



Updates to ENERGY STAR® Portfolio Manager Metrics

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US EPA ENERGY STAR



ENERGY STAR® PortfolioManager®

Management Tool



Assess whole building energy and water consumption, plus waste



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



Track green power purchase



Create custom reports



Share/report data with others



Apply for ENERGY STAR certification



ENERGY STAR® PortfolioManager®

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

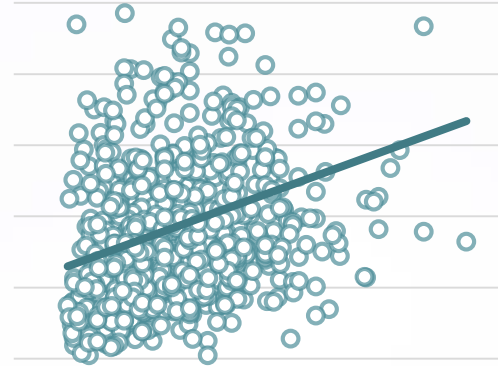


- **Hundreds of thousands of buildings benchmarking**
- **Two dozen local benchmarking policies**
- **One foreign government partnership (Canada)**

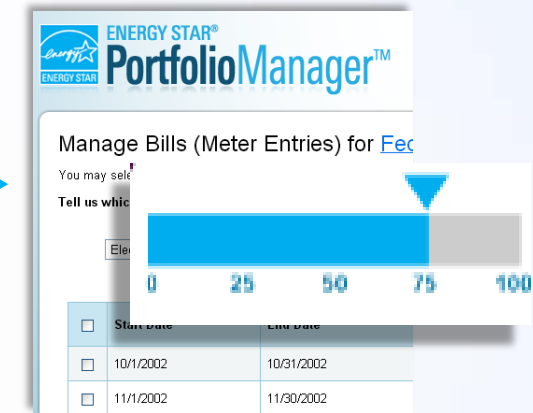
EPA's 1 – 100 ENERGY STAR scores are based on market data



Nationally representative survey
- CBECS gathers data on building characteristics and energy use from thousands of buildings across the U.S.



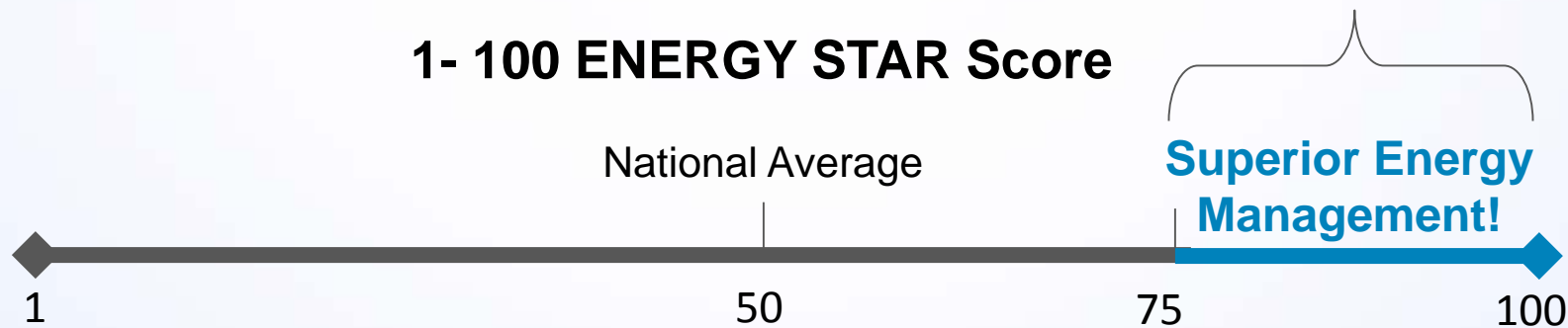
EPA creates a **statistical model** that correlates the energy data of the property use details to identify the key drivers of energy use, accounting for weather variations






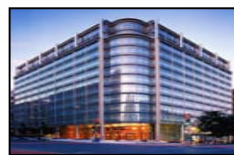






Compares the actual energy data for a building to the modeled estimate to determine where the building ranks relative to its peers on a 1-100 scale

ENERGY STAR certification for commercial buildings

- Building must be in the United States or territories
- Achieve an ENERGY STAR score of 75 or higher
- Apply for ENERGY STAR recognition via Portfolio Manager
- Application must be verified by a licensed professional
- Awarded based on the calendar year of application



Property types with 1-100 ENERGY STAR scores

Score based on CBECS data						
	Bank Branch	Barracks*	Financial Offices	K-12 Schools	Supermarkets	Wholesale club/ Supercenters
						
Score based on other survey data	Medical Offices*	Hotels	Residence Hall/Dormitory*	Office Buildings	Courthouses	Worship Facilities
						
	Retail Stores	Distribution Centers	Warehouses			
						
	Data Centers	Hospitals	Senior Care Communities	Wastewater Treatment Plants*	Multifamily Housing	

*These building types are not eligible for ENERGY STAR certification.

What's getting updated?

- 1-100 ENERGY STAR score models (based on CBECS 2012)
 - **Offices**
 - Financial offices
 - Bank branches
 - Courthouses
 - **K-12 Schools**
 - **Retail**
 - Retail store
 - Warehouse club/ supercenter
 - **Supermarkets**
 - **Hotels**
 - **Warehouses**
 - Refrigerated
 - Non-refrigerated
 - Distribution centers
 - **Houses of Worship**
- National source energy factor
- Data center benchmarking options

Updates to design metrics

- ENERGY STAR Portfolio Manager and Target Finder generate metrics used to evaluate *energy design targets of new construction*, including the 1-100 score.
- Both tools calculate metrics using the same underlying methodology, so design metrics are also getting a refresh.



Future updates to note

- Currently conducting national surveys of US hospitals and medical office buildings
- Efforts supported by industry partners
- Based on the results, we hope to update ENERGY STAR scores for hospitals and medical office buildings, *likely in 2019*
- If survey data is sufficient, we hope to reinstate ENERGY STAR certification for medical office buildings

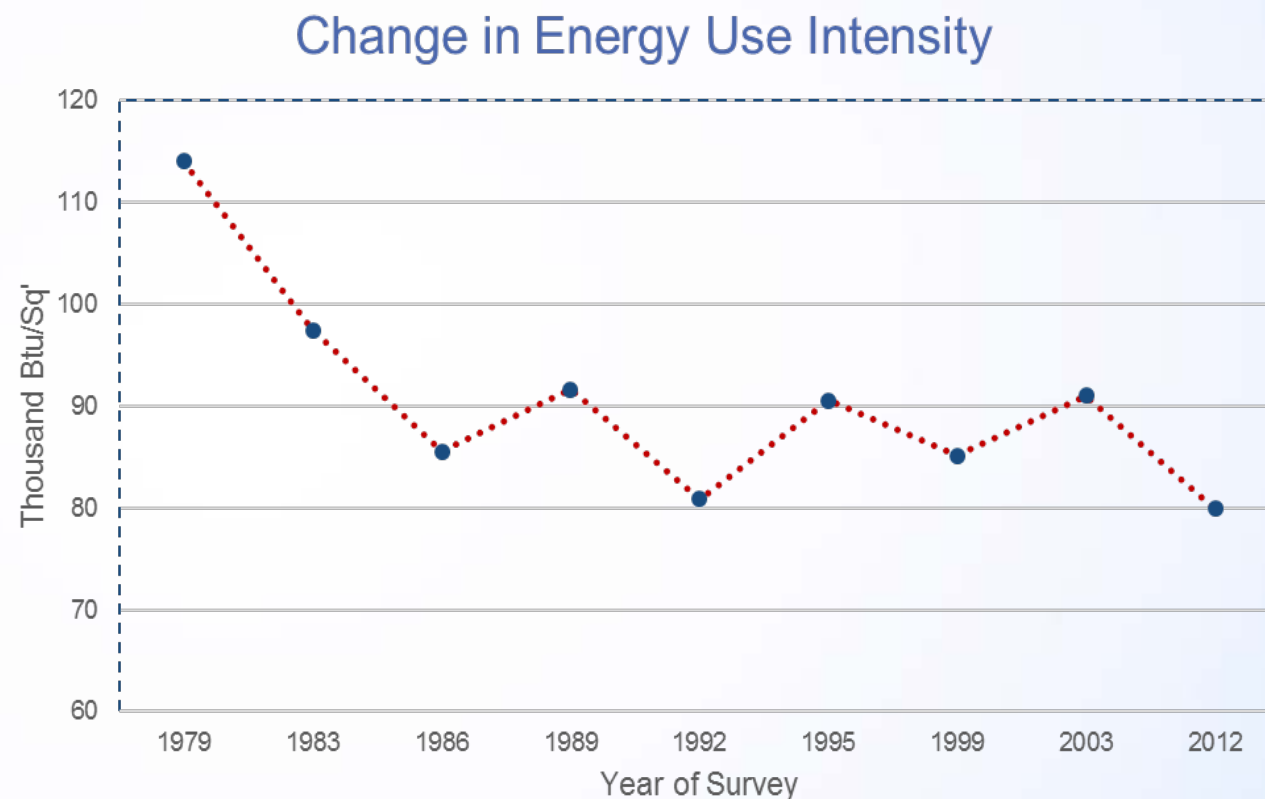


Why are we updating metrics?

- EPA is committed to providing information about building performance based on the most up-to-date market data available.
- When updated data sources become available, we refresh our ENERGY STAR metrics accordingly
- EPA's basic approach is **not** changing
 - Provide a national level benchmark
 - Use source energy to provide equitable scores for all fuel mixes
 - Incorporate variables that capture weather and business activity
 - Exclude from analysis terms about technology, in order to reward technology that saves energy

Overall trend in U.S. building energy use

- Long-term trend has been relatively stable over the last 30 years.
- 2012 survey shows lower aggregate intensity as compared with 2003.
- This is a good trend. It also means that ENERGY STAR scores will shift.



Schedule for metric updates

- **Perform detailed analysis**
 - Started May 2016
 - Hundreds of regression model formulations
 - Explore new variables captured by CBECS
 - Compare CBECS and Portfolio Manager Data
 - Determine appropriate changes to regression models used for score calculations
- **Program metric updates into Portfolio Manager**
 - Ongoing
 - Document software requirements
 - Program code changes to the tool and perform extensive testing
- **Release updated metrics in Portfolio Manager**

→ Target date is August 26, 2018

Impact on historical scores

- When we update the methodology, the new calculations will be applied to all time periods
- Users will maintain the ability to compare performance over time
 - Even if scores go down, users will still see their improvement between the baseline and the current periods
 - Continue to analyze differences that are a result of their own activities, not EPA's methodology

Metrics Summary			
Metric	Dec 2014 (Energy Baseline)	Mar 2017 (Energy Current)	Change
ENERGY STAR Score (1-100)	39	48	9.00 (23.10%)
Source EUI (kBtu/ft ²)	294.9	264.4	-30.50 (-10.30%)
Site EUI (kBtu/ft ²)	118.7	95.8	-22.90 (-19.30%)
Energy Cost (\$)	581,581.78	540,588.06	-40993.72 (-7.00%)
Total GHG Emissions Intensity (kgCO ₂ e/ft ²)	11.3	9.9	-1.40 (-12.40%)
Water Use (All Water Sources) (kgal)	3,373.9	3,228.1	-145.80 (-4.30%)
Total Waste (Disposed and Diverted) (Tons)	879.99	836.75	-43.24 (-4.90%)

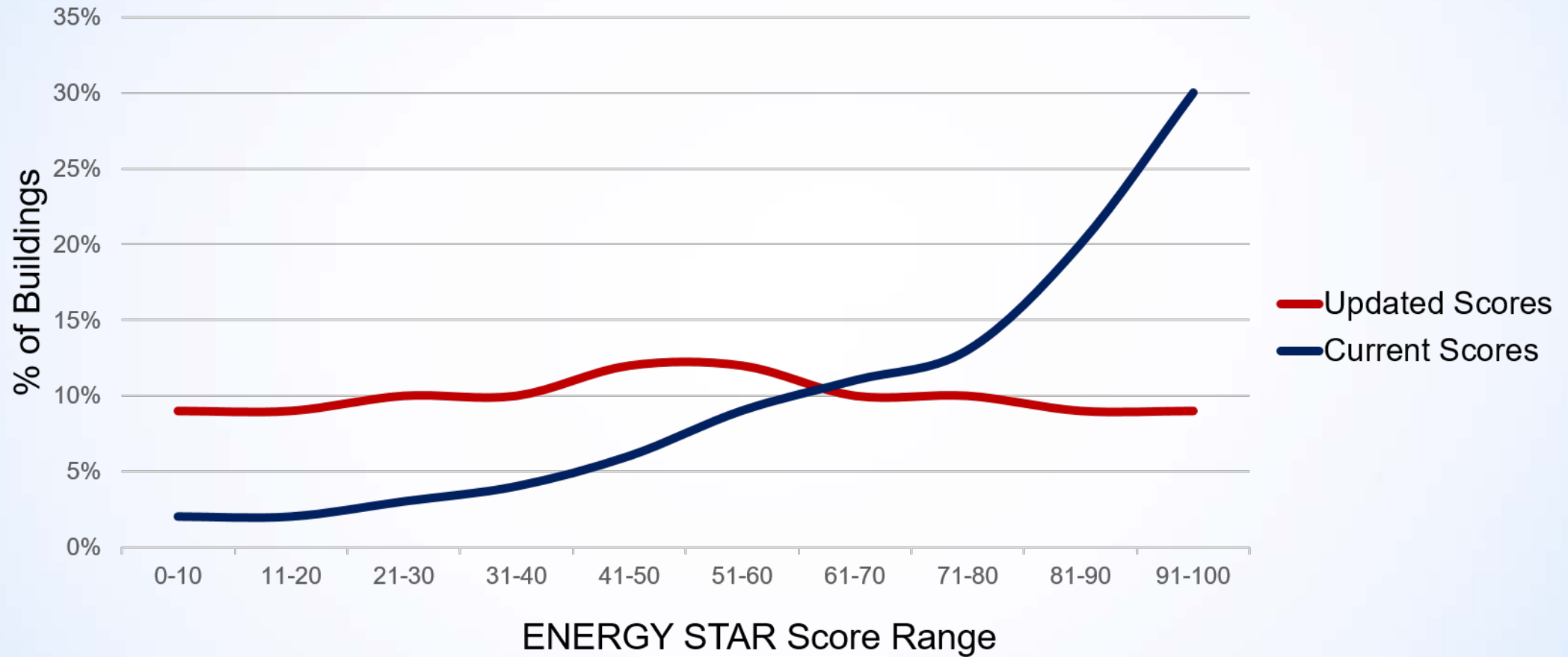
2012 Commercial Buildings Energy Consumption Survey

- **New and improved data**
- Nationally representative survey of U.S. commercial buildings
- Collects energy usage data and building characteristics
- Published in 2016 by the DOE's Energy Information Administration (EIA)
 - More current data than 2003 CBECS used for current score
- Larger sample
 - 29% larger than 2003 (6,720 vs. 5,215 records)
- More buildings and bigger buildings in the U.S.
 - 14% increase in the total number of buildings
 - 22% increase in total building floor space

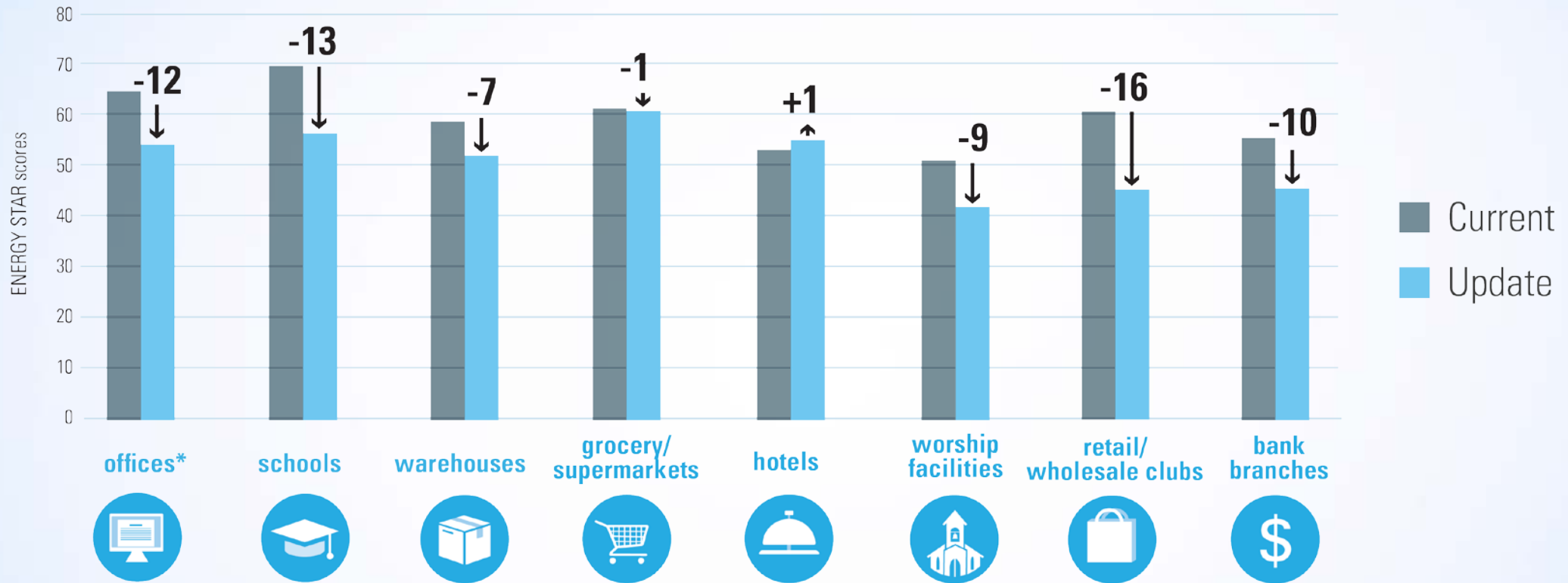
Objectives of analysis and score update

- Leverage the most recent market data
 - This will show us if buildings are becoming more or less efficient
 - If the market is getting more efficient, then it may become harder to qualify for ENERGY STAR
- Re-assess key drivers of energy use
 - Have the relationships between operating characteristics and energy intensity changed in the last 10 years?
 - Are there new variables in CBECS that we should be adjusting for going forward?

ENERGY STAR scores need to be recalibrated over time



Working estimated average ENERGY STAR score change by space type



*office, financial office, courthouse

These are average score changes for these building types. An individual building's score change is likely to differ from the average change shown above.

New use details in Portfolio Manager

- Warehouse
 - Percentage of Gross Floor Area Used for Cold Storage (**New in August**)
 - Percent that can be cooled and Percent that can be heated (**New in August for Refrigerated Warehouse**)
- Worship Facilities
 - Gross Floor Area Used for Food Preparation (**New in August**)
 - Percent that can be cooled and Percent that can be heated (**New in August**)
- K-12 Schools
 - Number of Workers on Main Shift
 - Exists now, but **will be required in August**
- Supermarket
 - Number of Open or Closed Refrigeration/Freezer Units
 - Exists now, but **will be required in August**

Data center energy estimates

Two options for properties with data centers

1. Existing and recommended option

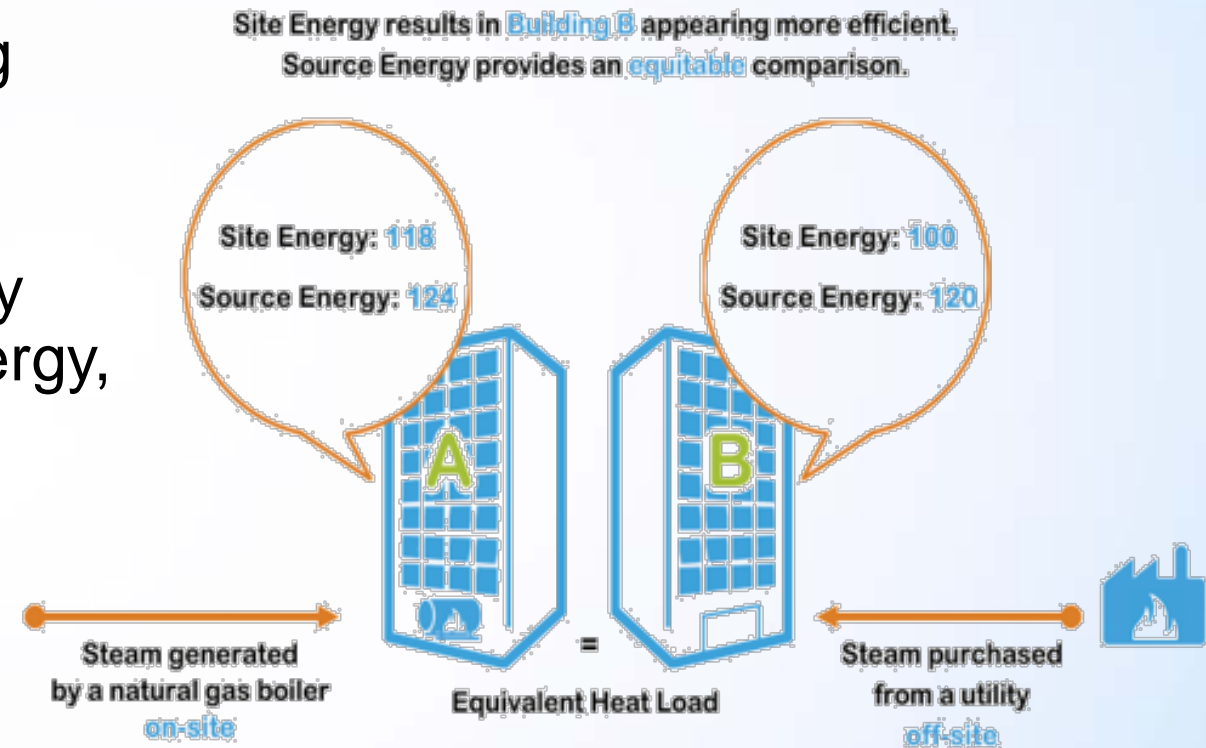
- Measure and enter IT energy
- Industry best practice – Most accurate and complete measure

2. New option: Estimated energy use for data centers

- Coming in August 2018
- Designed for smaller data centers, within another property type, and where it is not practical to measure IT Energy
- Estimate capped at 10% of the building area

Update to source energy factor

- Source energy traces the heat and electricity requirements of the building back to the raw fuel input
 - Level playing field for different fuel types
- Portfolio Manager delivers several key performance indicators in Source Energy,
 - Weather normalized source EUI.
 - ENERGY STAR score
- Incorporates all types of electric generation: Coal, Gas, Wind, Hydro, etc...



Electric Source Factor: grid electricity from renewable energy

- **Past approach**

- Grid electricity generated from renewable energy treated as requiring the same raw fuel inputs as fossil fuel energy.

- **New approach**

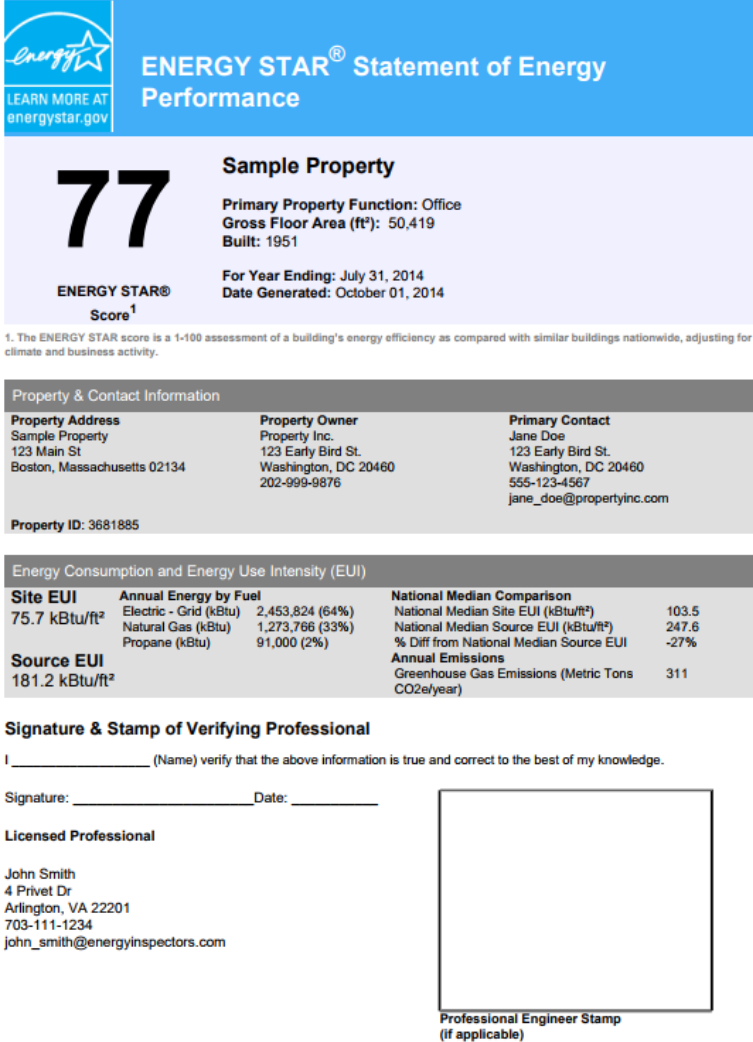
- Offsite renewables lower the national average electric source factor. Electricity generated from renewable energy sources have lower raw fuel inputs than electricity generated from fossil fuels.

- **New electric source factor releasing Aug 2018**

- Dropping from 3.1 to 2.8 (more efficient grid)
- Will impact ENERGY STAR score & all source energy metrics
- ENERGY STAR score could increase or decrease depending on a building's fuel mix ratio
- Changes based on this update alone will be small in magnitude comparatively

Preparing for the updates

- Communicate the metric updates – to colleagues, clients, stakeholders, etc.
- If needed, document pre-update metrics with Portfolio Manager reports (in Reporting Tab)
 - “Performance Highlight” Report (Portfolio level, multi-year)
 - Statement of Energy Performances (Building level, represents 12 month performance period)



ENERGY STAR® Statement of Energy Performance

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ENERGY STAR® Score¹

Sample Property
Primary Property Function: Office
Gross Floor Area (ft²): 50,419
Built: 1951
For Year Ending: July 31, 2014
Date Generated: October 01, 2014

1. The ENERGY STAR score is a 1-100 assessment of a building's energy efficiency as compared with similar buildings nationwide, adjusting for climate and business activity.

Property & Contact Information		
Property Address Sample Property 123 Main St Boston, Massachusetts 02134	Property Owner Property Inc. 123 Early Bird St. Washington, DC 20460 202-999-9876	Primary Contact Jane Doe 123 Early Bird St. Washington, DC 20460 555-123-4567 jane_doe@propertyinc.com
Property ID: 3681885		

Energy Consumption and Energy Use Intensity (EUI)			
Site EUI 75.7 kBtu/ft²	Annual Energy by Fuel	National Median Comparison	
	Electric - Grid (kBtu) 2,453,824 (64%)	National Median Site EUI (kBtu/ft²)	103.5
	Natural Gas (kBtu) 1,273,766 (33%)	National Median Source EUI (kBtu/ft²)	247.6
	Propane (kBtu) 91,000 (2%)	% Diff from National Median Source EUI	-27%
Source EUI 181.2 kBtu/ft²		Annual Emissions	
		Greenhouse Gas Emissions (Metric Tons CO2e/year)	311

Signature & Stamp of Verifying Professional

I _____ (Name) verify that the above information is true and correct to the best of my knowledge.

Signature: _____ Date: _____

Licensed Professional

John Smith
4 Privet Dr
Arlington, VA 22201
703-111-1234
john_smith@energyinspectors.com

Professional Engineer Stamp
(if applicable)

Preparing for the updates

- Document ENERGY STAR pre-update scores for other third-party certification and incentives
- Get ready for the upcoming data center flexibility and possible new required inputs for the ENERGY STAR score
- Tune in to EPA announcements and check out www.energystar.gov/scoreupdates to stay up-to-date.

Preparing for the updates

- Apply for ENERGY STAR certification...especially if your score is close to 75!
- Applications submitted by July 26, 2018 will be assessed using currently available (pre-update) scores.
 - **Applications received before July 26, 2018** and which require no significant follow-up or changes, will be guaranteed to be approved and awarded certification prior to the score changes.
 - **Applications received July 26 – August 26** are not guaranteed to be approved prior to the score changes.
 - **Applications received after August 26** will be evaluated using the updated score models.
- EPA will not rescind prior ENERGY STAR certifications.



New application eligibility flexibility for buildings that earned the ENERGY STAR in 2017


- To aid in this transition to updated scores, EPA is making a one time update to eligibility rules to allow everyone to apply before the score changes are implemented.
- EPA is updating the requirement to wait at least 11 months after the “Year Ending” date of your last approved application.
- **Policy for 2018 Only** – All buildings that earned 2017 ENERGY STAR certification will be eligible to apply for 2018 certification using a “**Year Ending Date**” of **April 30, 2018** or earlier.

2018 Certification “Year Ending Date”

2017 Certification “Year Ending Date”	Next eligible “Year Ending Date”
Sometime in 2016	12/31/2017
1/31/2017	12/31/2017
2/31/2017	1/31/2018
3/31/2017	2/28/2018
4/30/2017	3/31/2018
5/31/2017	4/30/2018
6/30/2017	4/30/2018
7/31/2017	4/30/2018
8/31/2017	4/30/2018
9/30/2017	4/30/2018
10/31/2017	4/30/2018
11/30/2017	4/30/2018
12/31/2017	4/30/2018

Find the “Year Ending Date” on Your Application


OMB No. 2060-0347

 **ENERGY STAR® Application for Certification**
LEARN MORE AT energystar.gov

87
ENERGY STAR®
Score¹

Office - Test Application
Registry Name: Office - Test Application
Property Type: Office
Gross Floor Area (ft²): 128,600
Built: 1992
For Year Ending: 04/30/2016²
Date Application Becomes Ineligible: 08/28/2016

1. The ENERGY STAR Score is based on total source energy. A score of 75 is the minimum to be eligible for the ENERGY STAR.
2. Applications must be submitted to EPA within 120 days of the Year Ending Date. The award is not final until approval is received from EPA.

 Please use the [Licensed Professional's Guide to the ENERGY STAR® for Commercial Buildings](#) for reference in completing this checklist (<http://www.energystar.gov/pguide>).

Property & Contact Information

Property Address	Property Owner	Primary Contact
Office - Test Application 37 Example Street Washington, District of Columbia (D.C.) 20007	ICF International 9300 Lee Highway Fairfax, VA 22031 () -	John Smith 37 Example Street Arlington, VA 22201 703-732-2007 jon.gimber@icfi.com

Property ID: 3625620

1. Review of Whole Property Characteristics

Basic Property Information

1) Property Name for Registry: Office - Test Application ☐ Yes ☐ No
Is this the official name to be displayed in the [Registry of ENERGY STAR Certified Buildings and Plants](#)?
If "No", please specify: _____

2) Property Type: Office ☐ Yes ☐ No
Is this an accurate description of the primary use of this property?

EPA Form 5900-197 Page 1 of 9 Tracking Number: APP-20160727-1-3625620
Generated On: 07/27/2016

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ENERGY STAR®
Score¹

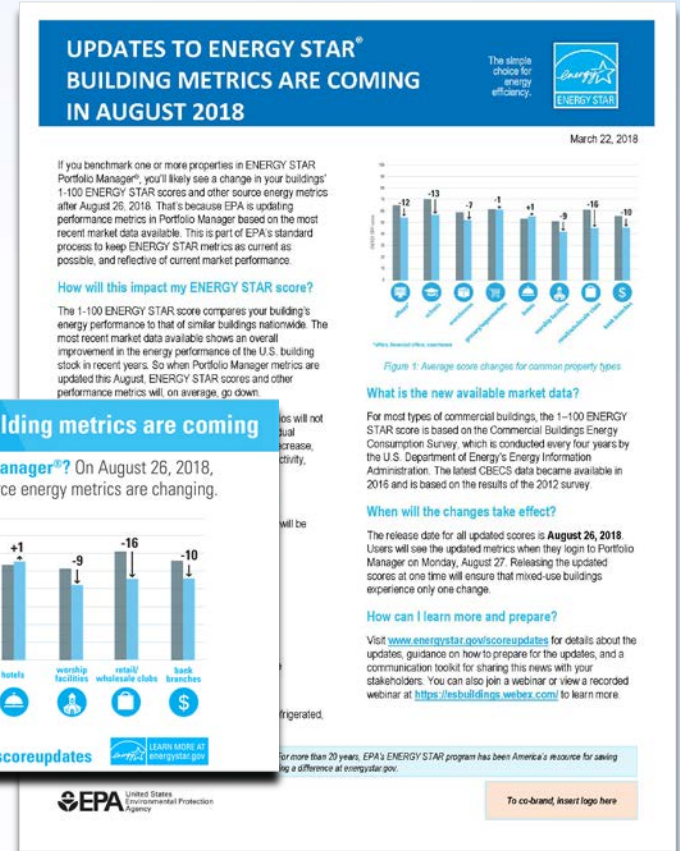
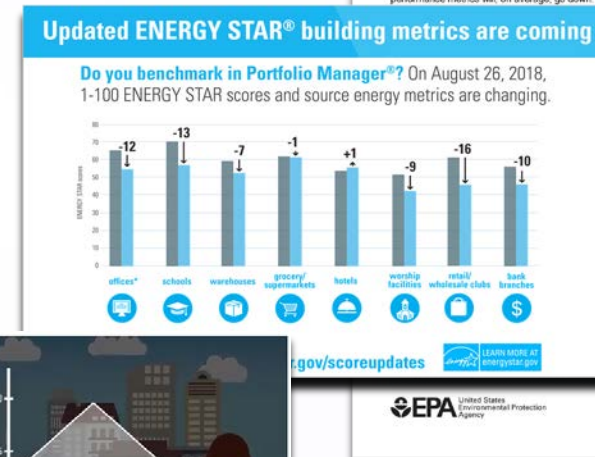
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How EPA is preparing

- Conducting general outreach and sector-specific webinars, ongoing since 2014
- Coordinating with local and state benchmarking policy implementers
- Briefing organizations that offer incentives, recognition, and third party certifications based on ENERGY STAR metrics
- Preparing additional materials for ENERGY STAR partners, including associations, so we can broadly share consistent information leading up to August 2018

Spread the word!

- Communicate metric updates to colleagues, clients, stakeholders, etc. using EPA's communications toolkit:
 - ✓ Co-brandable fact sheet
 - ✓ Shareable graphic
 - ✓ Template social media content
 - ✓ Template training slides
 - ✓ Quick video tutorial about the 1-100 ENERGY STAR score



Download EPA's score update materials at: www.energystar.gov/scoreupdates

Learn more at www.energystar.gov/scoreupdates

- Summary of changes
- Timeline of 2018 metric updates
- Guidance on how to prepare
- Links to FAQs
- Links to register for future EPA informational webinar on 6/20
- Slides from previous webinars
 - Embedded video of recorded first webinar
 - Links to six recorded sector-specific update webinars

Questions and Discussion