



# Solar electric energy Tokelau

Can a solar array power Tokelau?

Solar Array's seen on the three tiny islands of Tokelau to completely produce solar power energy. The renewable energy system comprising of solar panels, storage batteries and generators running on biofuel derived from coconut will generate enough electricity to meet 150% of the islands' power demand.

How much electricity does a solar system provide in Tokelau?

Each system alone is among the largest off-grid solar power systems in the world, and together they are capable of providing 150% of current electricity demand in Tokelau, a much higher amount than the 90% that was originally planned for.

Why is electricity so expensive in Tokelau?

Before the PowerSmart systems were installed on the nation's three atolls, Tokelau was highly dependent on imported fossil fuels to meet its energy needs and therefore vulnerable to international price fluctuations and increasing fuel costs, making electricity extremely expensive for both households and businesses.

Why did Tokelau switch to solar?

Yet despite the challenges involved in installing comprehensive solar systems in such a remote location, switching to solar was absolutely crucial for the tiny collection of islands. "Tokelau's atolls are low-lying and especially susceptible to the adverse effects of climate change," Mayhew stressed.

How many people live in Tokelau?

Tokelau is made up of three small atolls, Atafu, Nukunonu and Fakaofu, has an area of around 10km<sup>2</sup>; and is populated by 1,411 New Zealand citizens, all of whom now have their energy needs met by solar electricity systems. "Each system alone is among the largest off-grid solar power systems in the world."

How much does a diesel generator cost in Tokelau?

Indeed, until recently, diesel generators were burning around 200 litres of fuel daily on each atoll, meaning more than 2,000 barrels of diesel were used to generate electricity in Tokelau each year, costing more than \$1m NZD.

kWh/m<sup>2</sup>/day Kilowatts per square metre per day (measure of solar energy) kWp Kilowatts peak of solar panel capacity (at standard conditions) LPG Liquefied Petroleum Gas NZD New Zealand dollars (currency) OTEC Ocean Thermal Energy Conversion PV Photovoltaics TPS Tokelau Public Service UNDP United Nations Development Programme

Because PV technologies use both direct and scattered sunlight to create electricity, the solar resource across the United States is ample for home solar electric systems. However, the amount of power generated by a solar energy ...

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Tokelau - located just south of the equator, with nearly constant solar irradiation year-round - is an ideal candidate for photovoltaics. The three atolls of Fakaofu, Nukunono and Atafu now operate their own hybrid systems. With 1 megawatt of total power, the plants generate more energy than the 1,411 inhabitants of Tokelau need.

For almost eight years Tokelau has enjoyed near 100% renewable energy; and while the TREP equipment is in excellent condition, increasing demand and the gradual decrease in battery capacity has left the systems unable to fulfil their initial role of contributing nearly all of Tokelau's electrical energy needs.

than one type of energy into a grid to increase electricity output efficiency.<sup>14</sup> Islands such as Tumbatu in Zanzibar have a wealth of renewable energy resources, and by utilizing a variety of renewable energy technologies, small islands can develop by satisfying all of their domestic energy needs.<sup>15</sup> Tumbatu Island is the third-largest in the

Tokelau is the first country in the world to produce all its electricity needs from renewable energy. This small Pacific nation with three atolls and 1160 people has switched off its noisy, polluting diesel generators and is ...

Tokelau, a small group of Pacific atolls off the coast of New Zealand, is well on its way to becoming the world's first truly renewable nation. Housing 1,400 people, the island is currently dependent on diesel fuel generators, burning 200 litres of gas daily. However, the residents hope to shed this wasteful habit by October of this year using solar energy.

The South Pacific nation of Tokelau became the first country in the world to have all of its electricity needs met by solar power. Designed by Powersmart Solar in partnership with ITP Renewables, construction of the combined 1 MW of ...

**CASE STUDY 1.3** A hybrid energy system including solar photovoltaic (PV) panels, battery storage, and diesel backup was introduced by the TREP. With the help of the new system, Tokelau's dependency on diesel was to be greatly reduced since 90% of its electricity needs would be met by solar energy (Tokelau Renewable Energy Project, 2013). A ...

in Tokelau, and we can use solar panels to make the sunlight into electricity. The sun's energy is called solar energy, and it's renewable. Tokelau is the first country in the world to use renewable energy to make all its electricity. Everyone in Tokelau is very proud that such a small country has done such a big thing." <sup>16</sup>

Target: 100% renewable energy; Status: Achieved; RES: 1MW off-grid solar energy system across three main atolls of Tokelau. The project includes : 4032 solar modules, 196 string inverters, 112 DC charge ...

Accelerated innovation in both major domains of solar energy (photovoltaics and concentrated solar power) has resulted in the rapid fall of the solar electricity price, opening ...

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The Diesel dependent country will rely on solar energy not only for heating and electricity, but also for cars - powering its entire fleet of cars straight from the Sun; but being fully straight ...

Department of Energy The Department of Energy, based in Fakaofu, is responsible for supply and maintenance of power to all three atolls. Each of the three atolls now has a significant solar panel array that caters for almost all local electric power requirements. Tokelau was said to be the first country in the world to have gone 100% solar, in ...

Samoa is aiming to achieve 100% renewable energy by 2017, while Tokelau has already reached 94% including 100% of its electricity. ... Next April the UK government proposes to increase taxes on self-consumed solar electricity installations on schools, offices, warehouses and factories by a whopping 6-8 times, write the STA and undersigned. This ...

2 ???&#0183; The Los Angeles Times last month (Nov. 24) reported, "In the last 12 months, California's solar farms have curtailed production of more than 3 million megawatt hours of solar energy, either on the orders of the state's grid operator or because prices had plummeted because of the glut, according to an analysis of data by The Times."



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