

# State of Arkansas

## Introduction to On-site Training Sessions

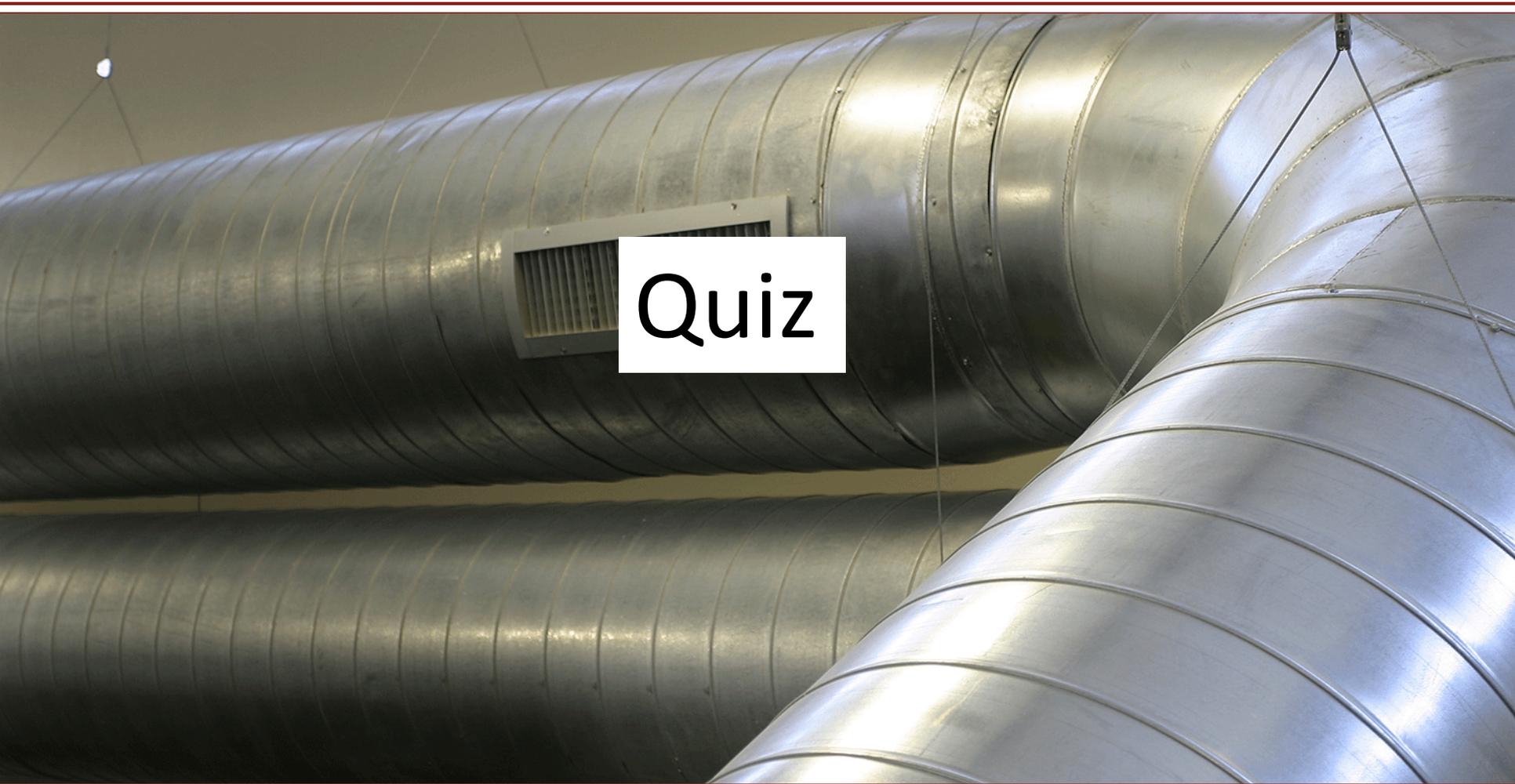


# Key Concepts – Unit 1

	Topics	Learning Objectives
Unit 1	<ul style="list-style-type: none"><li>• Detailed hands-on training on using EPA’s Portfolio Manager.</li><li>• Additional information such as energy unit conversions, mixed-use spaces, utility bills, data collection, and utility meters.</li><li>• Opportunities for tracking cost savings and prioritizing retrofits.</li></ul>	<ul style="list-style-type: none"><li>• Understand the importance of energy benchmarking as a primary energy efficiency strategy.</li><li>• Teach the fundamentals of benchmarking and the continuing need for measurement and verification (one of the ARRA goals).</li><li>• Demonstrate knowledge in the use of all the features related to creating, editing, updating, sharing, and removing data for a facility.</li></ul>

# Key Concepts – Unit 2

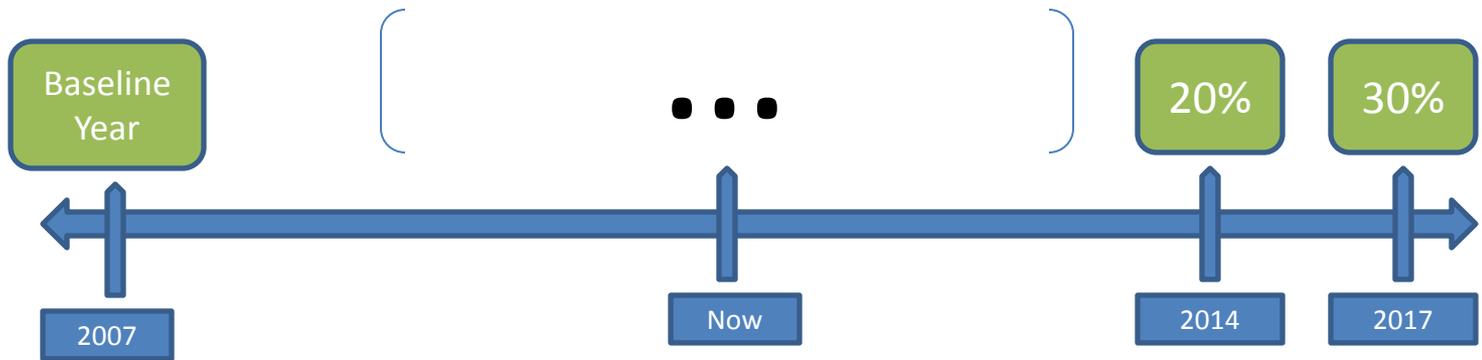
	Topics	Learning Objectives
Unit 2	<ul style="list-style-type: none"><li>• Campus facilities.</li><li>• Complex multi-fuel, multi-meter facilities and facilities undergoing renovations.</li><li>• Greenhouse gas emissions.</li><li>• Report generation.</li></ul>	<ul style="list-style-type: none"><li>• Describe, understand, and use the campus feature accurately.</li><li>• Describe, understand, and apply knowledge on how to treat facilities where a single meter serves several buildings, where multiple fuels are used, and where meters are added or removed.</li><li>• Make adjustments to the agency portfolio for accuracy.</li><li>• Create GHG reports, or carbon-related reports.</li></ul>



# Quiz

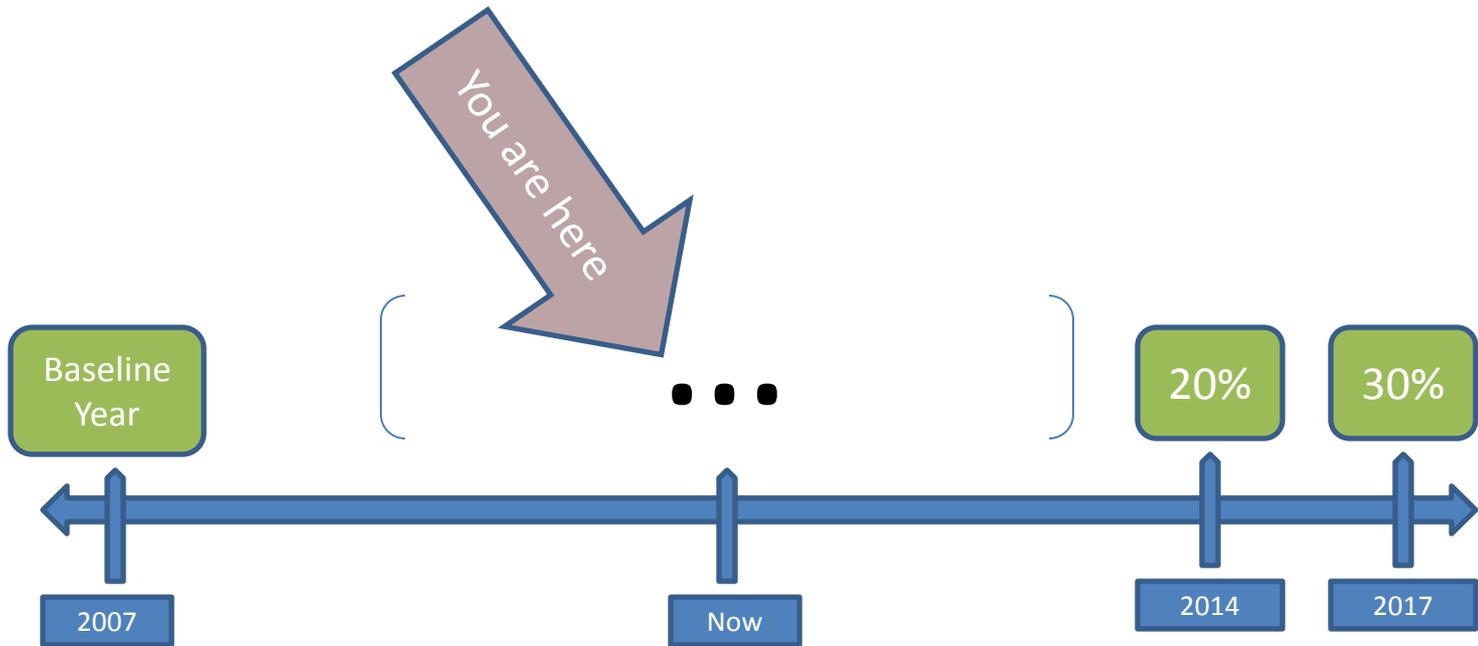
# Introduction

## Act 1494



# Introduction

## Act 1494



# Where Do You Fit In?

# Introduction

*... What happens now? ...And later?*

- 
- Benchmarking
  - Rate Analysis

- Onsite Audits
- Retrofits



# Introduction: Project Context

## *Understanding the Project*

- Advance Arkansas energy efficiency programs, Lead by Example
- Protect financial & environmental resources
- Comply with [Act 1494](#) of 2009
  - Reduce water, electricity, and natural gas use
    - 20% by 2014
    - 30% by 2017





# Introduction: ENERGY STAR

## *What is ENERGY STAR?*

- A government-backed, voluntary program that helps businesses and individuals protect the environment through superior energy performance by providing energy-efficient solutions for homes, businesses, and institutions.
- The national symbol for environmental protection through energy efficiency, recognized by more than 75% of all U.S. households.

Source: U.S. EPA ENERGY STAR

# Introduction: ENERGY STAR Portfolio Manager for Buildings



Fuel Efficiency

MPG

Is 60 MPG high or low for an automobile?

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

Statement of Energy Performance

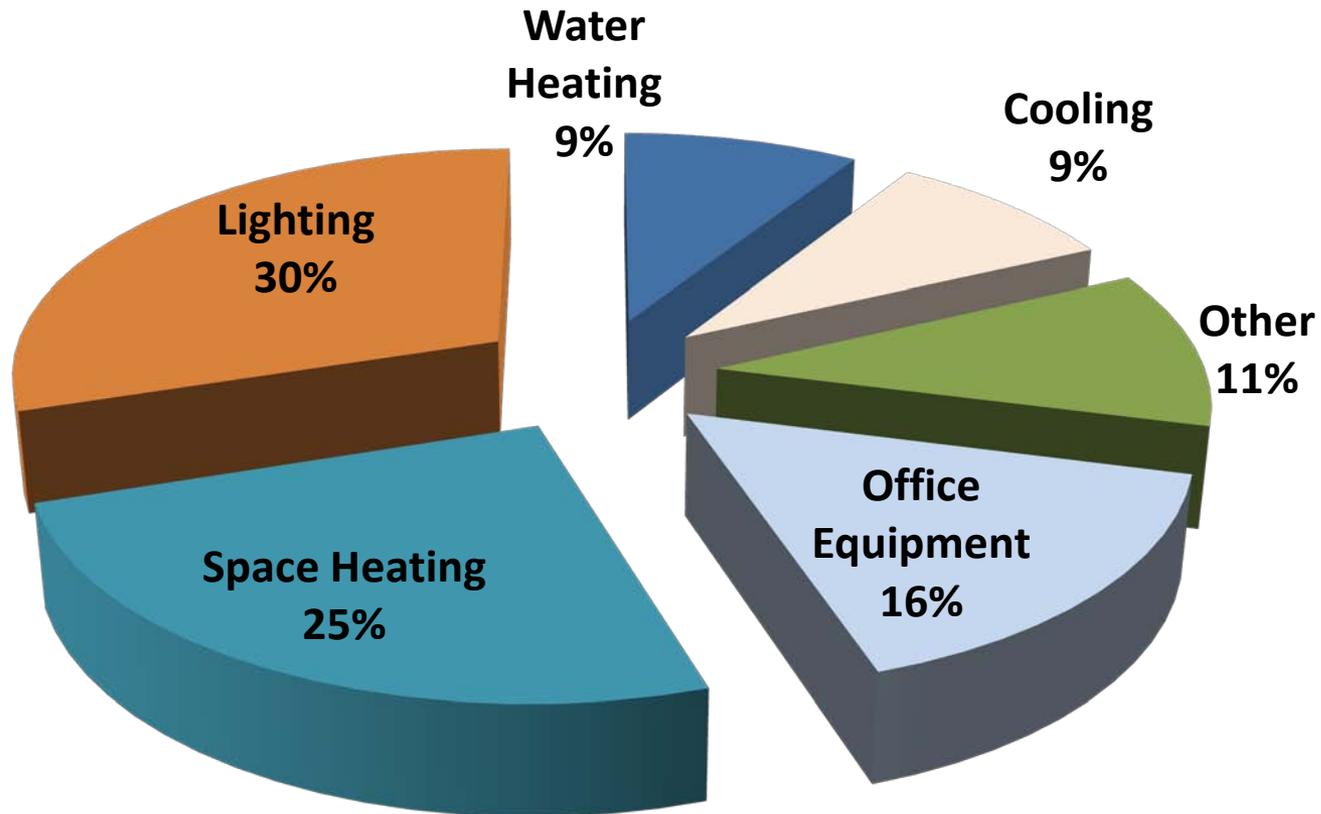
EPA Score



STATEMENT OF ENERGY PERFORMANCE				Margrave High School		Date SEP Generated: March 30, 2008																												
<p>Owner: Calhoun Group            Contact: John Dine            5001 North Gate Motor Drive            Suite 200            Arlington, VA 22209            (703) 241-6800</p>				<p>Building ID: 1027129            For 12-month period ending: January 31, 2008</p>																														
<p>Facility Space Use Summary</p> <table border="1"> <thead> <tr> <th>Space Type</th> <th>Area (SF)</th> <th>Number of Students</th> <th>Number of PCs</th> <th>Cooling Percent</th> </tr> </thead> <tbody> <tr> <td>Complete Class Center</td> <td>538</td> <td>N/A</td> <td>N/A</td> <td>N/A</td> </tr> <tr> <td>K-12 Schools</td> <td>261,221</td> <td>1,521</td> <td>420</td> <td>100</td> </tr> </tbody> </table>				Space Type	Area (SF)	Number of Students	Number of PCs	Cooling Percent	Complete Class Center	538	N/A	N/A	N/A	K-12 Schools	261,221	1,521	420	100	<p>Site Energy Use Summary</p> <table border="1"> <thead> <tr> <th>Electricity (kBtu)</th> <th>Gas (kBtu)</th> <th>Total Energy (kBtu)</th> </tr> </thead> <tbody> <tr> <td>3,649,801</td> <td>320,419</td> <td>3,970,220</td> </tr> <tr> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>3,649,801</td> <td>320,419</td> <td>3,970,220</td> </tr> </tbody> </table>		Electricity (kBtu)	Gas (kBtu)	Total Energy (kBtu)	3,649,801	320,419	3,970,220	0	0	0	3,649,801	320,419	3,970,220	<p>Professional Verification</p> <p>John Dine            5001 North Gate Motor Drive            Suite 200            Arlington, VA 22209            (703) 241-6800</p> <p>License Number: 173161960            State: VA</p>	
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0	0	0																																
3,649,801	320,419	3,970,220																																
<p>Results</p> <p>Energy Performance Rating* (1-100): 94</p> <p>Energy Intensity*            Site (kBtu/SF*yr): 17            Source (kBtu/SF*yr): 49.4</p> <p>Emissions            CO<sub>2</sub> (1000 lbs/yr): 6,773            SO<sub>2</sub> (1000 lbs/yr): 305            NO<sub>x</sub> (1000 lbs/yr): 21</p> <p>Energy Cost            Cost (\$/yr): \$204,800            Intensity (\$/SF*yr): \$0.72</p>				<p>Indoor Environment Criteria*</p> <p>Indoor air pollutants controlled? Yes            Adequate ventilation provided? Yes            Thermal conditions met? Yes            Adequate illumination provided? Yes</p>		<p>Environmental Progress Score</p> <p>Report to the Environmental Protection Agency for the year of any violation to this building. Identify that the information contained on this statement is accurate.</p>																												
<p>Notes:            1. Buildings for ENERGY STAR must be certified by EPA within 4 months of the Period Ending date. Award of ENERGY STAR is not final until approval is received from EPA.            2. Energy performance rating of 95 is the minimum required rating for certified eligible for ENERGY STAR.            3. Environmental progress score is calculated based on the following criteria:            4. Based on meeting ENERGY STAR level 100 for all or any quality, ASHRAE Standard 90.1-1999 for thermal comfort, and ENERGY STAR Lighting Handbook for lighting quality.</p> <p>Tracking Number: SEP200403300001004542</p>																																		

# Introduction

## Office Buildings End Usage (U.S. Average)



<http://greenenergypayback.com/>



# Introduction: Efficiency Benefits *Opportunities in Buildings*

- Commercial buildings and industrial facilities generate about **50 percent** of U.S. carbon dioxide emissions.
- **30 percent** of energy consumed in commercial and industrial buildings is wasted.
- Reductions of **10 percent** in energy use can be possible with little or no cost.



Source: U.S. EPA ENERGY STAR



# Introduction: ENERGY STAR

## *Benchmarking*

### Portfolio Manager

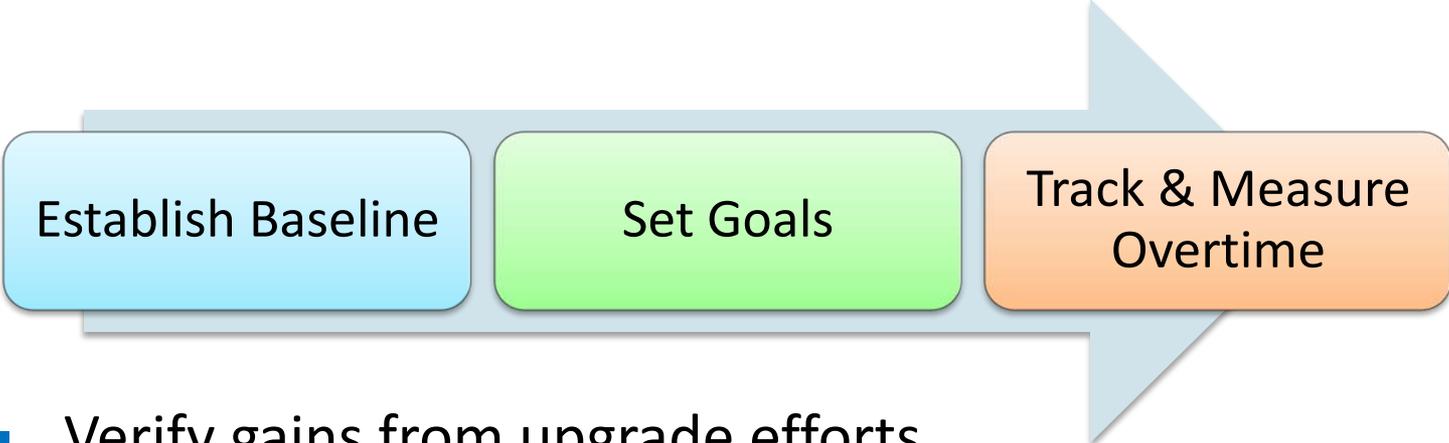
- Measure and track energy and water use of all buildings to receive an energy use intensity (EUI). Many buildings, including office buildings can receive energy performance scores on a 1-100 scale
- Track changes in energy and water use over time in single buildings, groups of buildings, or entire portfolios
- Track and report cost savings and CO<sub>2</sub> emissions
- Apply for the ENERGY STAR
- [www.energystar.gov/benchmark](http://www.energystar.gov/benchmark)

Source: U.S. EPA ENERGY STAR



# Introduction: ENERGY STAR

## *Smart Energy Management*



Establish Baseline

Set Goals

Track & Measure  
Overtime

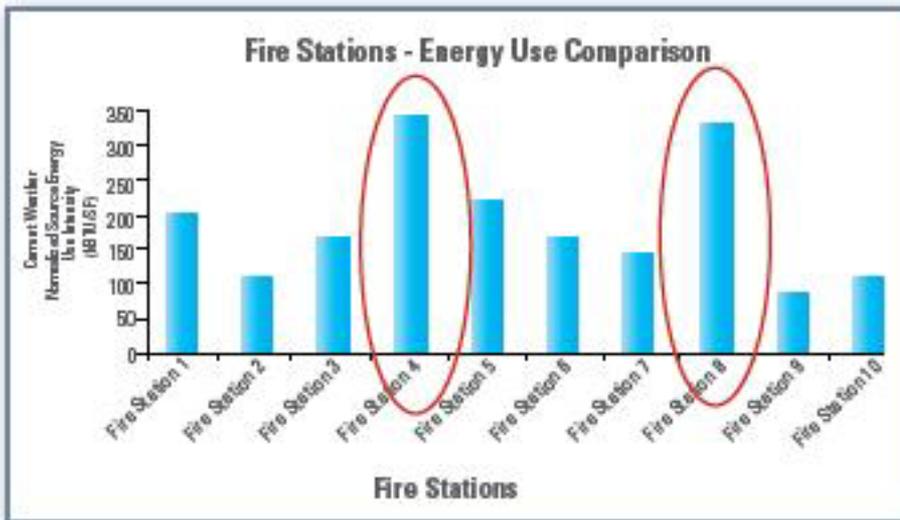
- Verify gains from upgrade efforts
- Require specific rating gains from service providers in select building types such as office or warehouse

Source: U.S. EPA ENERGY STAR

# Introduction: ENERGY STAR

## *Best Opportunities for Improvements*

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



Prioritize efforts by identifying under-performing buildings.

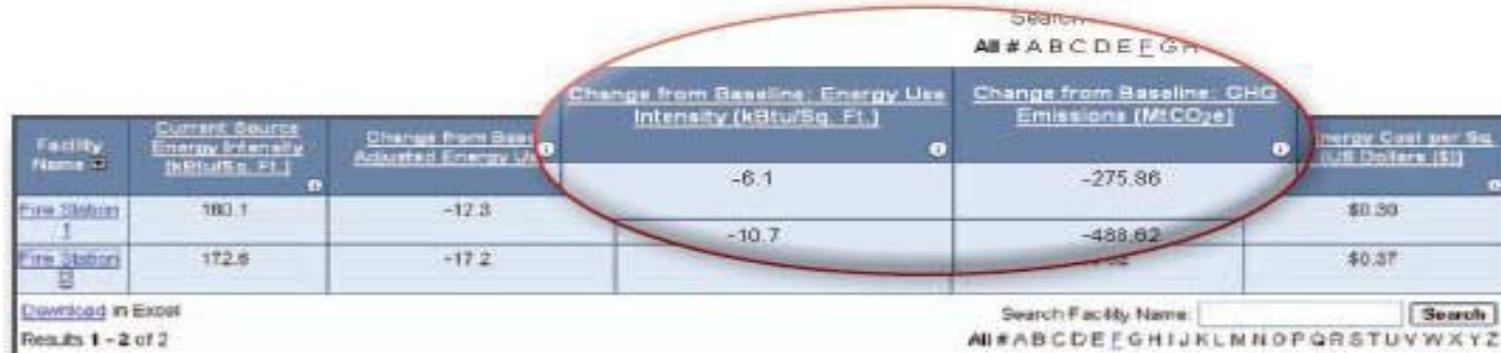


Source: U.S. EPA ENERGY STAR

# Introduction: ENERGY STAR

## Track Progress Over Time

- Set a custom baseline and monitor energy efficiency improvements before, during, and after an upgrade project
- View percent improvement in weather-normalized energy use intensity
- Track reductions in greenhouse gas emissions
- Monitor energy and water costs



Facility Name	Current Source Energy Intensity (kBtu/Sq. Ft.)	Change from Baseline Adjusted Energy Use	Change from Baseline Energy Use Intensity (kBtu/Sq. Ft.)	Change from Baseline GHG Emissions (MtCO <sub>2</sub> e)	Energy Cost per Sq. Ft. (US Dollars \$)
Facility 1	100.1	-12.3	-6.1	-275.86	\$0.50
Facility 2	172.6	-17.2	-10.7	-488.62	\$0.37

Download in Excel  
Results 1 - 2 of 2

Search Facility Name:  Search  
All # A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

View and compare energy performance and GHG metrics.

Source: U.S. EPA ENERGY STAR

# Introduction: ENERGY STAR

## *Building Types Eligible for a 1 – 100 score*



**Bank/Financial Institutions**



**Courthouses**



**Data Centers**



**Dormitories**



**Hospitals**



**Hotels**



**Houses of Worship**



**K-12 Schools**



**Medical Offices**



**Office Buildings**



**Retail Stores**



**Senior Care**



**Supermarkets**



**Warehouses**

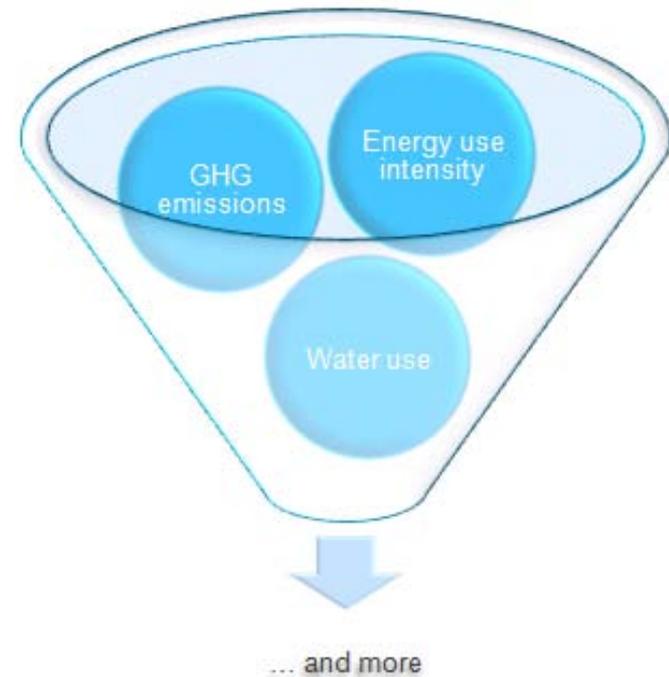


**Wastewater Treatment Plants**

# Introduction: ENERGY STAR

## *Space Types Not Eligible for 1 – 100 score*

- Police Stations
- Fire Stations
- Convention Centers
- Laboratories
- Libraries
- Malls
- Movie Theatres
- Restaurants
- Stadiums and Arenas
- Buildings Sharing a Common Meter



Source: U.S. EPA ENERGY STAR

# Introduction: ENERGY STAR

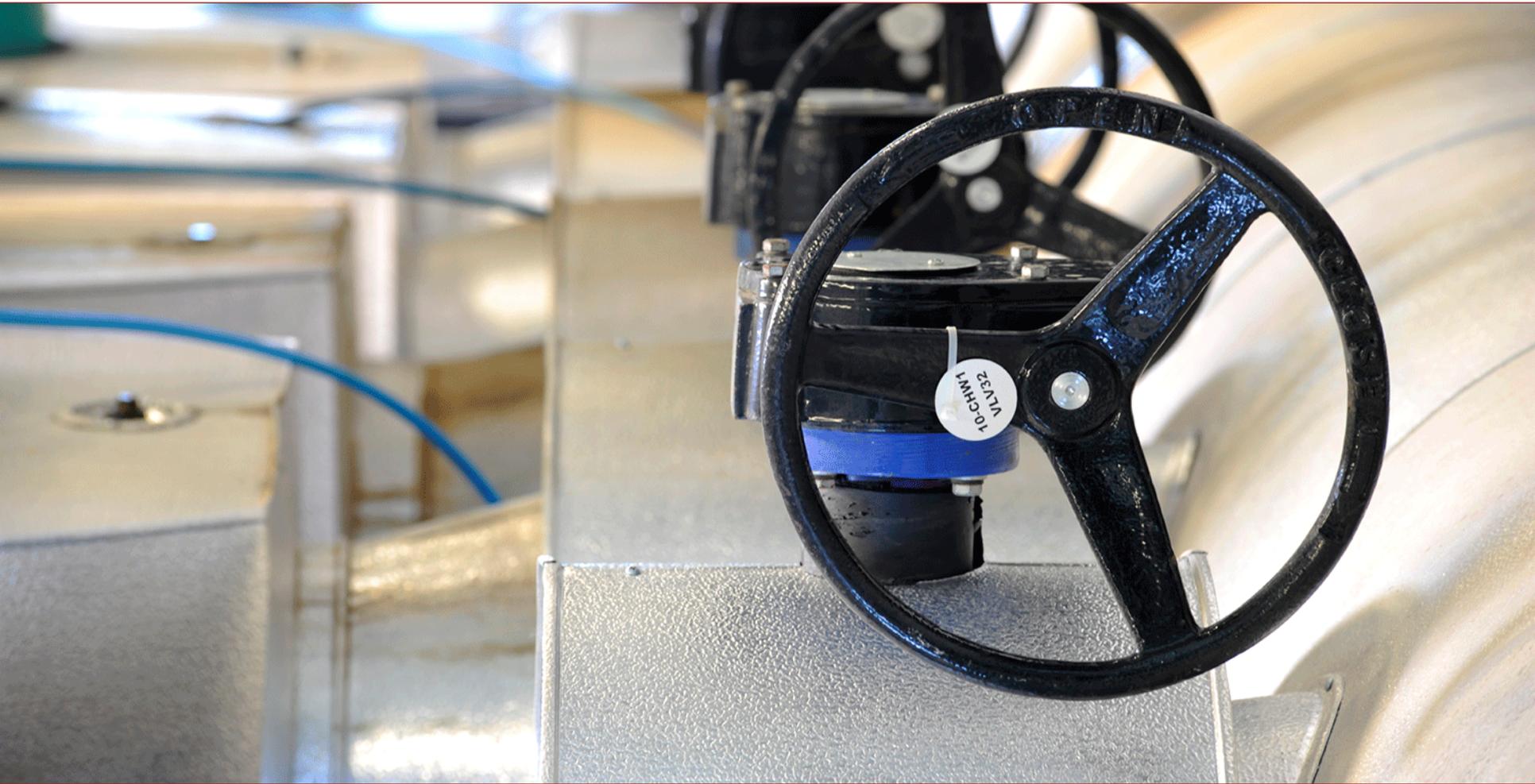
## *National and Local Recognition*

- ENERGY STAR Partner
- Designed to Earn the ENERGY STAR
- The ENERGY STAR for Existing Buildings
- ENERGY STAR Leaders
- ENERGY STAR Partner of the Year



Source: U.S. EPA ENERGY STAR

# Unit 1: Portfolio Manager Basics



# Portfolio Manager

## Accessing the tool

Visit [www.energystar.gov/benchmark](http://www.energystar.gov/benchmark)

- (1) Click **Buildings & Plants** on the ENERGY STAR home page
- (2) Click the Portfolio Manager link to **login** or create a new account
- (3) Click **Portfolio Manager** to read more about the rating system

The screenshot shows the ENERGY STAR website interface. At the top, there is a navigation bar with links for 'About ENERGY STAR', 'News Room', and 'FAQs'. A search bar is located on the right. Below the navigation bar, there is a banner for 'SUPERIOR ENERGY MANAGEMENT CREATES ENVIRONMENTAL LEADERS' by the U.S. Environmental Protection Agency. The main navigation menu includes 'ENERGY STAR', 'Products', 'Home Improvement', 'New Homes', 'Buildings & Plants', and 'Partner Resources'. The 'Buildings & Plants' section is active, showing a sidebar with links like 'Guidelines for Energy Management', 'Tools & Resources Library', 'Expert Help', 'New Building Design', and 'Green Buildings'. The main content area features a 'Buildings & Plants' header, a 'Strategy' section with links to 'Guidelines for Energy Management', 'New Building Design', and 'Green Buildings and Energy Efficiency', and a 'Tools' section with a link to 'Tools & Resources Library'. A 'Quick Finder' sidebar on the right contains a 'Portfolio Manager Login' link. Red annotations (1), (2), and (3) are placed on the page to indicate the steps described in the list.

Source: U.S. EPA ENERGY STAR

# Portfolio Manager

## *Four Steps of Benchmarking*



- **Open an Account**
  - Contact information and some simple questions
- **Add a Property**
  - Property address, zip code, year built
- **Add space**
  - Determine space type, mixed use. Gather data using Data Collection Worksheet
- **Energy and Water Use**
  - Building specific invoice information for at least 36 consecutive months (FY '08 – FY '10) for each source and update with monthly usage data.

# Portfolio Manager

## Benchmarking Starter Kit

The screenshot shows the ENERGY STAR website's 'Benchmarking Starter Kit' page. The header includes the ENERGY STAR logo and the slogan 'SUPERIOR ENERGY MANAGEMENT CREATES ENVIRONMENTAL LEADERS' with the U.S. Environmental Protection Agency and U.S. Department of Energy. Navigation tabs include 'Products', 'Home Improvement', 'New Homes', 'Buildings & Plants', and 'Partner Resources'. The 'Buildings & Plants' section is active, showing a breadcrumb trail: 'Home > Buildings & Plants > Portfolio Manager Overview > ENERGY STAR Benchmarking Starter Kit'. The main heading is 'ENERGY STAR Benchmarking Starter Kit'. Below it, a paragraph explains that benchmarking is a key first step for understanding and reducing energy consumption and carbon footprint. A list of benefits for logging into Portfolio Manager includes tracking energy and water consumption, identifying under-performing buildings, setting priorities, monitoring progress, verifying improvements, and receiving EPA recognition. The page also states that benchmarking is quick and simple, requiring only a few minutes a month, and provides valuable results. A final paragraph mentions that resources will help first-time users get started with benchmarking.

### Getting Started

- Use the [ENERGY STAR Portfolio Manager Data Collection Worksheet](#)  to identify and gather all the data you'll need to benchmark your building.
- Print the [Portfolio Manager Quick Reference Guide](#)  (1.3MB) for a handy, at-a-glance guide to the basic steps of using Portfolio Manager.
- View [animated training](#) providing step-by-step benchmarking instructions.

### Beyond Benchmarking



# Portfolio Manager Resources

1. Data Collection Worksheet
  - Available at [www.energystar.gov/ia/business/downloads/PM\\_Data\\_Collection\\_Worksheet.doc](http://www.energystar.gov/ia/business/downloads/PM_Data_Collection_Worksheet.doc)
  - Great source for data collection
2. Use the [Portfolio Manager Quick Reference Guide](http://www.energystar.gov/ia/business/downloads/PM_QuickRefGuide.pdf) for a handy, at-a-glance guide to the basic steps of using Portfolio Manager.
  - Available at [www.energystar.gov/ia/business/downloads/PM\\_QuickRefGuide.pdf](http://www.energystar.gov/ia/business/downloads/PM_QuickRefGuide.pdf)
3. Training
  - By Cadmus – You will be notified about upcoming training opportunities
  - EPA ENERGY STAR program training including animated sessions - [www.energystar.gov/businesstraining](http://www.energystar.gov/businesstraining)

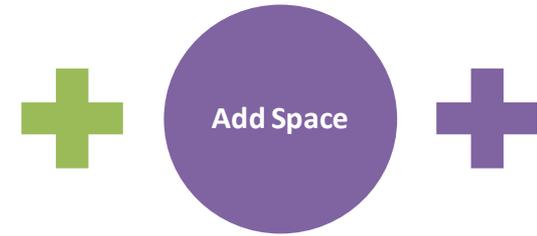
Source: U.S. EPA ENERGY STAR

# Quick Demo: Benchmarking a Facility



# Portfolio Manager

*Each building is a simple puzzle*



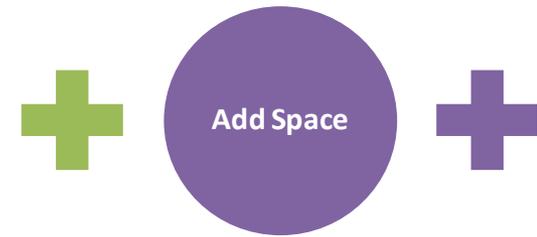
- Determine main function of the building
- Determine functions that make up your building such as parking areas, data centers, restaurants, retail space, etc.



Source: U.S. EPA ENERGY STAR

# Portfolio Manager

## Benchmarking Mixed-Use Building Types



- Add main space
- Add other spaces such as parking lots, data centers, etc.
- Verify gross floor area
- **Area that covers at least 50% of the gross floor area determines building type**

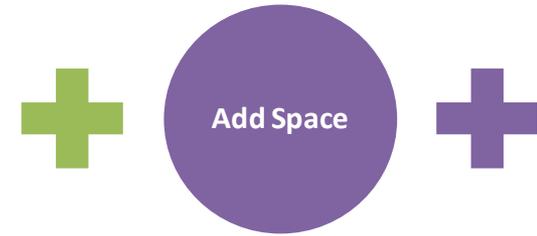
For all eligibility requirements, visit [http://www.energystar.gov/index.cfm?c=eligibility.bus\\_portfolio\\_manage\\_r\\_eligibility](http://www.energystar.gov/index.cfm?c=eligibility.bus_portfolio_manage_r_eligibility)

Single Building		
Space Type	Gross Sq. Ft.	Percent Sq. Ft.
Office	100,000	55%
Data Center	1,000	1%
Garage	30,000	17%
Library	50,000	18%
<b>TOTAL</b>	<b>181,000</b>	<b>100%</b>



# Portfolio Manager

## *Enter the Main Space*

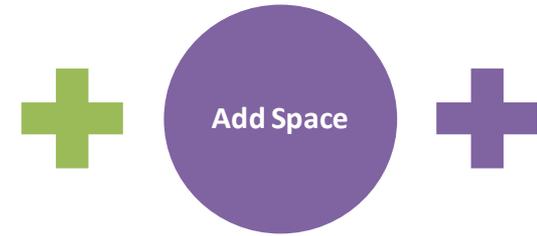


- Begin by entering the space that constitutes the majority of the building activity
  - Total gross floor area under the roof should be included
- Include the entranceway, hallways, atrium, and any other common space
- Include elevator shafts, stairwells, restrooms, mechanical rooms and any building areas



# Portfolio Manager

## *Enter Space For Other Activities*



- Spaces with different activity from the main space should be entered as separate space types
  - **Do not break your property into more spaces than necessary**
- Think about spaces that don't share the same function as the rest of the building
  - **Not eligible for a score?** Benchmark as Other
  - **Think about data centers**
    - Space designed for high-density computing and data storage
    - No server closets and computer training areas in this category
  - **Parking Lots:** Include if they use the same meter as the main building for lighting



# Portfolio Manager

## *Assessing Percent Energy Reduction*

- Objective:** Provide a metric to show a percent change in energy use over time
- Creates tracking capability for all space types

**Process:**

- For non-ratable spaces the tool compares weather-normalized source energy use between two periods and adjusts for any changes in square footage
- For ENERGY STAR ratable space types, the tool compares energy use between two periods adjusting for changes in weather and business activity



Source: U.S. EPA ENERGY STAR

# Portfolio Manager

## *Water Tracking*

**Objective:** Allow users to track water use in Portfolio Manager

- Continued emphasis on tracking all utilities
- Lay groundwork for understanding the relationships between water and energy use

### **Process:**

- User can select “Add Water Meter” for any facility
- User can identify water meters as indoor, outdoor, or wastewater
- Tool displays water use totals for any 12 month period
- User can compare two different periods and track over time



Source: U.S. EPA ENERGY STAR



# Applying Results

## *Building Upgrade Manual*

Plan and implement profitable energy saving building upgrades utilizing five stages:

Retrocommissioning

Lighting upgrade

Load reductions

Air distribution systems upgrade

HVAC upgrade

<http://www.energystar.gov/bldgmanual>



# Applying Results

## *Cash Flow Opportunity Calculator*

The Cash Flow Opportunity (CFO) Calculator helps decision-makers answer three critical questions about energy efficiency investments:

- How much new energy efficiency equipment can be purchased from the anticipated savings?
- Should this equipment purchase be financed now, or is it better to wait and use cash from a future budget?
- Is money being lost by waiting for a lower interest rate?

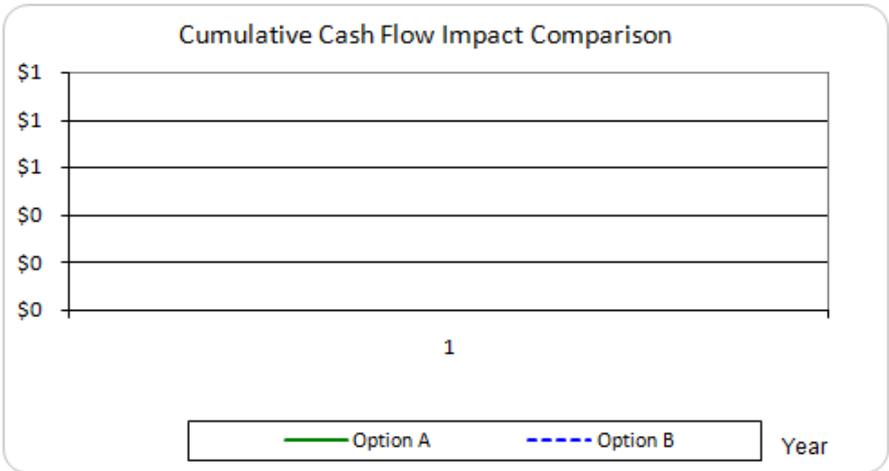


Source: U.S. EPA ENERGY STAR

# ENERGY STAR

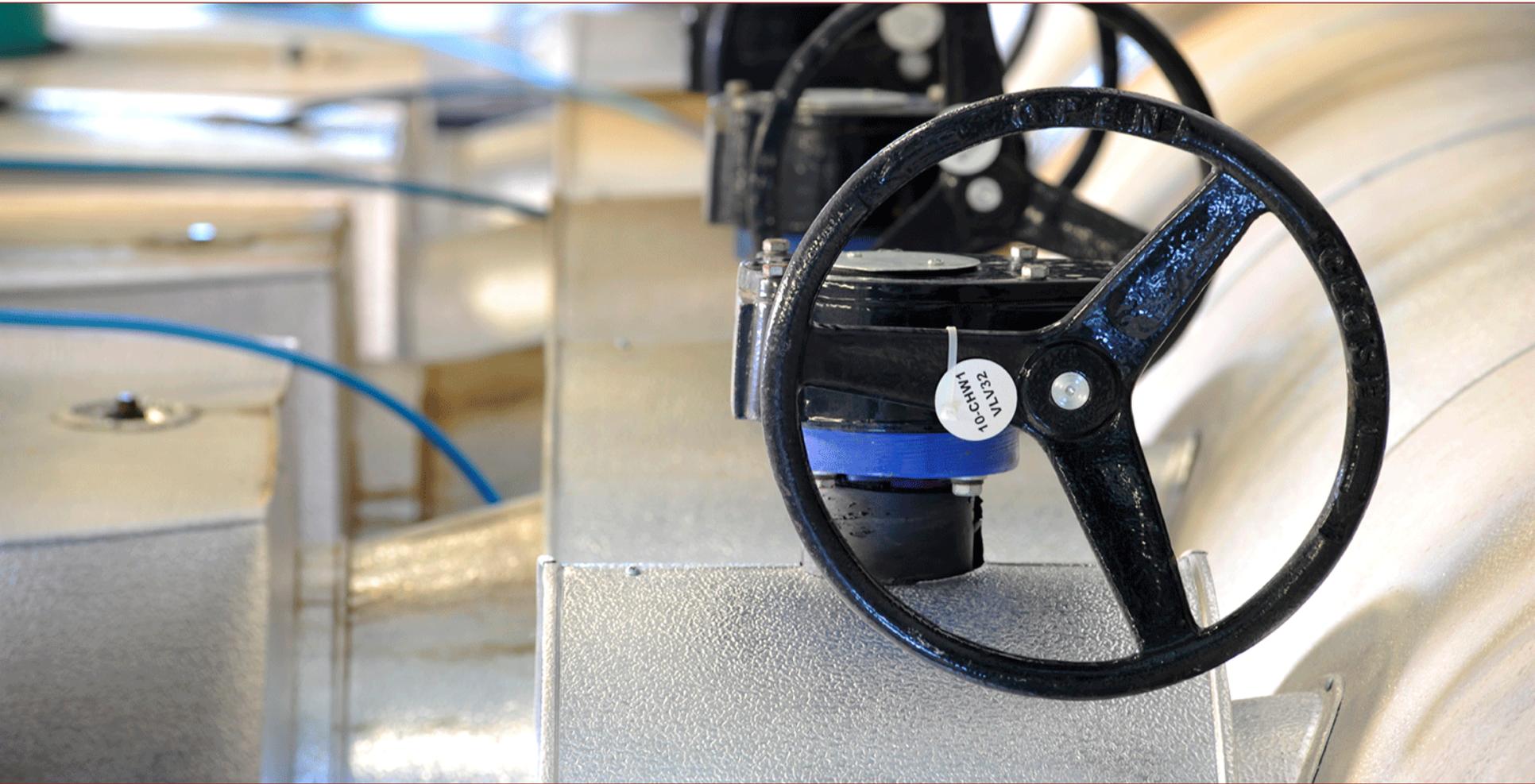
## Cash Flow Opportunity Calculator

Project cost	0	\$
Simple payback	0	years
	0	month(s)
Interest rate	0.00	%
Financing term	0	years
Year(s) postponed	0	years
Project cost increase due to postponement	0.00	%
Estimated energy cost change in year 2	0.00	%
Annual change in energy costs after year 2	0.00	%
Estimated energy savings in year 1	0.00	%

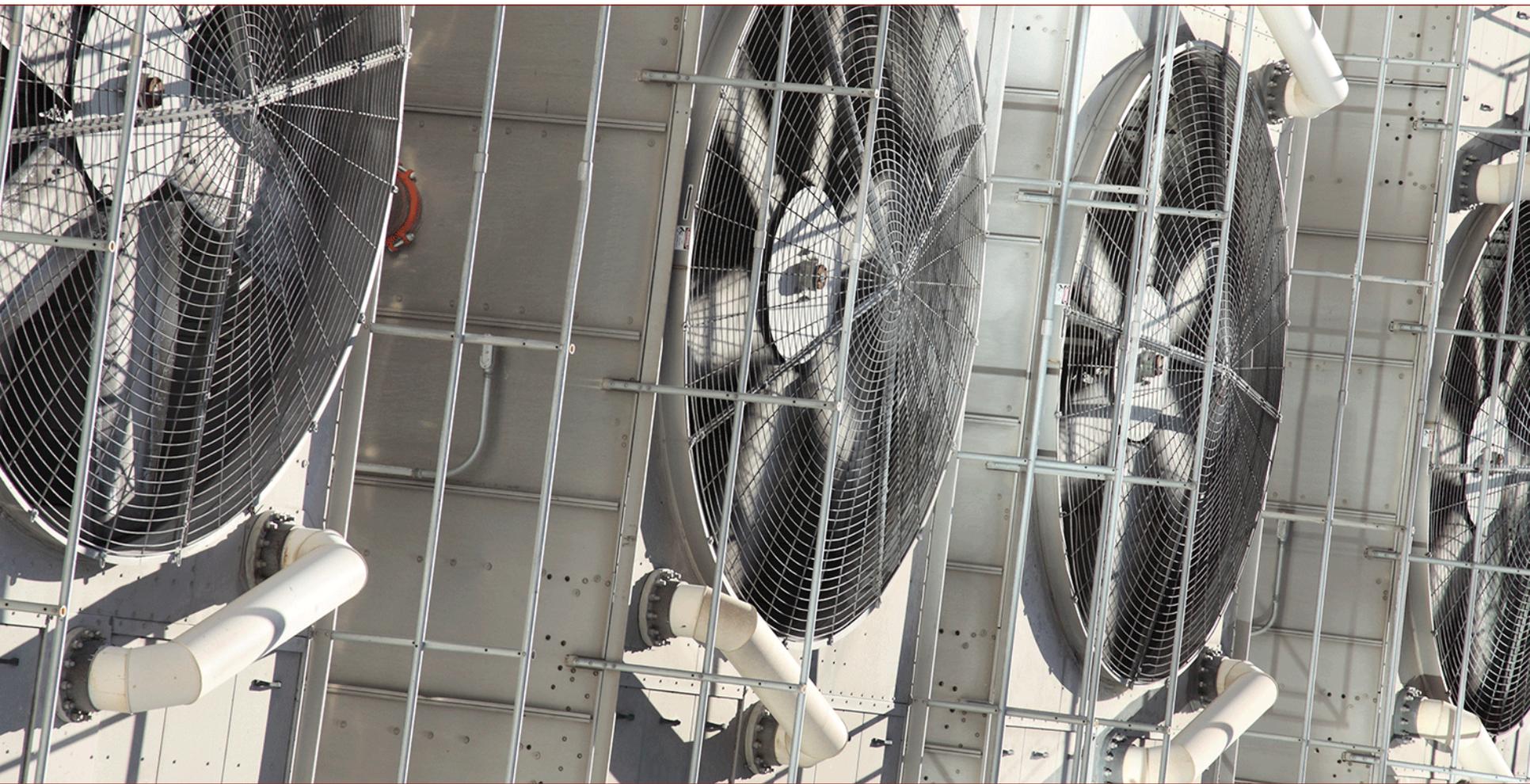


These cash flow calculations are on a pretax basis.  
 For purposes of this calculation, all cash flows are being discounted at the interest rate indicated in cell G7 - financing paid monthly in arrears.

# Interactive Demo: Benchmark Your Sample



# Unit 1 (Continued): *Utility Rate Analysis, Unit Conversion*



# Know your energy bill

5005216310112220



Always There.®

**QUESTIONS OR COMMENTS?**  
 CenterPoint Energy  
 PO BOX 2628  
 HOUSTON TX 77252  
 Billing & Service 1-800-992-7552  
 Monday-Friday Call 7 a.m. - 6 p.m.  
 CenterPointEnergy.com

**DID YOU KNOW?**

To report gas leaks, carbon monoxide and other gas emergencies, please call 1-888-876-5786. We appreciate your understanding that billing inquiries cannot be answered on this line.

Pay your bill via phone or internet with BillMatrix. Call 1-800-809-1095 or go to <http://www.centerpointenergy.com> to pay by credit/debit card or electronic check. This service is provided by BillMatrix for a fee.

Keep this part of your bill.	
Customer name	
Account number	
Date mailed	11/10/2010
Date due	12/02/2010
Total amount due	\$ 760.13

ACCT SUMMARY	Gas charges
Previous balance	\$955.73
Payment 11/01/2010	- 955.73
Balance forward	\$ 0.00
Current billing	760.13
<b>Total amount due</b>	<b>\$760.13</b>

**SERVICE ADDRESS**

**YOUR GAS USAGE**

28 Day billing period	10/06/2010 to 11/03/2010	Meter #	
Current reading	11/05/2010		34343
Previous reading	10/06/2010		33539
Metered usage	1 CCF = 100 cubic feet of gas		804

**YOUR BILL IN DETAIL**

		ARKLA Arkansas SCS-1
Customer charge		\$13.00
Distribution rate	804 CCF @ \$0.15177/CCF	122.02
Commodity gsr	804 CCF @ \$0.63540/CCF	510.86
Weather normalization adj	804 CCF @ \$0.02002/CCF	16.10
Bill determinant rate adj	804 CCF @ \$0.00256/CCF	2.05
Base rate adj	804 CCF @ \$0.00390/CCF	3.14
EE cost rate	804 CCF @ \$0.00620/CCF	4.98
Municipal franchise adj		34.95
City sales tax	0.50%	3.54
County sales tax	1.00%	7.07
State sales tax	6.00%	42.42

**Total current charges** **\$760.13**

ELECTRIC BILLING  
CITY WATER & LIGHT

ACCOUNT NUMBER [REDACTED] BILLING DATE 11/04/2010  
 LOCATION NUMBER 9-995-31500 READING DATE 10/29/2010  
 DAYS OF SERVICE 29

METER NUMBER	METER PRESENT	METER READINGS PREVIOUS	USAGE	MULT.	KWH CONSUMPTION
[REDACTED]	23732	23164	568	700	397,600
			TOTAL KWH		397,600

MAXIMUM KW DEMAND (KW X CONSTANT) 1.170 X 700 = 819  
 MAXIMUM KVAR DEMAND (KVAR X CONST) .481 X 700 = 337  
 POWER FACTOR (KVAR/KW) TAN = .411 COS(ARCTAN .411) = .93  
 BILLING DEMAND .95/.93 PF = 1.022 PF X 819 KW = 837 BILLABLE KW

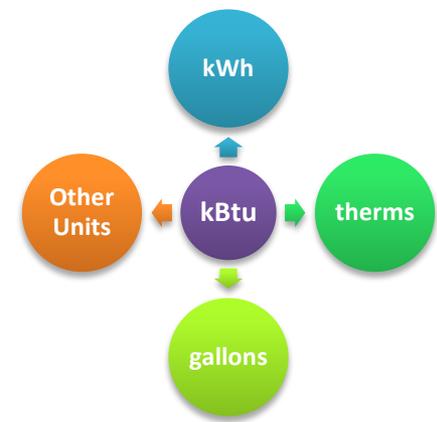
.....

DEMAND	837 KW X 4.45	3,724.65
ENERGY	397,600 KWH X .02850	11,331.60
SUB TOTAL		15,056.25
ENERGY ADJUSTMENT	397,600 KWH X .00652	2,592.35
GROSS BILL		17,648.60
PRIMARY METERING DISCOUNT 2%		352.97-
OWNS TRANSFORMER DISCOUNT 3%		.00
NET BILL		17,295.63
STATE SALES TAX		1,037.74
COUNTY SALES TAX		172.96
CITY SALES TAX		172.96
TOTAL ELECTRIC CHARGE		\$18,679.29

\*\*\* YOU COULD HAVE SAVED \$80.10 ON THIS BILL \*\*\*  
 \*\*\* IF YOUR POWER FACTOR HAD BEEN .95 OR BETTER \*\*\*

# Unit Conversion

Portfolio Manager converts all energy consumption units into kBtu (thousands of British thermal units).



**Electricity  
(KWh)**



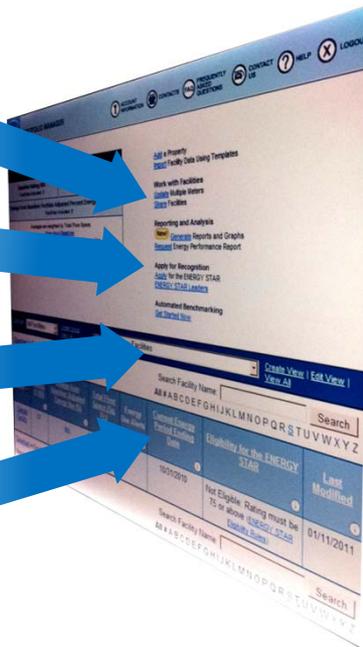
**Natural Gas  
(Therms)**



**Coal  
(Tons)**



**District Steam  
(Pounds)**

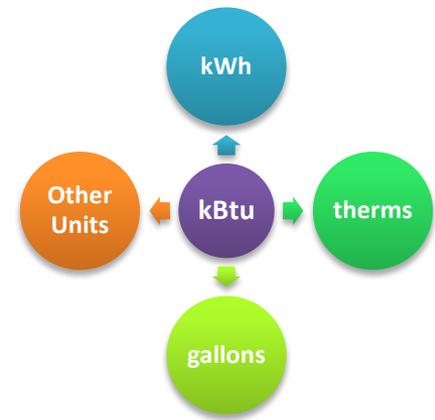


**Energy use  
intensity  
(EUI)  
kBtu/sq.  
ft./year  
and other  
metrics**



# Unit Conversion Tool

Cadmus developed a handy **kBtu CONVERSION TOOL** for you!



## kBtu CONVERSION TOOL

**Instructions**

**Step 1:** Choose the type of energy in the Energy Source Box.

**Step 2:** Select the corresponding Unit of Measure to convert from.  
The proper multiplier will be displayed in the Multiplier box.

**Step 3:** Type in the number of Units in the corresponding box.  
The converted kBtu's will be displayed in the kBtu box.

<b>Energy Source</b>	<b>Fuel Oil No. 1</b>		
<b>Unit of Measure</b>	<b>MBtu (million Btu)</b>		
<b>Number of Units</b>			
<b>Multiplier</b>		<b>10.00</b>	
		1,000.00	

<b>kBtu</b>
<b>10,000.00</b>



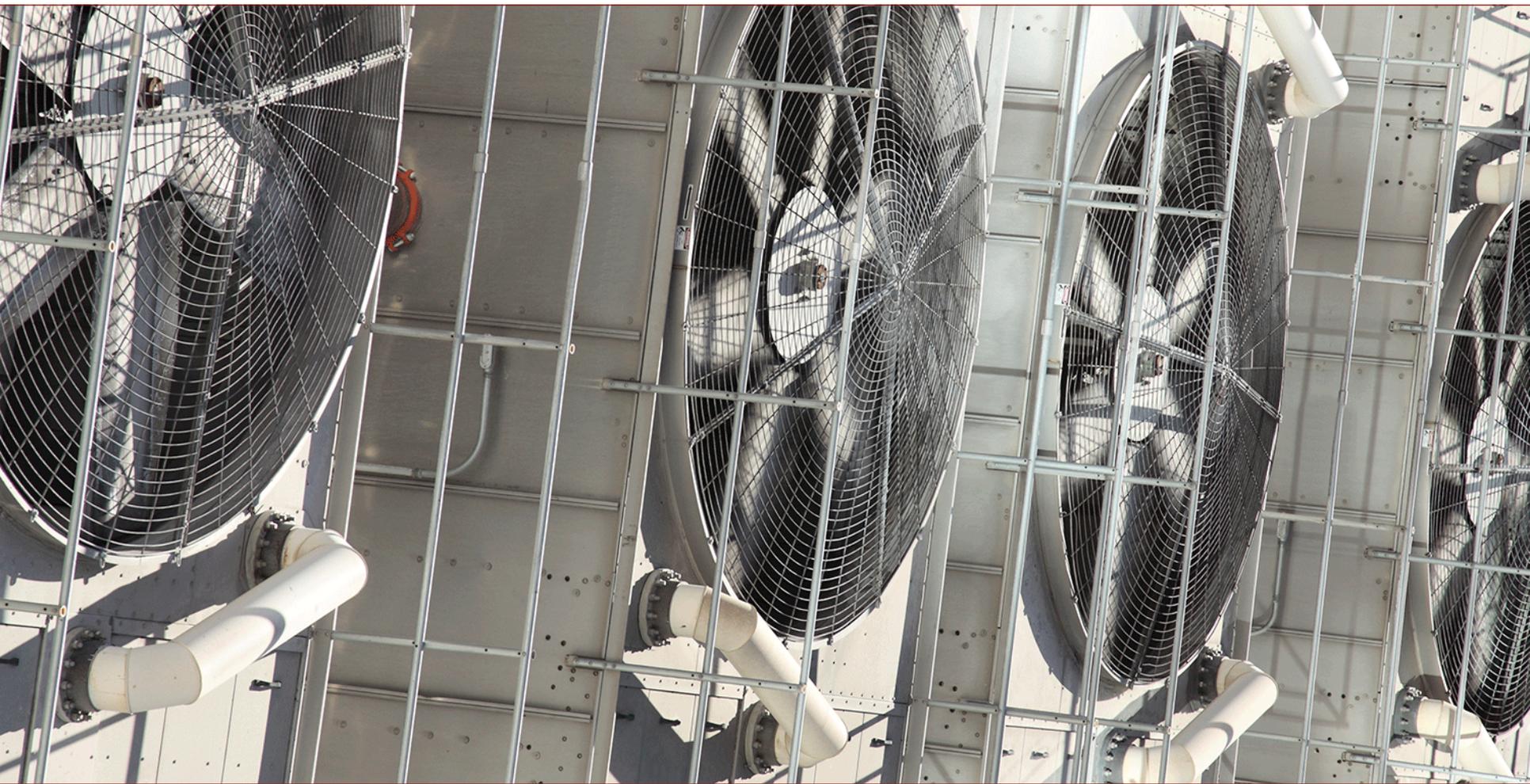
# Utility Rate Analysis

For ALL buildings:

- Gather additional information for analysis including detailed billing data, kWh, kW, rate schedules, rate codes per account, etc.
- Determine anomalies in billing data, if any, and prepare a report to be submitted to each agency and AEO.
- **Cadmus may contact you to obtain your approval to collect utility data from utilities serving you to complete this analysis!**



# Unit 2: Advanced Topics





## We will be covering...

- Campuses
- Import Template
- Master Accounts
- GHG
- MFMU
- Reporting
- Other tools and tips



# Portfolio Manager: Advanced Topics

## *Greenhouse Gas Emissions*

- Energy use in C&I buildings in the US contribute 45% of our national emissions
- CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O are the principal GHGs emitted from fossil fuels
- Electricity consumption in these buildings is responsible for roughly three-quarters of these GHGs
- Remainder resulting primarily from burning natural gas and petroleum products
- CO<sub>2</sub> represents more than 99% of the total GHG emissions



# Portfolio Manager: Advanced Topics

## *Greenhouse Gas Emissions*

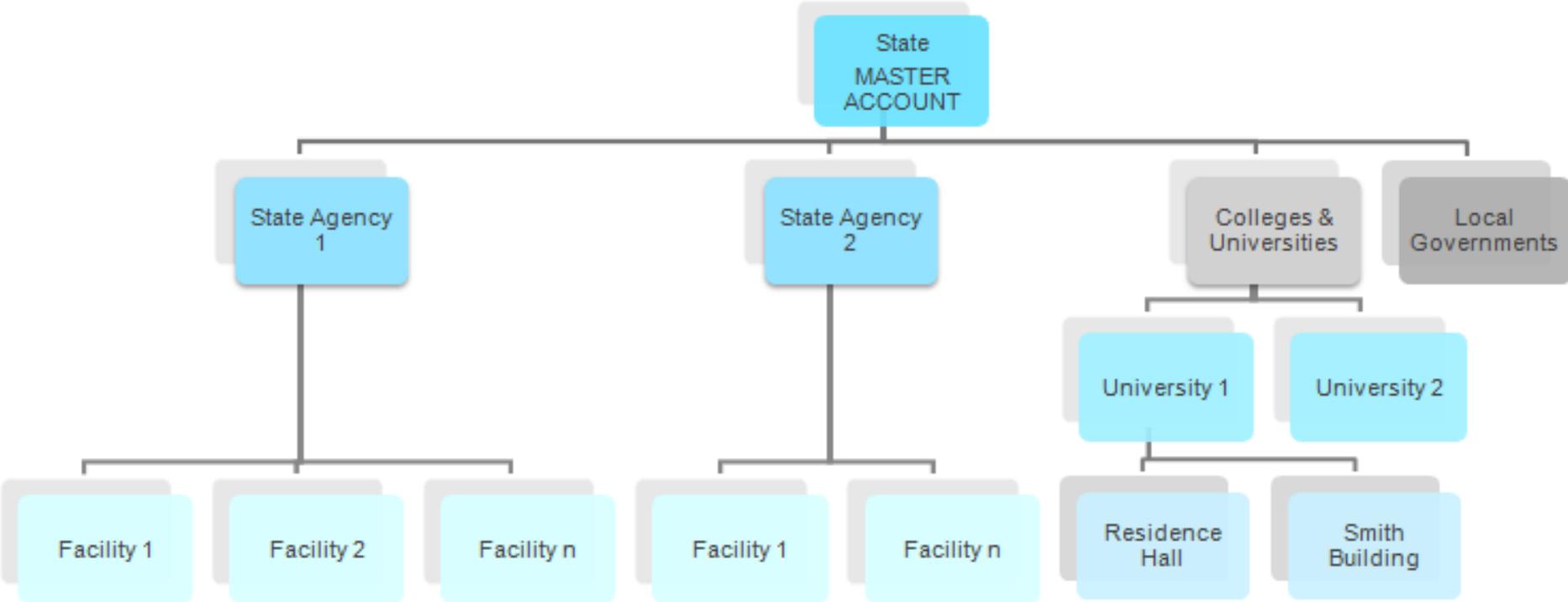
- Portfolio Manager can now help users see a building's carbon emissions
  - Compare to others in the same region
  - Compare across the country
  - Measure progress in reducing emissions
- Uses carbon emission factors from EPA's Emissions & Generation Resource Integrated Database (eGRID).



Source: U.S. EPA ENERGY STAR

# Master Accounts:

## *Large Portfolio Management*

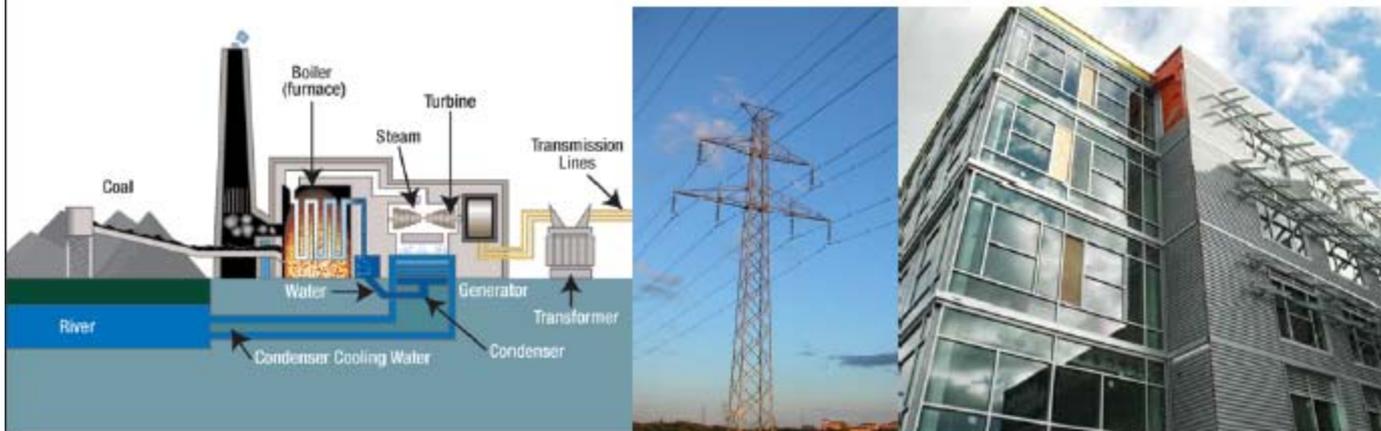


# Portfolio Manager: Advanced Topics

## *Site vs. Source Energy Use Intensity*

### Electricity & Emissions

Site vs. Source Energy



- Only 33 percent of fuel's embodied energy is consumed at the building site as electricity;
- 67% lost: generation & transmission

# Portfolio Manager: Advanced Topics

## *Multi-Facility Meter Update*

- **Objective:** Provide the ability to easily update meter data for a large number of facilities, greatly increasing the efficiency for meter updates
  
- **Process:**
  - Users select the facilities in their portfolio (maximum of 250 per download). A Microsoft Excel spreadsheet lists each facility and the specified number of meter data entries (billing cycles)
  - Once meter data is entered and saved, the spreadsheet is uploaded. Users can review and edit the data before uploading it to Portfolio Manager
  - This feature is used to update meter data; it will not overwrite or replace meter data that already exists in Portfolio Manager



Source: U.S. EPA ENERGY STAR

# Portfolio Manager: Advanced Topics

## Multi-Facility Meter Update

**Select Facilities to Update Meter Data**
GROUP: All Facilities ▼

Results 1 - 29 of 29

Meters for downloaded facilities will be locked

Select All <input type="checkbox"/>	Facility Name	Address	Entries (billing cycles)	Meter Name	Energy Type	Last Meter Entry (End Date)
<input type="checkbox"/>	<a href="#">Camp Perry Campus 1</a>	xx Ohio Street Columbus, OH 22209	12 ▼	11470111-001-000-3*4083175	Natural Gas (ccf)	10/31/2006
<input type="checkbox"/>	<a href="#">CATHLAMET STP</a>	390 2nd Street Cathlamet, WA 98612	12 ▼	E1	Electricity (kWh)	12/31/2006
<input type="checkbox"/>	<a href="#">City of Blaine STP</a>	9235 SEMIAHMOO PKWY Blaine, WA 98230	12 ▼	EM7	Electricity (kWh)	12/31/2006
<input type="checkbox"/>	<a href="#">Student Union</a>	123 Main St Bowling Green, OH 43402	12 ▼	9817394719837	Electricity (kWh)	12/31/2004
<input type="checkbox"/>	<a href="#">Westlake building</a>	501 Westlake Blvd. Houston, TX 77079	12 ▼	Electric Combined	Electricity (kWh)	12/31/2006
			12 ▼	Gas Combined	Natural Gas (MBtu)	12/31/2006

Results 1 - 29 of 29

Meters for downloaded facilities will be locked

# Portfolio Manager: Advanced Topics

## *Multi-Facility Meter Update*

B	C	D	E	F	G	H
Facility Name (Do Not Alter)	Meter Name (Do Not Alter)	Energy Type (Units) (Do Not Alter)	Start Date (mm/dd/yyyy)	End Date (mm/dd/yyyy)	Energy Use	Cost - US Dollars (optional)
Sample Facility	Sample Meter	Electricity (kWh (thousand Watt-hours))	1/1/2006	1/31/2006	1423	205
Sample Facility	Sample Meter	Electricity (kWh (thousand Watt-hours))	2/1/2006	2/28/2006	1520	230
Sample Facility	Sample Meter	Electricity (kWh (thousand Watt-hours))	3/1/2006	3/31/2006	1516	221
Sample Facility	Sample Meter	Electricity (kWh (thousand Watt-hours))	4/1/2006	4/30/2006		

(2)



# Portfolio Manager: Advanced Topics

## Creating a campus

A benefit of the 'Campus Feature' of Portfolio Manager is that:

- It allows multiple buildings on one (or more) meters to be benchmarked.
- It calculates combined energy usage based on combined floor space.
- Energy usage can be derived from both campus-level meters (used by multiple facilities) and separate meters for individual facilities .



# Live Demo: Import, Campuses, and MFMU



# Beyond Unit 1 and 2: *Existing Buildings Data Review*



# Common Mistakes in Portfolio Manager



Good

Information

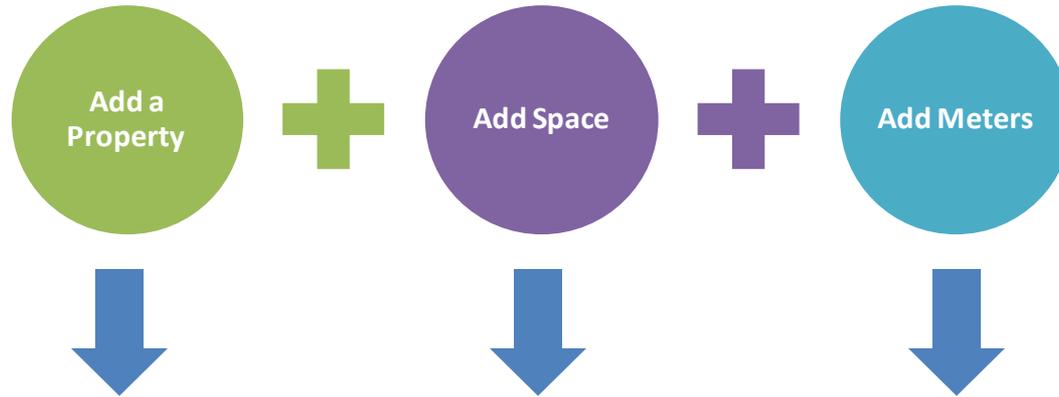


Good

Decisions

The Goal is Accuracy

# Common Mistakes in Portfolio Manager

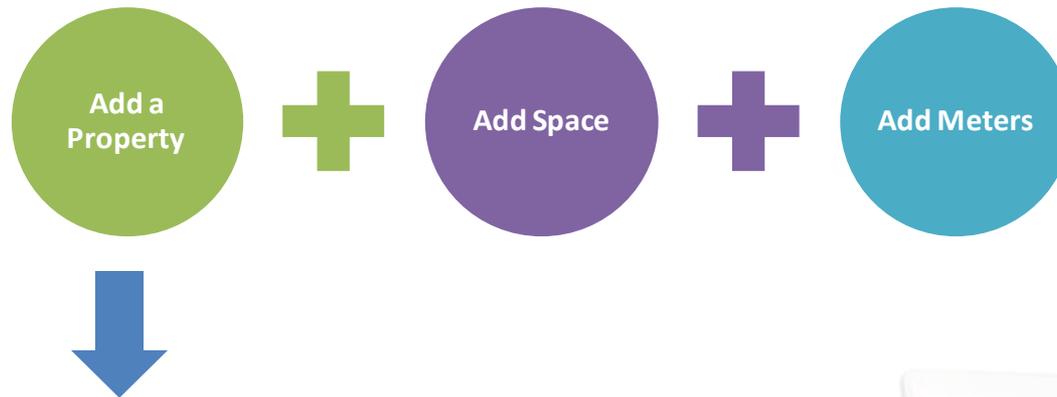


Building	Space	Utility
Duplicate	KPI* error	Data overlap
Inconsistent Name	Missing space	Duplicate
Incomplete address	Missing space data	KPI error
	Wrong space type	Missing utility provider
		Missing utility data
		Suspicious data entry
		Units

\*KPI – Key Performance Indicator



# Common Mistakes in Portfolio Manager

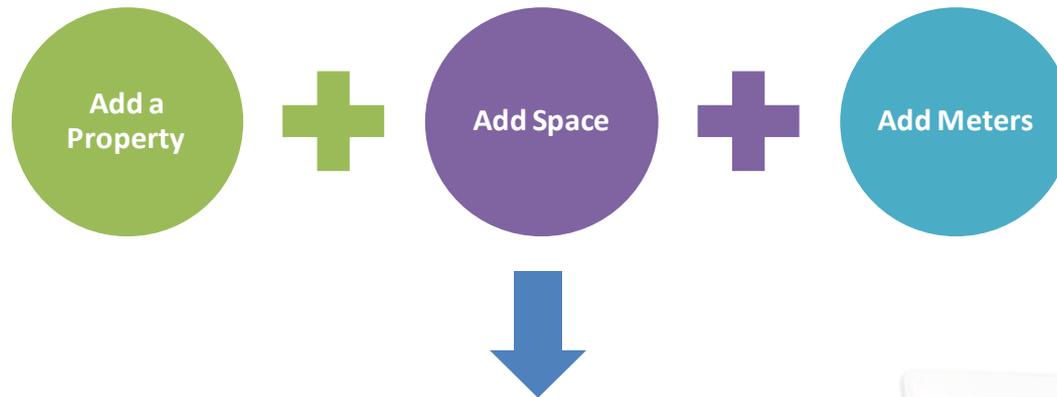


## Building

- AEO naming nomenclature is not followed
- Duplicate facilities
- Incomplete building address



# Common Mistakes in Portfolio Manager



## Space

- No space created
- Wrong space type (For example, “Other” versus “Office”)
- Missing space attributes, no floor area entered
- No mixed-use building information
- Less than One Full Year of Space Attribute Data
- Low EUI suggesting high floor area
- Low values for space attributes





# Common Mistakes in Portfolio Manager

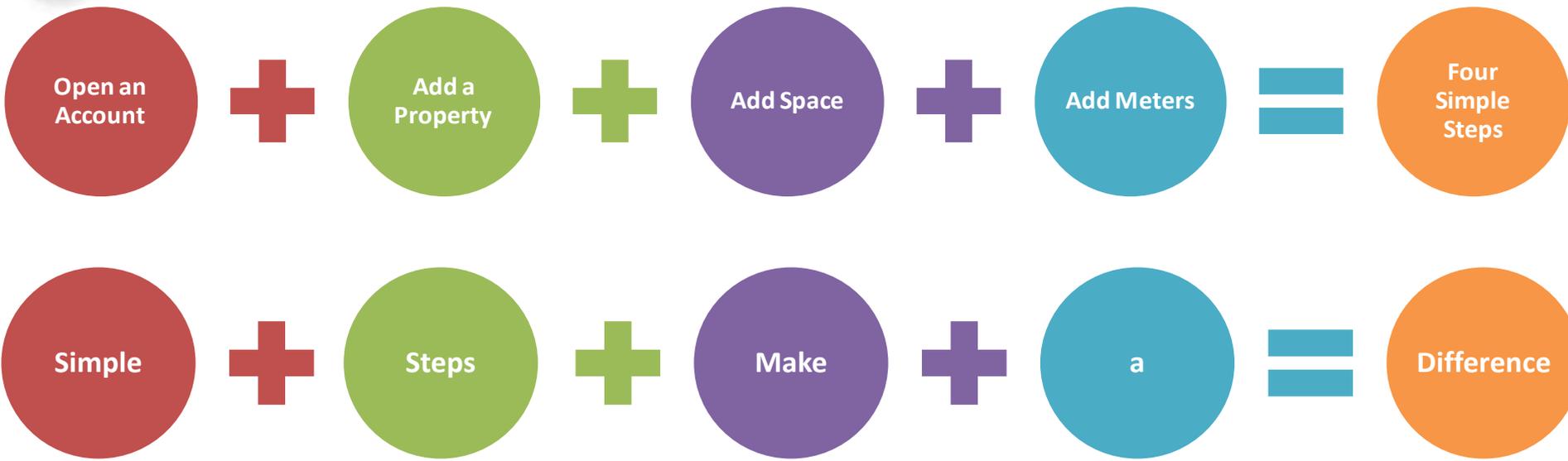


## ■ Utility

- No cost, energy and/or water data
- Less than 3 years worth data
- Gaps, overlaps, possible duplicates, zero values, incorrect units
- Inactive old meters
- Low EUI suggesting missing energy use
- Same meter ID used for different facilities without a campus setting
- Very high utility use for some months



# Learn the basic steps well!



# Live Portfolio Manager Demo

We will: create, edit, correct, and delete whole records or portions of a facility.

To begin:  
Please visit [www.energystar.gov](http://www.energystar.gov)



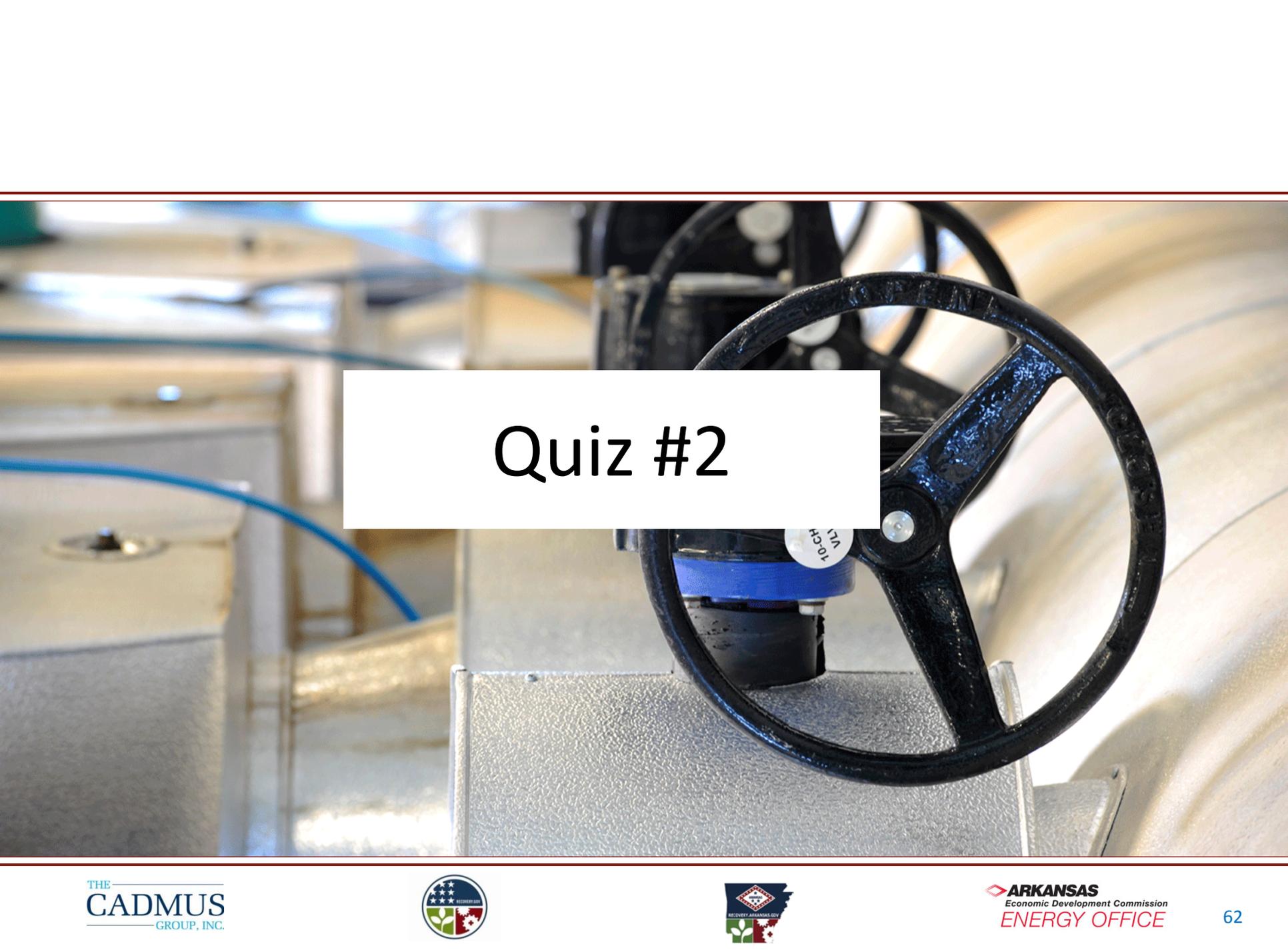
## TECHNICAL SUPPORT

**Arkansas@cadmusgroup.com**

**Toll-free support line:**

**1-855-266-9773**

**(8 am – 5 pm weekdays)**



# Quiz #2

# Contacts

## Arkansas Energy Office

Ed Ellis, CEM,  
(501) 682-7694  
[eellis@arkansasedc.com](mailto:eellis@arkansasedc.com)

## The Cadmus Group, Inc.

Shubhada Kambli  
[Shubhada.Kambli@cadmusgroup.com](mailto:Shubhada.Kambli@cadmusgroup.com)

Ben McGuire  
[Benjamin.McGuire@cadmusgroup.com](mailto:Benjamin.McGuire@cadmusgroup.com)

Kudret Utebay  
703-247-6138  
[Kudret.Utebay@cadmusgroup.com](mailto:Kudret.Utebay@cadmusgroup.com)

Colin Dunn  
703-247-6121  
[Colin.Dunn@cadmusgroup.com](mailto:Colin.Dunn@cadmusgroup.com)

# Reference Slides





# Portfolio Manager

## Data Collection Worksheet

- Covers all commercial (and multi-family residential) building types
- Provides data requirements for ALL space types.

### ENERGY STAR® Portfolio Manager Data Collection Worksheet

This worksheet was designed to help building owners and managers collect data to benchmark buildings using EPA's ENERGY STAR Portfolio Manager. The information in this worksheet is used to establish your building's profile in Portfolio Manager, which is critical to calculate benchmark values of key metrics such as energy intensity and costs, water use, and carbon emissions. **All building types can be entered into Portfolio Manager and receive energy and water benchmarks, as well as a comparison of performance against a national average for buildings of a similar type.**

Some buildings will also receive an ENERGY STAR score. The ENERGY STAR score is a benchmark for how efficiently buildings use energy on a 1-100 scale. A score of 50 indicates that energy performance is similar to other similar buildings, while a score of 75 or better indicates top performance, and means your building is eligible for the ENERGY STAR label. To receive an ENERGY STAR score, the gross floor area of the building must be more than 50% of one of the following space types: bank/financial institution, courthouse, data center, day care and children's, hotel, house of worship, K-12 school, medical office, office, residence hall/dormitory, retail store, supermarket/grocery store, warehouse (refrigerated and unrefrigerated), and wastewater treatment plant.

***Use this worksheet to collect the data for all space types applicable to your facility.***

Source: U.S. EPA ENERGY STAR

# Portfolio Manager

## Data Collection Worksheet



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*Use this worksheet to collect the data for all space types applicable to your facility.*

#### Required Data for ENERGY STAR Benchmarking

- Portfolio Manager username and password.
- The building street address, year built, and contact information.
- The building gross floor area and key operating characteristics for each major space type. Use this worksheet to collect this information before logging in to Portfolio Manager.
- 12 consecutive months of utility bills for all fuel types used in the building. If you don't have this information readily available, contact your utility provider(s) as most will be able to easily supply this historical information.

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# Portfolio Manager

## Data Collection Worksheet



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### General Building Information

Facility name \_\_\_\_\_ Year built \_\_\_\_\_

Building address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ ZIP \_\_\_\_\_

Source: U.S. EPA ENERGY STAR

# Portfolio Manager

## Data Collection Worksheet



### Data Center:

#### Required:

\_\_\_\_\_ Gross floor area (SF)  
 \_\_\_\_\_ IT Energy Configuration –

### Other:

#### Required:

\_\_\_\_\_ Gross floor area (SF) (must be less than 10% of gross building floor area in order for the building to be eligible for a rating)

#### Optional:

### General Office 1:

#### Required:

\_\_\_\_\_ Gross floor area (SF)  
 \_\_\_\_\_ Weekly operating hours  
 \_\_\_\_\_ # of workers on main shift  
 \_\_\_\_\_ # of personal computers  
 \_\_\_\_\_ Weekly operating hours  
 \_\_\_\_\_ # workers on main shift

\_\_\_\_\_ Percent of floor area that is air conditioned (>=50%, <50%, or none)  
 \_\_\_\_\_ Percent of floor area that is heated (>=50%, <50%, or none)

### Parking:

#### Required:

\_\_\_\_\_ Gross floor area (SF)  
 \_\_\_\_\_ Gross floor area (SF)  
 \_\_\_\_\_ Gross floor area (SF)  
 \_\_\_\_\_ Weekly operating hours

Source: U.S. EPA ENERGY STAR



# Portfolio Manager: Advanced Topics

## *Reporting Options*

- **Create Views:** The “My Portfolio” page uses views to display summarized data
  - A view is a set of columns that display various data in a table
  - Provides the ability for a user to create their own view by selecting the columns (up to seven at a time) to display
  - Enables the user to select the number of facilities that can display on the My Portfolio page (e.g., 25, 50)
  - About 80 different data columns from which to select
  - Set a view as the default view
  - Download into an Excel spreadsheet for further analysis
- Request **Energy Performance Report** for a single period or a range



Source: U.S. EPA ENERGY STAR



# Portfolio Manager: Advanced Topics

## *Reporting Options*

- The **SEP** can be generated for purposes other than applying for the ENERGY STAR
  - LEED-EB certification process
  - Real estate transactions
  - Maintaining a Facility Summary Report
- **Process:**
  - User selects time period of performance
  - Tool generates summary with energy use, cost, and emissions figures



Source: U.S. EPA ENERGY STAR



# Portfolio Manager: Advanced Topics

## *Reporting Options*

- **New Reporting Tool:** Use report templates to create reports and graphs
  - Eight templates to choose from
  - Several filters to get what key performance indicators you want
  - Download data in Excel, CSV, PDF, and XML formats
  - Data range options from a single period to a range or a comparative report to compare performance of your buildings
  - Create time series graphs (line and bar) for a single building or a group of buildings (uses average rating for the group)



Source: U.S. EPA ENERGY STAR