



Renewable Energy Methodology

Amazon is on a path to powering our operations with 100% renewable energy by 2025 as part of our goal to reach net zero carbon by 2040. This applies to all Amazon global businesses including operations facilities, corporate offices, physical stores, AWS data centers, and all financially-integrated subsidiaries. We will reach our renewable energy goal by improving the energy efficiency of our operations and adding new renewable energy to the electric grids where we operate across the world.¹ We will partner with other companies, utilities, policy makers, and regulators to accelerate plans and policies that increase the clean energy on the grids that serve Amazon and our customers.

¹ Our definition of renewable energy is aligned with the U.S. Environmental Protection Agency's (EPA) definition: "Renewable energy includes resources that rely on fuel sources that restore themselves over short periods of time and do not diminish. Such fuel sources include the sun, wind, moving water, organic plant and waste material (eligible biomass), and the earth's heat (geothermal)." <https://www.epa.gov/greenpower/what-green-power>

RENEWABLE ENERGY METHODOLOGY

Our approach employs five specific strategies to meet our renewable energy goals:

- **Energy Efficiency:** Innovate to continuously increase the energy efficiency of our operations.
- **Off-Site Renewable Projects:** Invest in new, utility-scale renewable energy projects.
- **On-Site Solar:** Deploy rooftop solar systems on buildings we operate.
- **Site Energy Contracts:** Participate in green tariff programs with utilities and pursue new renewable projects through competitive site energy contracts.
- **Policy Engagement:** Support public policy that advances access to and the expansion of clean energy for Amazon and our customers.

Amazon's Renewable Energy Percentage

To calculate Amazon's carbon footprint we use the Greenhouse Gas Protocol (GHGP), published by the World Resource Institute (WRI) and World Business Council for Sustainable Development (WBCSD), market-based method to demonstrate how renewable energy purchases reduce our consumption of grid electricity.²

To calculate the amount of renewable energy powering our operations, we evaluate both the renewable energy in the grid alongside the amount of additional renewable energy generated by Amazon's projects. This total renewable energy is then compared to Amazon's total energy use per the equation below:

$$\text{Amazon \% Renewable Energy} = \frac{\text{Renewable Energy in the Grid} + \text{Amazon Renewable Energy Projects}}{\text{Amazon Energy Use}}$$

Our annual carbon footprint and renewable energy calculations are assured by independent third-party auditors and we publicly disclose the results of those audits on our sustainability website.

Renewable Energy in the Grid

This is the amount of renewable energy serving Amazon from the local electricity grid. Our calculations include supplier-provided grid mix data, or grid region, state and country level factors of reported fuel mix (i.e., percent of electricity from hydro, gas, coal, wind, etc.) and carbon emissions rates, published by the International Energy Agency (IEA) or a similar government agency.³

We support the need for an improved data-set that reflects a customer's delivered electricity mix taking into account:

1. Environmental attributes owned by others.
2. The inter-grid and inter-state ownership and use of renewable energy generation.

² "Reaching Net Zero Carbon by 2040." Amazon's Carbon Methodology. Revised June 2020. <https://sustainability.aboutamazon.com/carbon-methodology.pdf>

³ For example, when we do not use supplier-specific grid mix data in the U.S., we reference the eGRID database from the EPA.

Amazon Renewable Energy Projects

To support the development and construction of new renewable energy, Amazon procures renewable energy beyond the existing grid mix. This includes our investments in off-site renewable energy contracts for wind and solar farms, on-site rooftop solar systems, and site energy contracts and green tariffs with local utilities that result in new projects being added to the grid. Explore our full list of projects by geography [here](#).

- **New Wind and Solar Projects:** Amazon works with energy companies across the globe to bring on new renewable projects dedicated to serving our load. Many of these projects are enabled by long-term contracts such as power purchase agreements (PPAs) with large wind and solar projects in the same energy grids as our electricity use.
- **On-Site Solar:** Amazon installs rooftop or ground mounted solar photovoltaic (PV) systems and battery storage on buildings across our operations.
- **Site Energy Contracts:** Amazon may choose to partner with our electricity supplier to source renewable energy through electricity contracts. These commitments result in adding new renewable energy to the grid, beyond business as usual for the utility or energy supplier.
- **Environmental Attributes:** Environmental attributes, such as renewable energy certificates (RECs), allow companies to track and record the environmental benefits of renewable energy generation.⁴ Amazon retires, or has retired on its behalf, environmental attributes for all Amazon renewable energy projects included in the renewable energy percentage calculation. We may choose to purchase additional environmental attributes to signal our support for renewable energy in the grids where we operate in line with the expected generation of the projects we have contracted.⁵

Amazon Energy Use

This includes all electricity usage from Amazon's global facilities consistent with our Scope 2 electricity use calculation for carbon emissions. This calculation methodology includes owned, leased, and co-located AWS data center infrastructure, as well as fulfillment center and delivery network buildings, on-site electric vehicle charging, corporate offices, customer service centers, physical stores, and financially-integrated subsidiaries (e.g. Whole Foods Market).

We use actual metered electricity use from site utility invoices as the primary source of data. Where this invoice data is not available, we calculate usage based on electricity spend at the facility or estimate usage based on similar facilities in similar geographies, and scale estimated usage based on square footage or business activity.

⁴ Each attribute represents one MWh of renewable energy generation. Environmental attributes have varying names throughout the world, such as Renewable Energy Certificates (RECs) in the U.S. and Guarantees of Origin (GoOs) in Europe.

⁵ As of December 2020, Amazon has enabled over 6,500 MW of new renewable energy through wind and solar projects. Those projects have a lead time of 2-3 years from contracting to operating (producing renewable energy).