

## OFF GRID ELECTRIC | TANZANIA

In Tanzania, between 80-90% of the country lacks access to electricity. Most families living in rural off-grid areas use dim kerosene lamps to light their homes at night. Burning fuel inside pollutes the air with harmful particles, which can irritate the eyes and lungs, and puts children at risk of accidentally burning themselves.

[Off Grid Electric](#) (OGE) is a ground-breaking company based in San Francisco and Arusha, Tanzania, with the ambitious aim of powering off-grid homes across Africa with affordable, renewable energy. OGE currently provides solar systems to homes and businesses in rural communities through an innovative financial solution. It offers “solar as a service” to customers who suffer from an expensive grid, an unreliable grid, or have no grid access at all. The company applies the mobile phone industry’s business model to the provision of light and electric power, whereby customers pre-pay for electrical services using mobile money.

OGE was one of the first organizations to offer pay-as-you-go solar home systems, which made basic electricity services (such as clean, bright light and phone charging) accessible to the poorest for as little as USD 0.19 a day. With the growth of pay-as-you-go solar home systems in East Africa, OGE is fulfilling an important niche for very affordable, entry-level systems.

### Key facts

- OGE has brought solar, storage and lighting to more than 100,000 homeowners in its 3.5 years of operations and in doing so, has displaced more than 5 million litres of kerosene for burning to create light.
- OGE’s Million Solar Homes Fund, a novel USD 45 million debt financing fund to finance distributed solar leasing to sub-Saharan African households, is the largest fund of its kind.
- OGE is already at around 1,000 employees, 90% of which are on the ground in Africa, nearly all of which are hired from the country where the operations are focused. If OGE is successful, in future years the job creation would be well over 10,000.

### The problem

Approximately one in five people around the world lack access to reliable energy and electricity. In Sub-Saharan Africa, this amounts to over 600 million people. Demand in this region is also projected to increase four-fold by 2040. The majority of un-electrified households in the developing world use kerosene as the primary source of fuel to light their homes. Burning kerosene emits a number of gases into the atmosphere, with the most prominent among them being CO<sub>2</sub> and black carbon.

### The solution

OGE designs, manufactures, installs, and maintains its solar home system. This system is significantly different from the traditional home solar system in five ways: it is extremely efficient with power; it has a design life of more than a decade; it uses

next generation batteries; it has advanced value-engineered electronic controls; and, it incorporates a pre-paid time-based meter.

Vertical integration enables OGE to overcome typical barriers of solar adoption with proprietary systems, including a software platform and mobile application, a hardware platform, a retail partner network, and direct sales, distribution and service network.

Off Grid Electric was also one of the first companies to successfully attract significant amounts of debt for asset-financing of the solar home systems – crucial for the growth of its customer-credit model. OGE embraces financial innovation as a core tenant of its business model.

OGE closed a USD 45 million ‘Million Solar Homes Fund’ in December 2015, which is the first off-balance sheet, non-recourse special purpose vehicle for distributed solar in Africa. This vehicle will be transformative for the entire off-grid solar industry as it allows solar operators to monetize the PAYG customer lease revenue so they may scale growth in a low-cost, non-dilutive manner.

This vehicle - funded by Ceniarth, Packard Foundation and US AID - takes cues from commercial structured finance and will provide the bridge for operators to transition from expensive equity funding of inventory and receivables to debt funding in a manner that allows companies to scale operations and provide clean, affordable lighting to millions.

### **Helping the planet**

OGE solar systems have so far displaced more than 5 million litres of kerosene for burning to create light. This has prevented more than 13 million kilograms of carbon dioxide from entering the atmosphere and prevented 140,000 kilograms of black carbon from being produced inside households. With between two and three kerosene lamps replaced by each OGE system, the saving from systems currently in use is over 23,000 tonnes of CO<sub>2</sub>e per year.

### **Helping people**

In Sub-Saharan Africa, only 34% of the population has a financial account. By collecting payments via mobile money, OGE is signing up customers for their first formal financial service and giving them a tangible reason for regular use. Payment history collected through OGE’s software accumulates a credit profile for customers, which can help unlock access to other financial services as well.

Through OGE’s financial solution, its services are affordable to 80% of Tanzanian households today. The cost of the OGE service is on par with kerosene for lighting (typically US\$0.25 per day), and customers can pay in the way that suits them best.

OGE’s work benefits numerous groups, including young men and women in Tanzania and Rwanda. Through the OGE Academy, the company now employs over 900 local people, almost all of whom are between 18 and 24 years old and 43% of whom are

women. This is a catalytic source of private employment in economies with upwards of 35% unemployment for this demographic.

Off Grid Electric systems also have a positive impact on community resilience and climate change adaptation. Not only are their customers protected from fluctuations in the price of kerosene, they also benefit from decentralized, renewable energy, which means they are not at the mercy of often unreliable national grid connections.

### **Spillover effect**

OGE has been built from Day 1 for scale as the company's mission is to light Africa within a decade. A key component of this scalability is a proprietary software system (SURGE) which collects data, connects all processes of the company and is the backbone of operations. OGE currently spends approximately 2:1 on software versus hardware as this investment increases the scalability of operations into new geographies.

OGE has created a scalable financing mechanism through its Million Solar Homes Fund. This debt facility allows the company to grow from 100,000 to 350,000 customers in a low-cost, non-dilutive manner. OGE is now exploring similar financing vehicles in Rwanda as well as other new geographies.

Vertical integration, door-to-door sales and data analysis have allowed OGE to build an excellent customer experience into its hardware. This enables the company to potentially enter distribution partnerships, licensing agreements and joint-ventures across the continent. In addition, the OGE Academy creates a scalable mechanism to locate and train top human capital across the continent.

OGE's goal is to reach 12,000 customers in Rwanda by the end of 2016, as well as 150,000 total in Tanzania. It is currently exploring geographic expansion in both Eastern and Western Africa with partners such as Total, EDF, Helios Investment Partners & Solar City. It expects to be operating in 1-2 additional countries by year end 2016.

### **More information**

Digital assets are available for download at: <http://bit.ly/m4c-assets>

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