



AWS & Sustainability

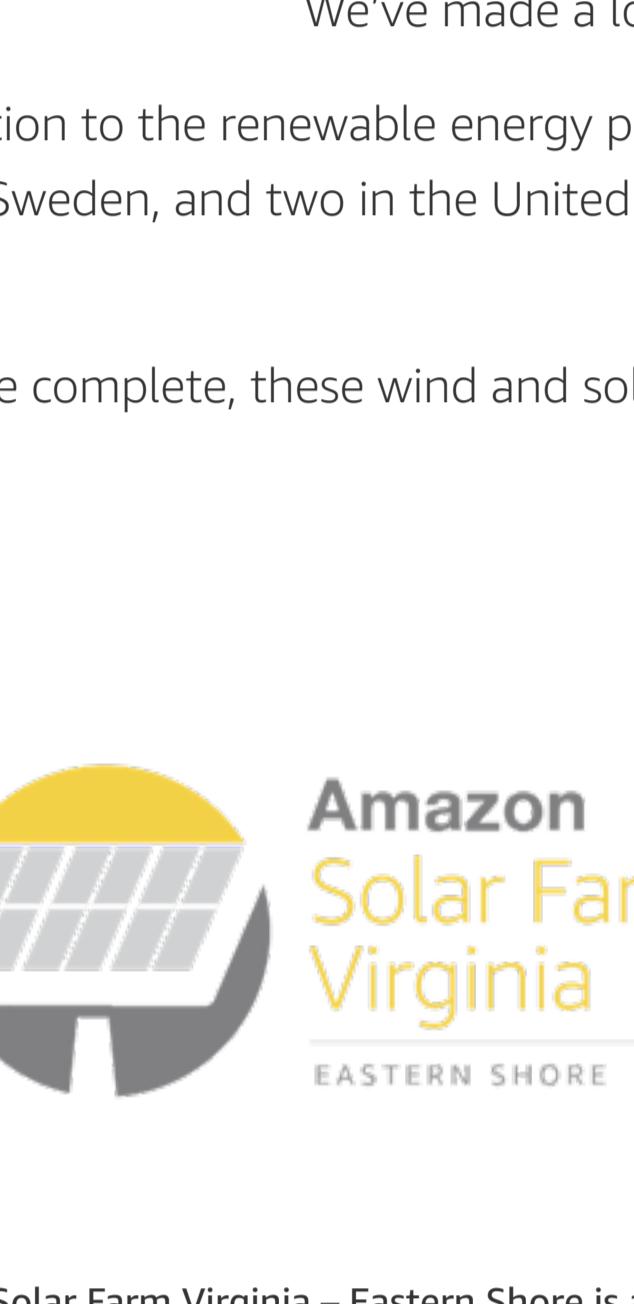
AWS is committed to running our business in the most environmentally friendly way possible

[Home](#)[Renewable Energy](#)[Timeline](#)[Videos & Photos](#)

In addition to the environmental benefits inherently associated with running applications in the cloud, AWS is committed to achieving 100% renewable energy usage for our global infrastructure

ON-PREMISES VS. IN THE CLOUD

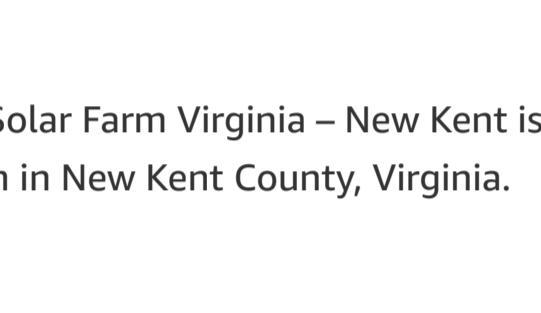
It's greener in the cloud



Any analysis on the climate impact of a data center should consider resource utilization and energy efficiency, in addition to power mix. Carbon emissions are a factor of three things: the number of servers running, the total energy required to power each server, and the carbon intensity of energy sources used to power these servers. A recent blog post by Jeff Barr outlines why using fewer servers and powering them more efficiently is at least as important to reducing the carbon impact of a company's data center as its power mix.

A typical large-scale cloud provider achieves approximately 65% server utilization rates versus 15% on-premises, which means when companies move to the cloud, they typically provision fewer than 1/4 of the servers than they would on-premises.¹ In addition, a typical on-premises data center is 29% less efficient in their use of power compared to a typical large-scale cloud provider that uses world-class facility designs, cooling systems, and workload-optimized equipment.² Adding these together (fewer servers used plus more power efficient servers), customers only need 16% of the power as compared to on-premises infrastructure. This represents an 84% reduction in the amount of power required.

This massive improvement in energy efficiency drives a huge reduction in climate impact because less energy consumed means fewer carbon emissions. The climate impact improvements get even better when you factor in that the average corporate data center has a dirtier power mix than the typical large-scale cloud provider. Large-scale cloud providers (AWS included) use a power mix that is 28% less carbon intense than the global average.³



Combining the fraction of energy required with a less carbon-intense power mix, customers can end up with a reduction in carbon emissions of 88% by moving to the cloud and AWS.

[Read more here.](#)

PROGRESS

Keeping up with our commitment to 100% renewable energy

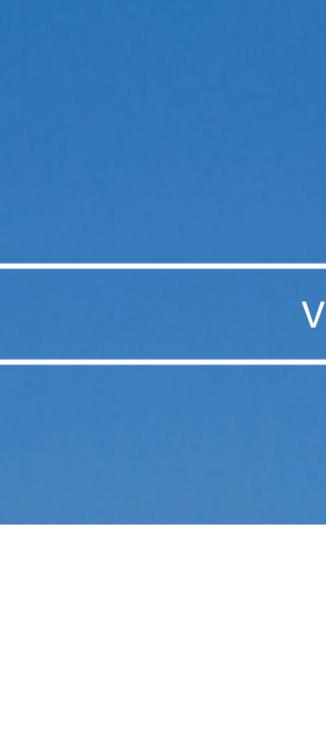
We've made a lot of progress on this commitment. AWS exceeded 50% renewable energy usage for 2018.

In addition to the renewable energy projects below, AWS has [announced](#) four new wind farms and one new solar farm. These [projects](#) – two in Ireland, one in Sweden, and two in the United States – will total over 297 megawatts (MW), with expected generation of over 830,000 megawatt hours (MWh) of renewable energy annually.



Amazon Solar Farm Virginia EASTERN SHORE

Amazon Solar Farm Virginia – Eastern Shore is an 80 megawatt solar farm in Accomack County, Virginia.



Amazon Solar Farm Virginia BUCKINGHAM

Amazon Solar Farm Virginia – Buckingham is a 20 megawatt solar farm in Buckingham County, Virginia.



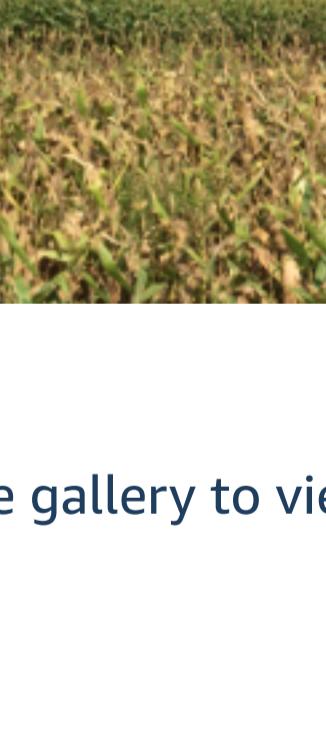
Amazon Solar Farm Virginia NEW KENT

Amazon Solar Farm Virginia – New Kent is a 20 megawatt solar farm in New Kent County, Virginia.



Amazon Wind Farm Indiana FOWLER RIDGE

Amazon Wind Farm Indiana – Fowler Ridge is a 150 megawatt wind farm in Benton County, Indiana.



Amazon Wind Farm North Carolina DESERT WIND

Amazon Wind Farm North Carolina – Desert Wind is a 208 megawatt wind farm in Perquimans and Pasquotank counties, North Carolina.



Amazon Wind Farm Ohio TIMBER ROAD

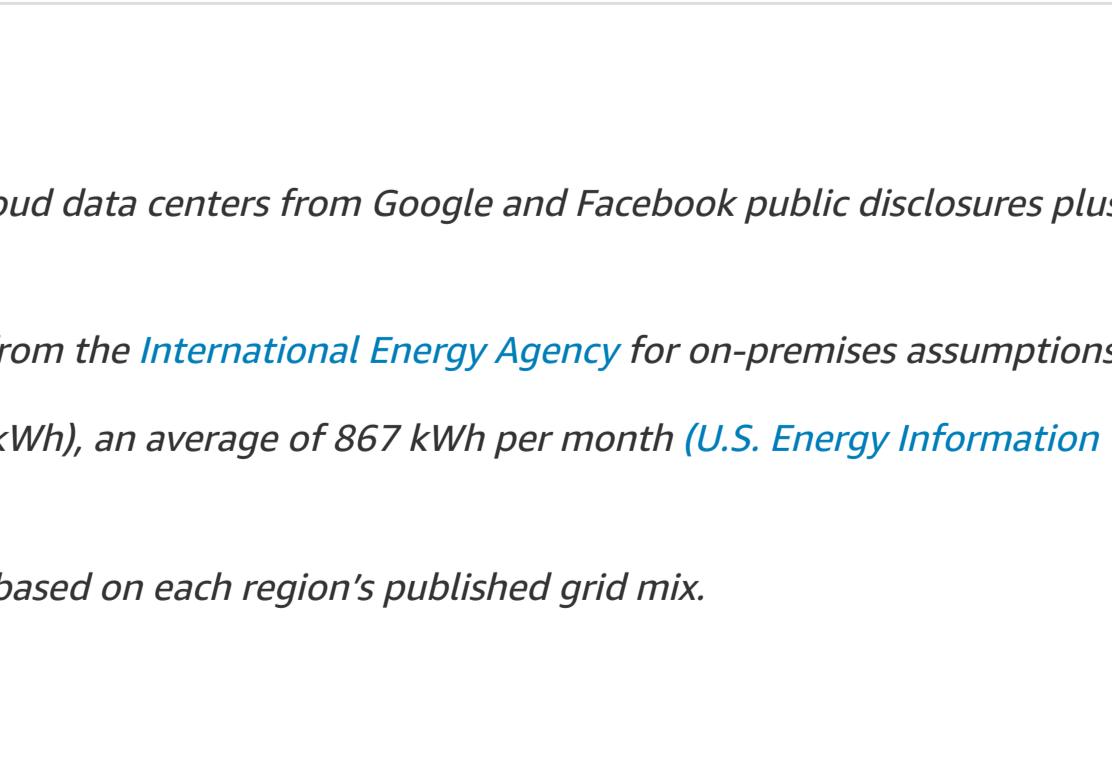
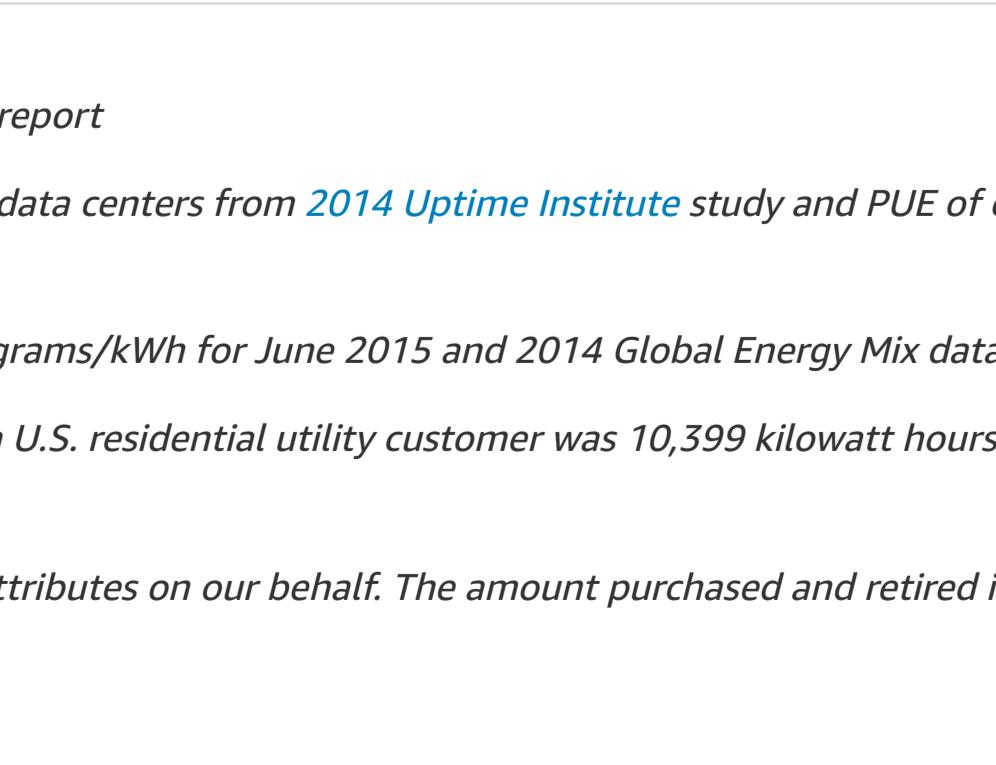
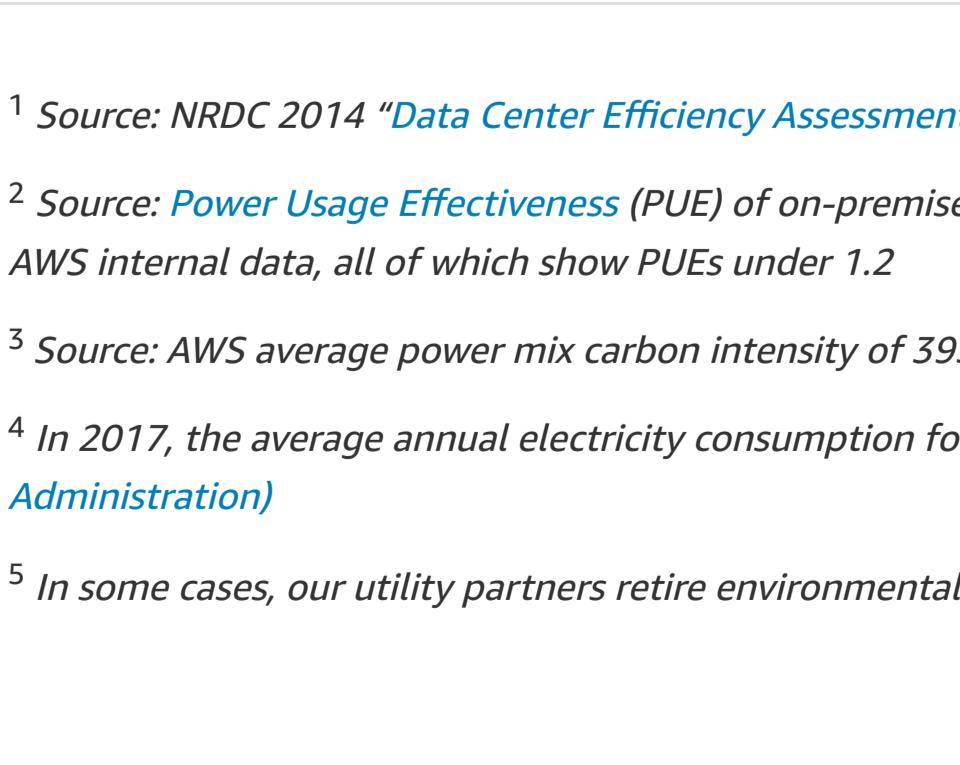
Amazon Wind Farm Ohio – Timber Road is a 100 megawatt wind farm in Paulding County, Ohio.

VIDEOS & PHOTOS

Learn more about how AWS is working to achieve its goal of 100% renewable energy usage for our global infrastructure



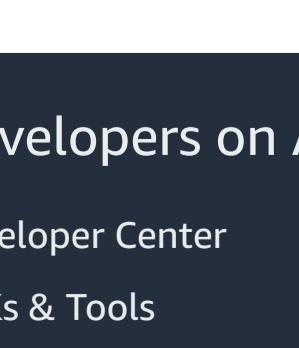
Amazon Wind Farm US Central
Amazon Wind Farm Fowler Ridge
Amazon Solar Farms US East



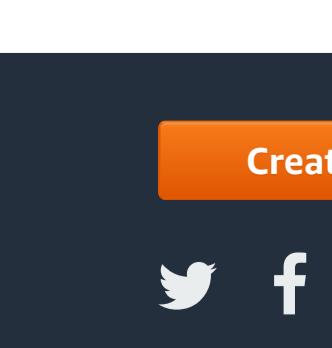
Visit the gallery to view more photos from our projects

[View Gallery](#)

US West (Oregon)



Europe (Frankfurt)



Europe (Ireland)

GovCloud (US-West)

Canada (Central)

SUSTAINABILITY AT AMAZON

In addition to the sustainability initiatives focused on powering the AWS global infrastructure, Amazon is pursuing sustainability across the company.

For more information, please visit [Sustainability at Amazon](#) and the [Amazon Sustainability Question Bank](#).

¹ Source: NRDc 2014 "Data Center Efficiency Assessment" report

² Source: Power Usage Effectiveness (PUE) of on-premises data centers from 2014 Uptime Institute study and PUE of cloud data centers from Google and Facebook public disclosures plus AWS internal data, all of which show PUEs under 1.2

³ Source: AWS average power mix carbon intensity of 393 grams/kWh for June 2015 and 2014 Global Energy Mix data from the International Energy Agency for on-premises assumptions

⁴ In 2017, the average annual electricity consumption for a U.S. residential utility customer was 10,399 kilowatt hours (kWh), an average of 867 kWh per month (U.S. Energy Information Administration)

⁵ In some cases, our utility partners retire environmental attributes on our behalf. The amount purchased and retired is based on each region's published grid mix.

Learn About AWS

What Is AWS?
What Is Cloud Computing?
What Is DevOps?
What Is a Container?
What Is a Data Lake?
AWS Cloud Security
What's New
Blogs

Resources for AWS

Getting Started
Training and Certification
AWS Solutions Portfolio
Architecture Center
Product and Technical FAQs
Analyst Reports
AWS Partner Network

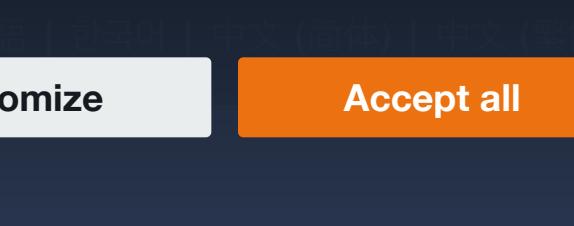
Developers on AWS

Developer Center
SDKs & Tools
.NET on AWS
Python on AWS
Java on AWS
PHP on AWS
Javascript on AWS

Help

Contact Us
AWS Careers
File a Support Ticket
Knowledge Center
AWS Support Overview
Legal

Create an AWS Account



Amazon is an Equal Opportunity Employer: Minority / Women / Disability / Veteran / Gender Identity / Sexual Orientation / Age.

Select your cookie preferences

We use cookies and similar tools to enhance your experience, provide our services, deliver relevant advertising, and make improvements. Approved third parties also use these tools to help us deliver advertising and provide certain site features.

[Privacy](#) | [Site Terms](#) | [Cookie Preferences](#) | © 2020 Amazon Web Services, Inc. or its affiliates. All rights reserved.

Customize

Accept all

⁵ AWS purchases and retires environmental attributes, like Renewable Energy Credits and Guarantees of Origin, to cover the non-renewable energy we use in these regions.⁵