaluate_performance/pm_lp_guide.pdf.

There are two documents that the licensed professional must review:

- Statement of energy performance, page 1: This is a summary page listing facility and energy information. The licensed professional will sign and stamp this page in the space provided.
- Data checklist: A listing of data underlying the building's energy performance score, including general facility information, space attributes and energy consumption data. The licensed professional must review this list, check each item, add notes where applicable and sign at the bottom of the checklist.

Both the SEP and data checklist must be signed and stamped (SEP only) by the licensed professional before it can be mailed to EPA.

3. Complete the ENERGY STAR recognition form and verify SEP

The ENERGY STAR recognition form is used to capture information so that it may display correctly on the ENERGY STAR certificate, congratulations letter and the list of ENERGY STAR certified buildings. At this point in the process it is important to have in place a certification application manager as the primary building contact for the EPA. This individual will be the one who receives all of these documents and will be the person who has to sign the letter of agreement that accompanies the certification application.

Follow the steps below to complete the ENERGY STAR recognition form if the Exit to Facility Summary button was selected from the SEP and Data Checklist Generated page for a single facility:

a. From the My Portfolio page, select the name of the facility to continue the ENERGY STAR application process.
b. Select the Continue Applying for ENERGY STAR link located on the right side of the page in the Applying for the ENERGY STAR section. The ENERGY STAR Recognition page will open. Print and sign the ENERGY STAR recognition form.

Follow the steps below to complete the ENERGY STAR recognition form if the Continue button was selected from the SEP and Data Checklist Generated page for a single facility:

a. Complete the ENERGY STAR recognition form. All information is required.
b. Select the Save and Exit button to return to the Facility Summary page. All recognition information entered into the form will be saved; or select the Continue button. The verify SEP Tracking Number page will open.
c. Enter the last four digits of the tracking number of the signed and stamped SEP into the text box.

Note: To enter the last four digits of the tracking number at a later time, select the Exit to Facility Summary button to return to the Facility Summary page. When ready to enter the last four digits, select the Continue Applying for ENERGY STAR link located on the right side of the Facility Summary page in the Applying for the ENERGY STAR section. Until this point, new SEPs can be generated for the building as necessary. If the building contact needs to be changed, or some other pieces of information need to be amended, a new SEP can be generated from the Apply for the ENERGY STAR page. However, once the user enters the last 4 digits of the SEP tracking number, then the application has been submitted electronically and no further edits can be made; therefore, it is important that all information on the SEP is reviewed and verified before this step.

Select the Continue button. The Download Letter of Agreement page will open.

4. **Download and sign the letter of agreement.**

   To complete the ENERGY STAR application, the original letter of agreement, original signed data checklist and original signed/stamped SEP must be mailed to EPA. If the certification application manager was used to submit applications for multiple facilities, a separate SEP, data checklist and letter of agreement for each facility must be downloaded, signed and mailed. Make sure the following criteria have been met for the SEP, data checklist and letter of agreement before mailing to EPA:

   a. SEP and data checklist: To ensure that the SEP and data checklist are valid, review the "Date SEP becomes ineligible" at the top of the SEP. The SEP must be postmarked before the date it becomes ineligible. If this date has passed and the SEP and data checklist have not been mailed, the EPA cannot accept the ENERGY STAR application. To be considered valid, all sections of the SEP and data checklist must be signed and stamped by a licensed professional.

   b. Letter of agreement: The letter must be signed by the primary contact for the facility. The primary contact is the person who represents the organization that owns the facility. The name printed at the bottom of the letter of agreement is also the person who must sign it. The letter cannot be altered or edited in any way. Print and sign the letter of agreement exactly as it is downloaded in Portfolio Manager. Do not submit old, previously used or sample letters of agreement.

5. **Mail the signed and stamped SEP, the signed data checklist and the signed letter of agreement to ENERGY STAR Certification for Buildings.**

   Upon receipt of the application, an e-mail will be sent to the primary contact for each ENERGY STAR application. If there are any problems or questions regarding an application, the primary contact for the ENERGY STAR application may also be contacted via e-mail or phone.

   The plaque recipient should receive the ENERGY STAR plaque and congratulatory letter together with the original SEP in one package, typically within three weeks of application approval unless the plaques are on backorder. Under special circumstances, plaques may be express mailed, provided that arrangements have been made through the applicant's express mail service account.

   Special Cases: Steps to Receive a Rating

   In some cases, special considerations need to be granted to receive an ENERGY STAR score. Two examples are:

   - Not enough utility consumption data: If enough energy consumption data does not exist to meet the requirements, start collecting and tracking the building's consumption through its utility meters.
   - Shared utility meters: A campus that has one meter for multiple buildings can install sub-meters to monitor a single facility and place that facility into Portfolio Manager as a single facility with its own meters.

6.5 Appendix E: The IFMA Energy Challenge: ENERGY STAR

The IFMA Energy Challenge is to **reduce measured facility energy use by 15 percent.** To get started:

1. Create an ENERGY STAR Measurement and Tracking Tool: Portfolio Manager account at www.energystar.gov – it is fast, free and easy.
2. Add the facility's data to Portfolio Manager, which requires basic information about the building, including area, number of occupants, operating hours and energy consumption (utility bills).
3. Share the facility's data with the IFMA Master Account so progress can be tracked.

*Buildings operating with an ENERGY STAR score of **75** are an average of **25%** more efficient.*

How to Share a Facillity's Data with IFMA

In the My Portfolio screen, click "Share Facilities"

Step 1 Select a Portfolio Manager Master Account: IFMA – IFMA_Master

Click "Add and Modify" at the bottom of the screen

Step 2 Set Access Rights to "Read Only"

Select "No" for all Optional Rights

Step 3 Select the appropriate IFMA Group to share into. Do not share with "Main Portfolio."

Step 4 Select the facilities in the Portfolio Manager account to be shared with the specific IFMA Master Account Group.

Step 5 Confirm choices; then select "Save."

When sharing facilities with IFMA, put the facility into one of the following IFMA Groups:

- Academic/education facilities
- Assembly facilities
- Business/office facilities
- Entertainment and recreation
- Data centers
- Health care facilities
- Hospitality
- Multifamily/shelter
- Museums/cultural institutions
- Public facilities
- Research and development facilities
- Retail facilities
- Other

6.5.1 Frequently Asked Questions

Question 1: Why share facility data with IFMA?

Better benchmarking data – by sharing data with IFMA peers, similar facilities can be compared with one another. Even though not all facilities can earn a 1 to 100 ENERGY STAR score, participating in IFMA's ENERGY STAR initiative is still beneficial to an organization as a whole and can help in monitoring the performance of a building portfolio.

Question 2: What about confidentiality of information? Will organization names be shared?

Organization names will not be shared. Only relevant benchmarking data will be shared, such as:

- Building type
- Building location: state, province or country
- Site energy use intensity (EUI): annual energy consumption on site in units of kWh/SF
- National average site EUI: average annual energy consumption of similar facilities in units of kWh/SF
- Source EUI: annual energy consumption (including power generation losses) in units of kWh/SF
- ENERGY STAR score

Here is a sample report from the IFMA Portfolio Manager Master Account:

Sample Report

My Portfolio: IFMA Master Account Report - Business/Office Facilities
December 30, 2009 - 10:09:41 PM
Total Buildings: 6

Building Type	State/Province	Baseline Rating (1-100)	Current (1-100)	Baseline Site Energy Intensity (kBtu/Sq. Ft.)	Current Site Energy Intensity (kBtu/Sq. Ft.)	Change from Baseline: Energy Use Intensity (kBtu/Sq. Ft.)
Office	Virginia	59	75	110.8	89.8	-21
Office	Washington	95	99	20.4	13.6	-6.8
Office	California	92	100	64	44.4	-19.6
Office	Texas	79	88	71.7	57.8	-13.9
Office	California	83	89	82.8	73.8	-9.1
Office	British Columbia	88	88	41.1	50.8	9.7

Question 3: Is the name of the facility important?

Yes. Use names that intuitively indicate the type of facility, especially for facilities that fall into the ENERGY STAR "Other" building type. When IFMA runs a report for the building group, an IFMA Council or IFMA Community of Practice, Portfolio Manager will show the facility name and building use type. For facilities without a clear classification, only the general category will show. Following are example facility types and naming style recommendations:

If the facility is…	Recommended	Not recommended
Airport terminal	Terminal A	Building 1020
Mall	Smith Mall	1100 Main Street
Laboratory	IFMA R&D Lab (Bldg B)	Building B
Jail	County Jail (CF-034)	CF-034

Question 4: How can a rating be improved?

There are lots of ways – it can be as simple as changing computer power use settings, to building automation system updates, to capital equipment replacement projects. For more tips and strategies, see the ENERGY STAR Web site, www.energystar.gov.

If you find this publication useful, there is something you should know…

This publication was made possible by the support of people like you through the IFMA Foundation.

Established in 1990 as a nonprofit, 501(c)(3) corporation, and separate entity from IFMA, the IFMA Foundation works for the public good to promote priority research and educational opportunities for the advancement of facility management. The IFMA Foundation is supported by the generosity of the facility management community including IFMA members, chapters, councils, corporate sponsors and private contributors who share the belief that education and research improve the facility management profession.

By increasing the body of knowledge available to facility professionals, the IFMA Foundation advances the profession and potential career opportunity.

IFMA Foundation contributions are used to:

- Underwrite research — to generate knowledge that directly benefits the profession
- Fund educational programs — to keep facility managers up-to-date on the latest techniques and technology
- Provide scholarships — to educate the future of the facility management profession

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