

# Better Buildings Challenge

Organizations Leading the Way to Greater Energy Efficiency

## Energy Data Tracking Manual for Commercial Partners

The U.S. Department of Energy's (DOE) Better Buildings Challenge is a voluntary leadership initiative through which Partners – including companies, universities, school districts, and municipalities – make a public commitment to achieve lasting, organization-wide energy savings. This *Energy Data Tracking Manual for Commercial Partners* documents the process that will be used for Commercial Partners to track and verify progress toward energy savings goals. A separate manual is available for Industrial Partners.

### Contents

Overview	2
Baseline Year	2
Facilities Included	3
Energy Tracking Software	3
Reporting	4
Tracking Metrics	5
Portfolio Changes and Baseline Re-calculation	7
Verification	9
Appendix A – Reporting Template	10
Appendix B – Portfolio Manager Sharing Instructions	11
Appendix C – Portfolio Manager Adjusted EUI Calculations	14

*This manual will be updated as needed with the latest guidance and information from DOE.  
Last Updated: April 23, 2012*



## Overview

Partners in the Better Buildings Challenge commit to achieve significant portfolio-wide energy savings determined in the specific energy savings goal that they have set. Goals should encompass the entire portfolio and strive to achieve at least 20 percent energy savings by 2020.

Commercial Partners will track and verify progress towards energy savings goals by following a common process, which is outlined below and detailed in this manual:

- **Baseline:** Progress will be tracked against a baseline year, which will be selected by Partners within the parameters of program requirements.
- **Energy Tracking Software:** Commercial buildings are strongly encouraged, but not required, to use Portfolio Manager. Alternative data tracking options for commercial buildings must be reviewed and approved by DOE.
- **Reporting:** Progress toward energy reduction goals will be tracked every six months. Partners benchmarking in Portfolio Manager can share access to their account with DOE. All other Partners will provide data to DOE in an approved reporting format. Data will be collected from Partners at the facility level.
- **Metrics:** Energy use metrics will be expressed in terms of source energy use intensity (EUI). For commercial buildings, energy use intensity will be tracked in terms of energy use per square foot (sq. ft.). Adjustments will be made to energy use intensity values to account for weather variation and changes in operating characteristics over time.
- **Verification:** Energy data and operating characteristics will be reviewed to ensure completeness and accuracy. Data may be independently verified for a random sample of Partner facilities to maintain integrity of program results.

The following sections include details on how the energy data tracking process will be implemented for commercial organizations.

## Baseline Year

The preferred baseline year for the Challenge is the most recent calendar year for which data is available when a Partner joins the Challenge. A Partner may choose any of the three most recent calendar years when the Partner joins the Challenge, if it is considered important to capture recent energy savings accomplishments. For example, if a Partner joined the Challenge in June 2011, the baseline year could be 2010, 2009, or 2008.

Partners will provide energy consumption data for the baseline period to DOE in order to compute the baseline year energy use intensity. This data will include energy consumption and costs for all fuels, and floor area for all buildings. Specific energy data requirements depend on the energy data tracking software used.



Note that Partners using Portfolio Manager have the option to set a baseline period for each facility in Portfolio Manager. If possible, Partners are encouraged to set the Portfolio Manager Baseline equal to the Challenge baseline period, for ease in tracking and more accurate program metrics. If the two baselines are not equivalent, data will be adjusted by DOE outside of Portfolio Manager so that reductions from the Challenge baseline period can be tracked. (See the **Tracking Metrics** section and **Appendix C** for additional details.)

## Facilities Included

Partners must include **all** facilities located in the United States in the Better Buildings Challenge portfolio as part of their commitment to achieve portfolio-wide energy savings. Partners should not report energy data from facilities outside the United States.

One exception to this rule is required to avoid double counting of energy savings. Participants in the Challenge include building owners, property managers, and Community Partners. As such, it is possible that a single building could have relationships with more than one Partner. To ensure that energy savings are only counted once, a building may only be included in the Challenge commitment for one Partner. The building owner will have first priority to include the building in its Challenge commitment, followed by the property manager, and then the Community Partner.

## Energy Tracking Software

The use of Portfolio Manager for energy tracking is strongly encouraged. Portfolio Manager performs weather normalization and adjusted energy calculations to account for changes in operation over time, and allows for easy sharing of data with DOE. If a Partner is not using Portfolio Manager, DOE can provide support to establish a Portfolio Manager account, upload facility and energy use data, and share access with DOE. Data can be entered manually, through a spreadsheet upload option, or automatically through approved Automated Benchmarking Services (ABS) providers. For more information, see [www.energystar.gov/benchmark](http://www.energystar.gov/benchmark).

If a Partner is using an alternative software tool for tracking energy data, DOE will work with the Partner to review the tool to determine if it provides the required information and consistency in calculations for tracking progress. In order to determine this, Partners are asked to submit a description of the tool used, as well as sample data illustrating that the tool generates all required reporting metrics. The description of the tool should include general information (tool name, tool developer, etc.) and answer the following questions:

- How does the tool annualize energy data?
- How does the tool calculate Site and/or Source EUI in kBtu/square foot?
- How does the tool calculate Weather-normalized EUI?



- If applicable, how does the tool calculate Adjusted EUI?
- What checks are performed to ensure that data are complete and accurate?

More detail on these questions, as well as the data format required for reporting, is available in a template Microsoft Excel spreadsheet, which is available from DOE on request. Excerpts from this spreadsheet are included in **Appendix A**.

## Reporting

Twice a year, for the time periods ending June and December, DOE will collect energy performance data. The data will be used to document the progress made by the Partners toward achieving the energy reduction goal of the Better Buildings Challenge and to recognize the achievements of the Partners.

For Commercial Partners, data will be collected at the facility level. Note that facility addresses will not be collected and facility names will be kept confidential, except for facilities that are part of showcase projects. In cases where facility-level data is not available (e. g., universities with master-metered electricity or central heating plants), Partners are encouraged to install submeters if possible. More granular information can help organizations better identify opportunities to improve energy performance. However, data for master meters will be accepted.<sup>1</sup> Note that ENERGY STAR guidance encourages tracking of energy use for certain building types, such as hospitals, at the campus level. For exceptions such as this, Better Buildings Challenge guidance will be consistent with ENERGY STAR.

For Partners that are tracking energy consumption in Portfolio Manager, data can easily be shared with a DOE Portfolio Manager account, as described in **Appendix B**. If a Partner is already tracking data in a Portfolio Manager account, sharing data is a simple process. If a Partner is new to using Portfolio Manager, DOE can provide assistance in setting up an account, entering data, and sharing access. By using the sharing feature in Portfolio Manager, DOE will automatically have read-only access to all updates made within Portfolio Manager, which simplifies the process for Partners. Key energy performance data will be exported from Portfolio Manager every six months, using standard reporting formats for all Partners. Partners will be notified before reports are generated so that they can confirm that data has been updated.

For Partners that are using an alternative energy tracking software tool, data will be provided to DOE in a Microsoft Excel spreadsheet template, using the format shown in **Appendix A**. Data will be submitted to DOE every six months.

---

<sup>1</sup> In the case where one or more facilities on a master meter intend to participate in the Challenge, but other facilities on that meter do not, DOE recommends the following approach. First, DOE encourages the Partner to include all buildings on the master meter in the Challenge if possible. If this is not possible, the Partner may include ALL usage from the master meter in the Challenge if the facilities included in the Challenge represent a large percentage of the energy usage from the master meter. Contact your Better Buildings Challenge account manager for additional details.



## Tracking Metrics

Energy use metrics will be expressed in terms of source energy use intensity. For commercial buildings, energy use intensity will be tracked in terms of energy use per square foot<sup>2</sup>. Adjustments will be made to energy use intensity values to account for variations in weather from year to year and changes in operating characteristics over time.

At the facility level, the following metrics will be used to track energy savings:

- Adjusted EUI:** Adjusted EUI accounts for changes in operating characteristics over time, as well as changes in weather. For buildings in Portfolio Manager, Adjusted EUI is provided for building types that receive an ENERGY STAR score.<sup>3</sup> It accounts for changes in operating characteristics that are included in the scoring model. These vary by space type, and may include factors such as hours of operation, number of workers, and number of personal computers. Additional details on Adjusted EUI are included in **Appendix C**. For buildings that are not tracked in Portfolio Manager, Partners may propose alternative procedures to adjust for changes in operating characteristics over time.
- Weather-normalized EUI:** Weather-normalized EUI accounts for changes in weather from year to year. This metric is available for all building types in Portfolio Manager, and will be used for building types that do not receive an ENERGY STAR score. For buildings that are not tracked in Portfolio Manager, weather normalization is commonly performed by alternative software tools.

DOE strongly encourages the use of Adjusted EUI for commercial building types that are eligible to receive an ENERGY STAR score. If a Partner is not gathering the required operating characteristics to calculate this metric, default values provided in Portfolio Manager may be used to populate this information. Under these circumstances, adjustments in Portfolio Manager will only account for changes in weather.

The facility-level energy intensity metrics will be used to determine the following portfolio-level metrics, which will be calculated for the Partner by DOE:

- Portfolio Average Baseline EUI:** This metric will be computed using an average of the individual building Baseline EUI values, weighted by the building square feet. (Note that this is mathematically equivalent to the total energy use for the portfolio divided by the total square feet of the portfolio.) The Baseline EUI will include the facilities in the portfolio during the baseline year. This will generally be a fixed value, but may be re-calculated based on changes to the Partner's portfolio.

<sup>2</sup> For the purposes of Better Buildings Challenge, the definition of square foot (and therefore energy use per square foot) will be consistent with Portfolio Manager. If alternative energy tracking software uses a different definition, it must be approved by DOE.

<sup>3</sup> Eligible building types that are currently represented by Challenge Partners include Office, K-12 School, Hospital, Retail, Bank, Hospitality, Supermarket, Warehouse, and Residence Hall.



- **Portfolio Average Current EUI:** This metric will be computed using an average of the individual building Current EUI values, weighted by the building square feet. The Current EUI will include the facilities in the portfolio during the current year.
- **Percent Improvement in Portfolio EUI:** The Percent Improvement in Portfolio EUI will be calculated using the Portfolio Average EUI values, and will be used to track progress toward the Partner's goal. It will be calculated for the total percent improvement since the baseline period (using the Baseline and Current EUI values).
- **Change in Percent Improvement from Previous Year:** This metric will be used to show progress on an annual basis. It is calculated by subtracting the Percent Improvement in Portfolio EUI for the previous year from the value for the current year.

### Computing Percent Improvement in Portfolio EUI

The following example illustrates the process used to compute the portfolio EUI and percent savings, for a sample organization with three buildings – Building A, Building B, and Building C. The Portfolio Average Baseline EUI is computed as an average of the individual building Baseline EUI values (160, 140, and 170 kBtu/sq. ft.), weighted by the building floor area values, and is equal to 158 kBtu/sq. ft. This is equivalent to the total energy use of 71,000,000 kBtu for the portfolio divided by the total floor area of 450,000 square feet. The Portfolio Average Current EUI for Year 2 is 150 kBtu/sq. ft., following a similar process. The Percent Improvement in Portfolio EUI can then be calculated as:

$$\% \text{ Improvement in Portfolio EUI} = \frac{\text{Baseline EUI} - \text{Current EUI}}{\text{Baseline EUI}} = \frac{158 \text{ kBtu/sq. ft.} - 150 \text{ kBtu/sq. ft.}}{158 \text{ kBtu/sq. ft.}} = 5\%$$

BUILDING PORTFOLIO	BASELINE			YEAR 1			YEAR 2		
	Energy Use (kBtu)	Square Feet	EUI (kBtu/sq. ft.)	Energy Use (kBtu)	Square Feet	EUI (kBtu/sq. ft.)	Energy Use (kBtu)	Square Feet	EUI (kBtu/sq. ft.)
Building A	16,000,000	100,000	160	15,500,000	100,000	155	15,200,000	100,000	152
Building B	21,000,000	150,000	140	20,250,000	150,000	135	20,250,000	150,000	135
Building C	34,000,000	200,000	170	34,000,000	200,000	170	32,000,000	200,000	160
<b>Corporate-wide</b>	<b>71,000,000</b>	<b>450,000</b>	<b>158</b>	<b>69,750,000</b>	<b>450,000</b>	<b>155</b>	<b>67,450,000</b>	<b>450,000</b>	<b>150</b>
Percent Improvement in Portfolio EUI (From Baseline)						2%	5%		
Change in Percent Improvement from Previous Year						2%	3%		

## Portfolio Changes and Baseline Re-calculation

The portfolio of buildings operated by a Partner may change during the time period of the Challenge. If properties are removed from a portfolio, they will no longer be counted toward Challenge commitments. If properties are added to the portfolio, Partners should add them to the Challenge commitment.

The policy for handling portfolio changes was designed to 1) encourage the inclusion of all new facilities in the corporate-wide commitment, 2) reward Partners appropriately for building energy-efficient new construction, and 3) avoid unfairly crediting Partners for shutting down or selling facilities. To the extent possible, program guidelines are consistent with other protocols for tracking energy savings, including EPA Climate Leaders, World Resources Institute, and ENERGY STAR Leaders.

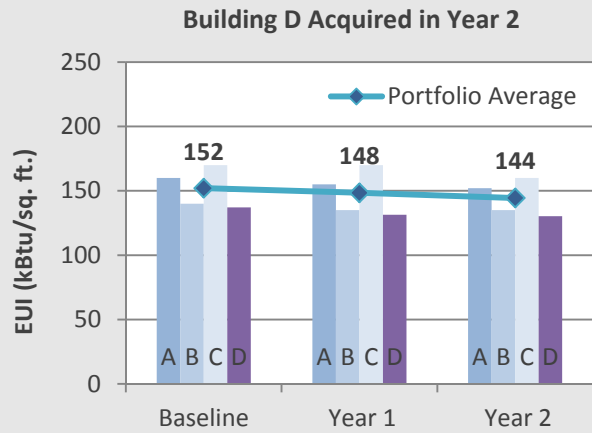
The following table includes specific guidelines that apply to changes in a portfolio after the baseline year. Typical scenarios are presented, along with examples for each scenario. The examples use the sample organization described previously, which operates Buildings A, B, and C. The figures show how adding Building D or removing Building C will affect portfolio energy intensity calculations for the baseline period, Year 1, and Year 2.

SCENARIO	EXAMPLE																								
<p><b>New Construction:</b> Facilities added to the portfolio through new construction will be included in the current portfolio, but not in the baseline portfolio.<sup>4</sup></p>	<p><b>Building D Constructed in Year 2</b></p> <table border="1"> <caption>EUI (kBtu/sq. ft.) Data</caption> <thead> <tr> <th>Year</th> <th>Building A</th> <th>Building B</th> <th>Building C</th> <th>Building D</th> <th>Portfolio Average</th> </tr> </thead> <tbody> <tr> <td>Baseline</td> <td>~160</td> <td>~140</td> <td>~160</td> <td>-</td> <td>158</td> </tr> <tr> <td>Year 1</td> <td>~150</td> <td>~140</td> <td>~160</td> <td>-</td> <td>155</td> </tr> <tr> <td>Year 2</td> <td>~140</td> <td>~140</td> <td>~160</td> <td>~130</td> <td>144</td> </tr> </tbody> </table>	Year	Building A	Building B	Building C	Building D	Portfolio Average	Baseline	~160	~140	~160	-	158	Year 1	~150	~140	~160	-	155	Year 2	~140	~140	~160	~130	144
Year	Building A	Building B	Building C	Building D	Portfolio Average																				
Baseline	~160	~140	~160	-	158																				
Year 1	~150	~140	~160	-	155																				
Year 2	~140	~140	~160	~130	144																				

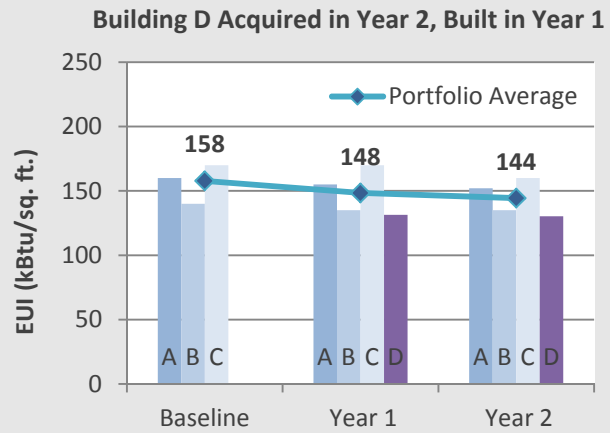
<sup>4</sup> Note that for New Construction and Acquisitions of facilities that did not exist in the baseline year, a Baseline EUI will be established for the individual facility using the first year it is added to the portfolio. This will not contribute to the portfolio Baseline EUI, but it will be used to demonstrate percent improvement over time for that individual facility.



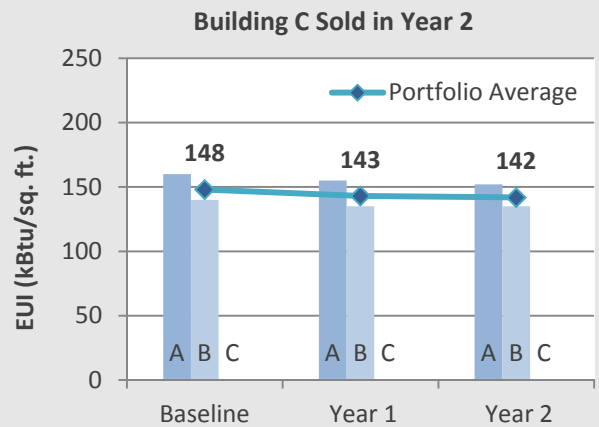
**Acquisition of Facilities that Existed in the Baseline Year:** These facilities will be included in the current portfolio and the baseline portfolio. It will be necessary to obtain energy consumption data for the baseline period, and the baseline energy consumption will be re-calculated by DOE to include these facilities. If data is not available for the baseline period, these facilities should not be included in the Challenge commitment.



**Acquisition of Facilities that Did Not Exist in the Baseline Year:** These facilities will be included in the current portfolio, and can be included in any previous years in which they existed, but they will not be included in the baseline portfolio.



**Removals:** Facilities removed from the portfolio (divestitures or closings) will no longer be included in the current portfolio or the baseline portfolio. The baseline energy consumption will be re-calculated by DOE to exclude these facilities.





As noted above, tracking the energy data for acquisitions to a portfolio is strongly encouraged. Exceptions are allowed for acquisitions of a limited nature. For any given year, if the sum of the energy use across all facilities acquired in that year represents less than 5 percent of the total baseline energy consumption for a Partner, the Partner may choose to exclude these facilities from the Challenge commitment.

As part of reporting energy consumption to DOE every six months, Partners will notify DOE of portfolio changes and report energy consumption data accordingly. For Partners using Portfolio Manager, new facilities can be added to Portfolio Manager, and must be shared with DOE. If a Partner experiences any significant portfolio changes that are not addressed by guidelines above, the Partner should contact DOE to determine the appropriate way to account for the changes.

## Verification

Verifying reductions in energy consumption is important to provide appropriate recognition for Partners, publicize program-wide accomplishments, and ensure program integrity. Although progress reporting will occur every six months, DOE will only verify data once a year.

The primary verification approach will be a data review to check for anomalies. Data verification will focus on building EUI and its components. Key fields subject to verification therefore include square footage and current energy consumption for all fuels. For Partners submitting Adjusted EUI data, additional fields may require verification if they deviate significantly from typical values (e.g., number of occupants, personal computers, walk-in coolers). If key data elements fall outside established error bands, DOE will follow up with Partners and ask them to correct or explain anomalies in the data. Anomalies often take the form of missing energy consumption data, unit conversion errors, incorrect hours of operation, occupancy levels, etc. A document summarizing each “flagged” Partner building and the data fields requiring completion or verification will be prepared by DOE and submitted to the Partner. The Partner will be asked to complete or update any missing data, as well as edit or confirm any other questionable data.

From time to time, DOE may use a sampling approach to augment the above verification procedure and provide for independent verification. (That is, records would be sought from independent primary sources, such as utility bills directly from the supplier, to verify key data). This sample-based verification approach may be implemented on a programmatic or Partner-specific level.



## Appendix A – Reporting Template

If a Partner is using an alternative software tool for tracking energy data, DOE will work with the Partner to review the tool to determine if it provides the required information and consistency in calculations for tracking progress. Once the alternative tracking mechanism has been approved by DOE, the Partner is required to submit energy consumption data every six months using a Microsoft Excel spreadsheet template, which is available from DOE upon request. Excerpts from this spreadsheet are below:

Better Buildings Challenge Data Collection Template												
<b>Overview:</b>												
This template is intended to assist Better Buildings Challenge commercial buildings partners in reporting energy data from alternative (non-Portfolio Manager) software tools. All alternative tools must be reviewed and approved by DOE.												
Annualized energy data for each building in the portfolio must be submitted to the Better Buildings Challenge in this template for the baseline period (preferably for calendar year 2008, but any year from 2008 through 2011 may be used) and to demonstrate progress every six months (i.e., annual consumption must be provided for the 12 months ending December 2011, June 2012, December 2012, etc.). New data should be added to the previously submitted spreadsheet, such that each submission includes a full record of progress over time.												
<b>General Instructions:</b>												
Fill in all required information on the Data Reporting Template tab of this worksheet. Columns shown in red are required. Cells shaded in gray will populate automatically. Please overwrite gray example text with your own data.												
<b>Field-Specific Information:</b>												
<b>Facility Name</b> - enter a unique building identifier for each facility in the portfolio. This identifier must be identical for the same facility across all reporting periods.												
<b>Facility Owner</b> - enter the name of the facility owner												
<b>Facility Type</b> - choose the facility type from the drop-down menu. If your facility does not fit into any of these categories, choose "Other."												
<b>Total Floor Space (Sq. Ft.)</b> - enter total square footage for each building. If the square footage of the building has changed over the 12 month period in which you are reporting data, please provide a time-weighted value (e.g., for a 5000 sq. ft. building that received a 1000 sq. ft. addition for one month of the year: Total Floor Space (Sq. Ft.) = 5000*(11/12) + 6000*(1/12) = 5083 sq. ft.)												
<b>Type of Data</b> - please choose "Weather-normalized" or "Adjusted," according to the following definitions												
<i>Adjusted metrics</i> - data have been adjusted to account for changes in weather and key operating characteristics												
<i>Weather-normalized metrics</i> - data have been adjusted to account for changes in weather												
<b>Period Ending Date</b> - provide the ending date of the 12 month reporting period for which your metrics are annualized												
<b>Energy Use (columns G-L):</b>												
To enter your annualized energy use, you have two options:												
(1) Provide <b>site energy</b> by fuel type in columns G-J (kBtu/Sq. Ft.). <i>[Please note: If your buildings use additional fuels other than natural gas and electricity (columns I and J, e.g., fuel oil, solar, wood, etc.), contact us and we will work with you accommodate your data],</i> or												
(2) Enter <b>source energy</b> (kBtu/Sq.Ft.) in column L. You will need to overwrite the existing formula with your data. Note that if you provide a value in column L, you DO NOT need to fill in columns G-J.												
<b>Annual Energy Cost per Sq. Ft. (US Dollars (\$/Sq. Ft.))</b> - enter the total energy cost per sq. ft. for the 12 month period ending on the date indicated in column F												

Facility Name	Facility Owner	Zipcode	Facility Type	Total Floor Space (Sq. Ft.)	Type of Data (Weather-normalized or Adjusted)	Period Ending Date	Current Site Electricity Use (kBtu/Sq. Ft.)	Current Site Natural Gas Use (kBtu/Sq. Ft.)	Current Site Other Fuel Usage (kBtu/Sq. Ft.)	Current Site Other Fuel Usage (kBtu/Sq. Ft.)	Current Total Site Energy Use (kBtu/Sq. Ft.)	Current Total Source Energy Use (kBtu/Sq. Ft.)	Annual Energy Cost per Sq. Ft. (US Dollars (\$/Sq. Ft.))
Building 1	Company X	XXXXX	Supermarket	9999	Weather-normalized	12/31/2010	88	99			187	397.573	99999999
											0	0	
											0	0	
											0	0	
											0	0	
											0	0	



## Appendix B – Portfolio Manager Sharing Instructions

If Partners are using Portfolio Manager, they can automatically submit facility-level data to DOE for program updates every six months through a sharing feature within Portfolio Manager. DOE will send out a reminder email two weeks in advance of each collection so that each Partner can confirm the accuracy and completeness of data before it is submitted for the Better Buildings Challenge program. If a Partner is not using Portfolio Manager, the Better Buildings Challenge program team can provide support to share facility and energy-use data.

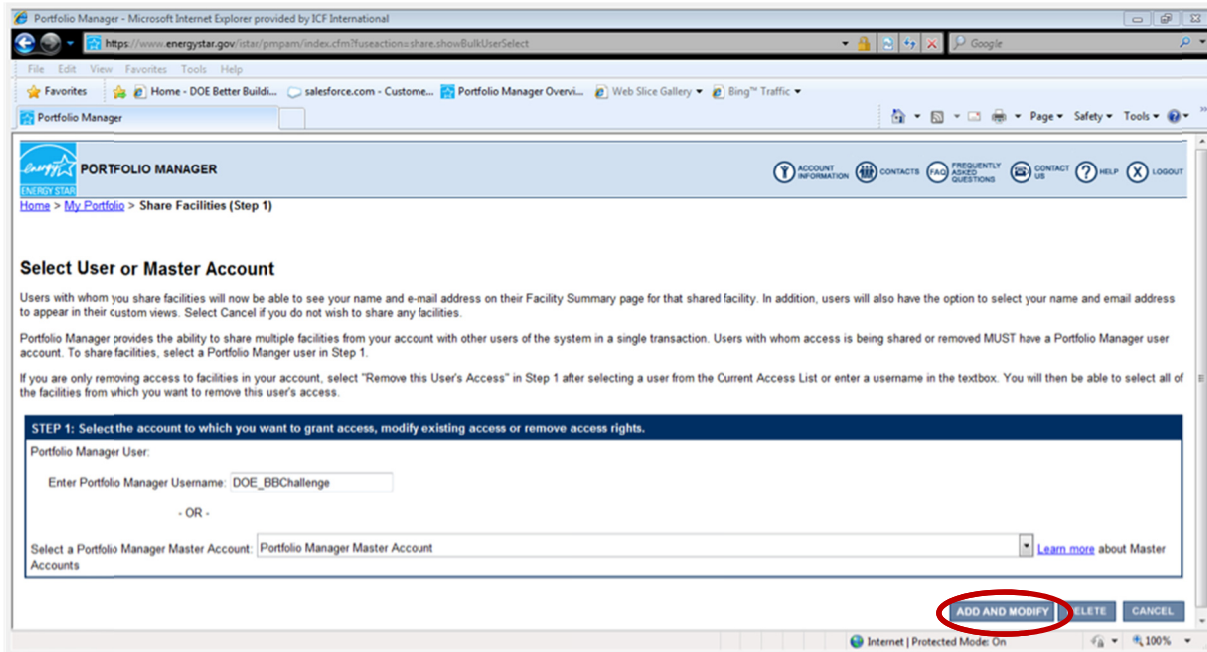
Below are step-by-step instructions on how to share data using Portfolio Manager.

1. Log into your Portfolio Manager account and choose “Share Facilities.”

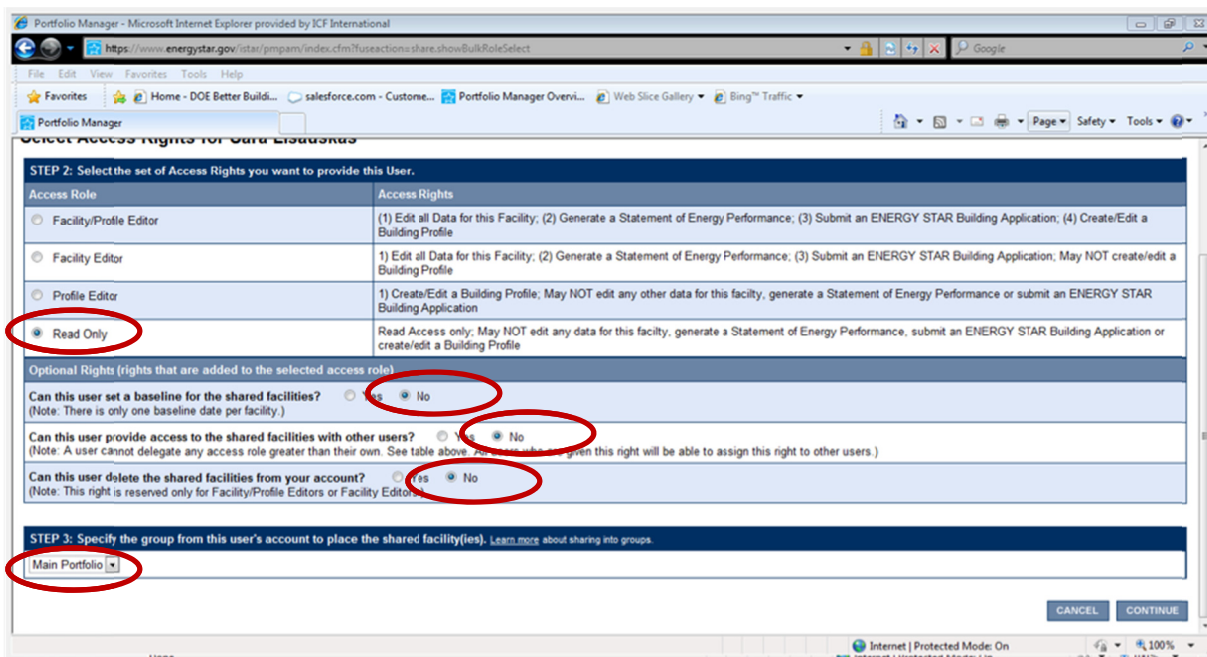
The screenshot shows the Energy Star Portfolio Manager web application. The top navigation bar includes links for ACCOUNT INFORMATION, CONTACTS, FREQUENTLY ASKED QUESTIONS, CONTACT US, HELP, and LOGOUT. The main content area displays 'Portfolio Averages' with a table showing Baseline Rating: 64, Current Rating: 75, and Change from Baseline: -8.1%. Below this, there are links for 'Add a Property', 'Work with Facilities', 'Reporting and Analysis', 'Apply for Recognition', and 'Automated Benchmarking'. The 'Work with Facilities' link is circled in red, and a red arrow points to it from the right side of the page. The bottom section shows a table with columns for Facility Name, Current Rating, Change from Baseline, Total Floor Space, Energy Use Alerts, Current Energy Period, Eligibility for the ENERGY STAR, and Last Modified.

Facility Name	Current Rating (1-100)	Change from Baseline: Adjusted Energy Use (%)	Total Floor Space (Sq. Ft.)	Energy Use Alerts	Current Energy Period Ending Date	Eligibility for the ENERGY STAR	Last Modified
Results 1 - 48 of 48							

- When you join, you will be given the name of a Portfolio Manager account that will be used by DOE to track reduction in energy use specifically for your organization (Ex: "DOE-BBC-ACMEInc"). Enter that name in the box marked "Enter Portfolio Manager Username." Then click "Add and Modify" at the bottom of the screen.



- Select "Read Only" and respond "No" to the Optional Rights. Under Step 3, select "Main Portfolio" in the drop-down box.



- Select the facilities to share using the check boxes. To quickly select a large number of facilities, use the "select all" feature, then uncheck facilities to NOT share.<sup>5</sup>

Select all facilities for which you would like to provide this user with access. To remove access, uncheck the checkbox next to that facility. Note: you will only be able to share facilities that you currently have access to share.

The access role and rights you selected in Step 2 are:  
 Access Role: **Portfolio Manager General User**  
 Able to Set Baseline? **No**  
 Able to Delegate Access? **No**  
 Able to Delete Facility? **No**  
 Accessible to User through: **Main Portfolio**

The "Current Access Level" columns allow you to see whether this user has already been provided access to this facility by you or another user. If you choose to change the access role here, your selection will replace the current access role.

If the access role or optional rights for a particular facility listed below in the "New Access Level" columns do not match those listed above, you do not have access to share that facility at the level you have chosen in Step 2. You can either choose to select the recommended access role/rights listed in the "New Access Level" columns below or provide a different level of access to that user at a later date.

**STEP 4: Select all facilities in your account that you would like to share with Sara Lisauskas.**

Select Facilities to Share (uncheck to Remove Access)	Facility Name	Current Access Level		New Access Level	
		Access Role (provided by)	Optional Rights	Access Role	Optional Rights
<input checked="" type="checkbox"/> select all					
<input type="checkbox"/>	Sample Facility	None	None	Portfolio Manager General User	Set Baseline? No Delegate? No Delete? No

<sup>5</sup> The Better Buildings Challenge is a portfolio challenge and Partners should share all facilities unless another arrangement has been agreed to with DOE. Please work with the Better Buildings Challenge program team to identify if there may be double counting of buildings between Partners.



## Appendix C – Portfolio Manager Adjusted EUI Calculations

For buildings that are eligible to receive an ENERGY STAR score, Portfolio Manager performs adjustments to account for operating characteristics that may change between the baseline period and the current period. Adjustments are calculated for operating characteristics that are included in the scoring model, which vary by space type, and may include hours of operation, number of workers, number of personal computers, etc. Using this approach, for example, a building could experience increased energy use due to longer hours of operation, but still show energy savings when the usage is adjusted to account for the longer operating hours.

To compute adjusted energy metrics for a building, Portfolio Manager uses a normalization factor generated from the scoring model for the relevant building type(s). The Predicted EUI for a building is computed under baseline and current conditions, to determine the normalization factor:

$$\text{Normalization Factor} = \frac{\text{Predicted EUI Baseline}}{\text{Predicted EUI Current}}$$

The primary metric displayed in Portfolio Manager is the **Change from Baseline: Adjusted Energy Use (%)**, which adjusts the percent change in energy use using the **Normalization Factor**. The **Change from Baseline: Adjusted Energy Use Intensity (kBtu/sq. ft.)** is also provided. The actual **Adjusted EUI** values for the baseline and current period are not currently displayed in Portfolio Manager, but can be calculated based on Portfolio Manager outputs, and will be used for tracking energy savings for the Better Buildings Challenge.

Note that the **Change from Baseline** metrics in Portfolio Manager are based on the baseline period that is set in Portfolio Manager. If possible, Partners are encouraged to set the Portfolio Manager Baseline equal to the Challenge baseline period, for ease in tracking and more accurate program metrics. If the two baselines are not equivalent, data will be adjusted by DOE outside of Portfolio Manager so that reductions from the Challenge baseline period can be tracked.

### Procedure to Calculate Adjusted EUI

In order to calculate Adjusted EUI, the following metrics from Portfolio Manager are necessary:

*Baseline Source Energy Intensity (kBtu/sq. ft.)*

*Change from Baseline: Adjusted Energy Use Intensity (kBtu/sq. ft.)*

These metrics are referred to as **PM Baseline EUI**, and **Change from Baseline: Adj EUI**, for short, in the equations that follow.



The Better Buildings Challenge metrics can then be computed as follows:

$$\text{Baseline EUI} = \text{PM Baseline EUI} + \text{Change from Baseline: Adj EUI}_{(\text{PM Baseline to Challenge Baseline})}$$

$$\text{Current EUI} = \text{PM Baseline EUI} + \text{Change from Baseline: Adj EUI}_{(\text{PM Baseline to Current Period})}$$

If the Portfolio Manager Baseline is the same as the Challenge Baseline, the Baseline EUI for the Challenge is equivalent to the PM Baseline EUI. If the baselines are not the same, an adjustment is added. The Current EUI for the Challenge must be calculated outside of Portfolio Manager regardless of the baseline selection, in order to capture the adjustments for operating characteristics.

Note that the reference year for all normalization is the Portfolio Manager baseline period. The energy use of the current year is normalized relative to the baseline year. The choice of Portfolio Manager baseline therefore impacts the EUI values that are tracked for the Challenge. For example, an office building with a baseline of 2006 in Portfolio Manager and a Challenge baseline of 2008 could be fully occupied in 2006, 2/3 occupied during the 2008, and 1/3 occupied in the current year. In this case, the EUI values generated through this approach would be normalized to represent the building from 2006 that was fully occupied. Although the EUI values will vary, the percent change in EUI for the building will be mathematically identical regardless of the baseline selection.

The Portfolio Manager online software is in the process of being re-designed. A new version will be released in 2013, which may include expanded options to track Adjusted EUI values. DOE will update this procedure as necessary to incorporate the software updates.

