REALPAGE®
ENERGY SUMMIT
2023

# ENERGY STAR Update

## Tools for Tracking GHG Emissions

RealPage Energy Summit

March 2, 2023

EPA

# Agenda

- Extremely Brief GHG Emissions Overview
- Tracking in ENERGY STAR Portfolio Manager
- ENERGY STAR Building Emissions Calculator
- ENERGY STAR NextGen Preview

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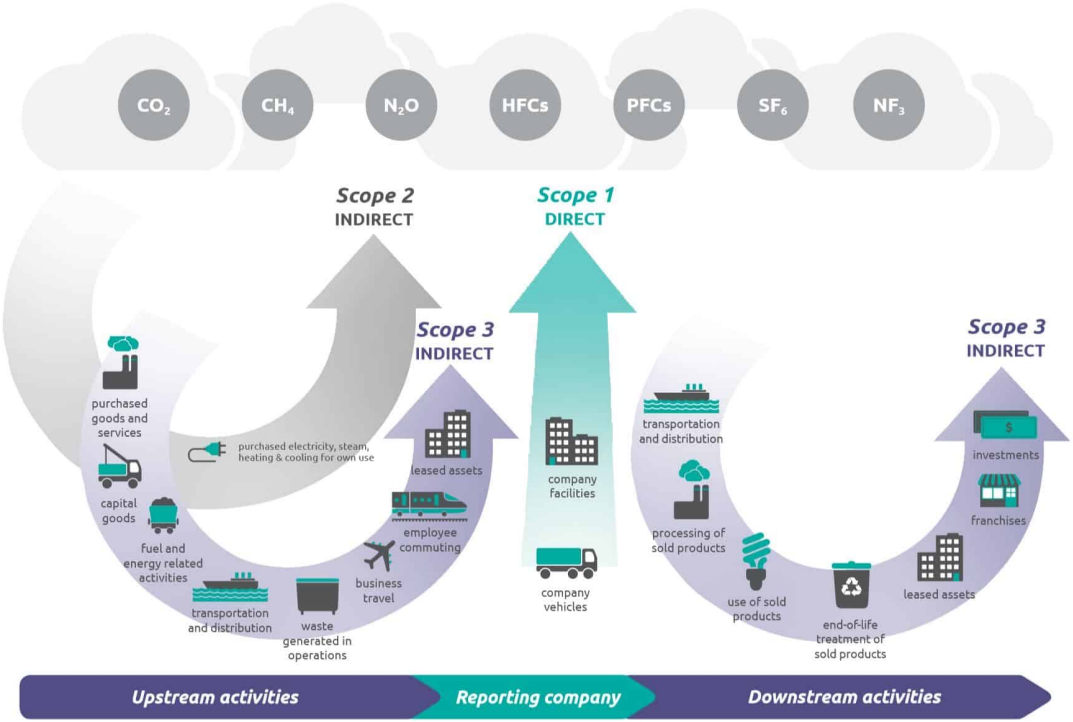
# Overview of Scopes

**Scope 1: Direct emissions from controlled activities**
(e.g., owner-paid natural gas, fleet vehicles.)

**Scope 2: Indirect emissions from controlled electricity consumption**
(e.g., common area electric, parking lot lighting)

**Scope 3: Indirect emissions from "induced" activities**
(e.g., tenant-paid utilities, employee commuting, business travel, embodied carbon)




Source: GHG Protocol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# Tracking GHG Emissions in ENERGY STAR Portfolio Manager

**Portfolio Manager allows you to…**

- Track the combined direct and indirect GHG Emissions of your properties
  - This includes assuming fuel-specific emissions factors for each primary energy product (direct), and regional emissions factors for indirect emissions from the power plant
- Track emissions benefits of on-site Green Power
  - Energy that is generated at your property via solar photovoltaic panels or wind turbines
- Track the purchase of Offsite Green Power from your local utility or third-party supplier
- Download GHG Emissions performance reports from the Reporting Tab

Please visit https://energystar.gov/buildings/training for trainings and webinars on GHG emissions tracking, reporting, and more!


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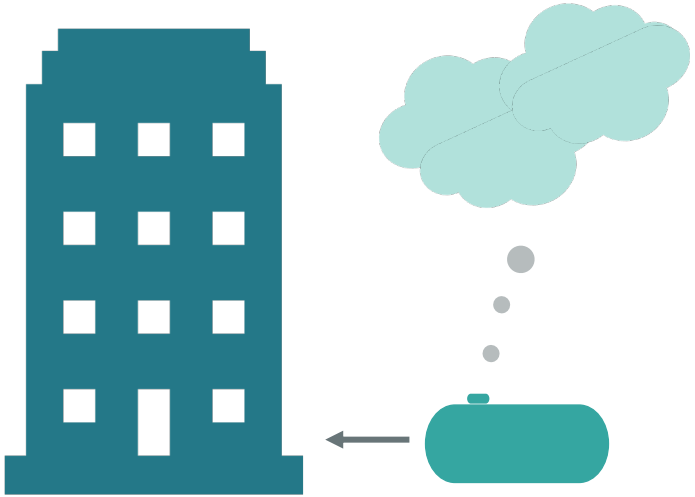
# Portfolio Manager GHG Inventory: Direct Emissions (Scope 1)

- **Direct emissions** result from the on-site use of primary energy products at a property, such as natural gas, fuel oil, or propane
- Portfolio Manager calculates direct emissions using a **default fuel analysis approach**, which assumes fuel-specific emissions factors for each primary energy product
- This approach only accounts for emissions at your building – any emissions from extracting or delivering these fuels are excluded

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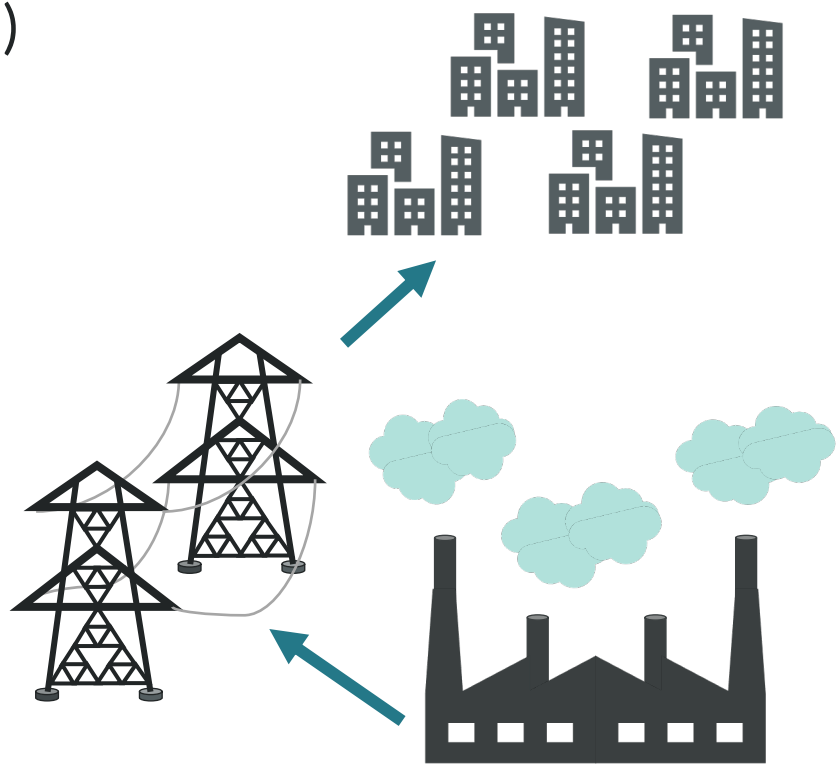
# Portfolio Manager GHG Inventory: Indirect Emissions (Scope 2)

- **Indirect emissions** result from the purchase of energy delivered by a utility, such as electricity or district heat.
- In this case, emissions occur at the plant where the heat/electricity was originally produced.
- Indirect emissions include:
  - Electricity
  - District steam
  - District hot water
  - District chilled water

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# Summary of the Portfolio Manager GHG Inventory

**Direct Emissions**

(from the on-site use of primary energy products, such as propane, natural gas, or fuel oil, at a property)

+

**Indirect Emissions**

(from the purchase of a utility-supplied energy product such as electricity or other district fuels)

=

**Total GHG Emissions**


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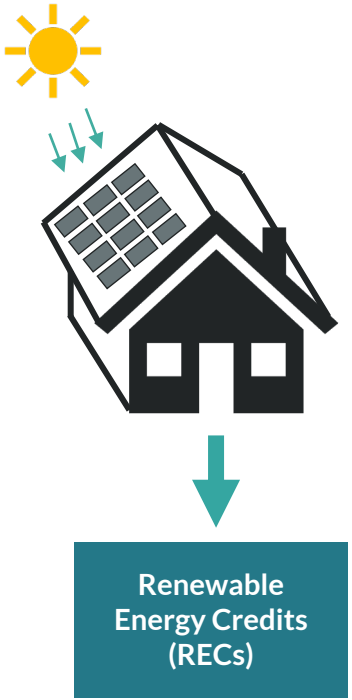
# Emissions Benefits from Onsite Green Power

- Portfolio Manager can track energy that is generated at your property via solar photovoltaic panels or wind turbines
- If RECs are retained:
  - You own the environmental claims to this energy, and it is considered Green Power
  - The energy you generate onsite and use onsite is counted as zero emissions in your inventory
  - PM will also calculate Avoided Emissions associated with this onsite Green Power
- If RECs are sold:
  - You no longer own the environmental claims to this energy, and it is no longer considered Green Power
  - The energy you generate onsite and use onsite is treated the same as grid electricity in your emissions inventory
  - No Avoided Emissions calculated





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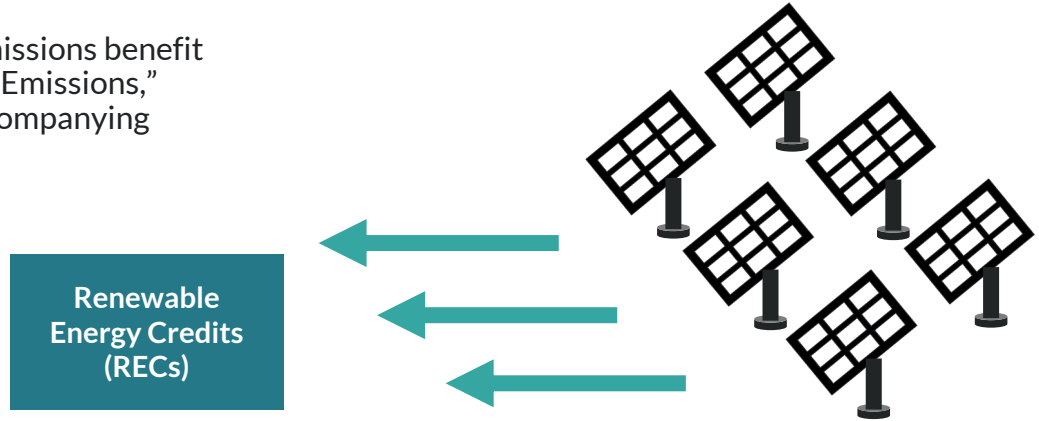
# Emissions Benefits from Offsite Green Power

- Portfolio Manager allows you to track the purchase of Offsite Green Power (kWh + RECs) from your local utility or third-party supplier
- Portfolio Manager calculates the emissions benefit of Offsite Green Power as “Avoided Emissions,” based on the location where the accompanying RECs were generated





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# How does Green Power impact metrics?

## Onsite

**Site Energy** – No effect

**Source Energy** – Decreases since renewables are more efficiently generated and used

**Score** – Increases since score is based on source EUI

**Emissions** – Decreases only if you maintain the RECs. If you sell them, electricity is treated as grid purchased

## Offsite

**Site Energy** – No effect since you are using the same energy as always

**Source Energy**– No effect since the renewables aren't tied to the building

**Score** – No effect since source energy isn't affected by renewables

**Emissions** – Does not affect total emissions, but contributes to Avoided Emissions metric

ENERGY STAR


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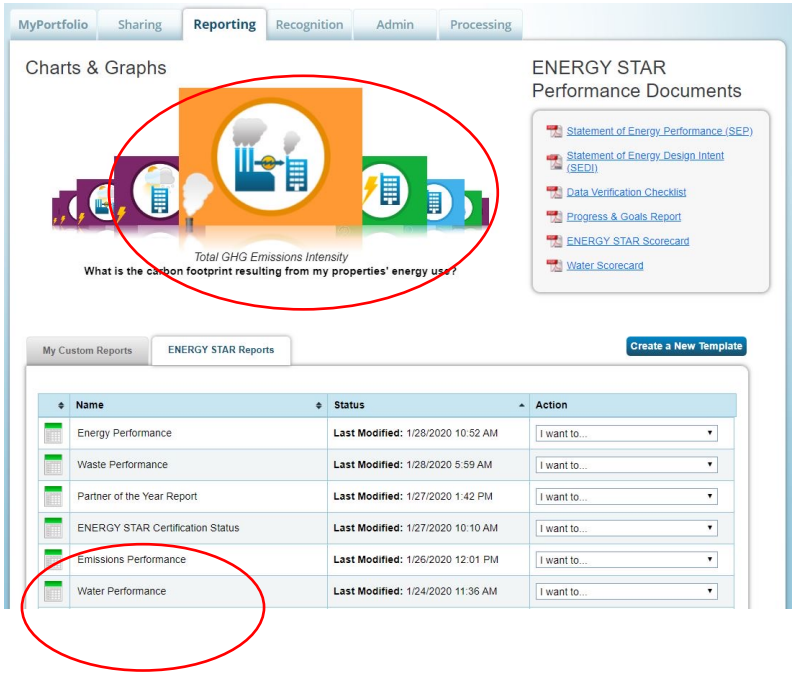
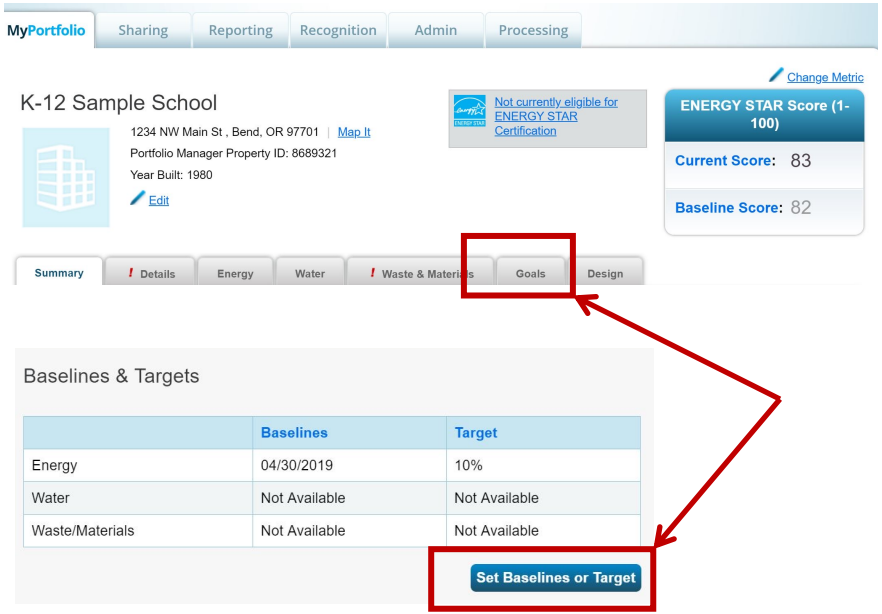
# Reporting and Goal Setting Features





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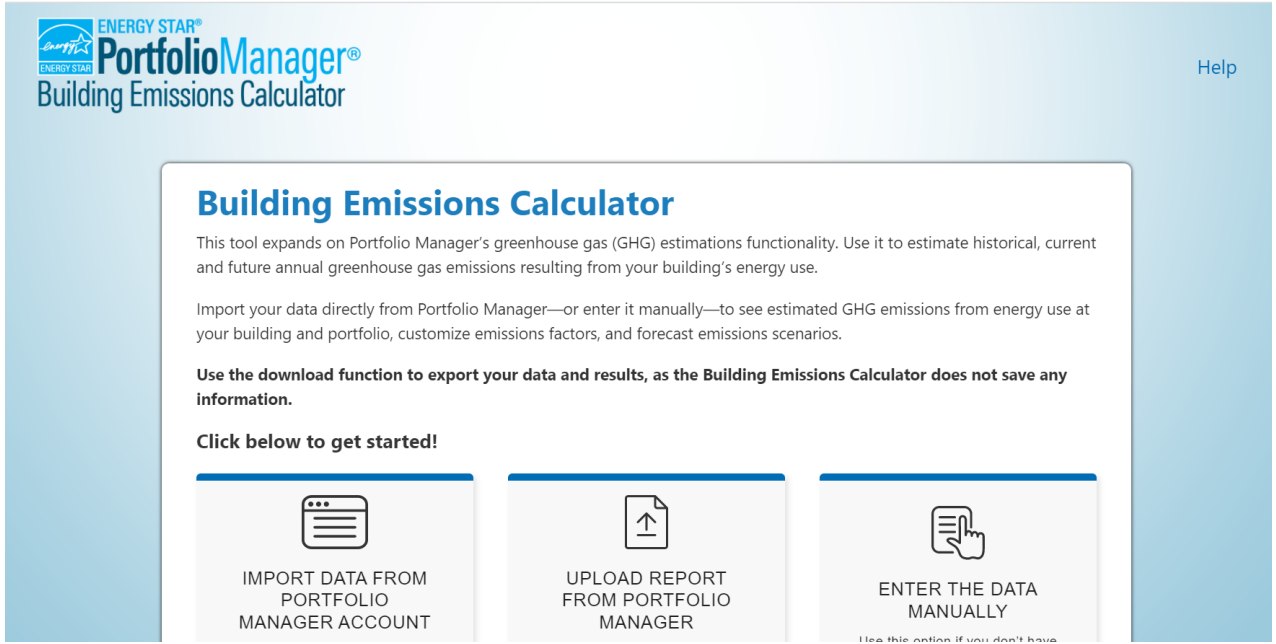
# Building Emissions Calculator (BEC)

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# Features

- **Estimates Past, Current and Future Emissions**
  - Baseline annual emissions, track changes over time, and evaluate the impacts of anticipated changes in energy use, fuel mix, green power, and emissions factors.
- **Leverages Your Portfolio Manager Data**
- **Allows Entry of Multiple Emissions Factors**
  - National, regional, supplier-provider, or locality-specified factors, such as those required under New York City's building performance standard.
- **Complies with GHG Accounting Protocols**
- **Supports a Single Building or Entire Portfolios**

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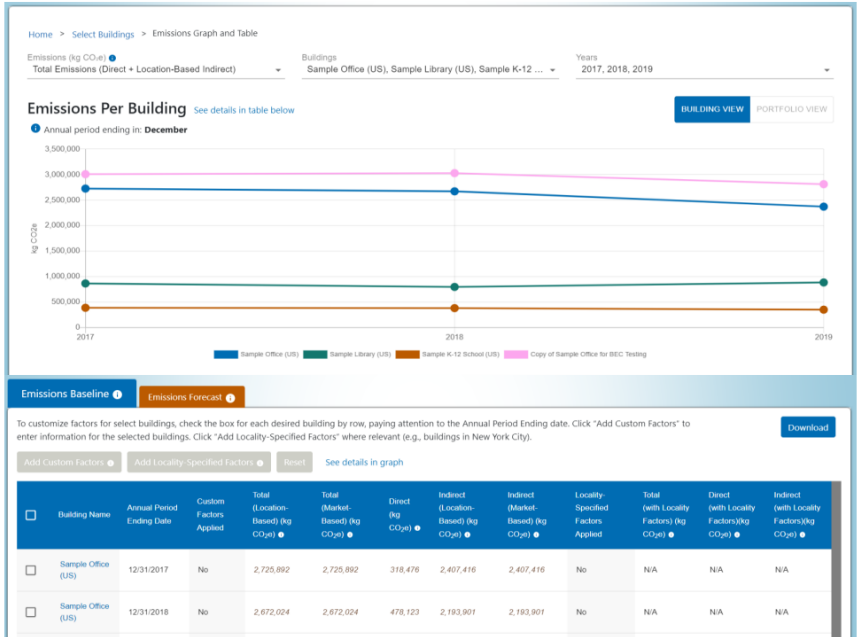
# Calculator Interface

- View property or portfolio performance
- View baseline emissions, adjusted for market or locality-based factors
- Forecast emissions for one future year for each building
  - Adjust assumptions for anticipated future changes, such as reductions in energy use, % of green power etc.
- Save and download results in excel





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# Net-Zero Economy by 2050
# Requires 3 Interdependent Pathways

## Electricity Decarbonization

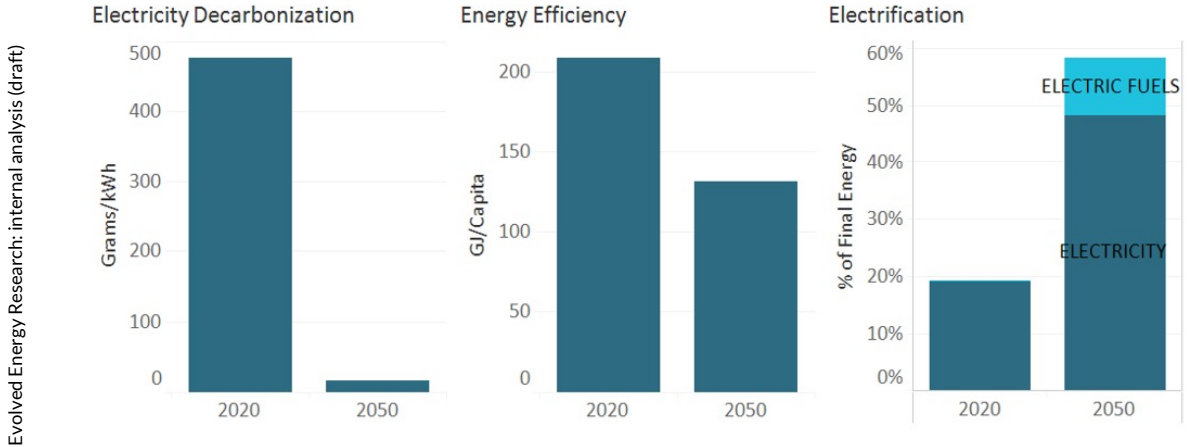
95% reduction in emissions intensity

## Energy Efficiency

40% reduction in per-capita final energy demand

## Electrification

300% increase in share of energy from electricity





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# Objectives of NextGen Certification for Buildings

- Continue to encourage greater efficiency of commercial and multifamily buildings
- Recognize role buildings play in renewable energy investments
- Reward transition to efficient electrification
- Strive to keep it simple
- Leverage foundation of ENERGY STAR and Portfolio Manager

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# Proposed Criteria

## Efficiency

ENERGY STAR certification

## Renewable Energy

Procure 30% of energy from renewable sources

## Electrification

Meet target for onsite GHG emissions


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# Energy Efficiency Criterion

**Requirement: ENERGY STAR certification**

## Why?

- Ensures energy efficiency
- Well-understood and accepted
- Includes review of building data and verification
- Leverages existing ENERGY STAR infrastructure
- Can easily increase stringency over time

## Consideration

- Restricts NextGen recognition to buildings eligible for ENERGY STAR certification


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# Renewable Energy Criterion

**Requirement: 30% of total energy use from renewable sources**

- Sources can include onsite renewable generation, renewable electricity certificates (RECs), renewable fuels, and/or renewable thermal certificates
- Total amount of RECs cannot exceed amount of electricity consumed
- Does not credit renewables that contribute to standard grid electricity

**Why?**

- Motivates buildings to procure renewable energy
- Does not penalize for lack of renewables on grid
- Single, national requirement keeps it simple

**Consideration**

- Does not account for low carbon grid
- Requires better tracking in Portfolio Manager


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# Electrification Criterion

**Requirement: Direct (i.e., onsite) emissions limit**

## Why?

- Encourages progress toward efficient electrification

  and

- Recognizes fully electrified, efficient buildings

## Consideration

- Fuels such as natural gas are predominantly used for space and water heating, so more is needed in cold climates for occupant comfort and safety
- Multifamily and other residential buildings need to use fuel throughout the day/have greater hot water and cooking needs
- EPA determined that normalization for climate/weather and building type is necessary


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# Normalizing Direct Emissions

- Heating Degree Days (HDD) measure the need for heating and are specific to a building's location
- EPA analyzed data from ENERGY STAR certified buildings (excluding 100% electric buildings) to determine the median direct GHGi per HDD for each type of building
- The medians are relatively consistent across regions
- These medians – or "GHGi Factors" -- can be used to normalize the NextGen Direct GHGi Targets

Proposed Factors for Calculating NextGen Direct GHGi Targets

| Property Type | Proposed GHGi Factor (g CO2e/ft2/HDD ) |
|---|---|
| Data Center | 0.15 |
| Retail Store | 0.14 |
| Warehouse | 0.18 |
| Office (incl. Office, Bank, Courthouse, Financial) | 0.25 |
| K-12 School | 0.22 |
| Worship Facility | 0.25 |
| Medical Office | 0.24 |
| Senior Living Community | 0.46 |
| Hotel | 0.43 |
| Multifamily Housing | 0.29 |
| Supermarket/Grocery Store | 0.49 |
| Hospital (General Medical & Surgical) | 1.25 |


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# Determining if a Building Meets Electrification/Emissions Criterion

- Steps in Portfolio Manager:
  1. Calculate the building's unique NextGen Direct GHGi Target:
  2. GHGi Factor x Actual HDD over the past 12 months
  3. Compare the NextGen Direct GHGi Target to building's actual annualized direct GHGi
- If the building's actual direct GHGi is ≤ its NextGen Direct GHGi Target, the building has met the requirement
- EPA will publish the GHGi Factors for each building type
- Portfolio Manager will show monthly progress toward NextGen Direct GHGi Target
- 100% electric buildings have zero direct GHG emissions and would always meet this criterion

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# Example NextGen Direct GHGi Target Calculations

| | Office DC | Office NYC | Retail Store NYC | Retail Store Atlanta |
|---|---|---|---|---|
| NextGen Direct GHGi Factor (g CO2e/ft2/HDD) | 0.25 | 0.25 | 0.14 | 0.14 |
| Experienced Weather (actual HDD for prior 12 months) | 3620 | 4147 | 4147 | 2682 |
| Building's NextGen Direct GHGi Target (kg CO2e/ft²) | 0.91 | 1.04 | 0.58 | 0.38 |

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# Recap

- ENERGY STAR Portfolio Manager allows you to track and report on your GHG emissions (GHG inventory)
- Portfolio Manager uses a location-based approach, however the BEC allows you to assess and customize for a market-based approach
- Understanding emissions is 1/3 of the equation for a clean energy economy.  Energy efficiency must still remain a priority, and investments in green power need to be made

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# Thank you!

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https://www.energystar.gov/buildings/benchmark/understand_metrics/how

https://www.energystar.gov/buildings/building_recognition/energy_star_nextgen_certification_commercial_buildings

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