Google

24/7 Carbon-Free Energy

Every hour. Every day. Everywhere.
By 2030.

goo.gle/CarbonFreeBy2030

Google Search I'm Feeling Lucky

Google Cloud customers need high-performance computing around the clock

Electricity fuels data centers

Reliable electricity supply enables us to deliver Google services without interruption

Products with >1 billion users

Google’s energy and sustainability journey

Since 2007

Carbon Neutrality

Offsetting operational emissions

Since 2017

100% Renewable Energy

Reducing emissions

By 2030

24/7 Carbon-Free Energy

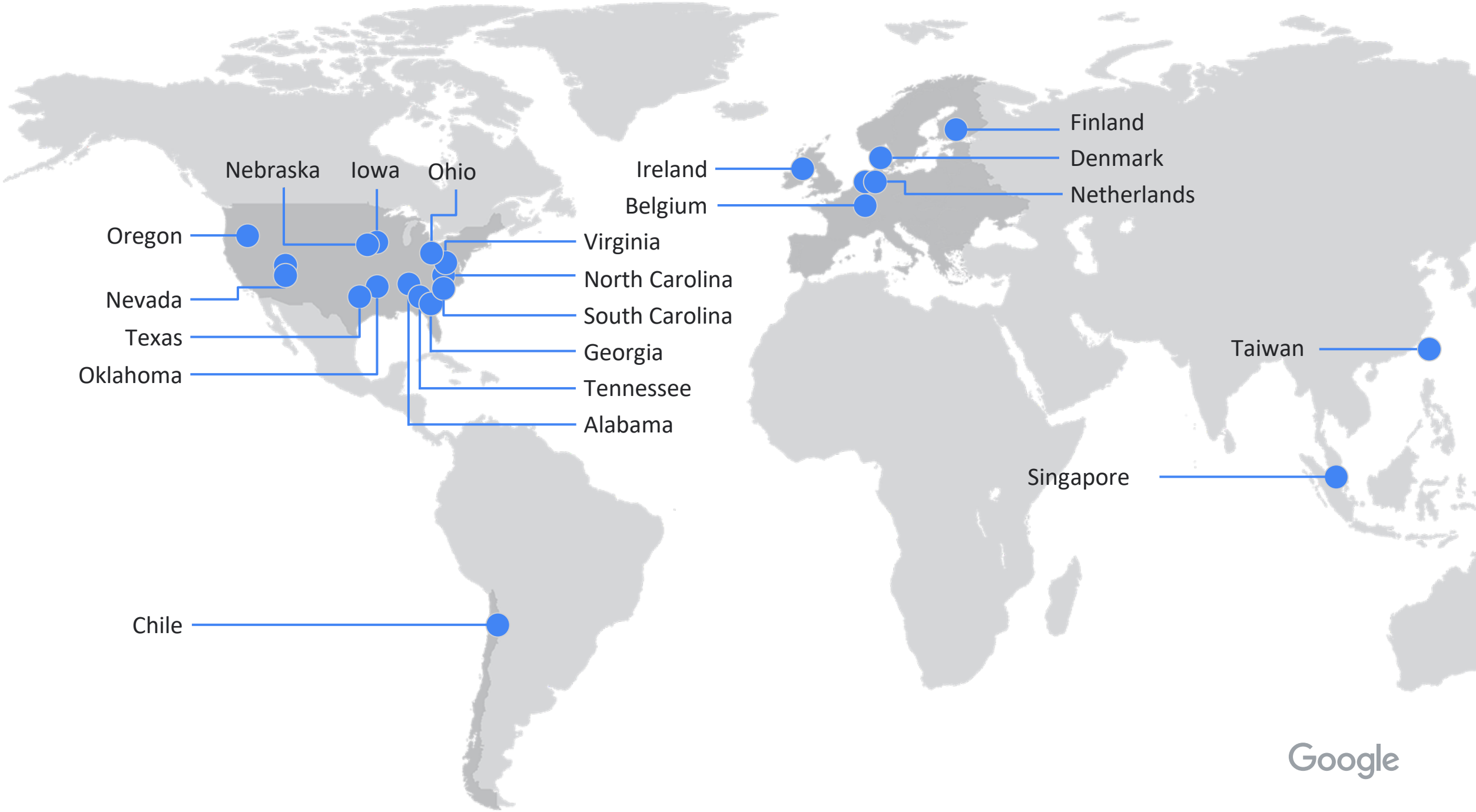
Eliminating electricity emissions

120% Water Replenishment

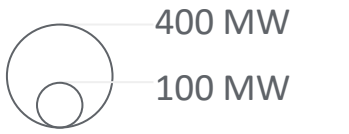
Managing the water we use responsibly

Net-Zero Emissions

Across all operations and value chain


Nebraska
Iowa
Ohio
Oregon
Nevada
Texas
Oklahoma
Virginia
North Carolina
South Carolina
Georgia
Tennessee
Alabama
Chile
Ireland
Belgium
Finland
Denmark
Netherlands
Taiwan
Singapore
Google

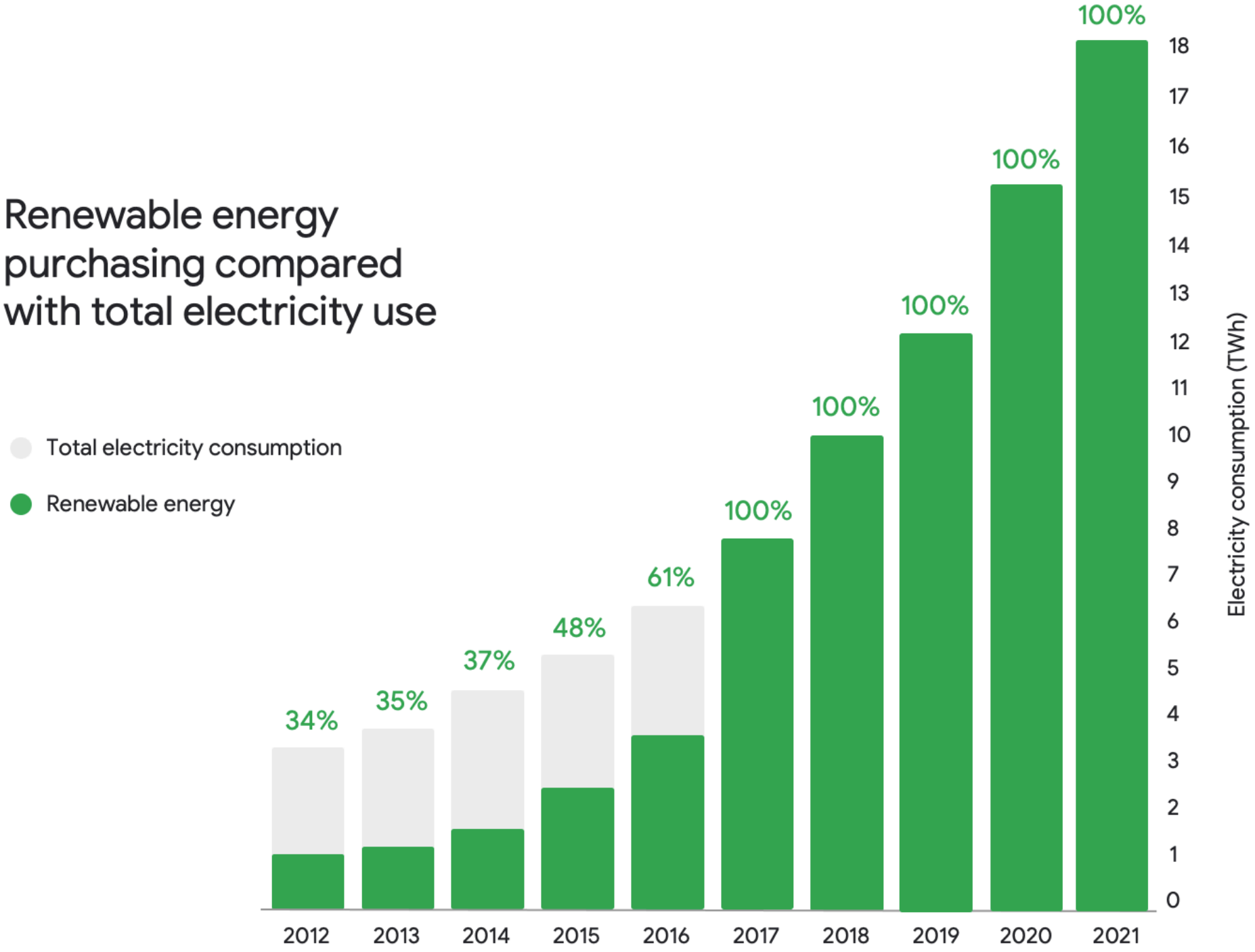
More than
55 renewable
energy projects
worldwide



Wind Solar

Google

Renewable energy purchasing compared with total electricity use



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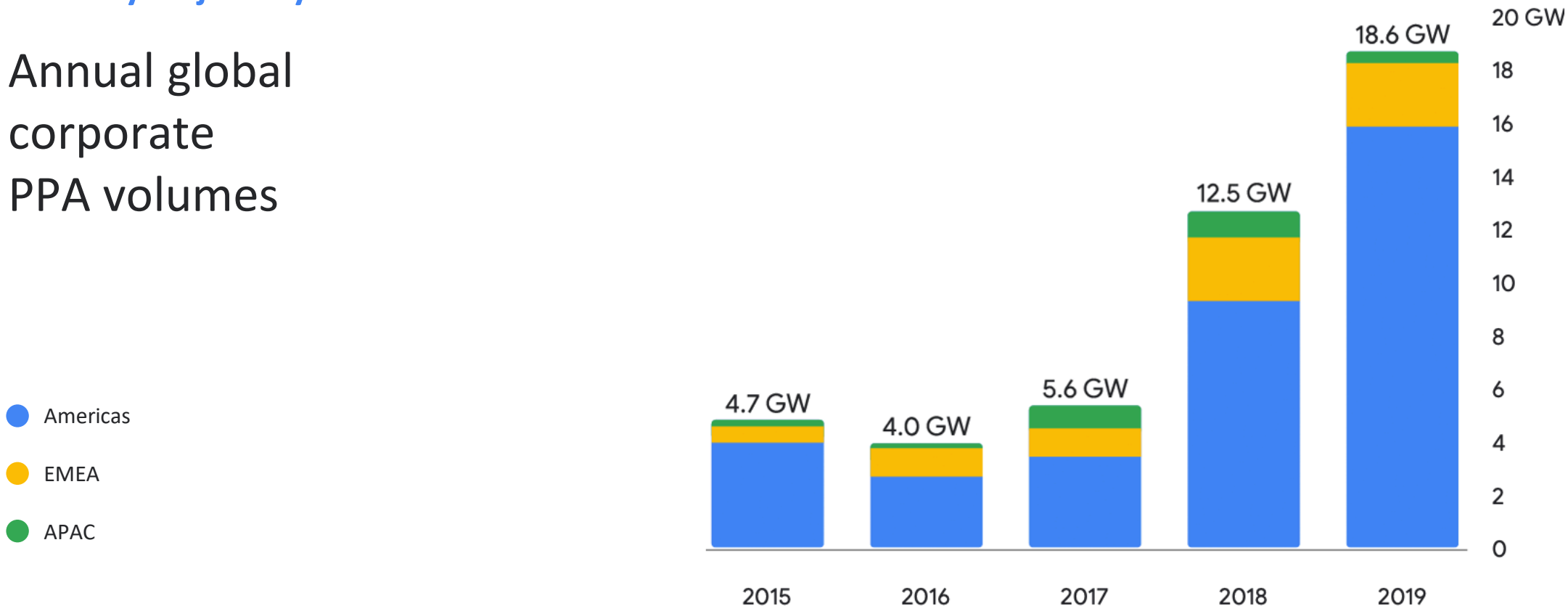
We want every organization to have a viable and cost-effective pathway to source carbon-free energy

Industry trajectory

Annual global corporate PPA volumes



Source: businessrenewables.org/corporate-transactions

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Key strategies

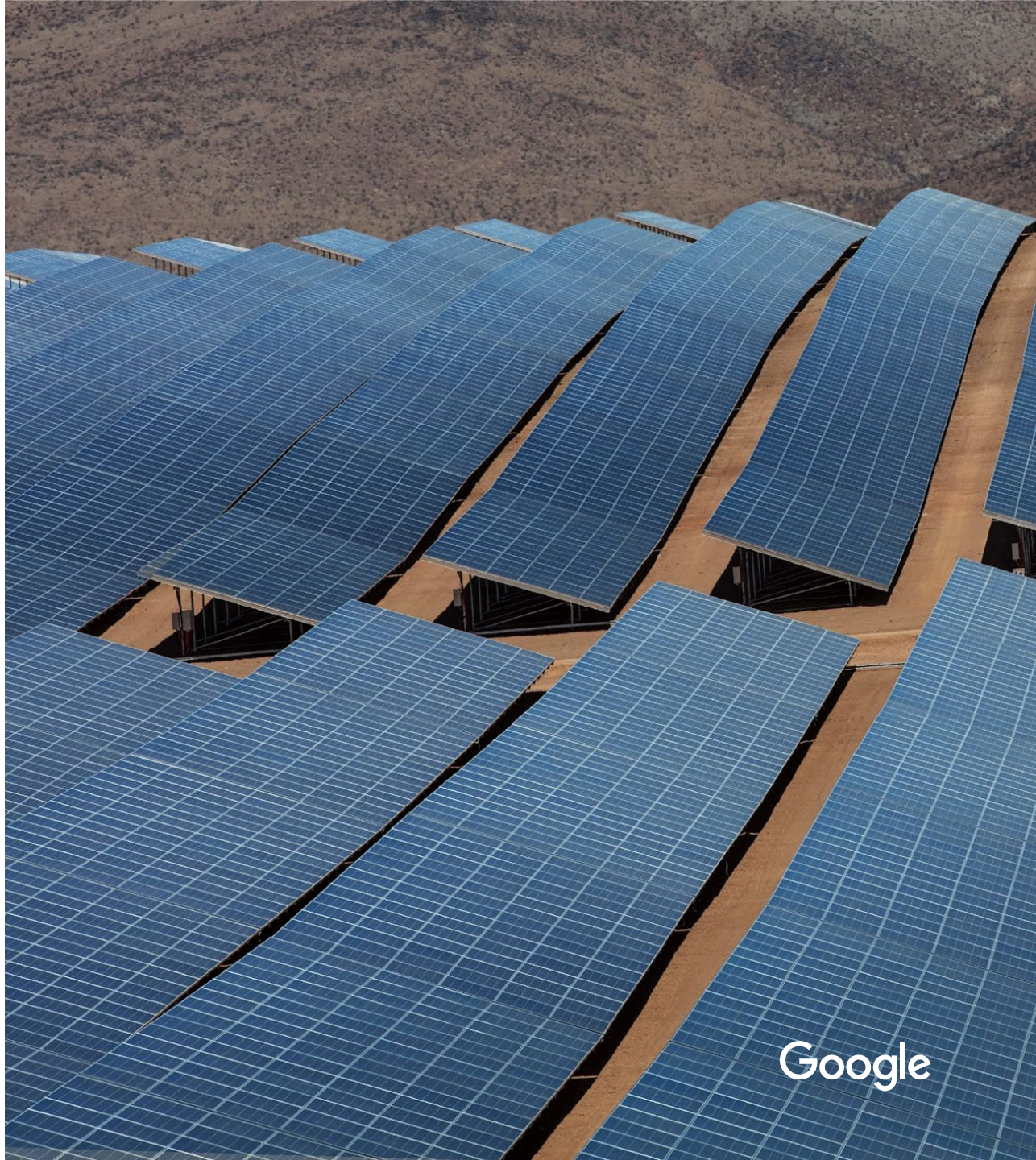
Moving toward 24/7 Clean Energy

Purchase multiple types of renewables in more regions

Employ technologies to improve the economics and performance of existing renewables

Explore next-generation carbon-free energy technologies

Remove policy barriers



Benefits of 24/7 Carbon-free Energy

Greater Emissions Reductions

Faster Retirement of Fossil Fuel Capacity

Accelerate Technology Innovation

Reduce Financial Risks of Procurement

Focusing Policy Advocacy

Economic development

Google has spurred more than **$7 billion** in renewable energy projects worldwide

Thousands of clean energy jobs created

Source: Google Blog

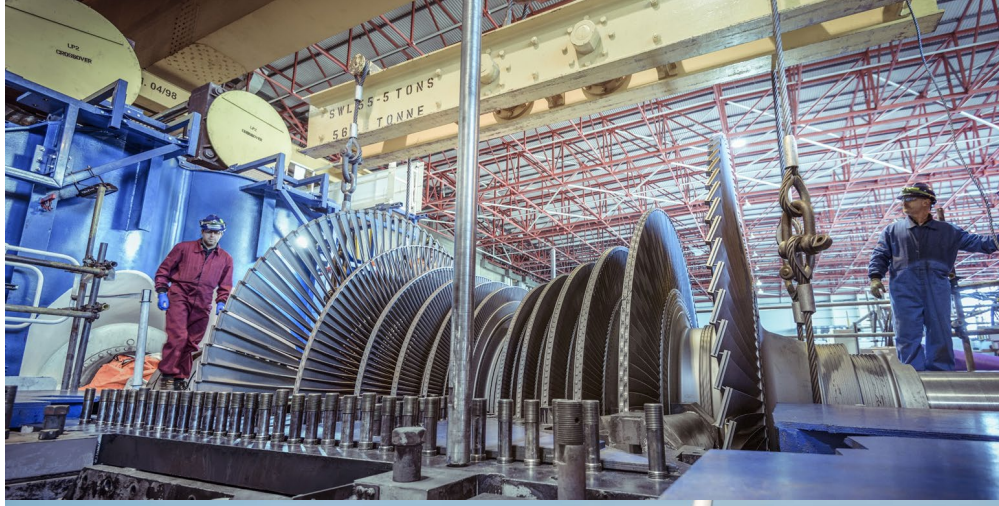
Google

Why 2030?

The cost of clean energy technologies like solar PV, wind, and batteries has seen historic declines

Governments and utilities are making strong clean energy commitments to speed grid decarbonization

We are making progress on developing and commercializing new carbon-free technologies



Google’s Approach

24/7 Carbon-Free Energy

Purchasing

Buy more and different types of clean energy deployed locally

Technology

Accelerate technology innovation

Policy

Advocating for policy changes to decarbonize electricity grids

Impact

Research by leading organizations confirms decarbonization impact of 24/7 CFE procurement

General Conclusions

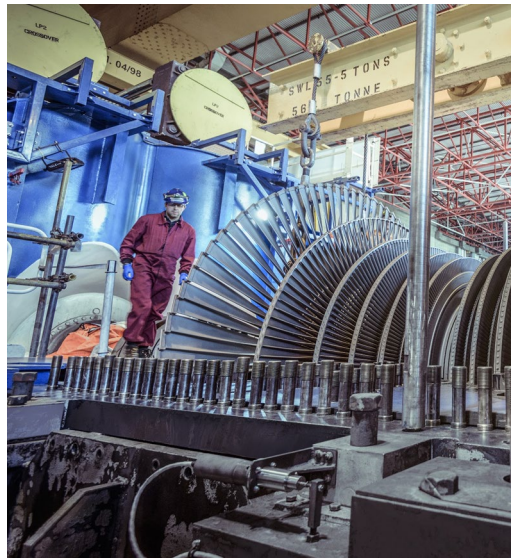
Lower emissions for both buyer and the electricity system

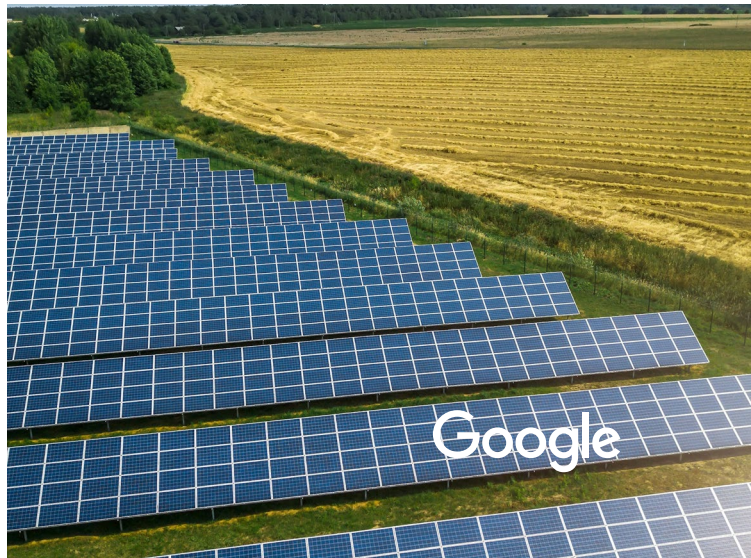
Has higher value for system, driving more retirement of fossil-based assets

Modest cost premium compared to 100% annual RE matching

Premium is reduced with advanced tech, including clean dispatchable and advanced storage technologies

Creates early market for advanced tech, stimulating innovation and cost reductions that benefit entire system





goo.gle/IEA-Report
goo.gle/TU-Berlin-247
acee.princeton.edu/24-7

Example: Policy

Spurring a Global Movement

U.N. 24/7 Carbon-free Energy Compact

A global group of companies, governments, and organizations actively engaged in accelerating the technologies, policies, tools, ideas, and advocacy that will collectively realize 24/7 CFE for all. More than fifty signatories and counting …

Clean Energy Buyer's Association

A community of ~300 energy customers and partners committed to achieving a 90% carbon-free U.S. electricity system by 2030.

Momentum: Others Adopting 24/7 CFE goals

U.S. Federal Government, Microsoft, Iron Mountain,
City of Des Moines, +

SUSTAINABLE ENERGY FOR ALL

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CEBA

cebuyers.org

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