Energy Efficiency First: Preparing your Nonprofit for Solar

February 27, 2024

Renew America's Nonprofits Program
DOE Office of State and Community Energy Programs

SCEP
STATE & COMMUNITY ENERGY PROGRAMS

Introduction

Introductions

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ORISE Fellow
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DOE Office of Energy Efficiency and Renewable Energy (EERE)

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President

Environmental and Energy Study Institute (EESI)

Overview: Nonprofit Sector Need

There are approximately **1.5 million 501(c)(3) nonprofits** in the U.S.

Nonprofits employ **more than 10%** of the workforce – more than **12.4 million workers.**

Energy costs are the **second largest operational expense** for nonprofits behind salaries.

Many nonprofits serve **disadvantaged populations**.

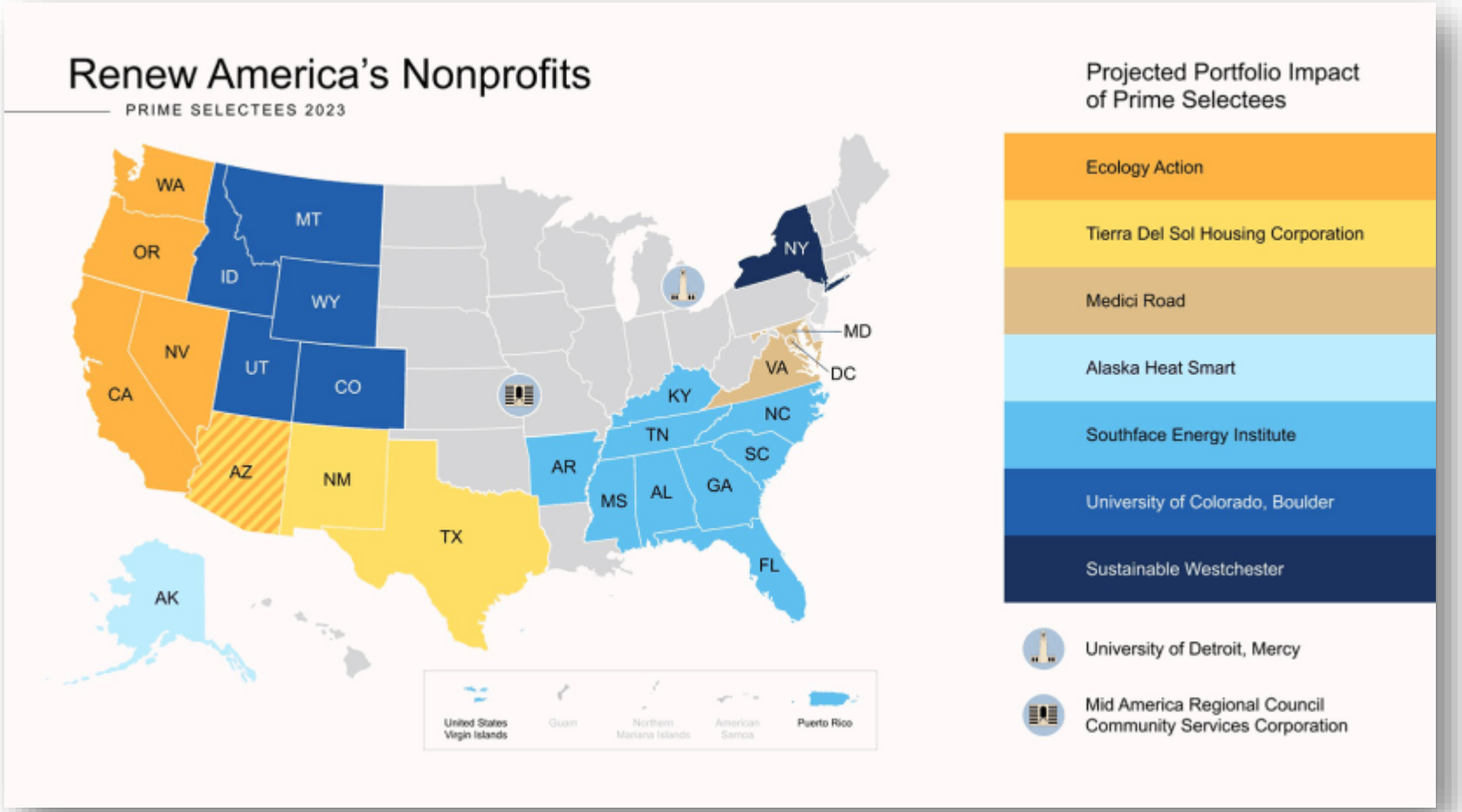
Citizens and communities are **deeply connected** to nonprofits as beneficiaries, volunteers, and donors.

Strong, resilient communities need **strong nonprofits**.

Energy cost savings can redirect limited funds to their **mission-critical work**.

Renew America's Nonprofits Selectees

Pilot $50M competitive grant program for efficiency upgrades at nonprofit facilities.



Renew America's Nonprofits – Technical Assistance

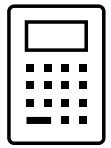
- Provide tools and resources to nonprofits;
- Build capacity for pipeline of sustained improvements in small community-based nonprofits; and
- Scale innovative and strategic initiatives to transform nonprofits nationwide.

Importance of Energy Efficiency for Nonprofits

Roadmap for Energy Improvements

- Benchmarking / energy assessments
- Identifying / prioritizing improvements
- Financing
- Installation

Energy Efficiency



Clean Energy

- Assessments
- Financing
- Right-sized installation

- Pre-registration
- File with IRS
- Receive cash back through “elective” or “direct pay”

Cash for Clean Energy

Why Efficiency?

- More of your budget can go towards your mission with ongoing savings, boosting organization resiliency and long-term health.
- Creating a healthier building for volunteers, employees, and the community.
- You will reduce pollution and emissions.
- It will be more affordable to get solar, renewables, and cash for clean energy.
- Opportunity to connect to new funders focused on climate investments.

Benchmark with EPA's ENERGY STAR Portfolio Manager

Caterina (Katy) Hatcher
ENERGY STAR National Manager, Public Sector
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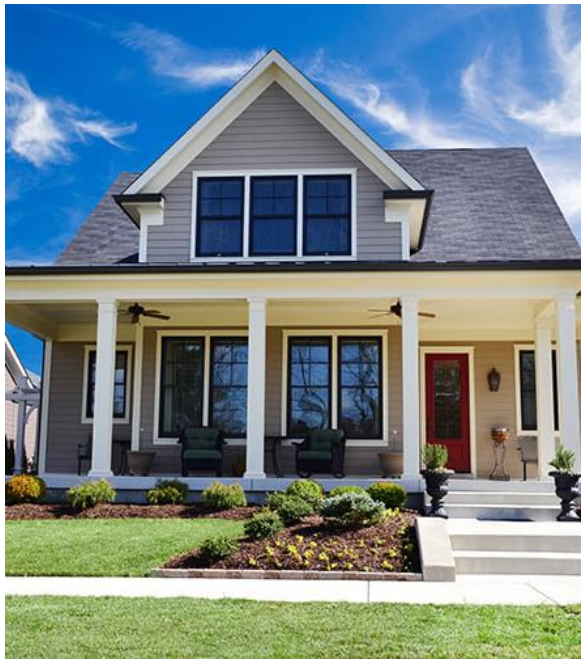
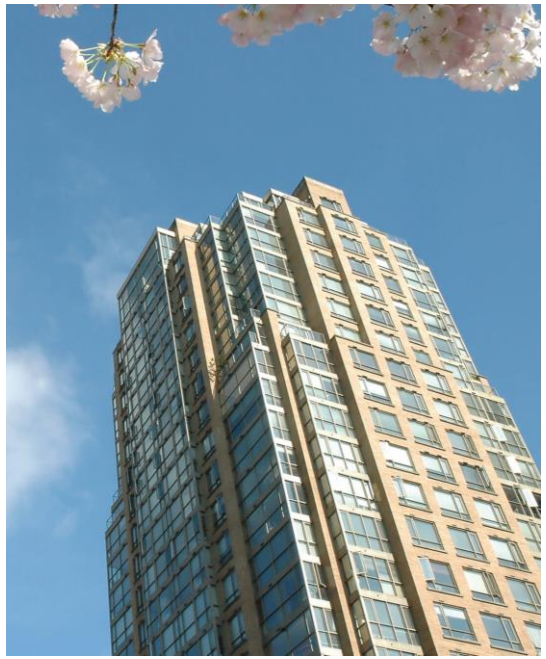
The biggest little label in energy efficiency

7 billion products

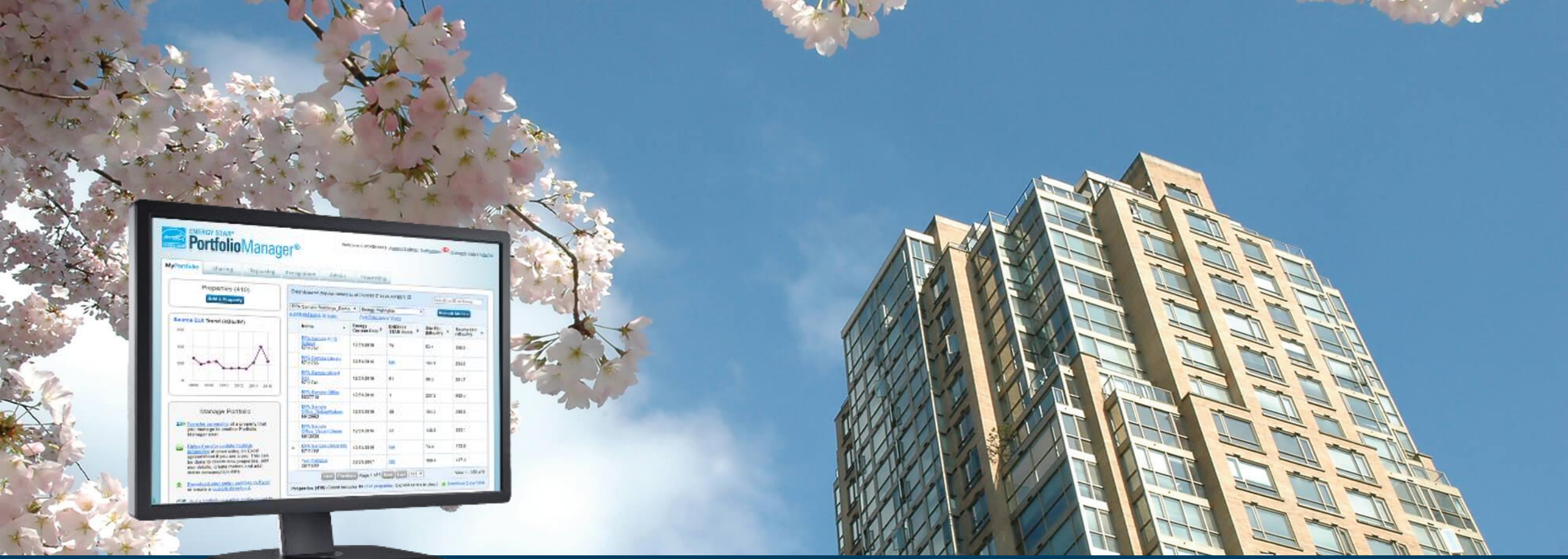


2.3 million new homes



41,000 buildings

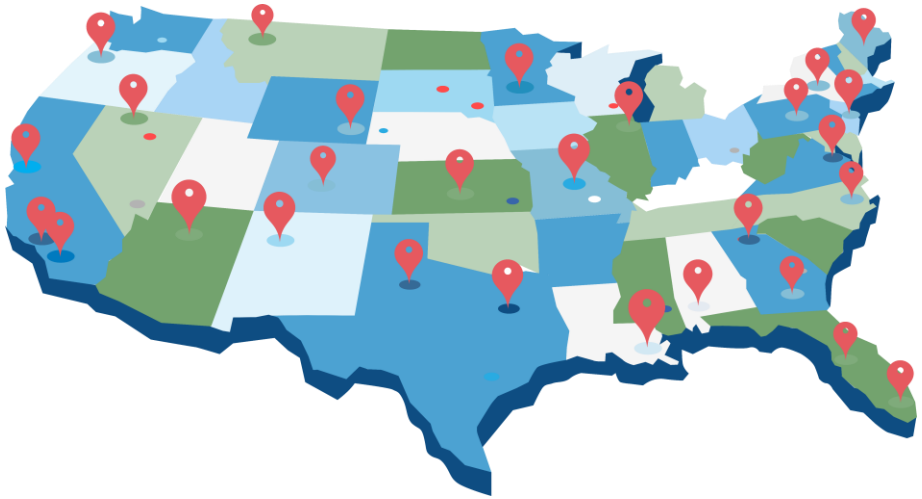
250 industrial plants



- 300,000+ buildings last year
- Nearly 25% of all floorspace
- 1,000 properties added every day
- 3 languages – French, Spanish
- 380 third-party tools
- Dozens of state/local benchmarking policies
- One foreign government (Canada)

Identify Underperformers Through Benchmarking

Compare your building to a national sample of similar buildings.



Compare your own buildings to each other.

ANY building can be benchmarked.

ENERGY STAR

ENERGY STAR® Portfolio Manager®

Management Tool

Assess whole building energy and water consumption, plus waste

Track green power purchase

Share/report data with others

Track changes in energy, water, greenhouse gas emissions, and cost over time

Create custom reports

Apply for ENERGY STAR certification, meet IAQ standards

ENERGY STAR® Portfolio Manager®

Hundreds of metrics, including:

Energy use
Source, site, weather normalized, demand

Water use
Water use intensity, Water Score (for Multifamily)

Waste & Materials
Waste intensity, diversion rate

1-100 ENERGY STAR score

GHG emissions
Indirect, direct, total, avoided

ENERGY STAR

Get Started: Gather the information needed to benchmark

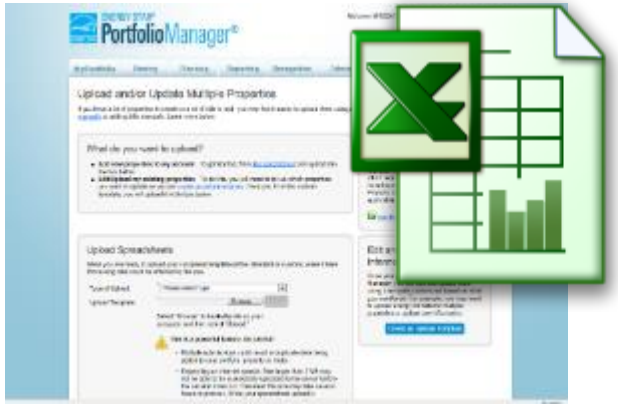
- Property information
  - Building type
  - Name, street address, ZIP/postal code
- Property type data
  - Gross floor area
  - Use details (e.g., workers, operating hours)
- Utility bills
  - From all purchased and on-site generated energy *(required for EUI and/or 1 to 100 ENERGY STAR Score only)*
  - From all purchased and on-site generated water
  - Related to waste management

ENERGY STAR

Choose the best data management method

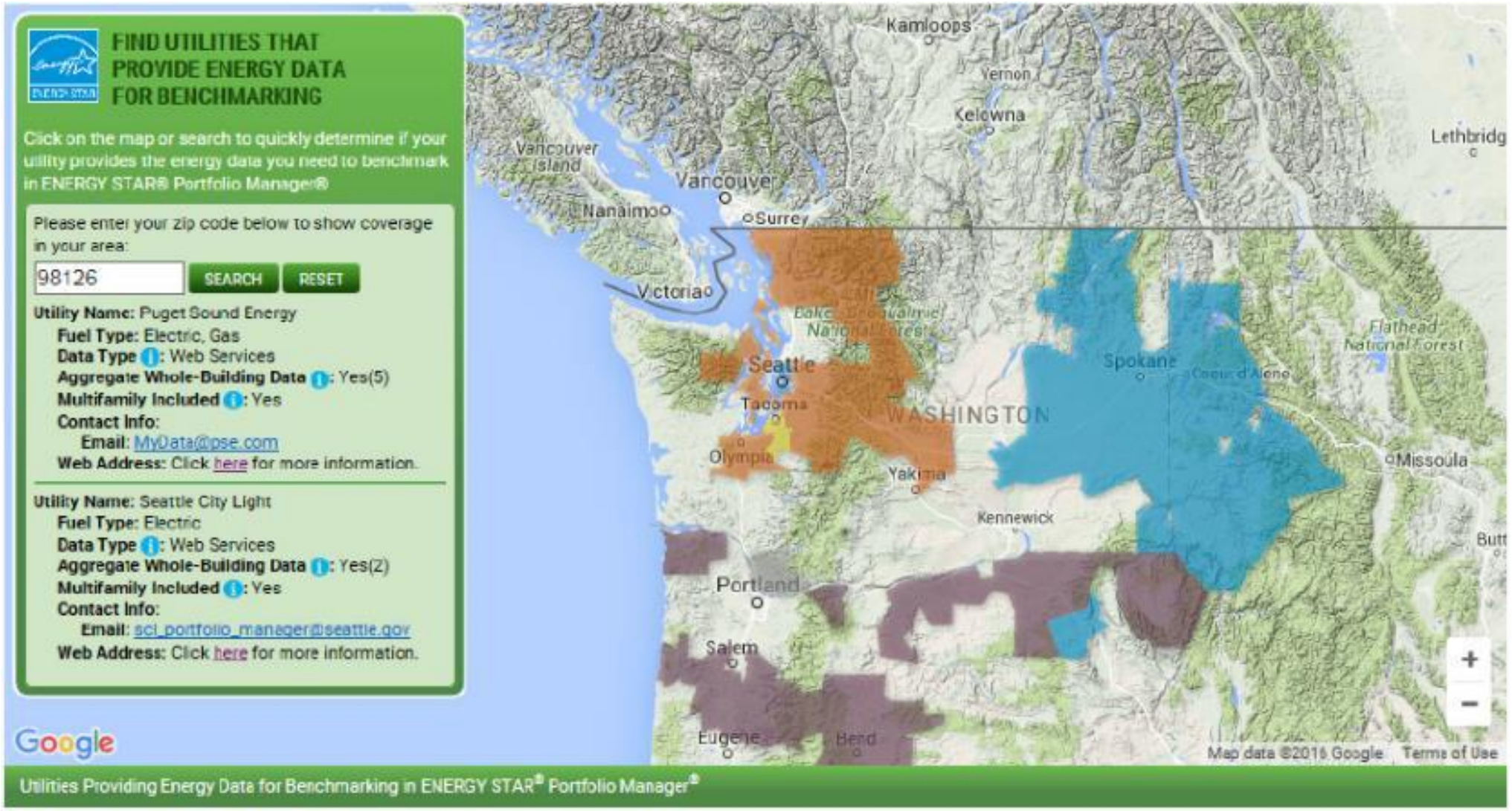
Manual Entry

Spreadsheet Upload



Web Services

Find Utilities that Provide Benchmarking Data



www.energystar.gov/utilitydata

ENERGY STAR

ENERGY STAR®
PortfolioManager®

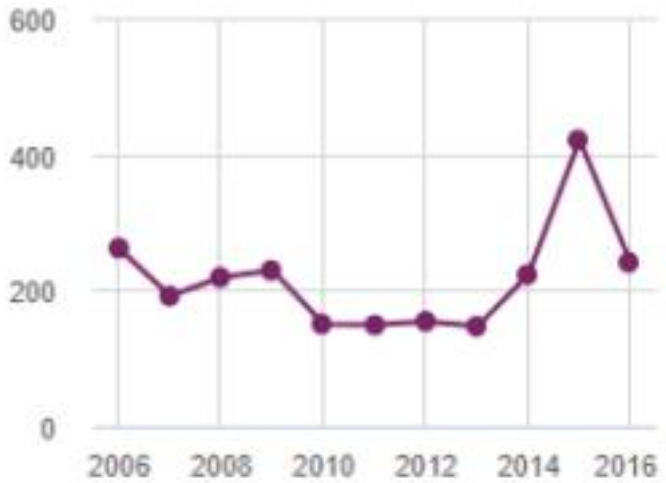
Account Settings | Notifications 158 | Contacts | Help | Sign Out

MyPortfolio | Sharing | Reporting | Recognition | Admin | Processing

Properties (410)

Add a Property

Source EUI Trend (kBtu/ft²)



Dashboard (Metrics current as of 07/20/2017 10:24 AM EDT)

Search by ID or Name

EPA Sample Buildings_Demo | Energy Highlights | Refresh Metrics

Add/Edit/Delete Groups | Add/Edit/Delete Views

Name	Energy Current Date	ENERGY STAR Score	Site EUI (kBtu/ft²)	Source EUI (kBtu/ft²)
EPA Sample K-12 School 5711767	12/31/2016	79	53.1	108.9
EPA Sample Library 5711765	12/31/2016	NA	100.1	234.6
EPA Sample Mixed Use 5711741	12/31/2016	51	98.0	251.7

Translate simple information into dozens of 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)

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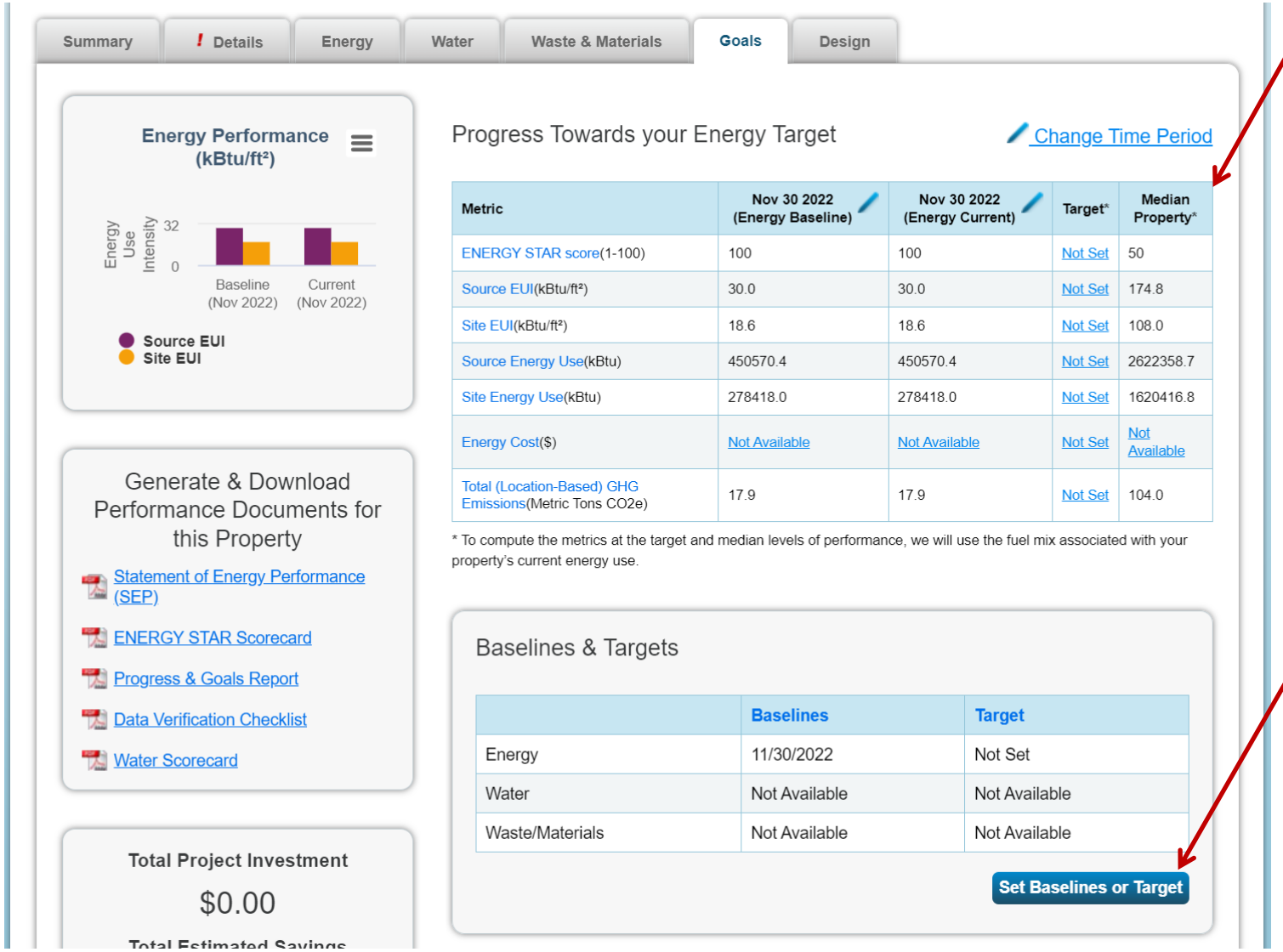
Set goals and track progress



Monitor progress and document savings goals achieved

Track targets at the building or portfolio levels

Set performance targets and baselines

Understand energy cost trends

Portfolio Average Energy Cost Intensity

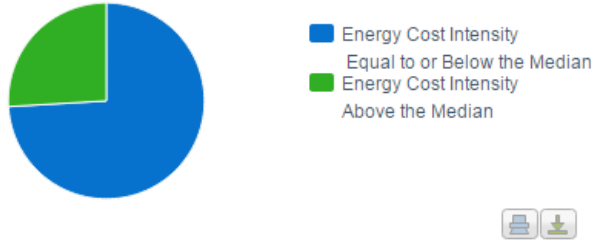
-0.15 Change in Average Energy Cost Intensity

1.39 Current Average Energy Cost Intensity

1.54 Baseline Average Energy Cost Intensity

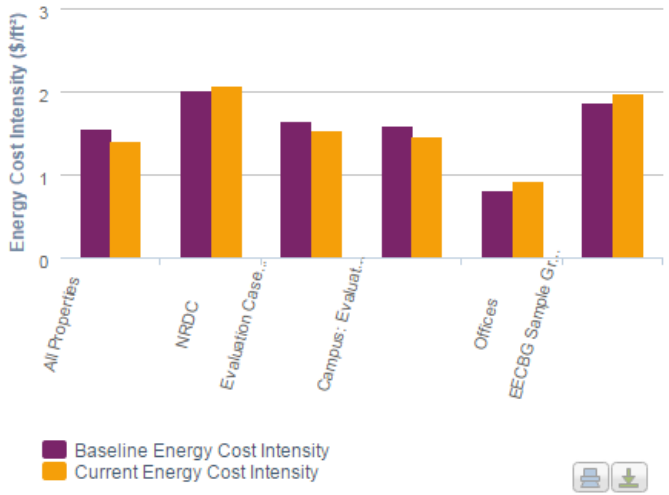
Properties Included: 27

Your Properties Compared to the National Median Energy Cost Intensity



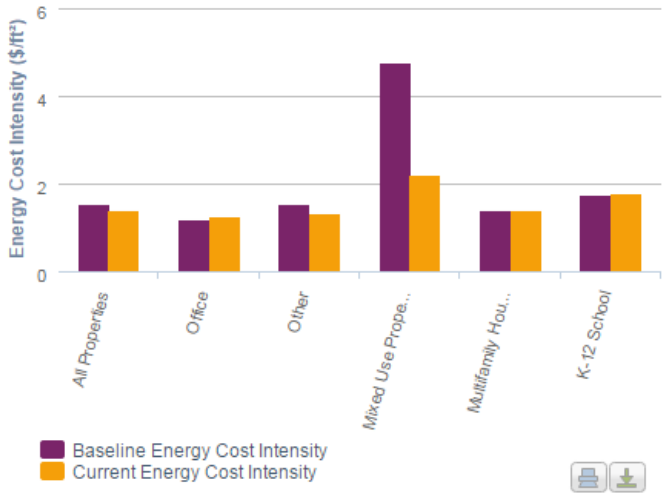
Energy Cost Intensity by Group

Select Groups



Energy Cost Intensity by Property Type

Select Types



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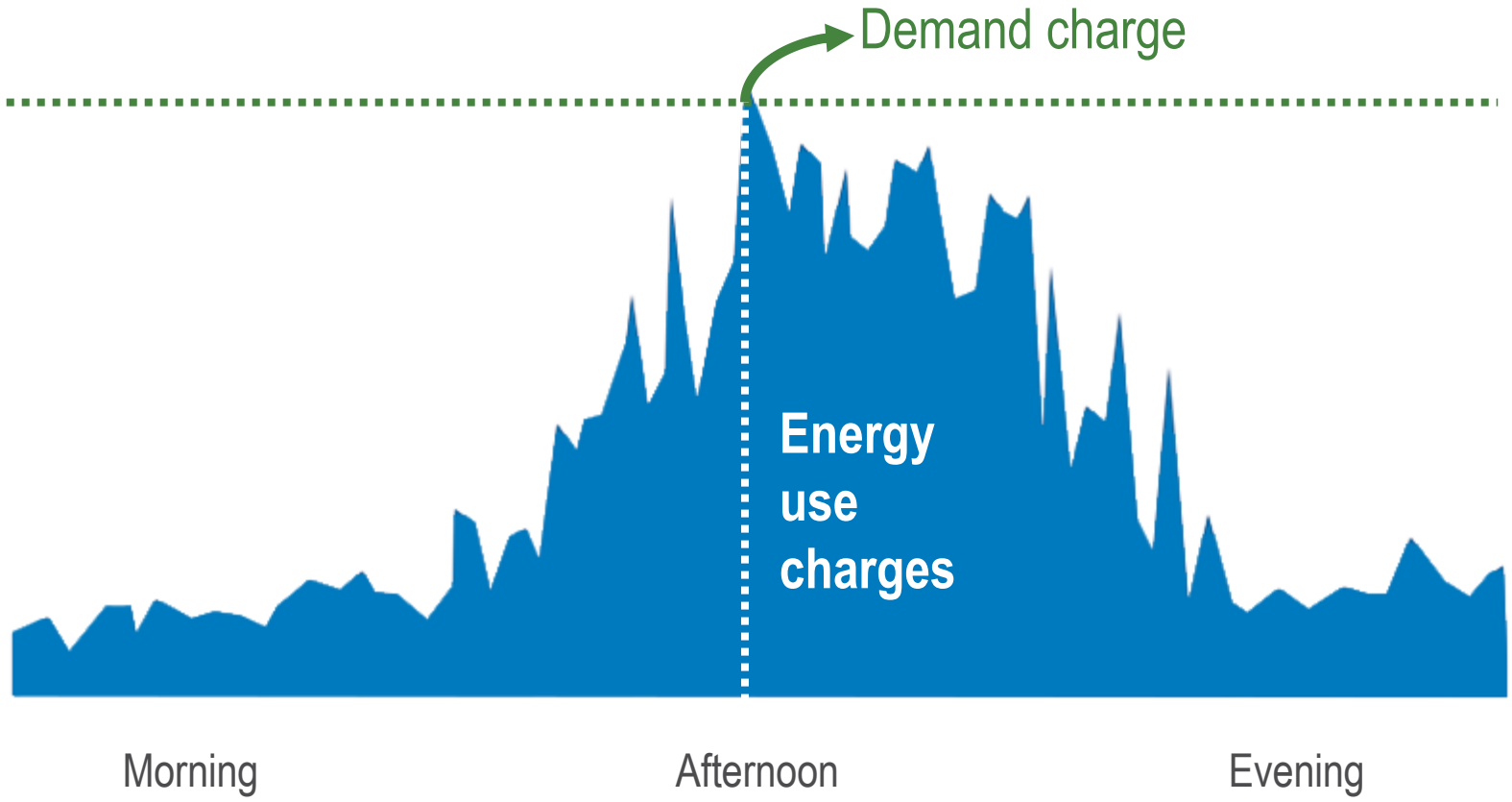
Demand Tracking

See how much energy you're using (and at what rates) so you can try to save on demand charges.



ENERGY STAR

ENERGY STAR certification

- Certification is available to eligible properties with an ENERGY STAR score of 75 or higher.
- Application must be verified by a licensed professional engineer or registered architect.
  - Meet min ASHRAE 62.1 & 55

Property types eligible to earn the ENERGY STAR

Bank Branch

Convenience Stores

Courthouses

Data Centers

Distribution Centers

Financial Offices

Hospitals

Hotels

K-12 Schools

Medical Offices

Multifamily Housing

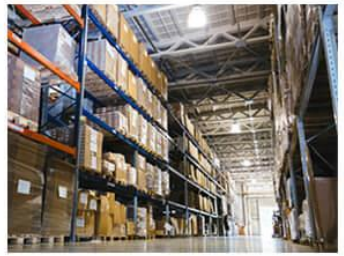
Office Buildings

Retail Stores

Senior Living Communities

Supermarkets

Vehicle Dealerships



Warehouses

Wholesale club/ Supercenters

Worship Facilities

ENERGY STAR

ENERGY STAR Recognition

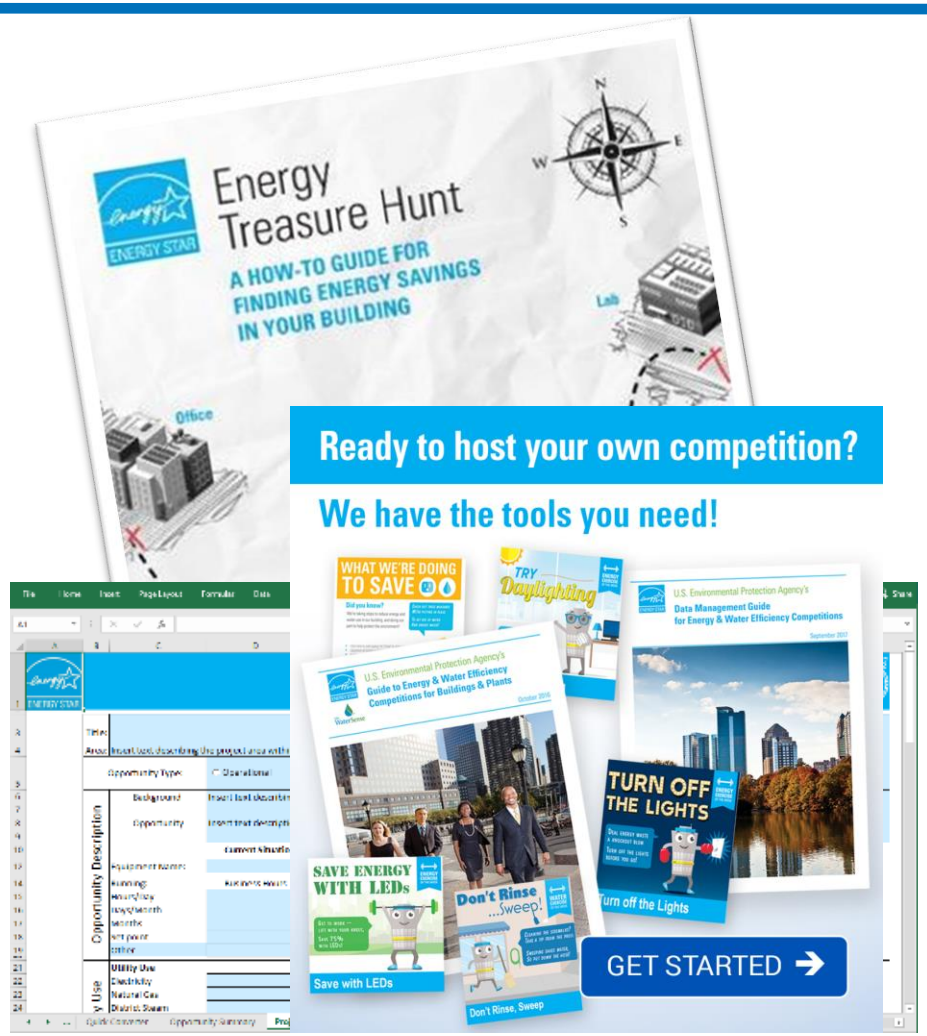
DESIGNED TO EARN THE ENERGY STAR

US EPA ENERGY STAR CHALLENGE FOR INDUSTRY

ENERGY STAR® TenantSpace™

ENERGY STAR

EPA's ENERGY STAR Tools and Resources

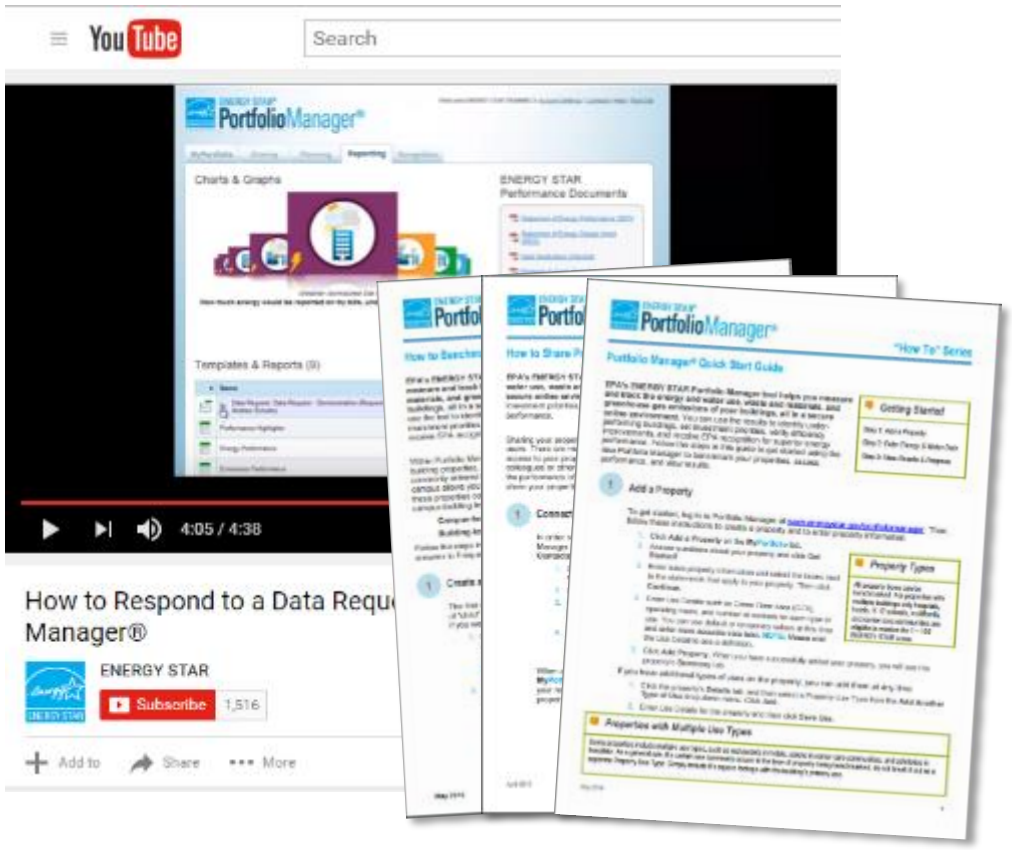


- Portfolio Manager
- Data Explorer
- Cash Flow Opportunity Calculator
- Building Emissions Calculator
- Competition Guide
- Treasure Hunt maps
- ENERGY STAR certification
- Decarbonize your Design
- Online help/training/TA
- ENERGY STAR Product Rebate Finder
- …and more!

energystar.gov

ENERGY STAR

Portfolio Manager Training & Help Desk



- Weekly live webinars
- 3-7 minute training videos on YouTube
- Step-by-step training guides, FAQs, and technical reference documents

ENERGY STAR

Thank You!

Caterina (Katy) Hatcher, hatcher.caterina@epa.gov

energystar.gov

Identifying Improvements:
BETTER

Building Efficiency Targeting Tool for Energy Retrofits (BETTER)

The Building Efficiency Targeting Tool for Energy Retrofits (BETTER) is a software toolkit that enables building operators to quickly and easily **identify the most cost-saving energy efficiency measures** in buildings and portfolios using **readily available building and energy data.**

- With utility billing data and basic building information BETTER conducts an inverse modeling analysis effort to identify energy savings opportunities.
- Uncovers simple **no-/low-cost measures** to immediately cut energy costs 5-10% portfolio-wide.
- Identifies buildings ready to achieve net zero energy.

BETTER

*Since release in June 2021, **~10,200** buildings and **1.6B ft²** across **17 sectors** entered*

"BETTER has helped our school division identify substantial energy cost savings, which can be redirected into the classroom. With its simple data inputs and powerful analytics, we believe BETTER is poised to help hundreds of school districts across the country to improve their energy, financial, and environmental performance."
— Bryan Conrad, Energy Education Coordinator for Prince William County Public Schools

"BETTER offers a possibility of delivering efficiency retrofits in underserved markets faster and cheaper by orders of magnitude."
— Tom Strumolo, Founder, Energy General LLC

How BETTER Works

Simple Inputs → Fast Analysis → Actionable Portfolio and Building Insights

Building Type
BuildingAddress
Gross Floor Area
Gross Floor Area

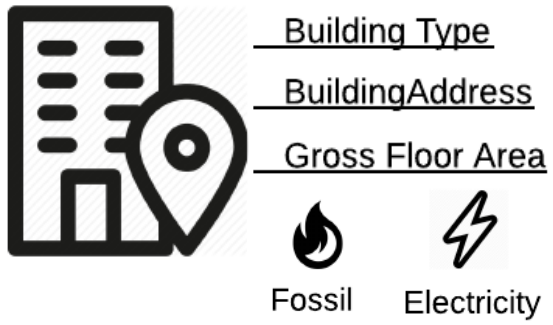
Top Energy Efficiency Recommendations

The energy efficiency recommendations most frequently recommended across your portfolio are:

Reduce Equipment Schedules	(15 out of 26 buildings)
Reduce Lighting Load	(14 out of 26 buildings)
Reduce Plug Loads	(14 out of 26 buildings)
Decrease Heating Setpoints	(8 out of 26 buildings)
Increase Cooling System Efficiency	(7 out of 26 buildings)

How to Use BETTER - Inputs

1. Simple Data Inputs



How to Use BETTER – Fast Analysis

1. Simple Data Inputs

Building Type

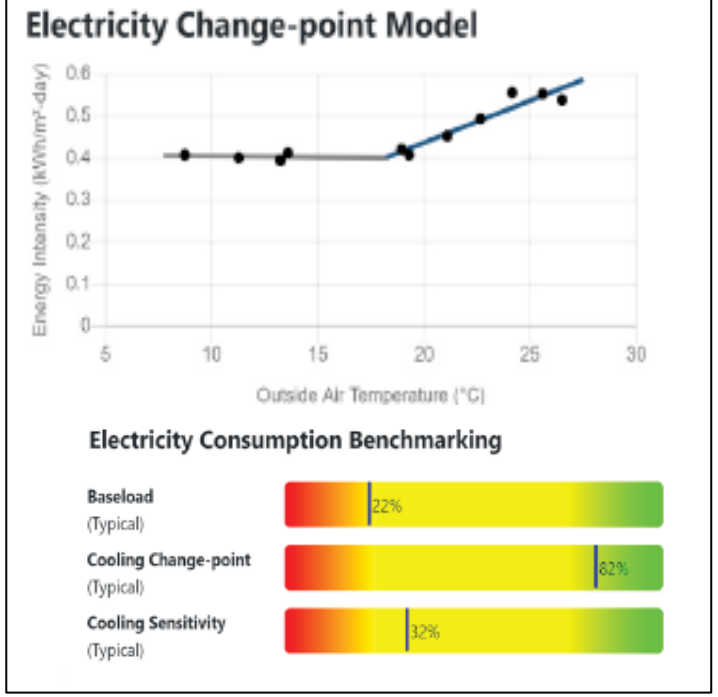
BuildingAddress

Gross Floor Area

Fossil

Electricity

2. Fast Analysis



How to Use BETTER – Actionable Outputs

1. Simple Data Inputs

Building Type

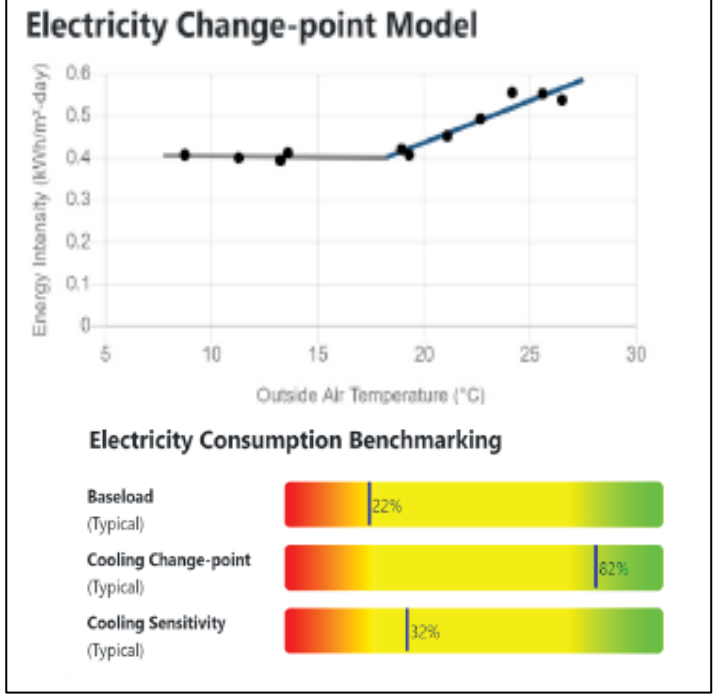
BuildingAddress

Gross Floor Area

Fossil

Electricity

2. Fast Analysis



3. Actionable Outputs

Cost Savings (USD / $):

2,506,975

21.4 %

Reduce Equipment Schedules

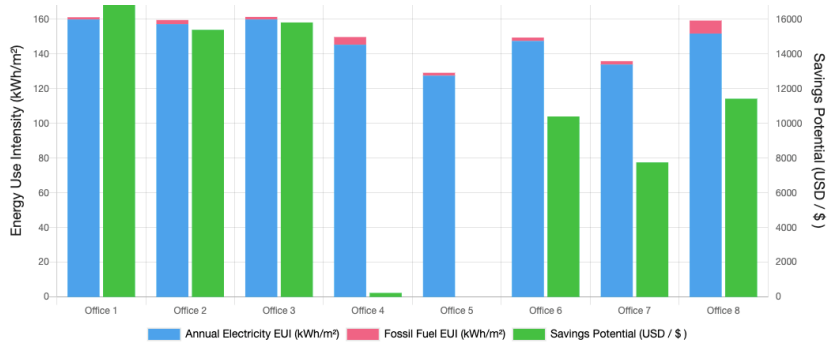
Reduce Lighting Load

Reduce Plug Loads

Decrease Heating Setpoints

Increase Cooling System Efficiency

Building Portfolio Savings Comparison



BETTER

BETTER V1.0 Building Summary Report

Campos, Flynn and Douglas

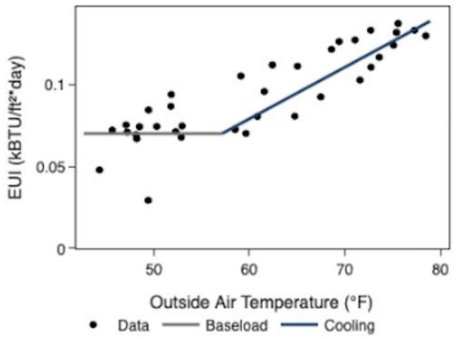
Generated at

Overview

Building Type: **Office**	Gross Floor Area (ft^2): **229,512.7**
Building Location: **3827 West Chapman Avenue, Orange, California**	Closest Weather Station: **Station: 722977-93184 : J. Wayne Apt-Orange Co Apt**
Potential Cost Savings: **$1,109,555** **80.9%**	Potential Energy Savings: **30,195,347 kBTU** **83.1%**
Electricity Energy/Cost Savings: **80.2%**	Fossil Fuel Energy/Cost Savings: **92.8%**
GHG Emissions Reduction ($MTCO_2e$): **1,899.8** **82.7 %**	GHG Emissions Intensity Reduction ($MTCO_2e/ft^2$) **0.008**

Electricity Model: Your consistent baseload is 0.07 kBTU/(ft^2)*day ,or 25.6 kBTU/(ft^2)*yr ,**[Baseload]**. The building's energy consumption start to increase as the outside air temperature goes above 57.1 °F **[Cooling Change-Point]**. Beyond the cooling change-point, the daily energy consumption increases by 115 (kBTU) when outdoor air temperature increases by 1 °F **[Cooling Sensitivity]**.

Electricity Change-point Model (R^2 = 0.83)



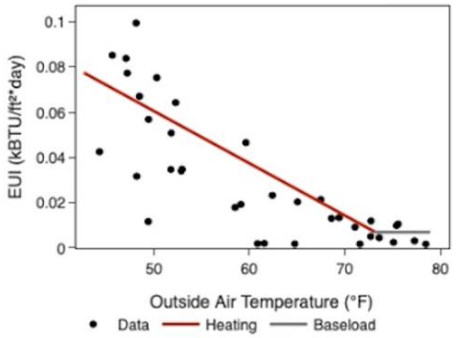
Electricity Consumption Benchmarking

Note: % indicates the percentage of buildings your building is superior to.

Fossil Fuel Model: Your consistent baseload is 0.007 kBTU/(ft^2)*day , or 2.6 kBTU/(ft^2)*yr , **[Baseload]**. The building's energy consumption start to increase as the outside air temperature goes below 73.2 °F **[Heating Change-Point]**. Below the heating change-point, the daily energy consumption increases by 84.5 (kBTU) when outdoor air temperature decreases by 1 °F **[Heating Sensitivity]**.

Fossil Fuel Change-point Model

(R^2 = 0.82)



Fossil Fuel Consumption Benchmarking

Note: % indicates the percentage of buildings your building is superior to.

DEMONSTRATION

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Environmental and Energy Study Institute

Energy Efficiency First: Preparing your Nonprofit for Solar

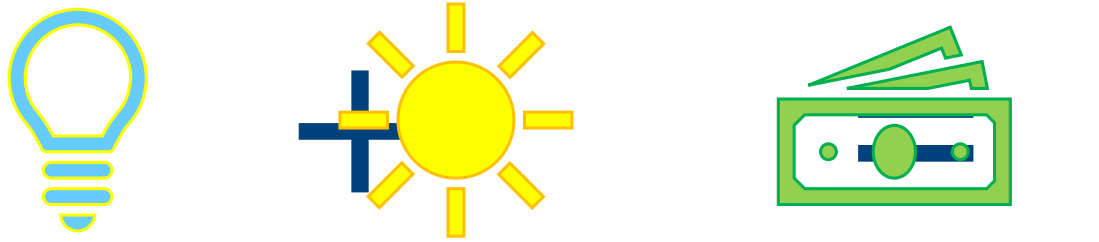
Ideas for Getting Started and Identifying Financing Options

Tuesday, February 27, 2024

Multiple Benefits of Energy Efficiency

Energy efficiency is *always* a good thing:

- Saves (previously wasted) money that can be reinvested to advance the core mission
- Enhances sustainability and productivity of facilities and operations
- Improves indoor air quality by replacing pollutant-generating fossil fuel combustion with cleaner, cost-effective electric appliances and equipment
- Contributes to community health, wellness, and resilience
- Sets a good example of environmental stewardship and community leadership
- Increases readiness for renewable energy, battery storage, and electric vehicles
- Reduces greenhouse gas emissions that contribute to climate change

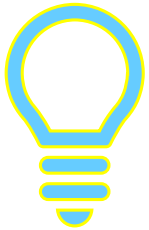


↑ The more you invest in this…

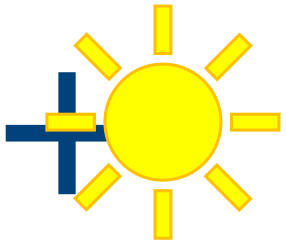
↑ The less you have to spend on this…

↑ The more of this to spend on other good stuff!

Maximizing Your Return on Investment



The more you invest in this…



The less you have to spend on this…

The more you can spend on other good stuff!

Simple Payback = Initial Cost ÷ Annual Savings

Overemphasizing simple payback is a great way to make suboptimal decisions!

Return on Investment = (Total Savings - Total Costs) ÷ Total Costs

Thinking about ROI helps you focus on lowering costs and making the best decisions!

The Secret Word Is _____?

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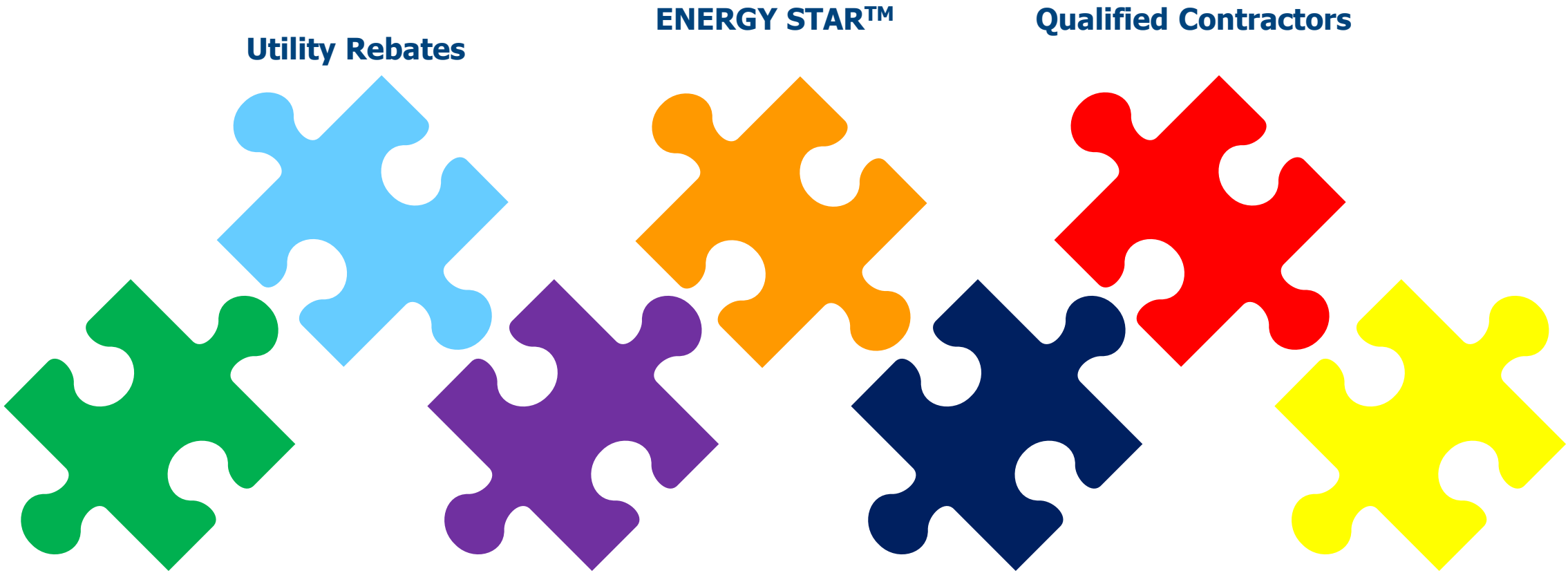
Environmental and Energy Study Institute

The Secret Word Is **LEVERAGE**!

EESI Environmental and Energy Study Institute



To learn all about these topics and more, visit us online at www.eesi.org/energy-efficiency-for-nonprofits!

The Secret Word Is **LEVERAGE**!

ROI= (Total Savings - Total Costs) ÷ Total Costs

All of these sources of leverage will help you lower costs and maximize project ROI!

Finding Accessible and Affordable Financing

EESI Environmental and Energy Study Institute

Identify sources of funding and financing

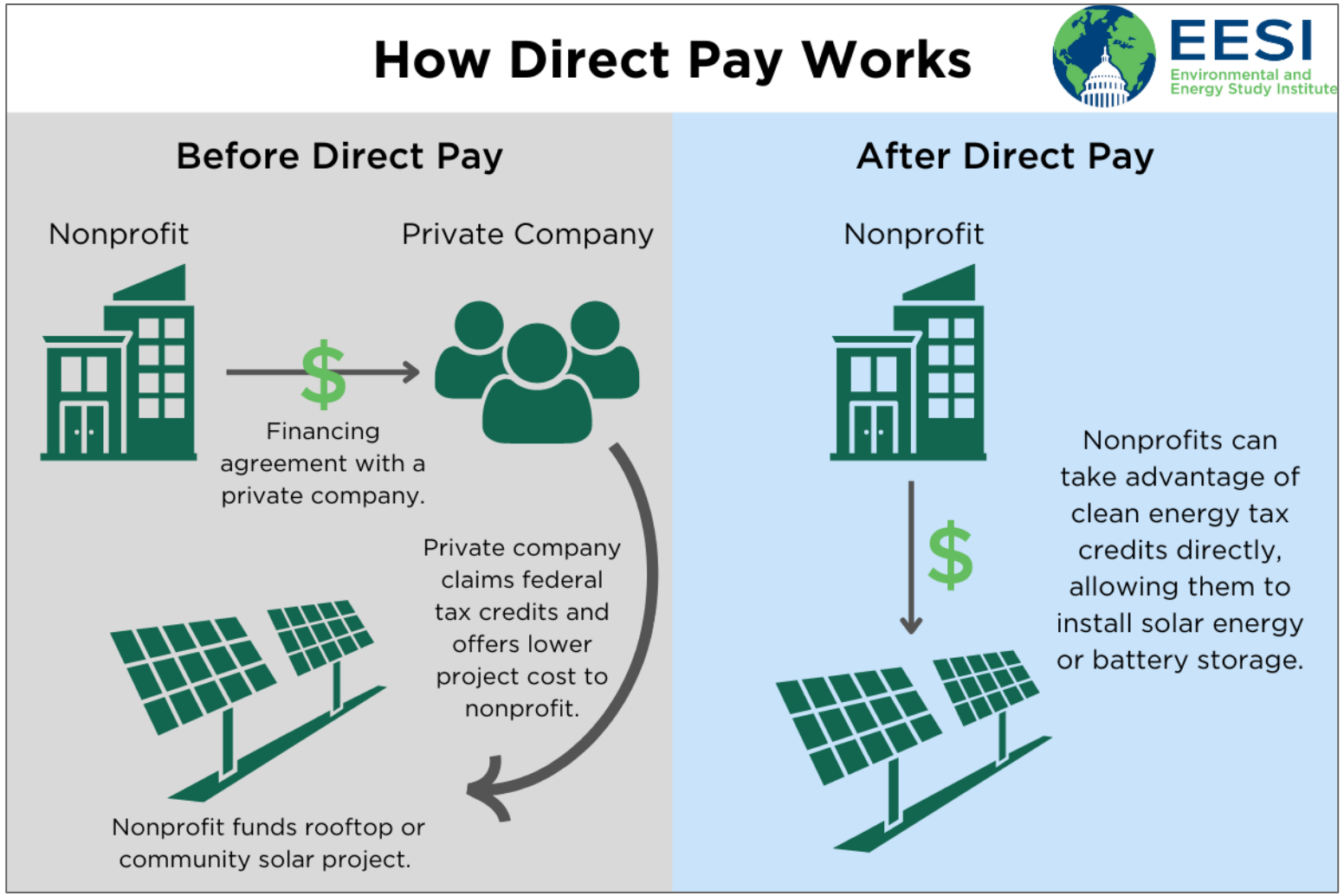
- Contact your utility about rebates and non-financial incentives
- Research financing options offered by your state energy office, green bank, utility, local banks, and community development financial institutions
- Discuss lessons-learned with your peers who have successfully implemented projects

Looking for a great place to get started?
https://betterbuildingssolutioncenter.energy.gov/financing-navigator

Summary of Potential Sources of Financing for Nonprofits

- **On-bill financing** programs allow repayments over time via a monthly utility bill line-item that is generally less the energy savings
- **Green banks** often target programs at underserved borrowers like nonprofits, including those in rural areas or that serve low-and medium-income communities
- Many states and local governments offer **property-assessed clean energy** programs to extend financing through tax bill assessments
- **Community development finance institutions (CDFIs)** and accredited **credit unions** expand access to financing in underserved communities

Direct Pay Is Here!



Clean energy is more accessible for nonprofits than ever before

- Direct pay for clean energy upgrades
  - ✓ 30% rebate for rooftop or community solar, geothermal heat pumps, and battery storage
- Clean Energy Projects in "Energy Communities"
  - ✓ Up to 10 percentage point bonus in clean energy tax credits based on certain criteria

Educational Resources for Nonprofits

EESI Case Studies and Resources for Nonprofits

- Why Energy Efficiency is Important for Nonprofits
- Financing Energy Efficiency Projects for Nonprofits
- Increasing Clean Energy Justice and Resilience for Faith Communities Through Solar Energy
- Presenting the Beneficial Electrification Toolkit!
- Justice40 The Path Forward for the Administration's Environmental Justice Initiative
- Connecticut Church Finds Big Savings Through Energy Efficiency
- To Help Care for the Earth, an Indiana Seminary Turned to Geothermal Energy and Efficiency
- How a Connecticut Theater Put Energy Efficiency in the Spotlight
- Ohio Churches Go Green

EESI Coverage of *Inflation Reduction Act* Incentives and Investments

- Direct Pay: Nonprofits Can Now Benefit from Clean Energy Tax Credits
- The Latest on the Clean Energy Tax Incentives in the *Inflation Reduction Act*
- Clean Energy Tax Credits Get a Boost in New Climate Law

EESI
Environmental and Energy Study Institute

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Thank you.

About EESI

Non-partisan Educational Resources for Policymakers

A bipartisan Congressional caucus founded EESI in 1984 to provide non-partisan information on environmental, energy, and climate policies

Direct Assistance for Equitable and Inclusive Financing Program

In addition to a full portfolio of federal policy work, EESI provides direct assistance to utilities to develop "on-bill financing" programs

Commitment to Diversity, Equity, Inclusion, and Justice

We recognize that systemic barriers impede fair environmental, energy, and climate policies and limit the full participation of Black, Indigenous, people of color, and legacy and frontline communities in decision-making

Sustainable Solutions

Our mission is to advance science-based solutions for climate change, energy, and environmental challenges in order to achieve *our vision of a sustainable, resilient, and equitable world*

Resources

Energy Efficiency

BETTER

BETTER Nonprofit Case Study

Email questions to
- ccszum@lbl.gov
- sydney.applegate@ee.doe.gov

Portfolio Manager

Financing

State and Local Solution Center

Better Buildings Financing Navigator

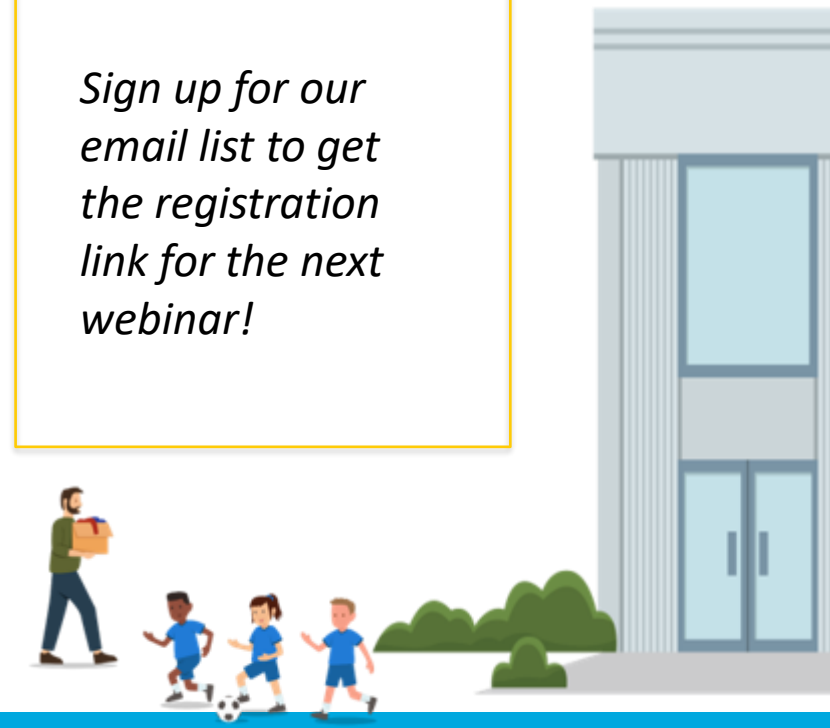
CleanEnergy.gov/DirectPay

Going Solar

PVWatts

RE-OPT

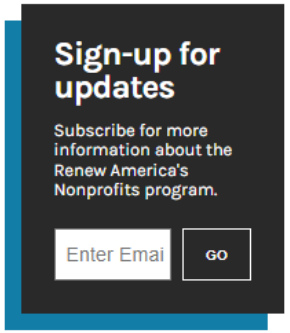
Sign up for our email list to get the registration link for the next webinar!



Contact Us: nonprofits@doe.gov

The DOE Renew America's Nonprofits Program is working to support nonprofits nationwide.

- ❑ **Don't miss our next webinar.** More details and registration link to follow.
- ❑ **Sign up for updates!** Our email list receives notices of funding opportunities, resources, and events applicable to nonprofits.
- ❑ **We want to hear from you.** Give us your ideas or let us know what your needs are here.



Questions?