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
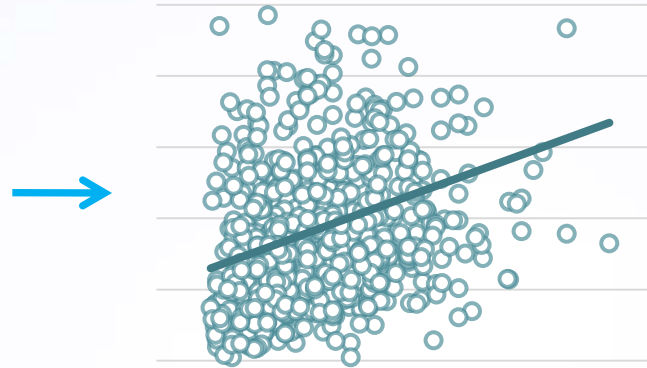Indirect, direct, total, avoided

- **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.
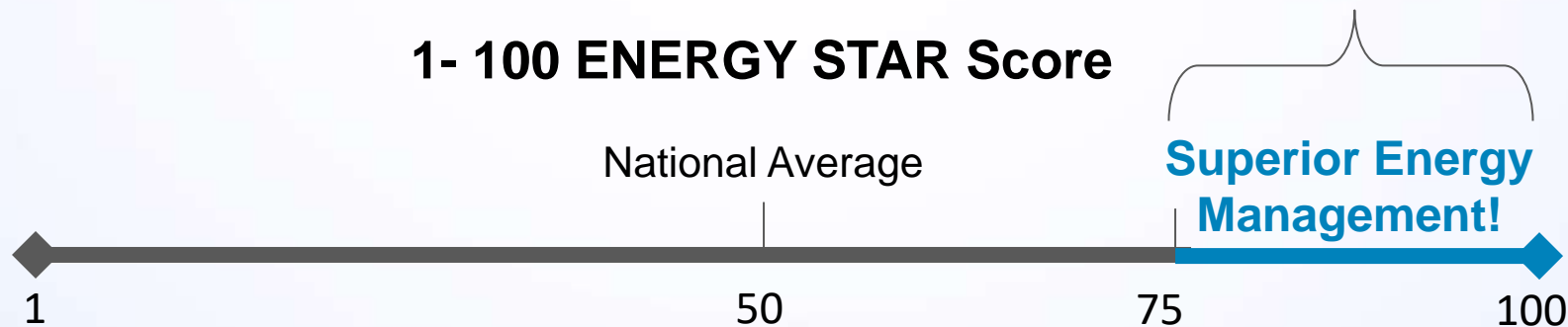
EPA creates a **statistical model** that correlates the energy data of the property use details to identify the key drivers of energy use, accounting for weather variations
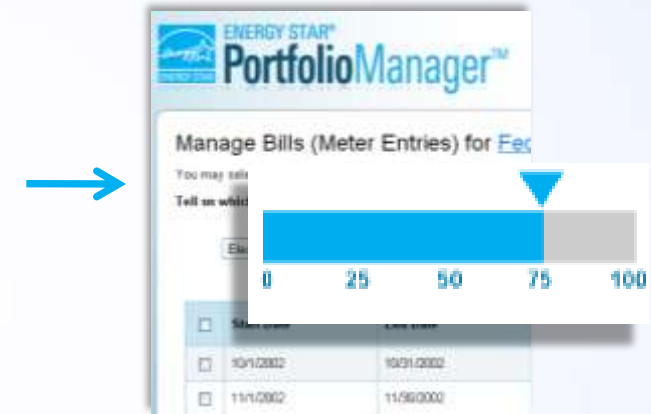
Compares the actual energy data for a building to the modeled estimate to determine where the building ranks relative to its peers on a 1-100 scale

ENERGY STAR certification for commercial buildings

- Building must be in the United States, US territories, or Canada (Canadian certification launched March 2018!)

- 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

1- 100 ENERGY STAR Score

National Average

Superior Energy Management!

1   50   75   100

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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

Medical Offices*   Hotels   Residence Hall/Dormitory*   Office Buildings   Courthouses   Worship Facilities

Retail Stores   Distribution Centers   Warehouses

Score based on other survey data

Data Centers   Hospitals   Senior Care Communities   Wastewater Treatment Plants*   Multifamily Housing

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

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What's getting updated? Scheduled for August 26, 2018

- 1-100 ENERGY STAR score models for US buildings (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

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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

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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/ft²)	294.9	264.4	-30.50 (-10.30%)
Site EUI (kBtu/ft²)	118.7	95.8	-22.90 (-19.30%)
Energy Cost ($)	581,581.78	540,588.06	-40993.72 (-7.00%)
Total GHG Emissions Intensity (kgCO2e/ft²)	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%)

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.

Change in Energy Use Intensity

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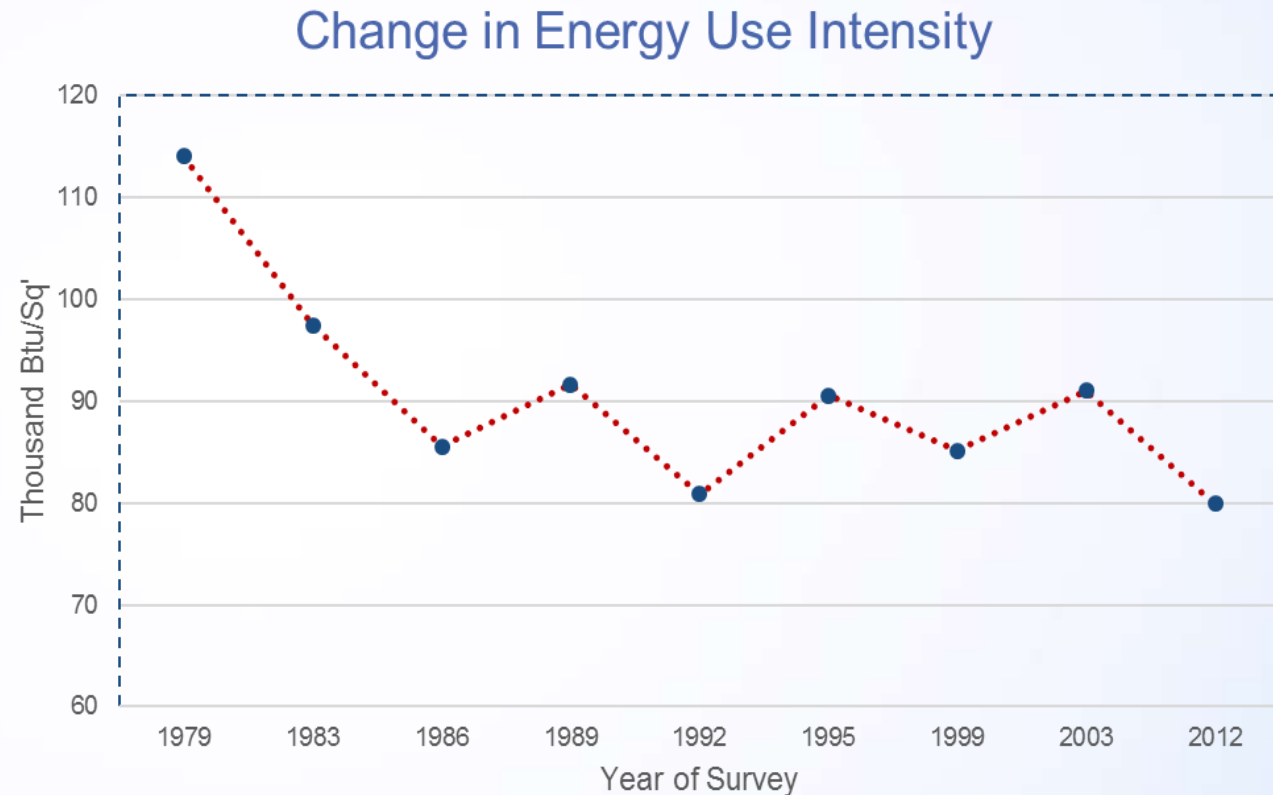
Objectives of analysis and score update

- 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?

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ENERGY STAR scores need to be recalibrated over time
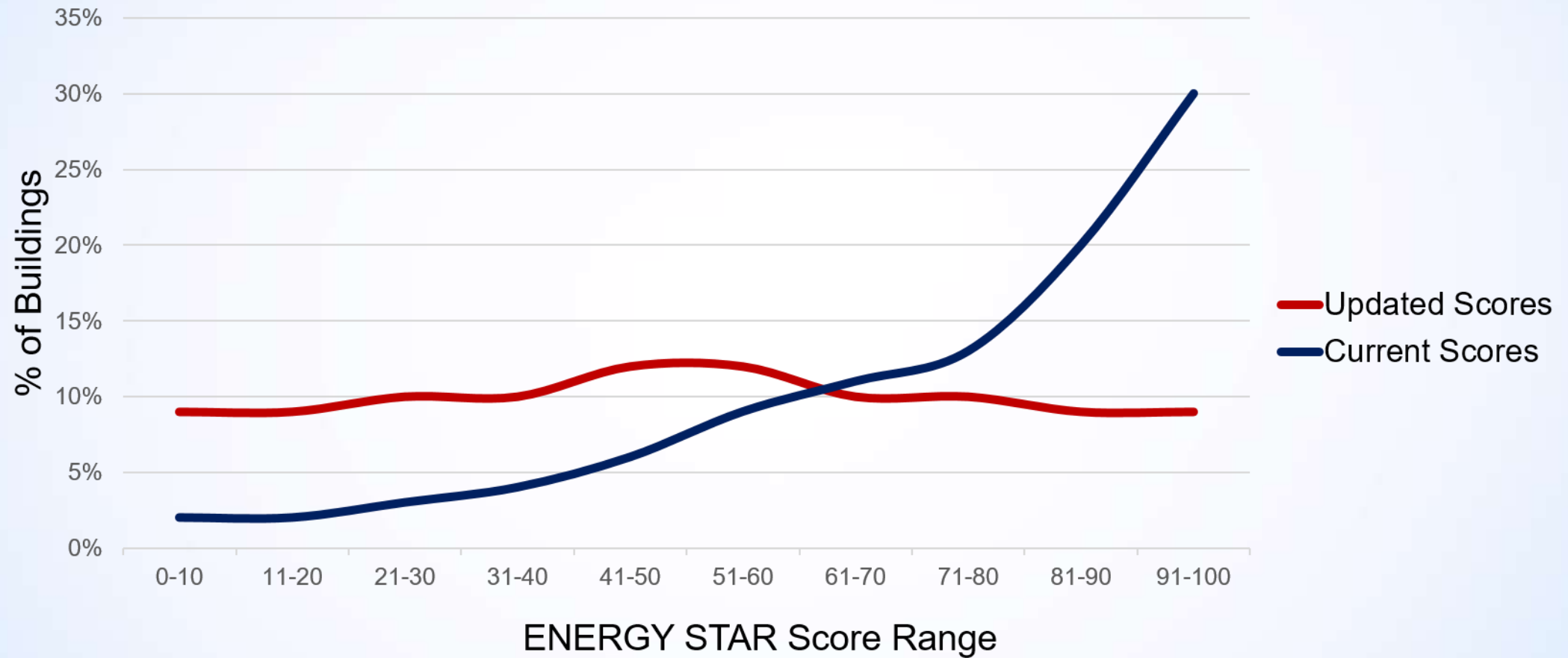
Working estimated average ENERGY STAR score change by space type
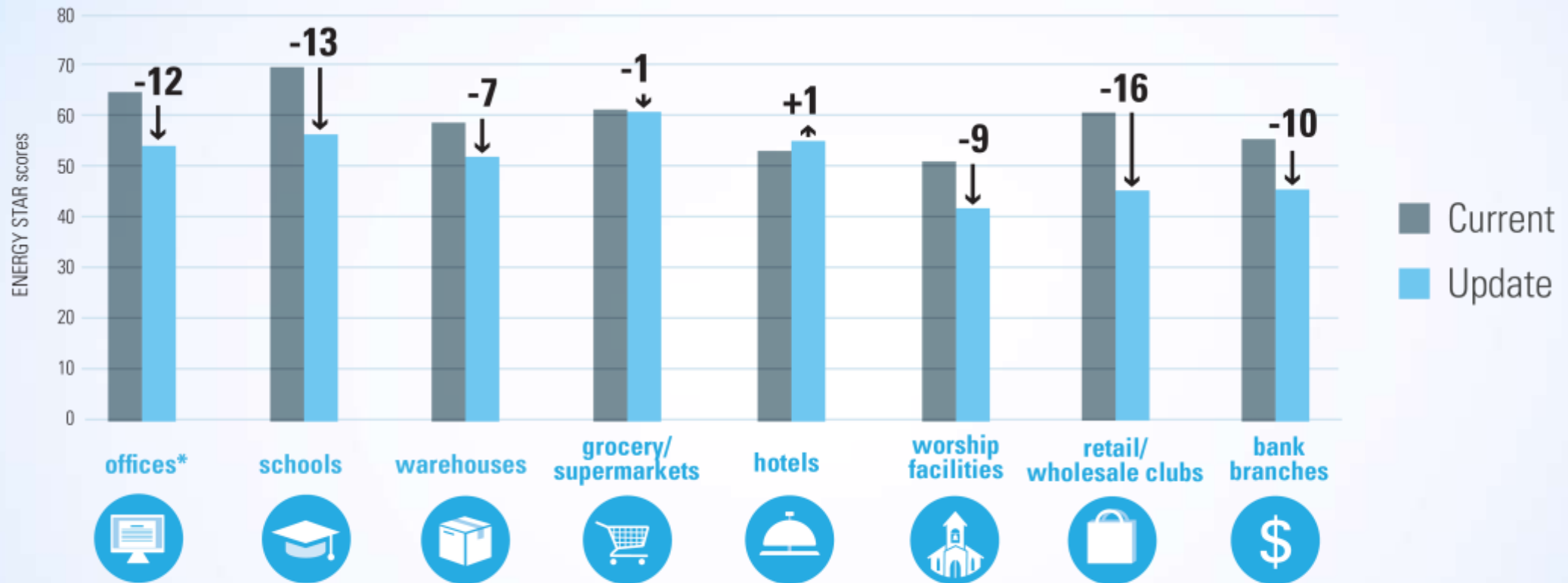
These are average score changes for these building types. An individual building's score change is likely to differ from the average change shown above.

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 <u>required</u> in August**

- Supermarket
  - Number of Open or Closed Refrigeration/Freezer Units
    - Exists now, but **will be <u>required</u> in August**

A summary of Use Detail updates are included in this [FAQ.](#).

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

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

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Preparing for the updates

- Communicate metric updates to colleagues, clients, stakeholders, etc. using <u>EPA's communications toolkit</u>:
  - ✓ Co-brandable fact sheet
  - ✓ Shareable graphic
  - ✓ Template social media content
  - ✓ Template training slides
  - ✓ Quick video tutorial about the 1-100 ENERGY STAR score
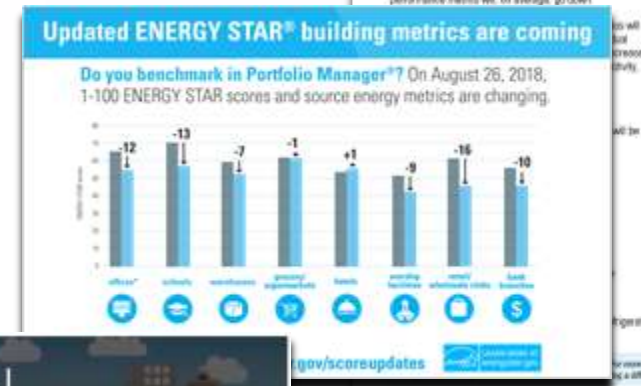
Download EPA's score update materials at: <u>www.energystar.gov/scoreupdates</u>

Preparing for the updates

- Get ready for the upcoming data center flexibility and new required inputs for the ENERGY STAR score

- If needed, document pre-update metrics with Portfolio Manager reports (in Reporting Tab)
  - **"Performance Highlight" Report** (Portfolio level, multi-year)
  - **Statement of Energy Performance** (Building level, represents 12 month performance period)
  - Metrics can also be extracted with **Portfolio Manager web services** if you are a provider or work with a provider.

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Preparing for the updates

- Apply for ENERGY STAR certification…especially if your score is close to 75!

- Applications submitted by <u>July 26, 2018</u> 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 <u>not</u> rescind prior ENERGY STAR certifications.

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
- Released a communications toolkit so we can broadly share consistent information leading up to August 2018

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Learn more at www.energystar.gov/scoreupdates

- Summary of changes

- Timeline of 2018 metric updates

- Guidance on how to prepare

- Metric update Communications Toolkit

- 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

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New in August! Monthly Usage Totals by Fuel Type

- New monthly metrics will be available in the Reporting tab to pull aggregated monthly consumption for:
  - Electricity
  - Natural Gas
- Will be calculated similarly to the values in the monthly chart exports on the Energy tab
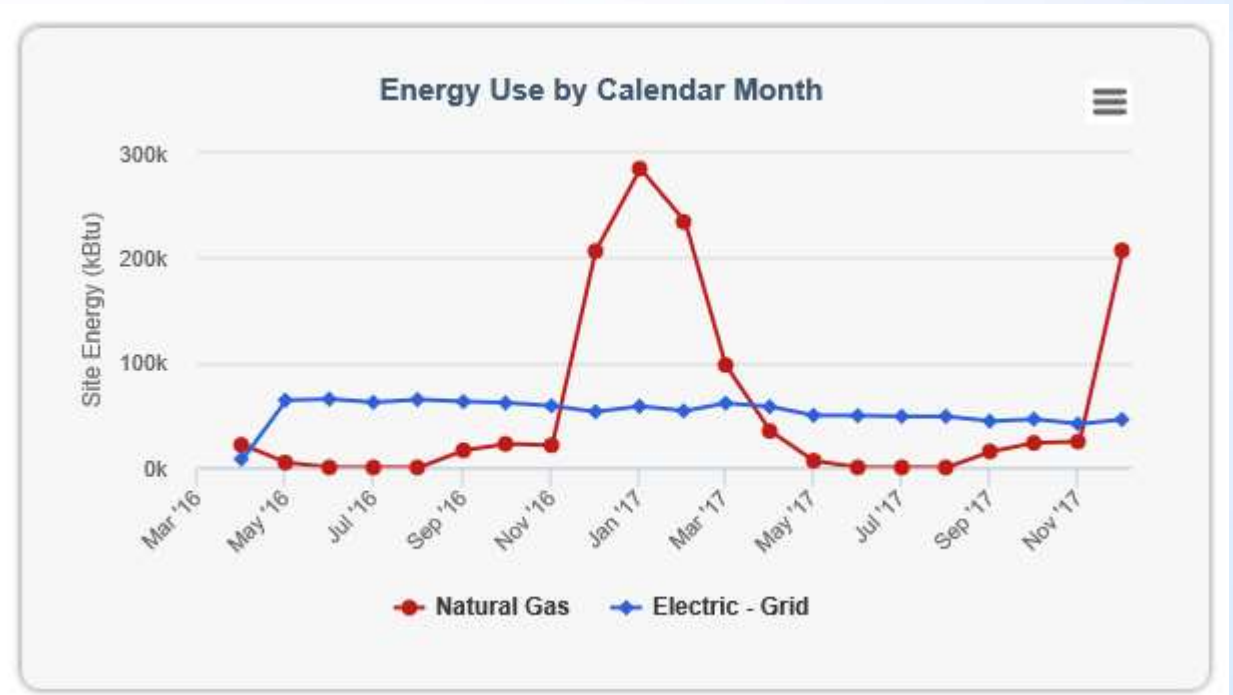
Questions and Discussion

Learn more at www.energystar.gov/scoreupdates

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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*

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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

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New buildings size minimum requirements for ENERGY STAR Score

Property Type	Current Score Minimum	Updated Score Minimum
Bank Branches	1,000 ft^2	1,000 ft^2
Worship Facilities	1,000 ft^2	1,000 ft^2
Offices	5,000 ft^2	1,000 ft^2
Schools	5,000 ft^2	1,000 ft^2
Warehouses	5,000 ft^2	1,000 ft^2
Grocery/Supermarkets	5,000 ft^2	5,000 ft^2
Hotels	5,000 ft^2	5,000 ft^2
Retail/Wholesale Club	5,000 ft^2	5,000 ft^2

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…

Site Energy results in Building B appearing more efficient.
Source Energy provides an equitable comparison.

Site Energy: 118
Source Energy: 124

Site Energy: 100
Source Energy: 120

A   =   B

Equivalent Heat Load

Steam generated by a natural gas boiler
on-site

Steam purchased from a utility
off-site
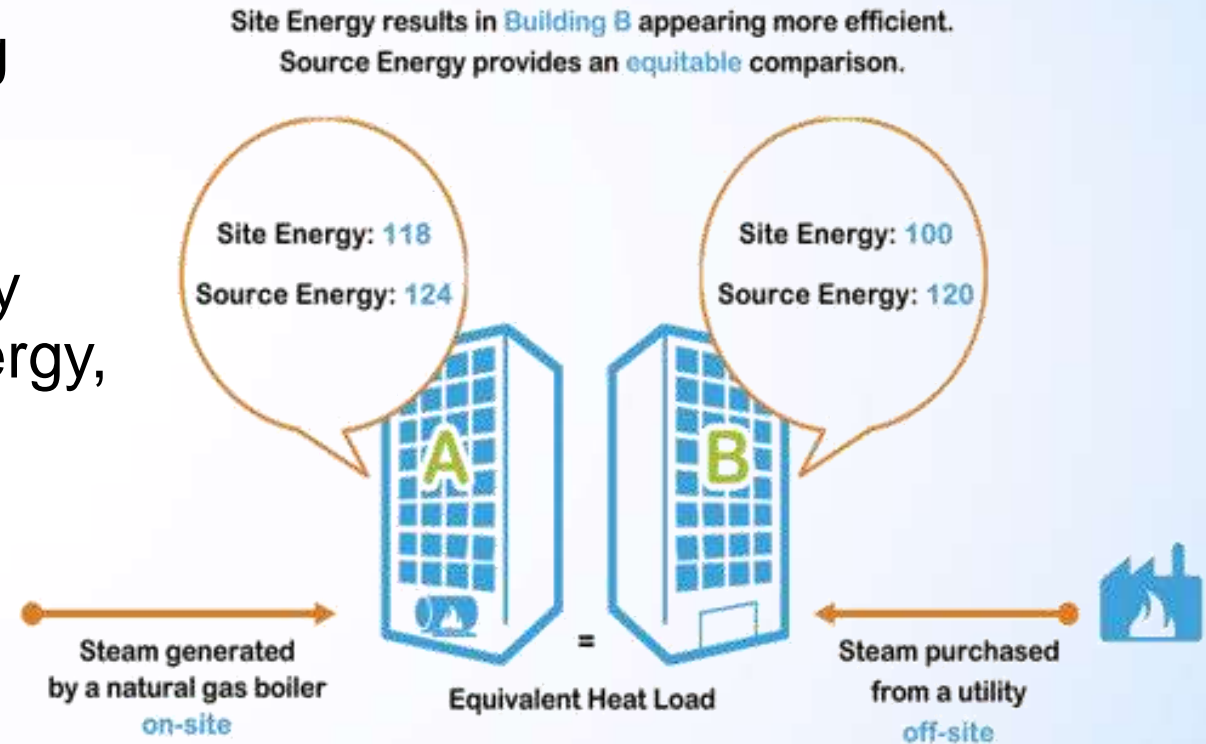
New application eligibility flexibility for buildings that earned the ENERGY STAR <u>in 2017</u>

- 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.
- **<u>Policy for 2018 Only</u>** – 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.
- **If you earned 2017 certification, eligible buildings (>75) can apply now.**

Tip for applying early:
Check for site visit re-use eligibility

- One site visit can be performed for two consecutive application years, as long as requirements for both certification years are met (i.e., the site visit occurs within the last month of application period or within the 120 days after the first certification year, **and** within the 12-month application period for the second certification).

- For 2018 certification: April 30 is the eligible ending date for all properties that certified in 2017, regardless of Period Ending Date (PED) – this means **there's a high likelihood your 2017 site visit date can be re-used.**

- Example: If 2017 PED was 9/30/17 and site visit occurred anytime between 5/1/17 and 1/31/18, it's eligible for re-use if 4/30/2018 is used as the 2018 application year ending date

- The Licensed Professional is **still responsible** for verifying that nothing has changed in terms of the operations, confirming that data entered into Portfolio Manager is accurate, and verifying energy bills.

General tips to speed application review while maintaining quality

- Review the application PDF for completeness
- Ask the property manager in advance for a fast turnaround time on signing the application
- Make sure vacant Office space is properly benchmarked (0 weekly operating hours, 0 workers, 0 computers).
- If you receive an eligibility alert during the application process, be sure that you
  - (a) check to make sure the data that raised the alert is accurate, and
  - (b) provide a complete and thorough response, ensuring all parts of the question in the alert are answered.