



# 10 Years of Carbon Neutrality

## Carbon neutral for 10 years

In 2007 Google made a commitment to be a carbon neutral company. We knew climate change was a global issue that needed urgent action, so we accelerated our efforts to make our operations carbon neutral. We defined a neutrality strategy based on three pillars: First, to be as efficient as possible and do more with less; second, to source clean energy for our operations; and third, to buy high-quality carbon offsets as a temporary solution to neutralize any remaining emissions. This year, we're excited to commemorate the 10th anniversary of Google's carbon neutrality. To celebrate, we'll share some of our achievements, lessons learned, and next steps.

In 10 years we've come a long way on all three neutrality pillars. We've designed our data center fleet from the ground up for maximum efficiency: on average, our data centers now use 50% less energy than typical data centers<sup>1</sup>. In 2012, we set a goal to match 100% of our electricity consumption with renewable energy. As a result, we've signed more than 20 contracts to purchase more than 2.6 GW of renewable energy directly from new wind and solar farms. We're on track to reach our goal by the end of 2017<sup>2</sup>. And finally, we built a portfolio of more than 40 offset projects that have cumulatively delivered more than 16 million metric tons of high-quality offsets to maintain our neutrality for 10 consecutive years. Thanks to emission reductions, use of renewable energy, and carbon offsets, in 10 years we've avoided releasing more than 21 million metric tons of CO<sub>2</sub> into the atmosphere.

## Our experience procuring carbon offsets for 10 years

In 2012, we published a white paper<sup>3</sup> describing our approach to sourcing carbon offsets. For the past 10 years, we've followed these guiding principles; they've proven to be fundamental to identifying and securing high-quality offsets. We continue to operate under these principles, and in particular, additionality.

Google's additionality criteria is at the core of our neutrality strategy, both for renewable energy and offsets procurement. In the renewable energy space, we want to ensure we are the driver for bringing new clean energy onto the grid<sup>4</sup>, and we follow the same approach with offsets. Before approving a new deal, our team performs thorough due diligence that allows us to be certain the project would not have happened if it hadn't been for the offsets incentive.

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<sup>1</sup> Machine learning finds new ways for our data centers to save energy. Retrieved from <https://environment.google/projects/machine-learning>.

<sup>2</sup> 100% renewable is just the beginning. Retrieved from <https://environment.google/projects/announcement-100/>.

<sup>3</sup> Google's Carbon Offsets: Collaboration and Due Diligence. Retrieved from <https://static.googleusercontent.com/media/www.google.com/en//green/pdfs/google-carbon-offsets.pdf>.

<sup>4</sup> Achieving Our 100% Renewable Energy Purchasing Goal and Going Beyond. Retrieved from <https://static.googleusercontent.com/media/www.google.com/en//green/pdf/achieving-100-renewable-energy-purchasing-goal.pdf>.

This means the avoided emissions are truly compensating for our own emissions. The validation process involves a detailed review of documentation, public records, and on-site interviews. Over the years, the approach has proven to be an irreplaceable method for weeding out projects that do not pass our quality standards.

Another core aspect of our strategy has been establishing long-term partnerships with project owners and developers. Working directly with our partners to identify new project opportunities has allowed us to invest in early-stage projects. Our long-term commitment provides the financial incentives that owners or developers need to deploy initial capital investments. These incentives have been particularly impactful over the last five years, as our long-term commitment eased some of the uncertainty that project owners faced when the carbon price in the voluntary market decreased significantly. Our financial commitment also allowed project owners to maintain high standards for project maintenance and expansion; in some cases, they used this revenue to implement other projects in the communities where they operate.

## Next Steps

Since the beginning of the program, we envisioned carbon offsets as an interim solution until we reached our renewable energy goals and established scalable mitigation programs for other emissions. This year we will achieve an important milestone: by the end of 2017, Google will reach 100% renewable energy for our global operations. This achievement will significantly reduce our operational emissions and thus the need for offsets.

In the 10 years since we pledged carbon neutrality, we have also procured carbon offsets to mitigate some of the emissions related to the manufacture of servers and construction materials for our data centers. When we first decided to mitigate these impacts, almost no industry guidance existed for estimating certain Scope 3<sup>5</sup> categories, so we created our own accounting methodology. We knew our estimates were rough; still, we decided to procure offsets to mitigate these emissions.

Now 10 years later, accounting methods for Scope 3 emissions have evolved greatly; there are now corporate guidelines under the GHG Protocol<sup>6</sup>, which we follow. But most importantly, Google's supply chain has significantly expanded to support our growth of data center capacity and hardware products. Our long-term goal has always been to drive environmental impact reductions that are scalable and reduce emissions where they occur. Google now has a fully dedicated Responsible Supply Chain team that directly engages and collaborates with our hardware suppliers<sup>7</sup>. As a result, we are shifting our resources from procuring offsets for server manufacturing and construction materials emissions, toward programs implemented directly within our supply chain.

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<sup>5</sup> Scope 3 emissions are indirect emissions from other sources in our value chain, such as purchased goods or services, or capital goods.

<sup>6</sup> Corporate Value Chain (Scope 3) Standard. Retrieved from <http://www.ghgprotocol.org/standards/scope-3-standard>

<sup>7</sup> Creating a Responsible Supply Chain. Retrieved from <https://static.googleusercontent.com/media/www.google.com/en/about/assets/pdf/2016-Responsible-Supply-Chain-Report.pdf>

This change in approach has a twofold impact. First, we were able to improve our supply chain GHG emissions visibility by collecting primary data from suppliers. Although the process is not yet perfect, the data provides us with a much better understanding of where the biggest opportunities are for emission reductions. Second, we believe this shift will drive change in suppliers' behavior, catalyze supply chain decarbonization at scale - not only for Google, but for the industry in general. This will ultimately allow us to have a much larger impact than what we were achieving with offsets.

Finally, we continue to explore new ways of driving down emissions for the remainder of our operational impact - namely, our Scope 1<sup>8</sup>, business travel, and employee commuting. For instance, we are implementing aggressive programs to move employees out of single occupancy vehicles<sup>9</sup>, and we are testing the use of renewable fuels in our facilities and vehicle fleet.

We believe that climate change is a pressing issue, and we are committed to advancing efficiency, renewable energy, and supply chain decarbonization. Emission reductions need to scale to the entire global economy to solve climate change, and we're committed to doing our part. Just as we have for the last decade, we will continue innovating to work toward operating 24x7 on clean energy in all geographies<sup>10</sup>, and we will use high-quality carbon offsets for any remaining emissions that we cannot mitigate to maintain carbon neutral operations.

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<sup>8</sup> Scope 1 emissions are direct emissions from sources we own or control, such as company vehicles or generators at Google's offices and data centers.

<sup>9</sup> Read more about our transportation program goals and achievements in Google's 2016 Environmental Report (page 47).  
<https://environment.google/projects/environmental-report-2016/>

<sup>10</sup> See footnote 4.