



Renewable Energy Methodology

Amazon supports our Climate Pledge commitment to reach net-zero carbon by 2040 through two renewable energy commitments:

1. **Amazon is on a path to powering our operations with 100% renewable energy by 2025**, five years ahead of our 2030 commitment. This includes all Amazon businesses such as operations facilities, corporate offices, physical stores, Amazon Web Services (AWS) data centers, and all financially-integrated subsidiaries that support millions of customers globally.
2. **Amazon has also committed to produce enough renewable energy to match the electricity used by all active Echo devices.**

RENEWABLE ENERGY METHODOLOGY

We will reach our renewable energy goals by improving the energy efficiency of our operations and devices while adding new renewable energy to the electric grids where we operate around the world.¹ We will also 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.

Our approach employs several strategies to meet our renewable energy goals:

- **Energy Efficiency:** Innovate to continuously increase the energy efficiency of our operations and devices.
- **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 the percentage of renewable energy powering Amazon's operations, we evaluate both the amount of renewable energy from Amazon's projects and the renewable energy in the grid. This total renewable energy is then compared to Amazon's total energy use per the equation below:

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

Amazon's renewable energy percentage is calculated on an annual basis, from January 1 through December 31 each year, and assured by an independent third-party auditor along with Amazon's carbon footprint.² We publicly disclose the results of these audits on our sustainability website.

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. These new projects support hundreds of jobs while providing hundreds of millions of dollars of investment in local communities. Explore our full list of projects [here](#).

- **New Wind and Solar Projects:** Amazon works with energy companies around the globe to develop new renewable projects dedicated to serving our load.
- **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:** Amazon uses environmental attributes, such as renewable energy certificates (RECs), to track and record the environmental benefits of our renewable energy projects.³ Amazon retires, or has retired on its behalf, environmental attributes for 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.⁴

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/green-power-markets/what-green-power>

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

³ 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 the European Union.

⁴ As of June 2021, Amazon has enabled over 10,000 MW of new renewable energy capacity through wind and solar projects. Those projects have a lead time of 2-3 years from contracting to operating (producing renewable energy).

Renewable Energy in the Grid

Renewable Energy in the Grid 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.⁵

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.*

Amazon Energy Use

Amazon Energy Use means all electricity usage from Amazon's global facilities consistent with our Scope 2 electricity use calculation for carbon emissions. Our calculation 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 figures and site utility invoices as our primary sources of data. Where this 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.

Devices Renewable Energy Percentage

To calculate the percentage of renewable energy matched to the electricity used by Amazon devices, starting with Echo devices, we compare renewable energy from our devices projects to the annual energy consumption of active devices per the equation below:

$$\text{Devices Renewable Energy \%} = \frac{\text{Devices Renewable Energy Projects}}{\text{Devices Energy Use}}$$

Devices renewable energy percentage is calculated on an annual basis, from January 1 through December 31 each year, and assured by an independent third-party auditor. We publicly disclose the results of this audit on our sustainability website.

Devices Renewable Energy Projects

Amazon supports the development and construction of new renewable energy to match the electricity use of our customers' devices. This renewable energy comes from investments in off-site renewable energy wind and solar farms. Amazon 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.

Devices Electricity Use

Devices Electricity Use includes the total annual customer electricity use for devices based on the number of active devices and the estimated annual energy consumption for each device.

⁵ For example, when we do not use supplier-specific grid mix data in the U.S., we reference the eGRID database from the EPA.