



# Renewable Communities

Massachusetts cities and towns  
leading the way to 100% renewable energy

## Gosnold: Solar + storage microgrid

The town of Gosnold, comprising the Elizabeth Islands off of Cape Cod, has the smallest population of any municipality in Massachusetts. Most of its 75 year-round residents live on Cuttyhunk, the outermost island and a popular vacation destination in the summer months.

Many island communities face challenges in providing energy to their residents. Often, it is uneconomical to run an underwater transmission line to an island with a small population, leaving residents dependent on generators powered by expensive, dirty fuels that have to be brought in by boat. Until recently, Gosnold relied exclusively on diesel-powered generators to provide electricity.<sup>1</sup>

In 2012, the town received a \$2.15 million grant from the U.S. Department of Agriculture to begin development of a microgrid, which went into operation in January 2017.<sup>2</sup> A microgrid is a localized energy grid which can be connected or disconnected from the traditional grid. Because it contains a source of electricity generation, a microgrid can keep communities powered during a grid outage. Some microgrids use a combination of energy storage and renewable energy resources, like solar panels, to provide a pollution-free and reliable supply of electricity.<sup>3</sup>

Gosnold's solar microgrid is one of the first community-scale microgrids in the United States. The system will save 30,000 gallons of diesel per year, reduce air pollution, and avoid the cost of purchasing and transporting fuel to the island.<sup>4</sup>

The Cuttyhunk Light and Power Company, the town's utility, worked with the Massachusetts-based firm Solar

Design Associates to install solar panels on a plot of land leased from a private owner.<sup>5</sup> The 351-kilowatt solar array feeds into a 1.25-megawatt-hour lithium ion battery. At times when the solar panels are generating more electricity than is consumed, the excess electricity is stored in the batteries for later use. This system enables the community to be powered by clean electricity even when the sun is not shining.<sup>6</sup>

During the summer, the solar panels provide more than 50% of Cuttyhunk's electricity consumption, with the remainder coming from diesel generators. As seasonal residents move back to the mainland for the winter, it is expected that the solar microgrid could cover up to 80% of the island's electricity demand.<sup>7</sup>

1. "No Fish Story. Tiny Island Lands Big Catch with Microgrid," Elisa Wood, Microgrid Knowledge, 12 September 2017, <<https://microgridknowledge.com/solar-plus-storage-microgrid-cuttyhunk/>>.

2. "Solar and battery system helps power Gosnold island," Meredith Gabriliska, Massachusetts Municipal Association, 10 October 2017, <<https://www.mma.org/solar-and-battery-system-helps-power-gosnold-island/>>.

3. "How Microgrids Work," Allison Lantero, U.S. Department of Energy, 17 June 2014, <<https://www.energy.gov/articles/how-microgrids-work>>.

4. "No Fish Story. Tiny Island Lands Big Catch with Microgrid," Elisa Wood, Microgrid Knowledge, 12 September 2017, <<https://microgridknowledge.com/solar-plus-storage-microgrid-cuttyhunk/>>.

5. Ibid.

6. "Solar and battery system helps power Gosnold island," Meredith Gabriliska, Massachusetts Municipal Association, 10 October 2017, <<https://www.mma.org/solar-and-battery-system-helps-power-gosnold-island/>>. "Solar with Energy Storage Success: Cuttyhunk Island, MA Celebrates Its First Summer Going Majority Solar-Powered," Business Wire, 30 August 2017, <<https://www.businesswire.com/news/home/20170830005132/en/Solar-Energy-Storage-Success-Cuttyhunk-Island-MA>>.

7. "Cuttyhunk electric supply goes half-solar with a 'mini-grid,'" Steve Urbon, The Standard-Times, 30 August 2017, <<https://www.southcoasttoday.com/news/20170830/cuttyhunk-electric-supply-goes-half-solar-with-mini-grid>>.