

# Growing Interest in Developing Navajo Utility-Scale Solar Industry

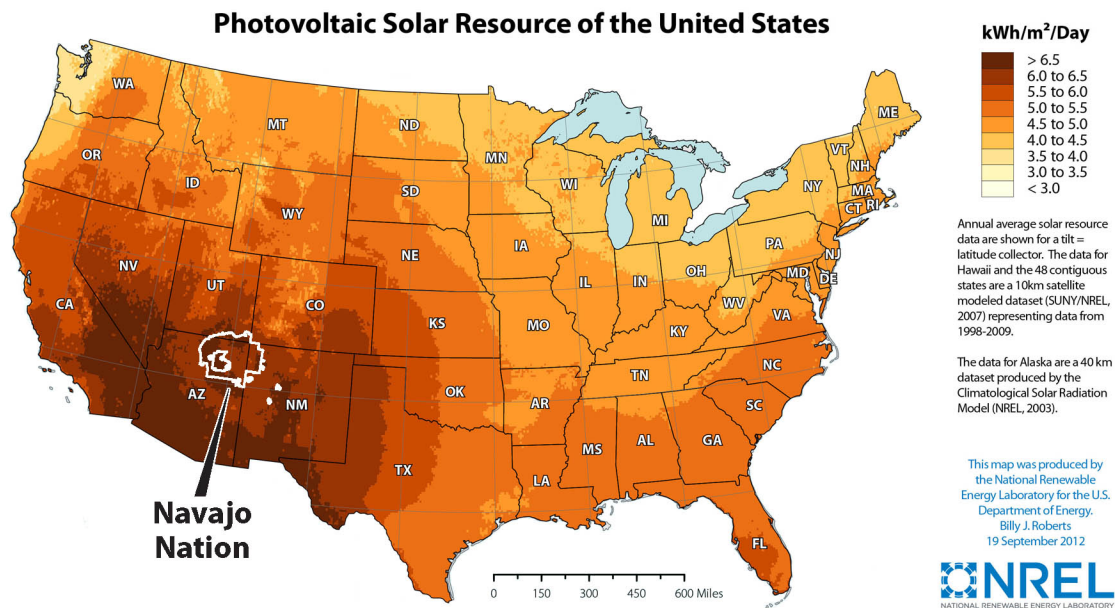
*Policy Momentum and Grassroots Support; Vast Tribal  
Natural Resource Remains Largely Untapped*

## Introduction

Various interests across the Navajo Nation are showing a growing appreciation for the commercial possibilities in solar generation over an area that has long been dependent on increasingly outdated coal-fired electricity generation and imported electricity.

This emerging interest in utility-scale solar is driven in no small part by the large-scale deployment of solar generation throughout the Southwest, which continues to grow rapidly as utilities “stop thinking of solar as a problem to be managed, and start thinking of it as an asset to be maximized,” as one prominent industry researcher has recently noted.<sup>1</sup>

Few locales in the U.S. are richer in solar potential than the Navajo Nation, as is clear on the map below, borrowed from researchers at the National Renewable Energy Laboratory and repurposed here by IEEFA to highlight how Navajo tribal lands are situated in the middle of the most sun-rich region of the country.



<sup>1</sup> S&P Global Market Intelligence: “Solar can be flexibly dispatched with other plants, research concludes” (October 2018)

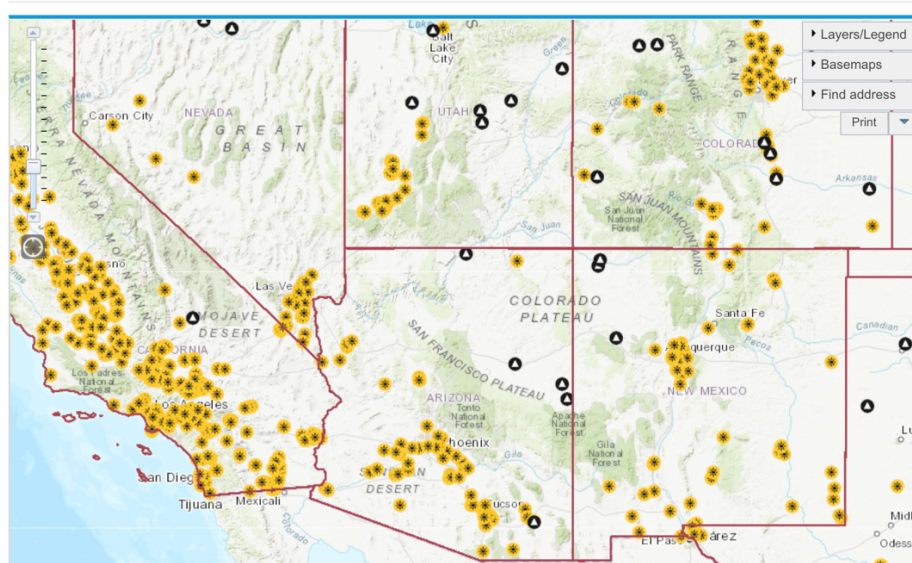
**Nascent, homegrown momentum for utility-scale Navajo solar-generation development appears to be developing on three fronts:**

- In an **evolving tribal utility policy** toward more utility-scale solar, a shift driven in part by the success of the Kayenta Solar Facility, a 27.3MW, 200-acre project that came online in 2017 and is now feeding into the regional grid. Kayenta, seen as a pilot for similar initiatives, is also serving as a training ground for large scale solar-installation-and-construction expertise.
- In **central tribal government support** for more solar infrastructure in general, including for community-owned solar farms that allow for revenue streams to be shared with local tribal chapters and land owners. Of note on this front: The creation in recent weeks of the Office of Energy Resources and Development.
- In **campaigns to bring community-owned solar projects** into locales that have access to key transmission lines and where ownership models are expected to include revenue streams for the Navajo Nation and local tribal chapters alike.<sup>2</sup>

To be sure, challenges to utility-scale solar production on Navajo tribal lands persist. Many are related to land acquisition for solar farms, which typically require sizeable acreage. Full-scale solar arrays are seen as incompatible in certain locales where lands are traditionally dedicated to grazing, for instance.

Few models for utility-scale solar generation exist on tribal lands, and indeed such lands represent something of an island in a regional sea of utility-scale solar that is spreading west from the Front Range of Colorado and Albuquerque and east from Arizona, California, and Nevada, as shown in the screenshot here from an Energy Information Administration database (sunbursts indicate utility-scale solar plants ).

U.S. Energy Mapping System



<sup>2</sup> IEEFA: Window of Opportunity: Navajo Solar: A Fast-Track Community-Driven Development Approach (December 2017)

That said, the Kayenta project, rolled out a little over a year ago as a utility-scale demonstration project by the Navajo Tribal Utility Authority on the outskirts of the northeastern Arizona community of Kayenta, has proven so successful that the utility began work on a second phase in August. Due for completion in June 2019, the expansion will double the size of the existing Kayenta facility.<sup>3</sup>

That project, along with policy developments at the Navajo Nation central government level and in early-stage community-development initiatives on tribal lands indicate a growing interest in solar initiatives.

Those impulses are driven apparently in part by market changes due to the electricity-generation transition occurring nationally and in part by how that shift is likely to put the Navajo Generating Station out of business.

It should be noted that one mandate of the Navajo Tribal Utility Authority is to bring electricity to the entirety of the Navajo Nation, where some 15,000 households still lack electricity. Serving that void may well require more off-grid free-standing solar generation, where technology advances and falling costs are making that an increasingly viable solution. Those possibilities are beyond the immediate scope of this research brief.

## Evolving Tribal Utility Policy

The Navajo Tribal Utility Authority (NTUA), established in 1959 to manage electrification across Navajo lands, provides power to about 41,000 homes<sup>4</sup> over a sprawling area that includes parts of four states (Arizona, Colorado, New Mexico, and Utah). NTUA, based in Fort Defiance, Ariz., is overseen by the Navajo Nation government in nearby Window Rock, which appoints the utility's seven-member board.<sup>5</sup>

NTUA has more than 700 people on its payroll, making it one of the largest employers in the region.

Navajo Nation jurisdiction—and by association, NTUA jurisdiction—covers about 27,000 square miles, an area bigger than some states, among them Connecticut, Massachusetts, New Jersey and West Virginia.

Like most utilities, NTUA has been historically reliant on coal-fired power generation, an increasingly expensive proposition and one that is faltering as more natural-gas-fired and renewables generation comes onto the grid that ties Navajo lands with much of the rest of the Southwest.

In a move toward power-generation modernization, NTUA last year built the Kayenta Solar Facility and brought it online in June 2017. NTUA estimates that the \$60 million, 27.3-megawatt project has the capacity to produce enough electricity to power 13,000 homes.

Because property rights are so prized by communities and families across the Navajo Nation, land acquisition was one of the main hurdles in bringing the project to fruition.<sup>6</sup> An agreement with the

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<sup>3</sup> SRP: NTUA, SRP and Navajo Nation Leaders Celebrate Groundbreaking Ceremony for Kayenta II to Celebrate Commitment to Develop Renewable Energy Projects on Navajo Nation (August 2018)

<sup>4</sup> Navajo Tribal Utility Authority

<sup>5</sup> NTUA board of directors

<sup>6</sup> Kayenta Solar Project Operational, Sending Power to the Grid (June 2017)

Kayenta Chapter of the Navajo Nation allowed it to proceed, however, and the solar farm today is considered such a success that it is being expanded with a second phase to double its size by mid-2019.

“The second phase of the Kayenta Solar Project demonstrates the Navajo Nation’s commitment to a responsible transition to renewable energy sources,” said Speaker of the Navajo Nation Council LoRenzo Bates when the project expansion was announced in late August.<sup>7</sup> “We are creating jobs and revenue from an emerging market, while remaining mindful of the associated costs, the time that it will take to transition, and other sources of energy development.”

NTUA officials tout Kayenta as a model initiative that—while offering limited long-term job opportunities—created almost 300 construction jobs, provided built-in job-training, and set off significant local economic ripples.

The utility will host a job fair in late November to fill 100 openings for Kayenta II construction, which is scheduled to begin this year and come online by June, Solar-installation workers trained at Kayenta have been hired to work on similar projects in the region, including ones near Gallup and Albuquerque, N.M. and expectations are that demand for solar-trained workers will continue across the region.

NTUA has increasingly promoted the tribal benefits of solar development on several points, including job creation, tax revenues and its potential in helping meet its mandate to electrify all Navajo Nation homes.

## Central Tribal Government Support

While most publicity of late around Navajo energy policy has centered on the fate of Navajo Generating Station (NGS), an aging coal-fired power plant that in combination with its source mine has been a mainstay of the economy<sup>8</sup> along the northern reaches of the Navajo Nation, discussions around diversifying the tribe’s resource development have intensified.

As uncertainty has grown as to whether NGS will survive,<sup>9</sup> the government in recent weeks has moved to establish the Office of Energy Resources and Development with an eye toward fostering “a competitive business environment to attract investors, to engage key governmental and community representatives, to serve as an apolitical informational resource for tribal leadership, to develop policies and plans regarding energy use and corridors, and to supersede all direction and control of energy development on the Navajo Nation.”<sup>10</sup>

**A market-driven  
urgency for energy  
policy modernization.**

The idea behind the new office, which is to be operated under the auspices of the Navajo Nation Division of Natural Resources, is to build on previous policy modernization<sup>11</sup> whose core publicly-stated goals seem likely to remain intact:

<sup>7</sup> NTUA, SRP and Navajo Nation Leaders Celebrate Groundbreaking Ceremony for Kayenta II to Celebrate Commitment to Develop Renewable Energy Projects on Navajo Nation (August 2017)

<sup>8</sup> Just Transition Fund: “Letter From Window Rock” (October 2018)

<sup>9</sup> IEEFA update: “The hurdles to an economically viable Navajo Generating Station remain” (July 2018)

<sup>10</sup> Navajo-Hopi Observer: “Navajo committee reviews establishment of Navajo energy office” (October 2018)

<sup>11</sup> Navajo National Energy Policy of 2013: Navajo Land Summit

- “Gain control of the Nation’s energy resource management and development.”
- “Optimal returns and equity from energy development.”
- “Eventually become self-sustaining in energy markets.”

The initiative is rooted in common aspirations sometimes overshadowed by the politics of the moment and that revolve around transparency, ensuring that natural resources are “used for the benefit of the Navajo people,” that they be “self-sustaining” and they guarantee “total resource sovereignty.”

The push for a more modernized tribal energy policy is surfacing anew not solely because of the likely loss of NGS. Other forces at work include the mainstream rise of utility-scale solar electricity generation and the fact that the Navajo Nation is in the middle of a region dubbed “the Saudi Arabia of solar.”<sup>12</sup>

Also driving interest in Navajo solar: A 2017 agreement<sup>13</sup> between the Navajo Nation and the current owners of NGS that guarantees the tribe lease access to “at least 500 megawatts (MW)” of capacity on two major transmission lines across Navajo lands.

Collectively, these dynamics—the rise of solar-powered electricity generation, the unique geography of the region, the transition occurring in power production regionally and nationally, and local interest in energy independence and security—are creating a growing urgency for policy modernization.

## Community Solar Initiatives

Advocates for community-based solar initiatives are emerging as on-the-ground agents for local Navajo initiatives that leverage the rapid build-out characteristics of solar power with ownership models that allow for full local participation in site-scale decisions, project scale and revenue.<sup>14</sup>

One example: The Navajo Nation tribal chapter at LeChee, just a few miles south of the NGS plant, which is in discussions now around the possibility of building a utility-scale solar project that would ensure revenue streams for the tribal government over 200 miles away at Window Rock *and* the local community.

While solar initiatives are not seen as replacements for the tax revenue base and jobs historically supplied by NGS, they are considered a significant component in local economic-development plans in communities like LeChee. Similar, immediate opportunities are seen also at Cameron about 70 miles to the south of LeChee and at Kayenta, roughly 100 miles to the west.

**Activity at LeChee, and budding opportunities across tribal lands from Cameron to Kayenta.**

<sup>12</sup> IEEFA: Window of Opportunity: Navajo Solar: A Fast-Track Community-Driven Development Approach (December 2017)

<sup>13</sup> 23<sup>rd</sup> Navajo Nation Council: NGS owners to sign lease agreement after approval by the Navajo Nation Council (June 2017)

<sup>14</sup> IEEFA: Window of Opportunity: Navajo Solar: A Fast-Track Community-Driven Development Approach (December 2017)

Such geographic diversity speaks to the potential in community initiatives, which are said to be encouraged by the Navajo Nation government since even with its central authority it is in no position to closely administer such far-flung projects.

Community solar advocates are sometimes at odds with NTUA priorities, and community-solar supporters criticize NTUA for what some see as its monopoly behavior, but such stances appear not to be keeping community initiatives from developing.

The challenges facing community-solar ambitions include the same ones facing any utility-scale solar project on tribal land. Chief among them is the acquisition of development rights on lands that are closely held by families and that have historically been seen as bastions against exploitation by outside interests.

Initial indications are that viable utility-scale solar projects in the region must be built with a capacity on the order of 500-1,000MW, a requirement that demands hundreds of acres of land. That said, discussions have occurred around arrays designed to accommodate traditional grazing rights while ensuring equitable ownership arrangements that benefit all parties.

Openings are developing quickly, as described in a research report jointly published 10 months ago by IEEFA and Diné Innovative Network Economies in Hozho:

“As the solar-industry footprint expands, Navajo communities are being courted by outside interests to participate in fast-moving development deals. The Navajo Nation, only 67 years old and built from a history of trauma, is not well-equipped to assess these opportunities, but tribal-chapter communities can get up to speed with proper advice and consultation.”

## Summary

While utility-scale solar generation on Navajo tribal lands remains in its early stages, interest in its expansion is supported on several fronts.

- In Window Rock, the seat of the Navajo Nation government.
- At the Navajo Tribal Utility in Fort Defiance.
- In several exploratory community tribal-chapter initiatives.

The region is blessed with abundant utility-scale solar resources and has access to key transmission line capacity that will come open with the likely closure of the coal-fired Navajo Generating Station.

While utility-scale solar is not seen as a replacement for NGS job and revenue losses, it can be a component of a new tribal energy economy that can bring distributed economic benefits and greater energy independence to the region.

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The Institute for Energy Economics and Financial Analysis conducts research and analyses on financial and economic issues related to energy and the environment. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy. <http://ieefa.org>

## About the Author

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