

AABC Commissioning Group

# A Deeper Dive into ENERGY STAR® for Commercial Buildings

Course Number: CXENERGY1604

Nils Klinkenberg, LEED AP The Cadmus Group on behalf of the U.S. EPA EDUCATION CATION

April 12, 2016

Credit(s) earned on completion of this course will be reported to AIA CES for AIA members. Certificates of Completion for both AIA members and non-AIA members are available upon request. CES for continuing professional education. As such, it does not include content that may be deemed or construed to be an approval or endorsement by the AIA of any material of construction or any method or manner of handling, using, distributing, or dealing in any material or product.

Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.

This course is registered with AIA



### Course Description

More than 40% of the commercial building space in the U.S. has benchmarked its energy performance in EPA's ENERGY STAR® Portfolio Manager® platform. This session delves into related topics such as weather normalization, analytical models behind the ENERGY STAR score, EPA's Water Sense Program, upcoming changes to Portfolio Manager and resources available to energy services providers.



## Learning Objectives

At the end of the this course, participants will be able to:

1. Understand the market role of the ENERGY STAR commercial buildings program and Portfolio Manager, its flagship tool

2. Explain the general technical workings behind many of the most asked-about features of the ENERGY STAR Portfolio Manager tool

3. Articulate the resources and support that the ENERGY STAR buildings program makes available specifically to energy services providers and other building energy professionals

4. Understand how ENERGY STAR Portfolio Manager can be used to help comply with city- and state-based energy reporting and disclosure requirements.





### Agenda

- I. Who's in the room?
- II. Overview & Marketplace Trends
- III. ENERGY STAR Resources for Building Owners and Service Providers
- IV. ENERGY STAR and EPA WaterSense
- V. What's new and upcoming for ENERGY STAR?
- VI. Extended Q&A / Ask-the-Expert



# Who's here?

- Who's presenting?
- Who's in the room?
  - Geography
  - Sector/Industry/Expertise
  - Property types
  - Experience with ENERGY STAR





products 4.8 billion commercial buildings 27,000

homes 1.5 million industrial plants 130





**\$EPA** 













**€PA**





**\$EPA** 



# Benchmarking with ENERGY STAR is the industry standard.

#### Cumulative through 2014

- Over 75,000 active Portfolio Manager accounts nation-wide
- More than 400,000 properties benchmarking energy use
- More than 90,000 properties benchmarking water use in Portfolio Manager
- More than 165,000 properties benchmark energy/water using web services
- More than 25,000 properties are ENERGY STAR certified



Cumulative buildings benchmarked ——Cumulative Floor Space (billions)

More than **40%** of U.S. commercial building space



# Value of Benchmarking

#### Energy Savings in Portfolio Manager

252

248

267

258

Consistent benchmarking in

buildings results in energy savings and improved performance







# Benchmarking and Transparency Policies: A Growing Trend

- All jurisdictions with benchmarking laws have specified the use of Portfolio Manager: Austin, Boston, Cambridge, Chicago, Minneapolis, New York, Philadelphia, San Francisco, Seattle, Washington DC; Montgomery County, MD; California; Washington (state)...
- Ordinances passed in 2015-2016: Atlanta, GA; Berkeley, CA; Boulder, CO; Kansas City, MO; Portland, OR
- Public commitment to pursue benchmarking policy in Los Angeles, CA & Orlando, FL
- Purpose of these laws:
  - Reduce GHG: In large cities with significant public transportation, buildings typically account for 70% or more of CO2 emissions and energy usage.
  - Increase transparency of building performance data for a better informed market (energy and water) – *like a fuel economy sticker on a vehicle*
  - Incentivize improvements in public and private building
  - Grow clean energy job market



#### **U.S. Building Benchmarking and Transparency Policies**





# **Energy Disclosure Laws Create Opportunities for Energy Service Providers**

- Promote Market Awareness of Programs
  - Reach out to existing customers to encourage understanding, participation and compliance with legislation
  - Demonstrate your expertise to potential clients by being a source of useful information about program requirements
  - Support local government messaging, emphasizing that these initiatives create jobs and stimulate the local economy



# **Energy Disclosure Laws Create Opportunities for Energy Service Providers**

### Assist Clients with Compliance

- Market and deliver benchmarking services
- Sharpen your skills by attending ENERGY STAR benchmarking training
- Encourage local professional associations to set up benchmarking support hotlines and training networks

#### Expand Business Opportunities through Enhanced Market Visibility

- Help create a directory of local energy service providers available to assist building owners in your market
- Encourage building owners to track and improve their energy performance – achieving long term goals of improved building competitiveness, reduced carbon footprint and job creation

€PA



#### State and local programs leverage Portfolio Manager.





### It's trending





# **ENERGY STAR Resources for Commercial Buildings**



**\$EPA** 



# ENERGY STAR® PortfolioNanager®



# ENERGY STAR® PortfolioManager®

A Metrics Calculator that generates key performance indicators.

- Energy consumption (source, site, weather normalized, EUI)
- Water consumption (municipally supplied potable and reclaimed, alternative)
- Greenhouse gas emissions (indirect, direct, total, avoided)
- ENERGY STAR 1-to-100 score (available for many building types)

A Management Tool that provides a platform for strategic energy management

- ✓ Assess whole building energy and water consumption
- Track changes in energy, water, greenhouse gas emissions, cost over time
- Identify high performing facilities for recognition and replicable practices.
- Prioritize poor performing facilities for immediate improvement.
- Develop a historical perspective and context for future actions and decisions.
- Apply for ENERGY STAR certification

→ Accessible in a free, online secure platform: <u>www.energystar.gov/benchmark</u>



## Choose the best data management method

Multiple ways to enter data for a property or portfolio:



Manually



#### Spreadsheet uploads



OR

Hiring a 3<sup>rd</sup> party to exchange data directly with Portfolio
 ♣EPA Manager via web services

Direct **web services** upload of utility data to Portfolio Manager (if offered by utility)



# What are Web Services?

- Web services provide a framework for exchanging data between EPA's Portfolio Manager and a third party system such as a utility customer information system (CIS)
- Uses Extensible Markup Language (XML) to...
  - authorize data release
  - transfer energy and/or building data
  - report energy benchmarking results
- Utilities can assist their customers with benchmarking by using web services to process data authorizations and automate the transfer customer energy data from the utility CIS to EPA's Portfolio Manager



#### Typical Web Services Relationship Between Customer and Data Provider (Utility or 3<sup>rd</sup>-Party Firm)

DATA PROVIDER SETS UP WEB SERVICES, PROVIDES CUSTOMER INSTRUCTIONS, AND SPECIFIES TERMS AND CONDITIONS AND CUSTOM IDENTIFIERS





#### **Data Exchange Provider List**

# > 65 Active ENERGY STAR Partners featured on EPA's <u>Most Active List</u>

 <u>http://www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings/save-</u> energy/expert-help/find-energy-star-service-a-0?c=spp\_res.pt\_spps\_automated\_benchmarking





#### **Utilities Offering ENERGY STAR Web Services**



Utility	State
Avista Utilities	Washington
Clark Public Utilities	Washington
ComEd	Illinois
Los Angeles Department of Water and Power	California
Pacific Gas and Electric Company (PG&E)	California
PECO	Pennsylvania
PEPCO	D.C.
Puget Sound Energy	Washington
Salt River Project (SRP)	Arizona
San Diego Gas & Electric Co.	California
Seattle City Light	Washington
Seattle Steam Company	Washington
Southern California Edison	California
Southern California Gas Co.	California



# "It's not just about benchmarking" or Other ENERGY STAR Resources for Commercial Buildings



**\$EPA** 



# **ENERGY STAR Resources that Make Benchmarking** *Actionable*



€FPA

- Guidelines for Energy Management
- Energy Efficiency Competition Planning Guide
- Energy Treasure Hunt Guide
- Success Stories: Landlords and Tenants
- Communications Strategy Planning Guide
- "Bring Your Green to Work" Engagement Kit
- Action Workbooks for Congregations and Small Businesses

....much more!

<u>energystar.gov/buildings/</u> <u>tools-and-resources</u>



#### Leverage the ENERGY STAR Partnership for Service Providers

- EPA's free and voluntary partnership for energy service and product providers (SPPs)
  - Access technical support, guidance & training from EPA
  - Use ENERGY STAR logo and off-the-shelf marketing materials
  - Collaborate with EPA on conference presentations, client-facing webinars, articles, etc.
- Differentiate yourself through EPA recognition
  - Get added to <u>EPA's directory of most active ENERGY STAR SPP</u> partners
  - Publish ENERGY STAR service and product provider success stories
  - Include your activity in profiles of ENERGY STAR certified buildings
  - Get recognized as ENERGY STAR Partner of the Year
- Requirements to Join
  - Benchmark at least 10 customer buildings in the last 12 months using Portfolio Manager, and/or
  - Earn the ENERGY STAR certification for at least
     1 customer building in the last 12 months







# **ENERGY STAR Partnership for Buildings**

- A free & voluntary partnership
- ENERGY STAR partners commit to:
  - Measure/track/benchmark building energy use
  - Implement a plan to improve energy performance
  - Educate and communicate others about energy efficiency
- ENERGY STAR partners can co-brand with ENERGY STAR, a brand recognized by 85 percent of Americans
- Partners also gain access to a rich variety of promotional materials

# www.energystar.gov/Join



# Tap into ENERGY STAR TechnicalAssistanceLive



- Live and recorded webinars offered regularly
- New 2-5 minute training videos
- Step-by-step training guides, FAQs, and technical reference documents
- On-demand user support

#### energystar.gov/buildings/training

#### ← → C https://esbuildings.webex.com/



# SUPERIOR ENERGY MANAGEMENT CREATES ENVIRONMENTAL LEADERS

May 17, 2016 1:00 pm Verifying the ENERGY STAR® Application

May 17, 2016 2:00 pm

Event Center My WebEx

	Apr 14, 2016 1:00 pm How to Apply for the ENERGY STAR®	<mark>⊠ Register</mark>
List of Events	Apr 19, 2016 1:00 pm Portfolio Manager® 101	<mark>⊘</mark> <u>Register</u>
Unlisted Events Search	Apr 19, 2016 2:00 pm Energy Savings Plus Health: Indoor Air Quality Guidelines for School Building Upgrades	<u>I Register</u>
Host an Event	Apr 20, 2016 12:00 pm Ask The Expert	<u>I Register</u>
<ul> <li>Manage Programs</li> <li>Set Up</li> </ul>	Apr 20, 2016 1:00 pm Portfolio Manager® 201	<mark>⊠ Register</mark>
Event Manager	Apr 21, 2016 1:00 pm Portfolio Manager® 301	Z Register
Preferences	Apr 26, 2016 1:00 pm Office ENERGY STAR® Score Update Plans	<mark>⊠ Register</mark>
Support Back to ENERGY	Apr 27, 2016 12:00 pm Ask The Expert	<mark>⊠ Register</mark>
STAR	Apr 27, 2016 2:00 pm Retail ENERGY STAR® Score Update Plans	<mark>⊠ Register</mark>
	May 10, 2016 1:00 pm Tackling WaterSense – Mechanical Systems	<mark>∦ Re</mark> gister
	May 12, 2016 1:00 pm Update on CBECS Data and ENERGY STAR® Score Development Process	Z Register

Register for the 2016 ENERGY STAR National Building Competition: BOOTCAMP!



Register

Register



# Join the ENERGY STAR Trainer Community

- A network of professionals around the country who deliver ENERGY STAR training sessions to the public More than 200 members from across the country
  - Members represent commercial real estate, ESCos, state and local government, schools, and many other sectors
- Gain access to EPA's trainer resources, including annotated slide decks in PPT format
- Advance notice of upcoming Portfolio Manager changes
- Advance notice of new ENERGY STAR resources
- Invitations to quarterly trainer meetings

Join at: <u>www.energystar.gov/buildings/welcome-energy-star-trainer-</u> <u>community</u>





#### Gain national recognition – earn ENERGY STAR Certification



Top 25% of energyefficient buildings, nationwide. Use 35% less energy and emit 35% less  $CO_2$  than their peers, on average.





# **ENERGY STAR Certification for Commercial Buildings**

- Recognition for superior energy performers score 75 or above – as verified by a Professional Engineer and provided they meet industry standards for indoor environmental quality.
- Awarded based on the calendar year. Buildings must re-apply annually.





## **Premiums for ENERGY STAR Buildings**



See www.imt.org/rating-value for more information



## **ENERGY STAR Recognition Opportunities**

- ENERGY STAR Certification for Buildings (score of 75 or higher)
- Designed to Earn the ENERGY STAR





• EPA's National Building Competition



ENERGY STAR Partner of the Year




# Take <u>90 days</u> to whip your buildings into fighting shape!

- Buildings nationwide compete to reduce energy and water use.
- Register up to 5 buildings per organization
- Recognition is based on percentage improvement in building energy or water use
- ENERGY STAR is providing new toolkits with a focus on engaging occupants
- Learn more at <u>www.energystar.gov/battleofthebuildings</u>

### ENERGY STAR EPA'S NATIONAL BUILDING COMPETITION



#### Key 2016 Dates

- Register: May 17 July 17
- Performance Period:
  September 1 November 30
- Winners announced Winter 2017

#### Recognition

Top performers for energy and water efficiency improvement recognized by building type

**S**EPA



# **ENERGY STAR & EPA WaterSense**





# **EPA's WaterSense Program**

A voluntary program launched by EPA in 2006 that provides a simple way to identify water-efficient:

- Products
- Programs
- Practices
- Homes

Products are independently certified for water efficiency <u>and</u> performance

https://www.epa.gov/watersense/





### WaterSense Labeled Products



Flushing Urinals



Lavatory Faucets



Irrigation Controllers



More than 16,000 product models have earned the WaterSense label



**\$EPA** 

Tank-Type Toilets



Showerheads



Pre-Rinse Spray Valves



New! Flushometer-Valve Toilets



# **ENERGY STAR and WaterSense Webinar Series**

WaterSense and ENERGY STAR are hosting a joint webinar series throughout 2016 to help building owners tackle facility water use:

Tackling WaterSense – Sanitary Fixtures & Equipment	January 28
Tackling WaterSense – Outdoor Water Use	March 30
Tackling WaterSense – Mechanical Systems	May 10
Let's Go on an Energy and Water Treasure Hunt	July 12
Tackling WaterSense – Commercial Kitchens	September 20

Register for these & other webinars at

www.energystar.gov/buildings/training



# Water Use Tracking in Portfolio Manager

- ENERGY STAR Portfolio Manager allows for water tracking, just like energy tracking...
- ...although there's no "WaterSense score" for buildings

**MyPortfolio** 

Sharing

• .....yet\*

\*EPA is currently evaluating a data set to explore the possibility of a water-efficiency score for Multifamily Housing properties



Planning

Reporting



Recognition



#### **Sepa**



# Recent & Upcoming Enhancements to Portfolio Manager



# **2015 Enhancements: Reporting**

- Reporting for Multiple Years
  - Number one request in last year's survey
  - Only limit is you cannot build a report with more than 5,000,000 cells
    - 1,000 properties x 50 metrics x 100 time periods = 5,000,000 cells
- New N/A Page for Data Requests
  - See a list of properties with N/A and the reason why before you submit your data
- Performance Table on Summary tab
  - Shows key metrics for current and baseline periods, with a change
  - Can edit to show any other periods, as desired
- Comparison to Median
  - Prominent display of the comparison to the median when there is no score in the upper right of the property pages
- Others...
  - Pie Chart on Use Details tab
  - New Metric to List all Property Types in a property
  - New "Total" row in tables at the bottom of Chart & Graph Reports



### **2015 Enhancements: Alerts**

- Alert Icons (!)
  - In page messaging to inform you of possible data errors
  - Limited to most critical issues that prevent metrics like site energy and site EUI
- Revised Message Format
  - Separate statements for Problem and What To Do
  - More links to the meters and property uses with problem data
  - More granular alerts
    - Used to say: one or more property use detail is out of the range required for the score
    - Now says: the timeweighted value for Hours of Operation for your Office is 20.0. You must have a value that is greater than 30.0 in order to compute a score.

#### Revised Data Quality Checker

- Ability to expand/contract alerts
- Compare EUI and operation to typical buildings, including for buildings that do not receive a score (e.g. Libraries, Police Stations)
- Removed the "save" feature
- Removed explanation boxes

**\$EPA** 



### **2015 Enhancements: Meters**

- Copy/Paste Feature for Monthly Bill Entry
- Enter Bills with Commas
- Download Meter Data
  - Excel Download available for all meters, for any specified date range
  - Green Button Download for Electricity, leveraging the standard Green Button XML format, which you can import into other tools
- Combine Manage Bills and Edit Basic Information Pages
  - See the Active/Inactive dates alongside the bill dates
  - Make any edits to the meter on a single page
- Ability to Edit Water and IT Meter Types
  - Change a meter from Municipally Supplied Potable to Municipally Supplied Reclaimed water
- Enhanced Energy and Water Tabs (January 2016)
  - Separate information about energy and water meters onto two tabs
  - See a graph of energy/water use by calendar month
  - Understand which meters are included in your metrics
  - Download annual totals for individual meters



# **2015 Enhancements: Other**

- Sharing/Transfer
  - Ability to accept/reject property transfers
  - User name shown in contact pick lists
  - Transfer of ownership of multiple properties at once
  - Cancel connection after it is sent
- Certification
  - See Approval Date and Score on the Recognition tab
  - Designate anyone (including non-LP) as person who performed Site Visit
- Import Spreadsheets (bulk and single meter)
  - Clean/streamlined formatting
  - Clearer, cell-specific, error messages
  - Exclude inactive meters from Update Bills template
- Web Services
  - Web service to report full reason for "why no score" analogous to improved alert messages
  - Web service to associate one meter at a time
  - Allow multiple providers to have FULL access at the same time
- Misc

€FPA

- Designate a property as "TEST" and exclude it from portfolio graphics
- Clearer identification of Parent Properties when you view the children
- Longer tables/Less "paging"
- Online HDD/CDD calculator: <u>www.energystar.gov/DegreeDaysCalculator</u>



# **Planned Enhancements for 2016**

- Solid Waste/Material Management Tracking (coming summer 2016)
  - Track waste use over time
  - View waste according to different management categories (Disposal, recycling, etc.)
- Water Tracking Improvements
  - Possible new score for water efficiency at multifamily properties
  - Better reporting for water metrics
    - Run custom reports for the water baseline/current
    - Show independent water periods in the Progress and Goals Report
- Bulk Share for Web Services
  - Share your entire portfolio with a company that exchanges data with Portfolio Manager
  - Note that you may need to fill in a spreadsheet if your provider requires custom property and/or meter IDs



### **Planned Enhancements for 2016**

- A new "Dashboard."
  - An at-a-glance set of performance metrics (Score, EUI, etc.) for each property, on the My Portfolio page – similar to the pre-2013 "Views" functionality
- Electric Demand
  - Starting R&D to figure out how to best help users track electric demand, with the goal to make this available in February 2017.
- Audit Report for Meters.
  - Improve meter auditing by showing Active/Inactive Dates & First/Last Bill Dates for all meters and properties.
- Historical Trend Graph
  - Visualize historical trends for each metric with new line graphs to supplement our current bar charts.



# **Open Q&A / Ask the Expert**





### **Open Q&A / Ask the Expert**

Possible topics:

- Portfolio Manager "how-to" (e.g. parking, campuses, waste tracking...)
- ENERGY STAR Weather Normalization
- Green Power and GHG emissions in Portfolio Manager
- Verifying applications for ENERGY STAR certification
- ENERGY STAR Partnership
- CBECS data and new ENERGY STAR score models
- ENERGY STAR data-exchange web services
- "Why doesn't EPA / the ENERGY STAR program do \_\_\_\_\_?

*I'm interested to learn from you:* 

- How you've used Portfolio Manager in the past
- What you've found most & least useful from the ENERGY STAR program

**\$EPA** 



# **Further Information**



www.energystar.gov/benchmark/

FAQs/Ask A Question:

www.energystar.gov/BuildingsHelp

ENERGY STAR Trainings: <u>www.energystar.gov/buildings/training</u>

Nils Klinkenberg The Cadmus Group, Inc. ENERGY STAR Buildings support contractor nils.klinkenberg@cadmusgroup.com



# Appendix: Waste Tracking in Portfolio Manager



# Waste Tracking in Portfolio Manager **Coming Summer 2016**



Your Property's Waste & Materials **Management Activities** 

How does your property manage its materials and waste? Please select all that apply.

]	Disposed
_	Donated
	Recycled

onated Recycled

Composted



Get Started Setting Up Meters for 1310 L Test

There are four ways to enter meter data. First, you can enter manually, starting below. Second, you can set up your meters below, then upload a specially formatted spreadsheet with just your bill data. Third, for advanced users, you can use our upload tool that allows you to set up all of your meters and enter bill data. And finally, you can hire an organization that exchanges data to update your energy data automatically.

ST2	Sources of Your Property's Energy	
()	How does your property acquire energy? Please select all that apply.	To track your energy, create an energy
	Electric	meter for each source of energy from a
	Natural Gas	utility, a neighboring building, or an on- site solar or wind panel. If you purchase
	Propane	a raw fuel (e.g. gas) and produce your
	Fuel Oil (No. 2)	water), you only need a meter for the fuel
	Diesel	you purchased (e.g. gas), and not for the
	District Steam	idel you produce.
	District Hot Water	Entering Your Meters in
	District Chilled Water	Helk
	Don't see your energy sources?	For advanced users, you may prefer to
	+ See more energy sources?	use the upload tool to set up all of your meters with one click
		Automate Your Meter Entries
	Your Property's Water Usage	If you have a lot of meters, you may want
	How does your property use water? Please select all that apply.	exchanges data to automatically update
	Municipally Supplied Potable Water	your energy consumption. Learn more
	Municipally Supplied Reclaimed Water	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
	Alternative Water Generated On-Site:	
	Other	
	Get Started! Cancel	



# Background

#### • Why is Materials/Waste Tracking being added?

- Many users of Portfolio Manager are responsible for sustainability at their organization, which may include:
  - Energy
  - Water
  - Waste/Materials Management
- Partners express an interest in leveraging Portfolio Manager to help with all aspects of sustainability
- To work closely across media (air, water, materials) to provide a unified platform for commercial buildings
- To introduce/standardize waste/materials reporting in commercial buildings
- What is the timeline for this initiative?
  - Initial Launch: Summer 2016
  - Web Services: August 2016



### **Inventory of Materials for Tracking**

		Donated/		
Waste/Materials	Disposed	Reused	Recycled	Composted
Appliances	х	х	x	
Batteries	х		х	
Beverage Containers (aluminum, glass, plastic)	х		х	
Building Materials - Carpet/Carpet Padding	х	х	х	
Building Materials - Cement/Concrete	х	х	х	
Building Materials - Mixed/Other	х	х	х	
Building Materials - Steel	х	х	х	
Building Materials - Wood	х	х	х	
Cardboard/Corrugated Containers	х	х	х	x
Compostable - Mixed/Other	х			x
Electronics	х	х	х	
Fats/Oils/Grease	х		х	
Food/Food Scraps	х	х		x
Furniture	х	х		
Glass	х	х	х	
Grass/Yard Trimmings	х			x
Lamps/Light Bulbs	х			
Mixed Recyclables	х		х	
Office Supplies	х	х		
Pallets	х	х	х	
Paper - Books/Textbooks	х	х	х	
Paper - Copy Paper	х		х	x
Paper - Mixed	х		х	
Plastics - Mixed	х		х	
Plastics - Wrap/Film	х		х	
Regulated Medical Waste	х			
Textiles/Clothing	х	х	х	
Trash	х			
Other	х	х	х	x
Count of materials within each type	29	16	21	6

- 29 Material Types
- 4 Methods of Management

<sup>• 72</sup> Unique Combinatio ns



# **Waste Tracking Specifics**

- How do I calculate the weight of my waste?
  - Enter the container size (volume) and Portfolio Manager calculates a weight.
    - Portfolio Manager uses a standard volume-to-weight conversion factor based on the Waste/Material category
  - Enter the weight:
    - Get the actual weight from your hauler
    - Estimate the weight yourself
    - Use a tool to help you calculate it



# **Volume Conversions**

- Volume conversions
  - Used to convert volume into weight
  - Important because the main unit for metrics and reporting is tons

#### Materials without conversions

- Cannot use "container size" option
- These materials are required to provide a weight
- If users need to estimate the weight, there is a way to mark each entry as estimated

Materials without Volume Conversions Appliances

Appliances Batteries Electronics Furniture Lamps/Light Bulbs Office Supplies Regulated Medical Waste Other



# **Methods of Data Entry**

- **Regularly** Meters for materials that are picked up on an ongoing basis (e.g. weekly pickup of trash and recycling). There are two basic paths:
  - <u>Measured</u> Requires a weight or volume for each entry
    - This can be marked as "estimated" if it is a weight that the user estimates
  - <u>Container Size</u> Is based on the size of the container
    - User enters a container size, and specifies the number of times it was emptied and the percent full
- **Intermittently** Meters for infrequent or 1-time events (e.g. annual donation of electronics, or construction materials)



# **Terminology: Materials Management & Waste**

- Materials
  - When something is donated or recycled, it is not "wasted"
  - In the context of commercial buildings, can have other connotations
    - Environmental attributes of materials like wood and carpet used in construction or interior design
- Waste
  - More common terminology among building owners and operators when referring to materials management streams
- Recommended Terminology in Portfolio Manager
  - Waste and Materials When there is a high profile title, make sure to use the word materials
  - Waste/Material When trying to say Waste or Materials and a short/scan-able word is needed
  - Waste When a short single word is needed to avoid long/awkward phrases:
    - e.g. Current Waste Date



# **Basic Terminology**

- Waste Material Type The 29 different categories of materials that you can track (e.g. trash, mixed recyclables, batteries, food scraps, etc.)
- Waste Management Method One of 4 options for how you manage your waste and materials
  - Disposed
  - Composted
  - Recycled
  - Donated/Reused
- **Disposed Waste Destination** One of 4 options for where your disposed waste (e.g. trash) goes:
  - Landfill
  - Incineration
  - Waste to Energy (refers to incineration for energy recovery, not to landfill with gas recovery)
  - Other/Unknown
- **Waste Diversion** the sum of the Composted, Recycled, and Donated/Reused Materials (i.e. everything that is not disposed)



# Appendix: Parking and Gross Floor Area in Portfolio Manager



# **How Do I Enter Parking?**

- Sub-meter your parking and exclude its energy and Gross Floor Area (GFA). (\*Recommended\*)
  - Do not enter a parking Property Use
  - Do not enter the energy for your parking
  - For certification, if your parking garage *is physically connected* with your building and part of a single structure, then the **parking** cannot be more than 75% of the total Property GFA.
  - If your parking garage *is not physically connected* to your building, but rather is a separate structure then there is no limit as to its size.

OR

- Benchmark your parking with your building and include its energy and GFA.
  - Add a Property Use for your parking.
    - Report the GFA of each type of parking (Fully Enclosed, Partially Enclosed, and Open)
  - Include all parking energy in your energy meters.
  - Regardless of physical connection



# **Types of Parking**

- **Open Parking Lot** is a paved area that is lit and use for parking vehicles. Open parking lot size refers specifically to open area, which may include small shading covers but does not include any full structures with roofs. Parking lot size may include the area of parking spots, lanes, and driveways.
- **Partially Enclosed Parking** is parking garages where each level is covered at the top, but the sides are partially or fully open that is, structures that have partial walls or no walls at all. These types of partially-enclosed structures can take advantage of natural day lighting and ventilation in a way that a fully enclosed structure cannot. Therefore the energy consumption of a partially-enclosed structure is generally lower. Carports should be counted here.
- **Completely Enclosed Parking** garages are completely enclosed by a roof and full-walls on all sides. Underground garages are an example of completely enclosed parking.





# **Gross Floor Area (GFA) Metrics in Portfolio Manager**

- Property GFA Self-Reported is the number you enter when you first create a property. It can be edited on the Details tab, under "Basic Information." This value does not change over time, and it is not time weighted. If you edit it, it deletes the previous value without saving a record of what it had been. THIS VALUE IS NOT USED TO CALCULATE ENERGY PERFORMANCE METRICS.
- **Property GFA EPA Calculated (Buildings and Parking)** is the sum of the GFA of all the Property Uses that you entered on the Details tab, including parking GFA. This value is time weighted.
- Property GFA EPA Calculated (Buildings) is the sum of the GFA of all the Property Uses that you entered on the Details tab, excluding parking GFA. This number should match your "Property GFA – Self-Reported." If you have Property Uses that change square footage frequently (like office space going vacant), this is a good check to make sure all of your Property Uses add up to the right number. This value is time weighted. THIS VALUE IS USED TO CALCULATE ENERGY PERFORMANCE METRICS.
- **Property GFA EPA Calculated (Parking)** is the sum of the GFA of your "Partially Enclosed" and "Completely Enclosed" Parking Property Uses that you entered on the Details tab. This value is time weighted.





# Appendix: Benchmarking Campuses in Portfolio Manager



# **Options for Benchmarking a Campus**

Option	When to Use
<b>1. Campus ONLY</b> (i.e. Parent Property, no children)	If you only have data for the entire campus If you're just getting started
<ul><li>2. Campus with SOME of the Individual Buildings</li><li>(i.e. Parent Property, some child buildings)</li></ul>	If you have data for the campus and sub- metered data for some (but not all) of the children
<b>3. Campus with ALL of the Individual Buildings</b> (i.e. Parent Property, all child buildings)	If all individual children are fully sub- metered
<b>4. Individual child buildings ONLY</b> (i.e. do not create a Parent Property)	If you have data for all children, and have no need for information about the campus as a whole



## What does EPA recommend?

- Benchmark the campus and each individual child building, when possible
  - This will enable you to understand the energy performance of each individual building as well as the whole campus
- There will be situations where this is not possible
  - Some fuels are sub-metered, others are not
  - In these cases, track as much as you can
- $\rightarrow$  Let's take a closer look at "Option 2"
  - → Benchmarking the parent and some of the children
  - Complicated example, but common scenario, where you don't have complete data on every child



### Let's look at a complex example College/University Campus





# Based on the diagram, here is what we have

- 10 Individual Buildings
- 3 Campuses
  - Entire Campus (consists of all 10 buildings)
  - Residential Quad (consists of Buildings 1-4)
  - Classroom Quad (consists of Buildings 5-8)
- 3 Steam Meters
  - One main meter for the whole campus
  - One sub-meter for the Residential Quad
  - One sub-meter for the Classroom Quad
- 9 Electric meters
  - One main meter for the whole campus
  - Eight sub-meters, one each for Buildings 3 through 10
- Note
  - Buildings 1 and 2 are not sub-metered for electricity
  - Buildings 9 and 10 are not associated with either quad, only the campus

# → EPA's recommendation: try to measure and track as much as you can …let's see what that means here...



# **Recommendation Part 1: Enter 8 Single Building Properties**

- Track electricity only for the 8 individual buildings that have electric meters
  - Buildings 3 through 10
- Track and improve electric use and emissions over time
- Set targets to reduce electric use and cost
- Cannot get an accurate score or certification





# **Recommendation Part 2: Track 3 Campus Properties**

#### • Campus 1: Entire Campus

- Create 2 meters
  - 1 Steam Meter (all steam for campus) | 1 Electric Meter (all electric for campus)
- Associate all 8 individual buildings as child properties. To compute metrics:
  - Add together your two campus meters
  - Do not add your 8 electric sub-meters to you campus total that would be duplicative
  - You are tracking the entire "whole property" energy for the campus

#### • Campus 2: Residential Quad

- Create 1 meter: Steam meter for the Residential Quad
- Associate Buildings 3 and 4
  - Remember Buildings 1 and 2 were not metered or entered
- To compute metrics:
  - Add together the Residential Quad steam meter and the electric meters for Buildings 3 and 4

#### • You are <u>not</u> tracking the entire energy for the quad

- You don't have electricity for Buildings 1 or 2
- But you can still set targets to improve and understand your energy, cost, and emissions

#### • Campus 3: Classroom Quad

- Create 1 Meter: Steam meter for Classroom Quad
- Associate Buildings 5-8
- To compute metrics

€FPA

- Add together the Classroom Quad steam meter and the electric meters for Buildings  $\frac{1}{2}5 8$
- You are tracking the entire "whole property" energy for the quad


## So...what are we tracking?

Res Trac Tota	idential Quad <i>king only part of</i> I Steam and Elect	3 and 4	Class Tracki	room Quad ng <i>whole property</i> energy Building 5 Building 6					
	Building 1 Not tracking Anything	Build Not tra Anythi	<b>ing 2</b> acking ng			Tracking <i>Electricit</i> Only	;y	Tracking <i>Electricity</i> Only	
	Building 3 Tracking <i>Electricity</i> Only	Build Trackir <i>Electri</i> Only	ing 4 <sup>ng</sup> city			Building 7 Tracking <i>Electricity</i> Only		Building 8 Tracking <i>Electricity</i> Only	
Entir Trackin	Entire Campus Tracking <i>whole property</i> energy				Build Tracki Electr Only	ling 10 <sup>ng</sup> icity			



## This concludes The American Institute of Architects Continuing Education Systems Course

**Contact Information** 



