

Energy Earthshots™ are the frontiers of the clean energy transition.



Hydrogen Shot™ | Accelerate innovation and increase demand for clean hydrogen by reducing the cost by 80%—to \$1 per 1 kilogram of clean hydrogen—within the decade.



Long Duration Storage Shot™ | Achieve affordable grid storage for clean power—anytime, anywhere—by reducing the cost of grid-scale energy storage by 90% for systems that deliver 10+ hours of duration within the decade.



Carbon Negative Shot™ | Enable removal of CO₂ from the atmosphere and durable storage at meaningful scales for less than \$100/net metric ton of CO₂-equivalent within a decade.



Enhanced Geothermal Shot™ | Reduce the cost of enhanced geothermal systems by 90%, to \$45 per megawatt hour by 2035 to unlock Earth's nearly inexhaustible heat resources to provide reliable, clean power for Americans and expand opportunities for a robust domestic geothermal industry.



Floating Offshore Wind Shot™ | Reduce the cost of floating offshore wind energy by more than 70% by 2035 to position the U.S. as a leader in floating offshore wind design, development, and manufacturing.



Industrial Heat Shot™ | Develop cost-competitive industrial heat decarbonization technologies with at least 85% lower greenhouse gas emissions by 2035 to put the American industrial sector on course to reduce its carbon-equivalent emissions by 575 million metric tons by 2050.



Clean Fuels & Products Shot™ | Decarbonize the fuel and chemical industry through alternative sources of carbon by advancing cost-effective technologies that achieve 85% lower net greenhouse gas emissions by 2035.



Affordable Home Energy Shot™ | Reduce the cost of energy-efficient retrofits in affordable homes by 50% and decrease residents' energy costs by at least 20% within a decade.



“This is our generation’s Moonshot... we choose to solve the climate crisis.”

U.S. Secretary of Energy
Jennifer Granholm, April 2021



DOE’s Energy Earthshots™ Initiative, which sets technical and cost goals in key next-generation clean energy technologies—is **accelerating research, development, and demonstration breakthroughs of more abundant, affordable, and reliable clean energy solutions by 2035** to address the climate crisis.

This effort was based in part on DOE’s highly successful SunShot, which set out in 2011 to **slash the cost of solar energy 75% within a decade** (and did so three years early). When President Biden took office, he understood the climate crisis called for a different kind of Moonshot.

Eight Energy Earthshots have been announced, in **hydrogen, carbon dioxide removal, long duration energy storage, floating offshore wind, enhanced geothermal, industrial heat, clean fuels and products, and affordable home energy**. Together, these efforts take an economy-wide look at how we can tackle climate change while supporting American innovation and creating thousands of good jobs.

Energy Earthshots represent a commitment to the collaborative R&D powering the energy transition. DOE is working to expand the solution set and give communities more technologies and more options. When achieved, these targets will support the private sector launch of new clean energy industries, help create quality jobs, lower energy costs for families across the country, and avoid hundreds of millions of tons of greenhouse gas emissions.

The Energy Earthshots drive integrated program development across DOE’s Office of Science and applied energy offices to **address the toughest technological challenges and drive down the costs of our most promising next-generation clean energy technologies**.

Each Energy Earthshot goal is based on extensive analysis. From identifying the toughest remaining research, development and deployment barriers preventing next-generation technologies from getting to market, to analyzing the technologies and fine-tuning the goals so that they are ambitious, yet achievable—**Energy Earthshots are the fearless innovations powering the clean energy transition**.

Achieving them will change peoples’ lives for the better—transforming homes, environments, and livelihoods.

