

The Village of Oak Park

The Path to Data Driven Decisions

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Video Presentation-click the play icon

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Learning Objectives

Energy Benchmarking & ENERGY STAR Portfolio Manager

- What is benchmarking?
- Information needed & entering energy data
- Navigating ENERGY STAR

Greenhouse Gas Inventory and ICLEI ClearPath

What is an inventory for?

- Information needed
- Calculating emissions

Benefits and Barriers of Entry



What is Energy Benchmarking?

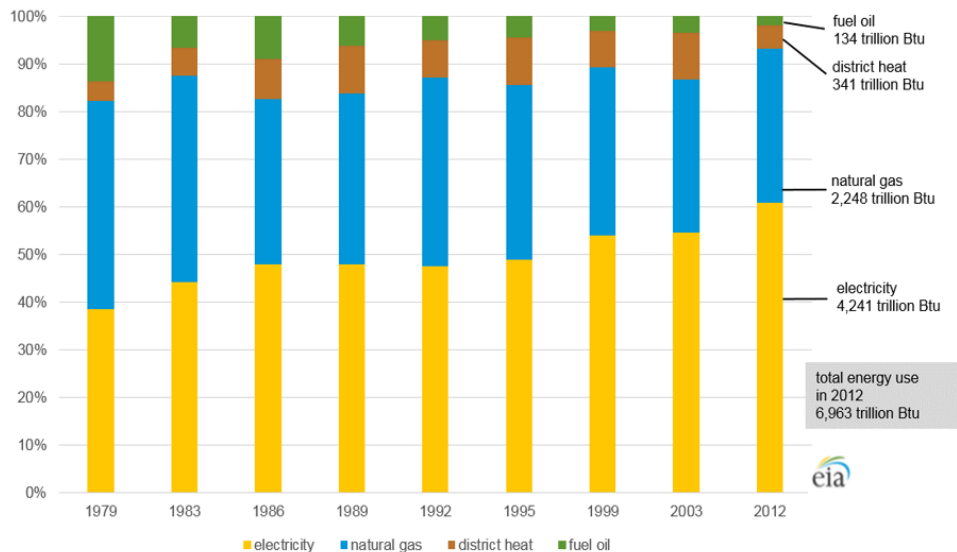
The practice of comparing the energy usage of a building, home, or facility with itself, or with buildings of similar sizes, uses, areas.

Tracks the energy used via electricity, gas, water, waste.



Benefits of Benchmarking

Figure 2. Electricity now accounts for 61% of all energy consumed in commercial buildings



Source: U.S. Energy Information Administration, Commercial Buildings Energy Consumption Survey.

EIA.GOV

Empowers user to:

- Make more informed decisions
- Identify opportunities to save energy
- Save Money
- Reduce Environmental Impact



ENERGY STAR Portfolio Manager



ENERGY STAR Portfolio Manager

Use Portfolio Manager to:	Energy	Water	Waste & Materials
Establish a baseline:	✓	✓	✓
• Compare current use to baseline overtime.	✓	✓	✓
• Compare median of national sample of similar buildings to baseline.	✓		
• Compare normalized national sample of similar buildings to baseline.	✓ (ENERGY STAR 1-100 Score)	✓ (Multifamily 1-100 Score)	
Set target reduction goal.	✓		
Compare properties in portfolio to each other.	✓	✓	✓
Apply for recognition (eligible space types).	✓ (ENERGY STAR Certification)		

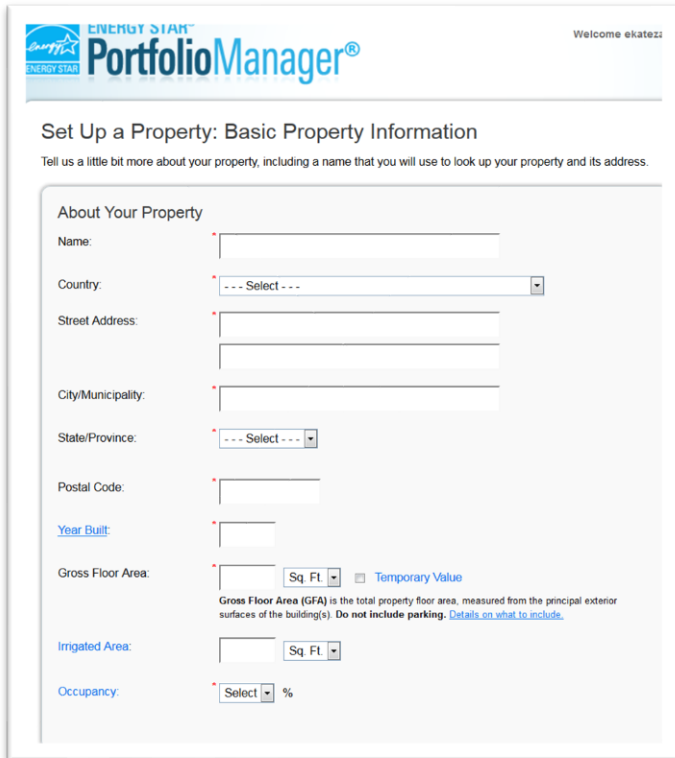
ENERGY STAR Stats

- The ENERGY STAR program helped save nearly \$10 billion in energy costs in 2016 (commercial).
- In 2018 alone, more than 270,000 buildings, comprising 26 billion square feet of floorspace, used ENERGY STAR Portfolio Manager® tool to measure and track their energy use, water use, and waste and materials.
- On average, ENERGY STAR certified buildings use 35% less energy than typical buildings nationwide.
- Studies find that ENERGY STAR certified buildings command a premium of up to 16 percent for sales prices and rental rates.



1. What You Need to Get Started

Basic Building Information



The screenshot shows the 'Set Up a Property: Basic Property Information' form in the Energy Star Portfolio Manager. The form includes fields for Name, Country, Street Address, City/Municipality, State/Province, Postal Code, Year Built, Gross Floor Area (with a 'Temporary Value' checkbox), Irrigated Area, and Occupancy. A note explains that Gross Floor Area (GFA) is the total property floor area, measured from the principal exterior surfaces of the building(s), and does not include parking. A link to 'Details on what to include' is provided.

ENERGY STAR[®] PortfolioManager[®]

Welcome ekatezz

Set Up a Property: Basic Property Information

Tell us a little bit more about your property, including a name that you will use to look up your property and its address.

About Your Property

Name: *

Country: *

Street Address: *

City/Municipality: *

State/Province: *

Postal Code: *

Year Built: *

Gross Floor Area: *

Sq. Ft. Temporary Value

Gross Floor Area (GFA) is the total property floor area, measured from the principal exterior surfaces of the building(s). Do not include parking. [Details on what to include.](#)

Irrigated Area: *

Sq. Ft.

Occupancy: *

Select %

Property Name

Property Address

Total Gross Floor Area

Irrigated Area

Year Built

Occupancy %

Number of buildings

Weekly Operating Hours

Number of Works on Main Shift

Number of Computers

Percent of Building that can be Cooled

Percent of Building that can be Heated



2. Collect Whole-Building Data

At least 12 months of consumption data for energy sources you would like to track.

Property-specific utility bills for all purchased and on-site generated electric, gas, water.

Quantity of waste and materials: recycled, disposed, donated, etc.

About Your Meters for Supermarket A-1

Enter the information below about your new meters. The meter's **Units** and **Date Meter became Active** are required. You can also change the meter's name.

2 Energy Meters for Supermarket A-1 (click table to edit)

☐	Meter Name	Type	Other Type	Units	Date Meter became Active	In Use?	Date Meter became Inactive	Enter as Delivery?	C
☐	Natural Gas	Natural Gas				☒		☐	1
☐	Electric Grid Meter	Electric - Grid				☒		☐	

ccf (hundred cubic feet)
cf (cubic feet)
Cubic meters
GJ
kBtu (thousand Btu)
kcf (thousand cubic feet)
MBtu/MMBtu (million Btu)
MCF (million cubic feet)
therms

[Delete Selected Entries](#)
[Add Another Entry](#)



3. Translating Data Into Performance Indicators

Energy Metrics (Site and Source)

- Total Energy Use (kBtu)
- Energy Use Intensity (EUI) (kBtu/Sq. Ft.)
- Weather Normalized EUI (kBtu/Sq. Ft.)
- National Median EUI (kBtu/Sq. Ft.)
- % Difference from National Median EUI (%)

Comparisons

- Total Energy Use (kBtu)
- Energy Use Intensity (kBtu/Sq. Ft.)
- Adjusted Energy Use (%)
- GHG Emissions (MtCO₂e)
- Available against baseline or between any two periods.

Financial

- Annual Energy Cost
- Total Energy Cost per Sq. Ft.
- Cumulative Investment in Facility Upgrades
- Cumulative Investment per Sq. Ft.

Renewable Energy

- Total On-Site Electric Generation (kWh)
- Percent of Electricity from On-Site Renewable (%)
- Total Renewable Energy Certificates Purchased and Sold
- Total Avoided Greenhouse Gas Emissions from RECs (MtCO₂e)



Greenhouse Gas Inventory

- Community-wide
- Typically an annual report that quantifies emissions into the 6 major GHG
 - ICLEI and GCOM require 3 (CO₂, N₂O, CH₄)
- Basic emissions activities: electric, stationary fuel, on-road vehicles, potable water, wastewater treatment, solid waste



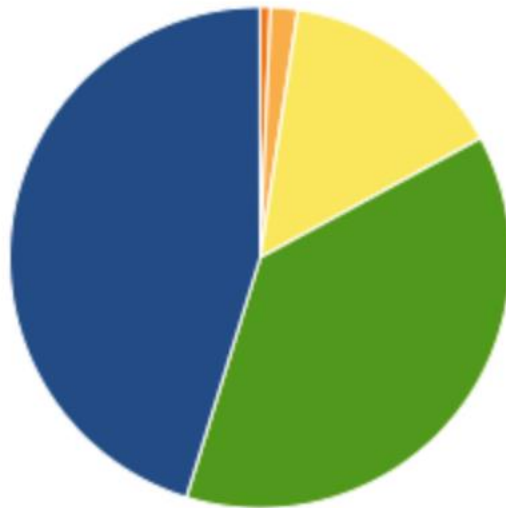
Greenhouse Gas Inventory

- Carbon Dioxide Equivalent (CO₂e) is the specific unit of measurement for GHG reporting
- Every greenhouse gas has its own global warming potential (GWP)
 - ✓ Carbon dioxide, Methane, Nitrous Oxide, Hydrofluorocarbon gases, Perfluorocarbon gases, Sulfur Hexafluoride
- CO₂e is how to report them as a single combined quantity



Benefits of an Inventory

Oak Park C02e- 2019



- Reduce/limit greenhouse gas emissions
- Prepare for the impacts of climate change
- Increase access to secure, affordable and sustainable energy and
- Track progress toward these objectives



ICLEI ClearPath



ICLEI ClearPath Application

- Develop protocol-compliant emissions inventories
- Forecast multiple scenarios for future emissions
- Analyze the costs and benefits of emissions reduction measures
- Visualize alternative planning scenarios
- Track your progress over time
- Guidance and training at your fingertips



1. What You Need to Get Started

- ✓ Determine the Global Warming Potential for each Greenhouse Gas.
- ✓ Obtain emissions factors.

An emission factor is a coefficient which allows us to convert activity data into GHG emissions. (ICLEI USA)

Basic GHG Calculation:

Activity Data X Emissions Factor = Emissions Estimate



2. Collect Activity Data

- Electricity and Stationary Fuel (natural gas, propane, etc.)
 - ❖ Collect for residential, commercial, and industrial
- On-road vehicles
- Potable water
- Wastewater treatment
- Generation of solid waste



3. Translating Data Into Performance Indicators

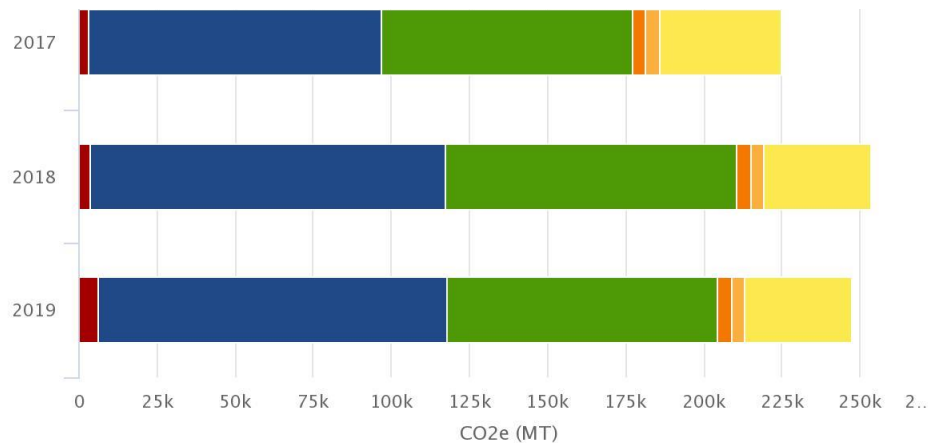
- Develop protocol-compliant emissions inventories
- Forecast multiple scenarios for future emissions
- Analyze the costs and benefits of emissions reduction measures



Oak Park Inventory Comparison By Sector and Year

Comparison of CO2e by sector and year over all official inventories

Year	Transportation & Mobile Sources	Solid Waste	Water & Wastewater	Commercial Energy	Residential Energy	Process & Fugitive Emissions
2017	38,728	4,486	4,564	80,004	94,018	2,949
2018	34,238	4,579	4,234	93,294	113,851	3,450
2019	34,153	4,037	4,631	86,930	111,346	6,199



● Process & Fugitive Emissions
 ● Residential Energy
 ● Commercial Energy
● Water & Wastewater
 ● Solid Waste
 ● Transportation & Mobile Sources



Benefits

- Make more informed decisions
- Identify opportunities to save energy
- Save Money
- Reduce Environmental Impact

Barriers to Entry

- Staffing/Time
- Working with Utilities



Recommendations for Overcoming Entry Barriers

Working with utilities

- Send FOIA data requests early
- Follow up, follow up, follow up!

Staffing/Time

- Host a GRC Corps Fellow!!



Questions or Comments

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