This investment supported a breakthrough, grid level energy storage technology, able to deliver storage services at a tenth the cost of current leading storage technologies, which will enable the widespread incorporation of renewable power onto the grid and decrease greenhouse gas emissions.

While progress has been made in incorporating renewables onto electricity grids around the world, the lack of a cheap, reliable technology to store intermittently produced electricity from solar and wind for use at other times (e.g. at night) has limited the spread of renewables. A grid level energy storage technology capable of delivering storage services for a tenth the cost of a lithium battery bank (the current market leader), would dramatically change the economics of both storage and renewables, and could significantly accelerate renewables adoption. Answering this challenge, Quidnet is developing a breakthrough energy storage technology that utilizes abandoned oil and gas wells. During times of excess electricity production, electricity is used to pump liquid into an abandoned well, where it is stored under pressure. When electricity demand exceeds what other plants on the grid can produce, the liquid in the well is released, where it spins a turbine at the surface to generate electricity and deliver it back to the grid. This seed round has enabled Quidnet to take the technology from the concept stage to commercial implementation.
Grid level energy storage technology, able to deliver storage services at a tenth the cost of current leading storage technologies, which will enable the widespread incorporation of renewable power.

This company furthers progress towards reducing emissions by 1 GT C/Y by 2050 by increasing electricity production from renewables technologies.

Strategies to Reduce Emissions by 1 Gt CO2e per year by 2050

- Create alternative travel methods or decrease travel miles
- Increase electrification of transportation sector
- Increase use of alternative transport fuels (e.g. biofuels, hydrogen)
- Increase building or industrial energy efficiency
- Increase carbon efficiency of fossil-fuel based transport
- Increase carbon efficiency of fossil fuel power plants
- Fuel switch from coal to lower carbon fuels
- Sequester CO2 from fossil fuel-fired power plants
- Increase electricity production from nuclear technologies
- Increase electricity production from renewables technologies
- Increase abundance or capacity of natural carbon sinks

This analysis is adapted from the Princeton University Carbon Mitigation Initiative’s Stabilization Wedges.
Indirect Charitable Impact from Climate Change Mitigation

Because this company helps to mitigate climate change, it also has indirect impacts on existing charitable purposes.

Promotes human health
Reduces pollution from fossil fuels and spread of disease

Alleviates poverty: natural disasters
Mitigates frequency and severity of natural disasters, which disproportionately affect the poor

Defends human rights
Protects communities most vulnerable to climate change effects

Combats community deterioration
Mitigates sea level rise and resource degradation

Protects the natural environment
Prevents ecosystem degradation and species extinction

Lessens the burdens of government
Reduces strain on infrastructure and need for climate-related assistance

Environmental Issue

Coal, natural gas, and diesel fueled power plants are a main consumer of fossil fuels and responsible for approximately 40% of global greenhouse gas emissions (European Commission Emission Database for Global Atmospheric Research, 2010 data). Any attempt to address climate change must therefore include a strategy to rapidly decarbonize the power sector. While renewable generation technologies such as wind and solar are readily available, and in many places reaching cost parity with fossil fuel generated electricity, a switch to 100% renewable power has been constrained by the lack of affordable grid level energy storage technologies. Energy storage is a critical complement to renewable technologies as society works towards a fully decarbonized grid. Grid scale energy storage could be used to smooth out electricity production from renewables, by storing the excess when production exceeds demand and putting power back onto the grid after the sun sets or the wind dies down.

While grid level energy storage technologies exist today, in most cases they are far too expensive to be deployed at scale. Quidnet’s ability to leverage existing oil and gas wells alongside existing turbine and pump technologies enables the company to develop energy storage projects at very low cost. As cost has been one of the major barriers to adoption of energy storage (and by extension the deployment of renewables), Quidnet’s approach has the potential to disrupt the energy storage market and lead to the rapid scaling of its technology in the field.

Direct Charitable Impacts

Quidnet’s technology has the potential to protect natural resources by directly mitigating harmful environmental practices in several ways:

- **Land** – reduces environmental damage from fossil fuel extraction. Affordable grid level energy storage will enable the widespread deployment of renewable power, decreasing the need to mine coal or drill for gas/oil. The extraction of coal, gas, and oil exacts a heavy environmental toll, from the direct destruction of natural habitat through practices like strip mining and infrastructure building in remote and pristine areas, to accidental environmental contamination through chemical spills and leaks.

- **Air** – reduces air pollution from fossil fuels. By helping to make renewables a technically feasible source of baseload power, Quidnet’s technology displaces burning fossil fuels for energy. In addition to accelerating climate change, power plant air emissions from burning fossil fuels also harm the health of nearby residents and workers.

Lessens the burdens of government

Quidnet’s technology has the potential to lessen the burdens of government in the following manner:

- **Subsidies:** Through the delivery of affordable grid energy storage services, reduces the need for government energy storage subsidies.

- **Critical Infrastructure:** Enables renewables as a baseload energy source, increasing American energy security.

Charitability and Social Impact Assessment