

POLICY FORUM



A Navajo hogan at Baby Rocks, Arizona has rooftop photovoltaic solar panels.

CLEAN ENERGY LANDSCAPE

The unprecedented opportunities for tribal renewable energy include more than \$13 billion from the 2021 Infrastructure Investment and Jobs Act (IIJA) and more than \$720 million from the 2022 Inflation Reduction Act (IRA) (2–5). This is an important down payment on the more than \$75 billion needed to develop land-based wind and photovoltaic solar potential on tribal lands in the 48 contiguous states (1), where the National Renewable Energy Laboratory estimates 17,600 billion kilowatt-hours per year (kWh/year) of solar energy potential and 535 billion kWh/year of wind energy potential (6).

Indian Country can attain many millions of dollars in cost savings, better align energy systems with tribal environmental values, meet the energy needs of tribal families (see the photo), and contribute to US energy security. This transition in Indian Country is slowly materializing (7). The US Department of Energy (DOE) is the major funder. Through its Office of Indian Energy Policy and Programs (DOE IE), the DOE has invested, independent of the IRA and the IIJA, \$114 million in more than 200 tribal energy projects that span the range from feasibility studies to deployment for energy efficiency and renewable energy investments (see the figure), with \$58 million appropriated in 2022 alone. But the DOE is not the only funder. For example, in 2022, the California Energy Commission awarded a \$31 million grant to the Viejas Tribe of Kumeyaay Indians for a 60-MWh long-duration energy storage project.

In 2022, the Red Lake Band of Chippewa Indians received approval of the first certified Tribal Energy Development Organization, a majority tribal-owned business organization that establishes sovereign authority over energy development, especially for energy-related leases and rights-of-way. Examples of utility-scale renewable energy projects include the 250-MW Moapa Southern Paiute Solar Project (2016) and the Navajo Nation Kayenta Solar Program (phases I and II in 2017 and 2019, respectively; 55 MW combined). Small-scale projects include the Seneca Nation's 1.7-MW wind turbine and the Picuris Pueblo's 1-MW community solar array. Utility-scale projects involve hundreds of millions of dollars, making recent climate incentives under the IIJA and IRA potentially game-changing for tribes. The total project cost for Kayenta Solar phase I was about \$61 million, partly funded by tax credits and federal loans.

RENEWABLE ENERGY

Opportunities to grow tribal clean energy in the US

Bold action is needed to address unmanageable time scales, limited access to information, and a need to build capacity

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As governments plan their transitions to renewable energy, Indigenous peoples must be deeply involved. In the United States, tribes, who like many marginalized communities often bear disproportionate public health and socioeconomic burdens from climate change and legacy pollution, now have the opportunity to redress historical injustices while helping meet national sustainable energy needs. Tribal lands contain

an estimated 6.5% of utility-scale technical potential for US renewable energy development on 5.8% of land area (1). New federal legislation sets aside approximately \$14 billion solely for 574 federally recognized American Indian tribes and Alaska Native villages (2–5), which can support tribal climate responsiveness and energy sovereignty. This opportunity positions tribes and villages to develop their economies and reimagine energy projects on their terms, building beyond many decades of energy and economic poverty. To respond effectively to this opportunity, time frames must be aligned, access to information enhanced, and capacity built.

Even with funding assistance, tribes may be justifiably hesitant to target large-scale renewable energy projects (8). There are at least six reasons for this. First, distrust stemming from past environmental injustices, including pollution and infringement on cultural use areas, is an unfortunate but real starting point for many potential projects. A second challenge is access to capital on a timeline that works for the project. Third, in some situations, small-scale solar is sufficient for tribal needs and presents fewer project delays. Fourth, tribal priorities related to improving public health infrastructure or managing relocation forced by climate impacts may take priority over ventures that support renewable energy. Fifth, within tribes, entities involved in tribal project development may disagree on partnership arrangements, project siting, and operations. Sixth, private developers from outside the tribe may lack the moral perspective, interest, and expertise needed to avoid frustration when faced with long timelines, potential dual taxation, and confusing jurisdictions for rights-of-way (9).

Progress in overcoming these barriers is accelerating. For example, the DOE IE and the federal Interagency Working Group on Coal and Power Plant Communities and Economic Revitalization conduct webinars and other activities to support energy communities [defined by the IRA as sites that have been disproportionately affected by and have relied on fossil fuel industries (4)]. Training efforts like this address some aspects of capacity building, but much more is needed. The depth of engagement with tribes must increase rapidly while all parties acknowledge that strengthening coordination and building relationships and trust take years. Tribal sovereignty, self-determination, and energy equity must be prioritized.

NEW OPPORTUNITIES

The ILJA and IRA support the tribal energy transition in many ways. The 117th Congress established both new tax incentives and direct pay authority in the IRA. Historically, tribes as nontaxable entities

could not benefit from federal tax incentives. Recent changes made in the IRA now allow tribes to request direct payments in lieu of tax relief.

New initiatives strive to align funding with just outcomes. The DOE requires Community Benefits Plans to accompany ILJA and IRA funding and loan applications to help ensure that energy investments support diversity, equity, inclusion, and accessibility. The Biden-Harris administration's Justice40 Initiative and executive order on environmental justice change the nature of federally funded projects, with increased investment in communities disproportionately affected by environmental degradation to foster economic opportunity and social equity (10, 11). Incentive programs aligned with the Justice40 initiative allow

mies and electrifying homes. There are four key concerns.

First, tribes vary in their ability to present shovel-ready projects. Tribes with high capacity, including completed engineering and designs, capital for cost shares, and the staff and infrastructure to submit grants, will be the first wave of applicants. Lower-capacity applicants will need extra time and assistance to assemble a project team and refine project designs.

Second, there needs to be long-term funding to support tribal subject experts and tribal partners who are knowledgeable about community engagement and cultural sensitivities through the life of a project (13). These tribal energy champions can serve as translators and advocates to ensure that tribal priorities are

reflected in all aspects of project design, construction, and management. For example, the tribal energy champion and staff of the Leech Lake Band of Ojibwe worked together to deploy funding for a 200-kW solar project as five separate 40-kW projects. The champion helped navigate complexities that arose from the projects being developed across four utilities, with state and foundation funding. Since completion in 2018, this project has generated an average of \$22,000 annually to assist families in need.

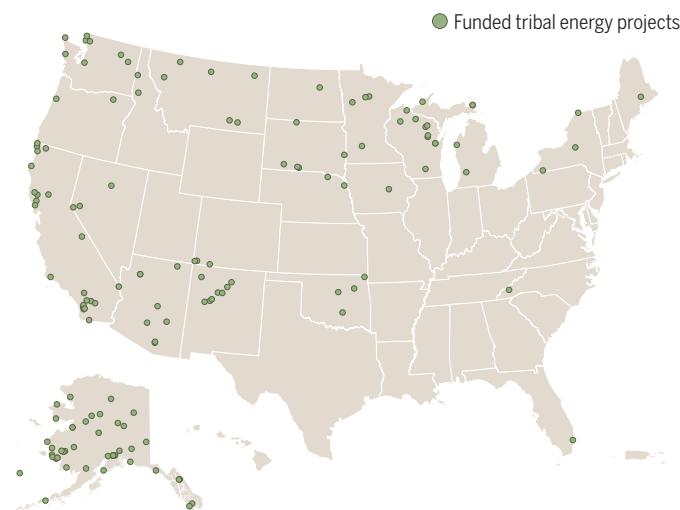
Third, the requirements and timeline of federal funding applications should be simplified. At present, tribe-specific funding opportunities do not get relief on the length and complexity of the application. Mismatched federal and tribal timelines can further compli-

cate the application process. Private sector assistance in navigating and completing applications can be helpful in some cases.

Fourth, federal agencies that offer technical assistance operate independent of each other. Technical assistance must be streamlined, aggregated, and targeted to better support tribal communities. It should support the complete project life cycle, from concept to sustained operations. In addition to project support, technical assistance should be designed to advance federal-tribal partnerships, with an emphasis on internal tribal capacity.

Geographic distribution of tribal energy projects

The projects shown were funded by the US Department of Energy's Office of Indian Energy Policy and Programs between 2010 and 2022. Projects funded by other federal or nonfederal entities are not shown. See supplementary materials for data.



tribes to lead projects on tribal terms (10). The Tribal Energy Loan Guarantee Program offers \$20 billion in backstop capital to tribes and tribal energy development organizations that qualify.

Tribal nations vary markedly in their capacity to pursue funding opportunities. Recognition of tribal sovereignty requires solutions that acknowledge these differences (12). However, many of these funding opportunities will persist for a decade or less, and tribes have concerns about missing a rare chance to leverage substantial federal funding for building tribal econo-

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NEXT STEPS

To go fast, start slow

The emphasis on speed and scale of renewable energy deployment to reach the nation's decarbonization goals may need adjustments to align with the priorities and capacities of tribal communities. Tribal voices, perspectives, and leadership will be critical in understanding and managing each step of the tribal renewable energy transition.

Time-frame alignments

Funding programs should adopt flexible and adaptable timelines for application submissions. Customized approaches tuned for different classes of applicants can allow tribes to identify resources, secure match funding, assemble staff and partnerships, and respond with mature applications, even when timelines for tribal planning are unaligned with federal funding cycles (e.g., the 20-month cycle for Navajo Nation priority setting is difficult to align with the annual budget cycles typically used by federal and state actors). More funding programs should follow the lead of the Tribal Energy Loan Guarantee Program, which does not have deadlines and can accept applications at any time.

Access to information

Tribes need an overarching technical assistance program to streamline access to resources. The US Environmental Protection Agency's selection of Environmental Justice Thriving Communities Technical Assistance Centers, in partnership with the DOE, is a step in the right direction. In addition, a directory of federal agencies and nonfederal entities that offer technical assistance is needed, as are long-term funding streams to support tribal energy champions. Further, technical assistance targeted to tribal energy projects should parallel support for broader climate mitigation and adaptation.

A targeted collection of resources and tools for tribes and tribal partners will help improve access, translation, and education on climate investments. The Access to Capital Clearinghouse created by the White House Council on Native American Affairs and the US Department of the Interior's Bureau of Indian Affairs is now operational, providing a searchable database of federal funding opportunities available to tribes (14). More broadly, tribes will benefit from a consolidated database of funding opportunity announcements from the full spectrum of federal, state, and philanthropic agencies, including funding levels, requirements, and deadlines. This database could be developed and maintained by the federal government or another entity.

Capacity development

Capacity development entails not only funding projects but also funding people, especially tribal energy champions, whose boots on the ground are essential for addressing inequities in energy distribution. These energy champions are familiar faces for tribal communities, and they understand tribal realities, cultural sensitivities, and sustainability goals based on tribal choices that are made on tribal terms. Tribal energy champions can be based in for-profit, nonprofit, or tribal enterprises.

Both short- and long-term funding opportunities are critically important for tribal workforce and capacity. Tribes need programs that build internal tribal capacity through training and professional development, including the opportunity to make adjustments based on lessons learned from research. Such programs can provide immediate local benefits, support future work in the energy sector, and spur economic development for long-term regenerative wealth, including tribally owned technology and manufacturing to increase residential solar sources for communities off-grid (15).

Long-term tribal workforce development requires support for academic programs and partnerships with educational institutions to train energy-sector professionals. For example, Sandia National Laboratories' Tribal Energy Program provides summer and year-round interns with real-world experience and career development. Nondegree programs, such as executive education for tribal, nonprofit, and federal leaders, can also contribute. Supporting and training current staff are essential because talent pools grow slowly through degree programs. Academic institutions, in particular tribal colleges, should be supported to foster tribal energy and environmental programs, including new research on the social, cultural, environmental, and economic aspects of guiding the energy transition on tribal lands.

We sketch a roadmap for designing, implementing, and funding projects and people to accelerate the renewable energy transition while also benefiting all tribal entities. Implementation will require vigilance to ensure that integrating justice throughout agency programs generates tribal wealth without recreating historical injustices. The issues we highlight and the recommendations we make are not all surprising, but they require bold action. ■

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ACKNOWLEDGMENTS

K.C.Y. was funded by the National Science Foundation Postdoctoral Research Fellowships in Biology under grant no. 20-602. This Policy Forum grew from an "Uncommon Dialogue" hosted by the Stanford Woods Institute for the Environment. Several authors are members of tribes and/or associated with entities that are actively participating in renewable energy development on and off tribal lands. K.C.Y., S.B., and C.P. are enrolled members of the Navajo Nation. K.W. is an enrolled member of the Citizen Potawatomi Nation. T.J. is an enrolled citizen of the Cherokee Nation of Oklahoma and a Native shareholder of Bristol Bay Native Corporation of Alaska. D.M. is Iñupiaq. D.R. is a senior director in a climate-related infrastructure investment fund. This article was prepared as an account of work sponsored by an agency of the US government. Neither the US government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the US government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the US government or any agency thereof.

SUPPLEMENTARY MATERIALS

science.org/doi/10.1126/science.adk8298

10.1126/science.adk8298