



ENERGY STAR[®] Recognition for Data Centers

An overview for Metropolitan Washington Council of Governments (MWCOCG)

February 20, 2025

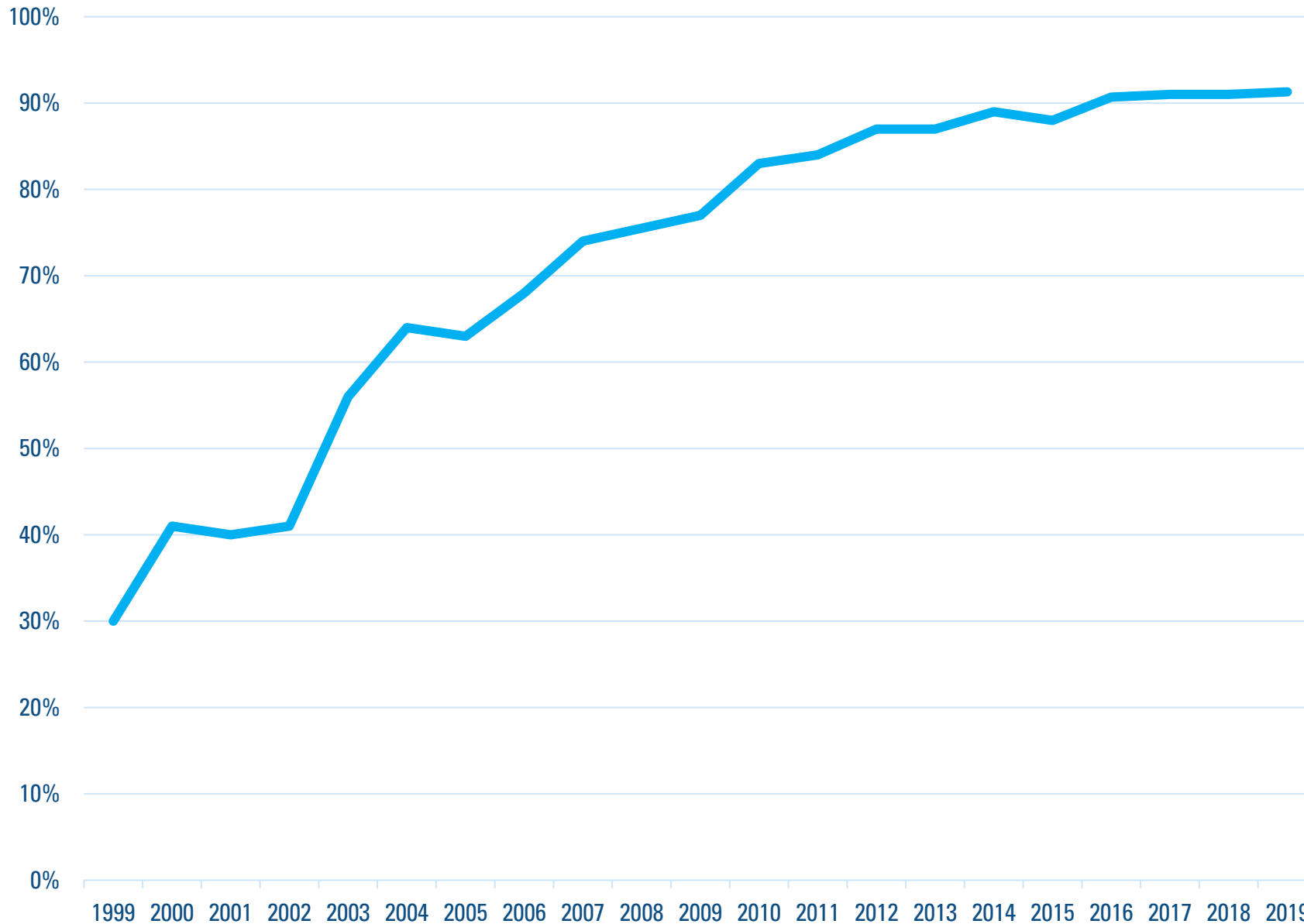
Agenda

- Value of ENERGY STAR
- ENERGY STAR Certification
- Designed to Earn the ENERGY STAR Recognition





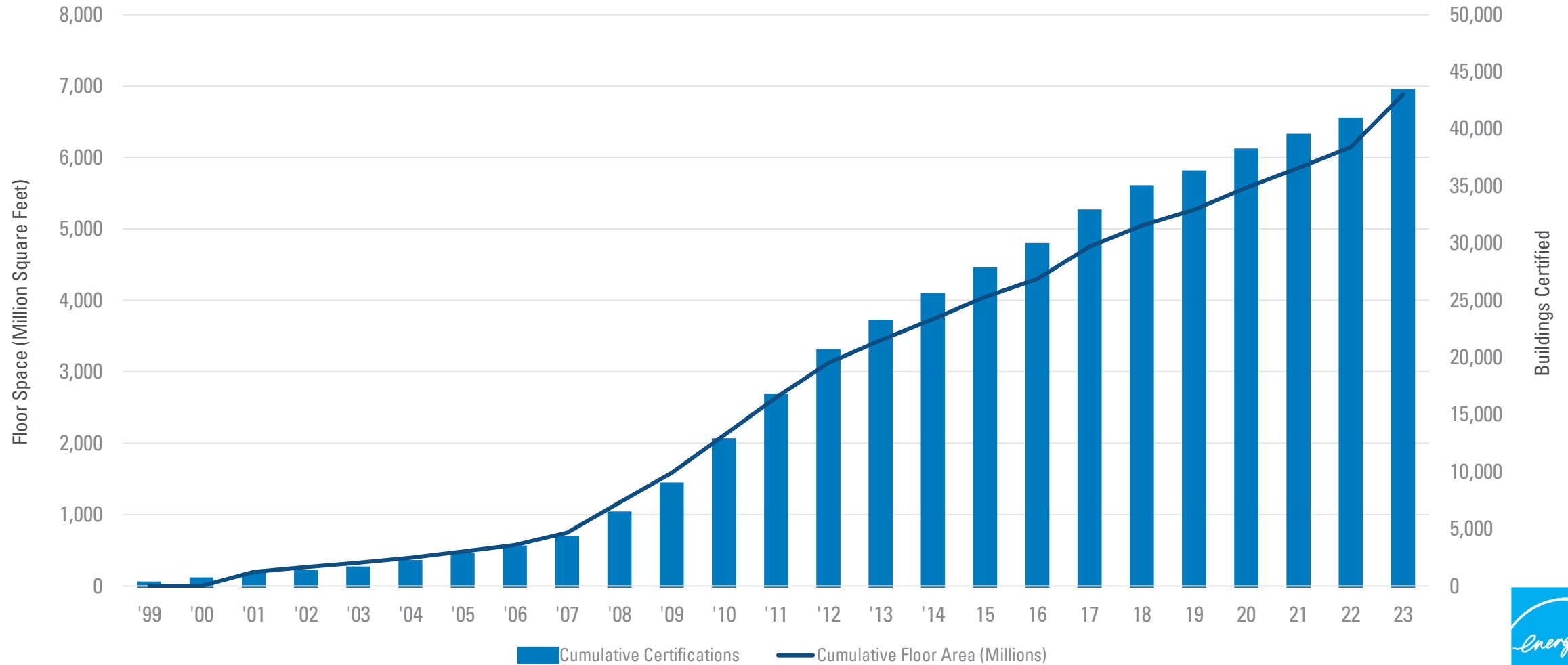
The Value of ENERGY STAR Certification



Recognized
by more than
90%
of Americans



ENERGY STAR Certified Buildings





ENERGY STAR Certified Buildings

- More efficient than 75% of similar buildings
- Use 35% less energy (on average)
- Cause 35% fewer greenhouse gas emissions (on average)



The 1–100 ENERGY STAR Score



One simple number understood by ALL stakeholders.



Developing a 1–100 ENERGY STAR Score

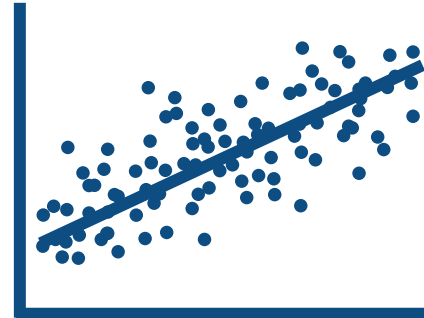
Nationally
representative
survey



Data analysis



Statistical modeling



Comparison between
actual energy data and
the modeled estimate





ENERGY STAR Certification for Data Centers

Overview of the Application Process

1. Benchmark your property in Portfolio Manager[®] and achieve an ENERGY STAR score of 75 or higher.
2. Begin the online application in Portfolio Manager.
3. Have a Licensed Professional (LP) conduct a site visit, verifying the information in your application.
4. Complete the online application in Portfolio Manager, upload a scanned copy of the signed application, and submit the application electronically to EPA.
5. Respond to questions from EPA, if necessary.
6. Receive notification of the application's status.



Data Centers

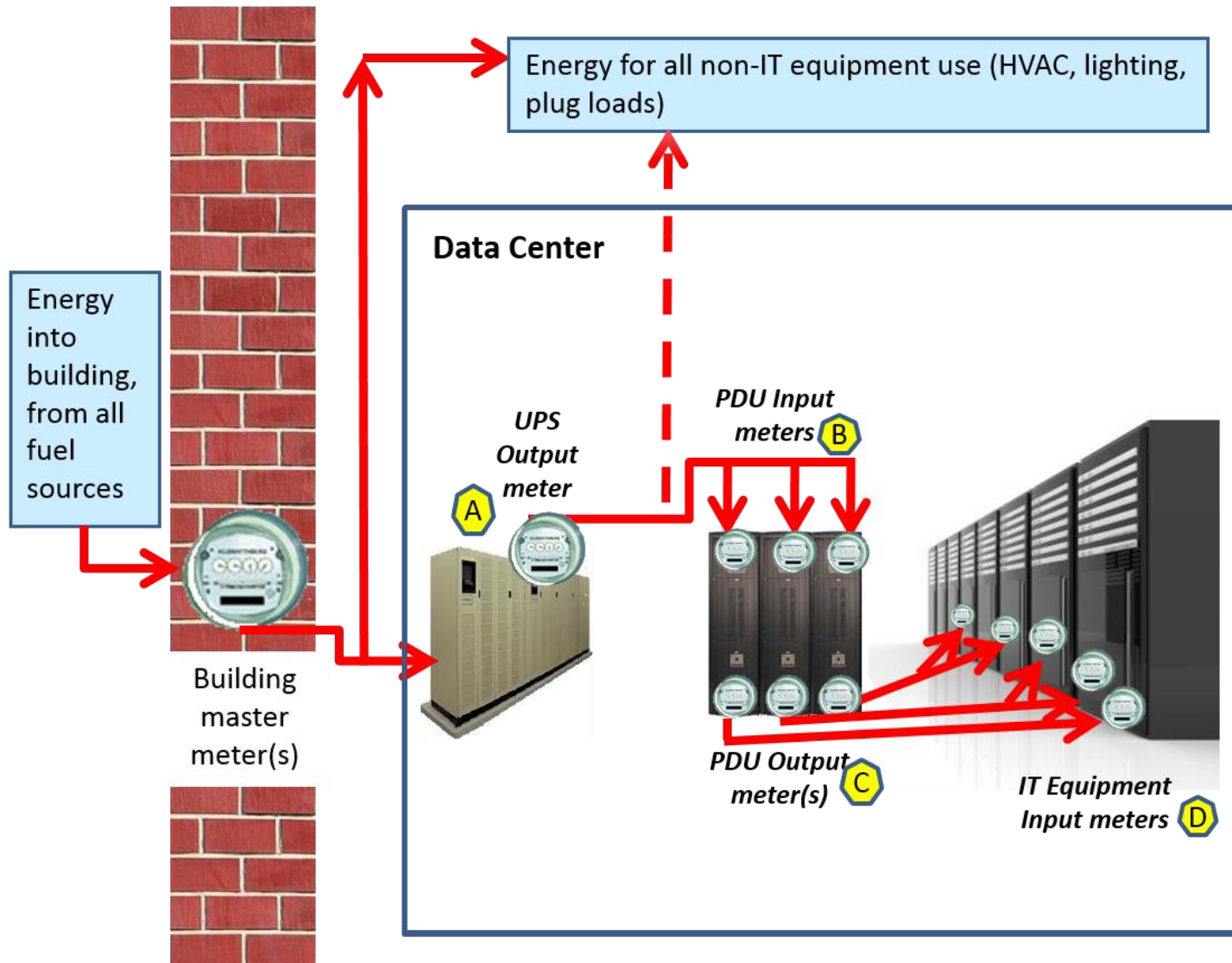
- The “Data Center” Property Use is intended for sophisticated computing and server functions which include:
 - High density computing equipment (such as server racks used for data storage and processing, typically greater than 75kW of demand)
 - Dedicated cooling systems
 - Uninterruptible power supplies (UPS)
 - Raised floors
- It is not intended for:
 - Server closets
 - Computer training areas
 - Telecom closets
 - Print/copy rooms

IT Energy Meter Configuration

- **IT energy must be metered from the output of a UPS;** Two exceptions to this rule where you can provide the IT energy metered at the input to the PDU:
 - If no UPS is present
 - If the UPS supports non-IT loads that are GREATER than 10% of its load (e.g., the HVAC is on the UPS meter)
- It is the responsibility of the LP to verify correct IT energy meter location and kWh values
- If IT energy cannot be metered, Data Center Energy Estimates are available.



Example of Data Center Metering Setup



Efficiency Metric: PUE

Power Usage Effectiveness (PUE) = Total Energy / UPS Energy

- Total Energy includes all fuels (electricity, natural gas, diesel, etc.)
- **Source Energy** is used for all EPA rating models
- It is the most equitable unit of evaluation to compare buildings with a diverse mix of fuel types
- It represents the total amount of raw fuel required to operate the building, and incorporates all transmission, delivery, and production losses

EXAMPLE CALCULATION

As detailed in our Technical Reference for the ENERGY STAR Score, at www.energystar.gov/ENERGYSTARScore, there are five steps to compute a score. The following is a specific example for the score for data center:

1 User enters building data into Portfolio Manager

- 12 months of energy use information for all energy types (annual values, entered in monthly meter entries)
- Physical building information (size, location, etc.) and use details describing building activity (IT energy)

Energy Data	Value
Electricity	15,000,000 kWh
Natural gas	20,000 therms

Property Use Details	Value
Annual IT Energy (kWh)	8,500,000

2 Portfolio Manager computes the actual power usage effectiveness

- Total energy consumption for each fuel is converted from billing units into site energy and source energy
- Source energy values are added across all fuel types

Computing Actual Source Energy

Fuel	Billing Units	Site kBtu Multiplier	Site kBtu	Source kBtu Multiplier	Source kBtu
Electricity	15,000,000 kWh	3.412	51,180,000	2.80	143,304,000
Natural gas	20,000 therms	100	2,000,000	1.05	2,100,000
Total Source Energy (kBtu)					145,404,000

- Portfolio Manager must also convert Annual IT energy (kWh) into Site kBtu, and then from Site kBtu to Source kBtu.

Computing IT Source Energy

Fuel	Billing Units	Site kBtu Multiplier	Site kBtu	Source kBtu Multiplier	Source kBtu
Electricity	8,500,000 kWh	3.412	29,002,000	2.80	81,205,600

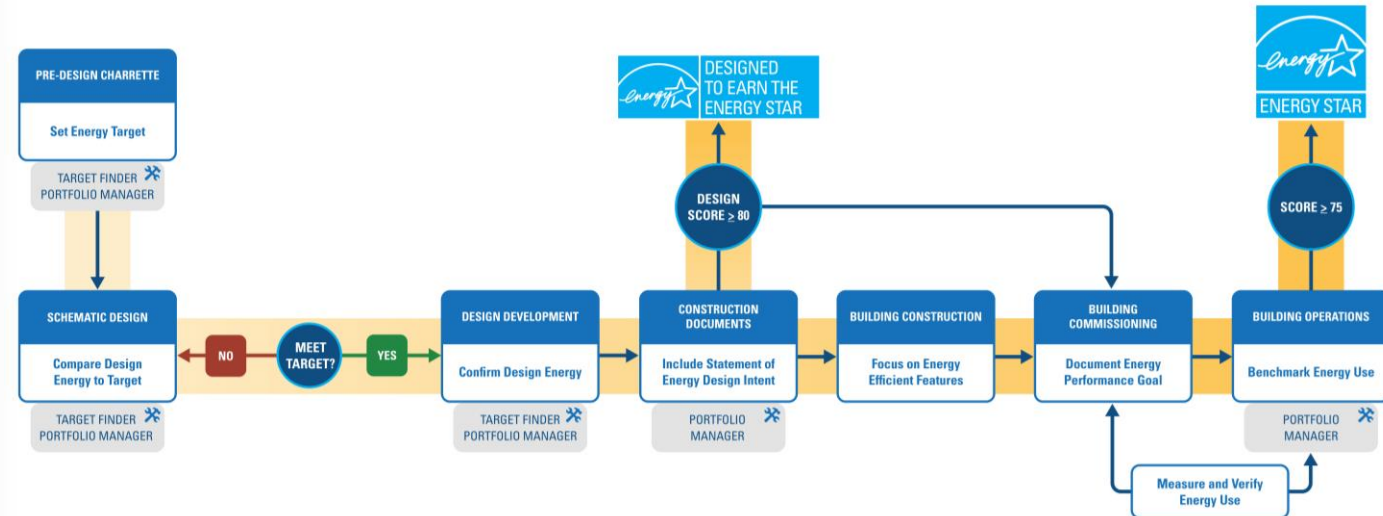
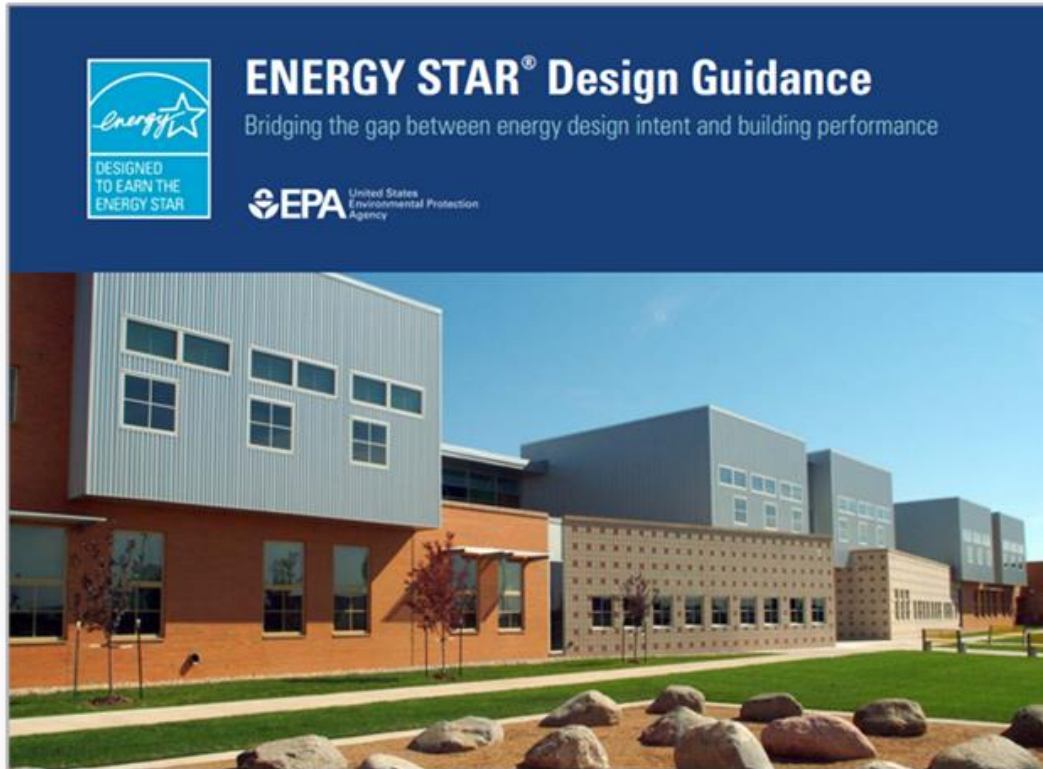
- Total source energy is then divided by Annual IT source energy to determine actual PUE
 - $PUE = 145,404,000 \text{ kBtu} / 81,205,600 \text{ kBtu} = 1.791$





Designed to Earn the
ENERGY STAR Recognition

Designed to Earn the ENERGY STAR Recognition



Estimated Design Energy and Target

- Enter estimated total annual energy use:
 - Must include electricity
 - Include all other fuel sources anticipated for operating building
 - Costs (optional)
- Select Target
 - ENERGY STAR score, (default 80; minimum to receive EPA recognition)
 - Percent better than median EUI

Estimated Design Energy (Optional)

If you have an estimate of how much energy your design property will use annually, enter it below. The tool will calculate your [ENERGY STAR design score](#) (if applicable) and show how your estimated energy use compares to the target and median property. To get the most accurate results, provide estimates for total annual energy for each energy type to be used for operating the building.

☐ I don't have (or don't want to) enter energy estimates.

<input type="checkbox"/>	Energy Type	Units	Estimated Total Annual Energy Use	Energy Rate (\$/unit)
<input checked="" type="checkbox"/>	Electric - Grid	kBtu (thousand Btu)	2,000,000	\$ /

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

Target

You can choose either a Target ENERGY STAR Score or a Target % Better than the Median Source EUI to see how much energy your property would need to be consuming annually to reach your target. If you have estimated your property's annual consumption, you can compare this against your target.

☒ Target ENERGY STAR Score ENERGY STAR Scores are not available for every type of property because of availability of reliable reference information.

(1-100)

☐ Target % Better than Median Source EUI This is calculated based on the Median Source EUI for the property. For example, you might like your property to be 20% better than a typical property of the same type.

[Create Design](#) [Cancel](#)


Apply for Recognition

Your Design Score

99

Congratulations!
Your project is eligible!

[Learn more about Designed to Earn the ENERGY STAR.](#)




[Apply for Designed to Earn the ENERGY STAR recognition](#)


MyPortfolio

SharingReportingRecognitionAdminProcessing

How to Apply for Designed to Earn



123 Test Application, Washington, DC 20009 | [Map It](#)
Portfolio Manager Property ID: 35719110
Year Built: 2025
[Edit](#)



Not currently eligible for
ENERGY STAR
Certification

Change Metric

**Weather Normalized
Source EUI (kBtu/ft²)** [Why not
score?](#)

Current: [N/A](#)

Baseline: [N/A](#)


SummaryDetailsEnergyWaterWaste & MaterialsGoalsDesign

Your Design Score


99

Congratulations!
Your project is eligible!

[Learn more about Designed to Earn the ENERGY STAR.](#)




[Apply for Designed to Earn the ENERGY STAR recognition](#)




Download Your Statement
of Energy Design Intent
(SEDI)


This document provides an overview of
your design and metrics. It is also used for
Designed to Earn the ENERGY STAR
applications.



Your Design's [estimated energy](#) and [Location-Based GHG emissions](#) are
57.9% better than your [Design's target](#).



Your Design's [estimated energy](#) and [Location-Based GHG emissions](#) are
73.4% better than the [median property](#).



You have not entered any information about your property's performance
while in use yet. But, when you do, you can see the difference here between
the actual performance of your property and your design.

Energy Use Intensity (EUI)

200

20

Apply for Designed to Earn the ENERGY STAR



<https://www.energystar.gov/buildings/tools-and-resources/how-apply-designed-earn-energy-star-recognition>



"How To" Series
ENERGY STAR for Commercial Buildings

How to Apply for Designed to Earn the ENERGY STAR Recognition

Architects and building owners can reduce their carbon footprints and energy costs by designing buildings that achieve ENERGY STAR. These buildings are designed to perform in the top 20 percent of similar buildings nationwide. This document provides instructions on how to apply for Designed to Earn the ENERGY STAR recognition for commercial new construction projects.

What is Designed to Earn the ENERGY STAR?

Designed to Earn the ENERGY STAR is awarded to eligible commercial new construction (CNC) or major renovation properties that are in the design or construction phase and the estimated total annual energy use achieves an ENERGY STAR design score of 80 or higher. Commercial new construction projects can display recognition graphics, Fig. 1 on design plans and promotional materials about the specified project.

Fig. 1 – Designed to Earn the ENERGY STAR recognition Graphic



Eligibility Criteria for Commercial New Construction Projects

- Meets all eligibility criteria to receive an ENERGY STAR score; see Appendix A for additional details.
- Receive an ENERGY STAR 1 – 100 score of 80 or higher.
- Create and save design project in Portfolio Manager.

Application Process Overview

1. Enter the design energy and property use details in Portfolio Manager. Then:

Eligible Property Types

- Bank Branch
- Convenience Stores
- Courthouse
- Data Center
- Distribution Center
- Financial Office
- Hospital (General Medical & Surgical)
- Hotel
- K-12 School
- Medical Office Buildings
- Non-Refrigerated
- Warehouse
- Office
- Refrigerated Warehouse
- Retail Store
- Senior Living Community
- Supermarket/Grocery Store
- Vehicle Dealership
- Wholesale Club/ Supercenter
- Worship Facility

Note: Recognition for ENERGY STAR Multifamily New Construction Projects, see details at www.energystar.gov/mfhr

Questions?


If you have any questions about Portfolio Manager
or the ENERGY STAR program, contact us at:

www.energystar.gov/BuildingsHelp



Extra Help

- Visit: www.energystar.gov/buildingshelp
- Guidance on ENERGY STAR certification available at: http://www.energystar.gov/buildings/building_recognition/building_certification
- Additional Portfolio Manager training resources available at: www.energystar.gov/buildings/training
- How To documents (PDFs)

ENERGY STAR®
PortfolioManager®

"How To" Series
ENERGY STAR for Commercial Buildings

How to Apply for ENERGY STAR Certification

Commercial buildings that earn EPA's ENERGY STAR certification perform in the top 25 percent of similar buildings nationwide, as verified by a Licensed Professional (a Professional Engineer or a Registered Architect). On average, ENERGY STAR certified buildings use 35 percent less energy than typical buildings nationwide.

To qualify for the ENERGY STAR, a property must achieve an ENERGY STAR score of 75 or higher on EPA's 1 – 100 scale, which compares a property's energy performance to other properties of that type, and accounts for differences in key physical and operational details. More than a dozen types of commercial buildings are eligible to earn ENERGY STAR certification, ranging from warehouses to K-12 schools to worship facilities.


Certification Eligibility Requirements

The following criteria must be met for a property to be eligible for ENERGY STAR certification:

- ✓ Meet the definition of one of the eligible property types.
- ✓ Receive an ENERGY STAR score of 75 or higher, accounting for all energy use on the entire property.
- ✓ Be located in the United States, U.S. territories, or owned by the U.S. government; or be located in Canada.

Property Types Eligible for ENERGY STAR Certification

- Bank Branch (U.S.)
- Convenience Store (U.S.)
- Courthouse (U.S.)
- Data Center (U.S.)
- Distribution Center (U.S., Canada)
- Financial Office (U.S., Canada)
- Hospital (General Medical & Surgical) (U.S., Canada)
- Hotel (U.S., Canada)
- Ice/Curling Rink (Canada)
- K-12 School (U.S., Canada)
- Library (Canada)
- Medical Office Buildings (U.S., Canada)
- Multifamily Housing (U.S., Canada)
- Museum (Canada)
- Non-Refrigerated Warehouse (U.S., Canada)
- Office (U.S., Canada)
- Refrigerated Warehouse (U.S., Canada)
- Residential Care Facility (Canada)
- Retail Store (U.S., Canada)
- Self-Storage (Canada)
- Senior Living Community (U.S., Canada)
- Supermarket/Grocery Store (U.S., Canada)
- Vehicle Dealership (U.S.)
- Wholesale Club/Supercenter (U.S., Canada)
- Worship Facility (U.S.)

United States
Environmental Protection
Agency

How to Apply for ENERGY STAR Certification 1

Resources

ENERGY STAR Commercial New Construction:

https://www.energystar.gov/buildings/resources_audience/service_product_providers/commercial-new-construction

ENERGY STAR Design Guidance:

<https://www.energystar.gov/buildings/tools-and-resources/energy-star-design-guide>

How To Apply for Designed to Earn the ENERGY STAR:

<https://www.energystar.gov/buildings/tools-and-resources/how-apply-designed-earn-energy-starr-recognition>

Talking about Designed to Earn the ENERGY STAR:

<https://www.energystar.gov/buildings/tools-and-resources/talking-about-designed-earn-energy-star>

Sample press release: Project has achieved Designed to Earn the ENERGY STAR:

<https://www.energystar.gov/buildings/tools-and-resources/sample-press-release-project-has-achieved-designed-earn-energy-star>

Projects and Architects to Achieve Designed to Earn the ENERGY STAR:

<https://www.energystar.gov/buildings/resources-audience/service-product-providers/commercial-new-construction/project-list>

Portfolio Manager training resources:

www.energystar.gov/buildings/training

For questions on Applying for Designed the Earn the ENERGY STAR Recognition, Portfolio Manager and ENERGY STAR program: www.energystar.gov/BuildingsHelp

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