

SBT Solar Project Proposal

Restoring the land and powering the future

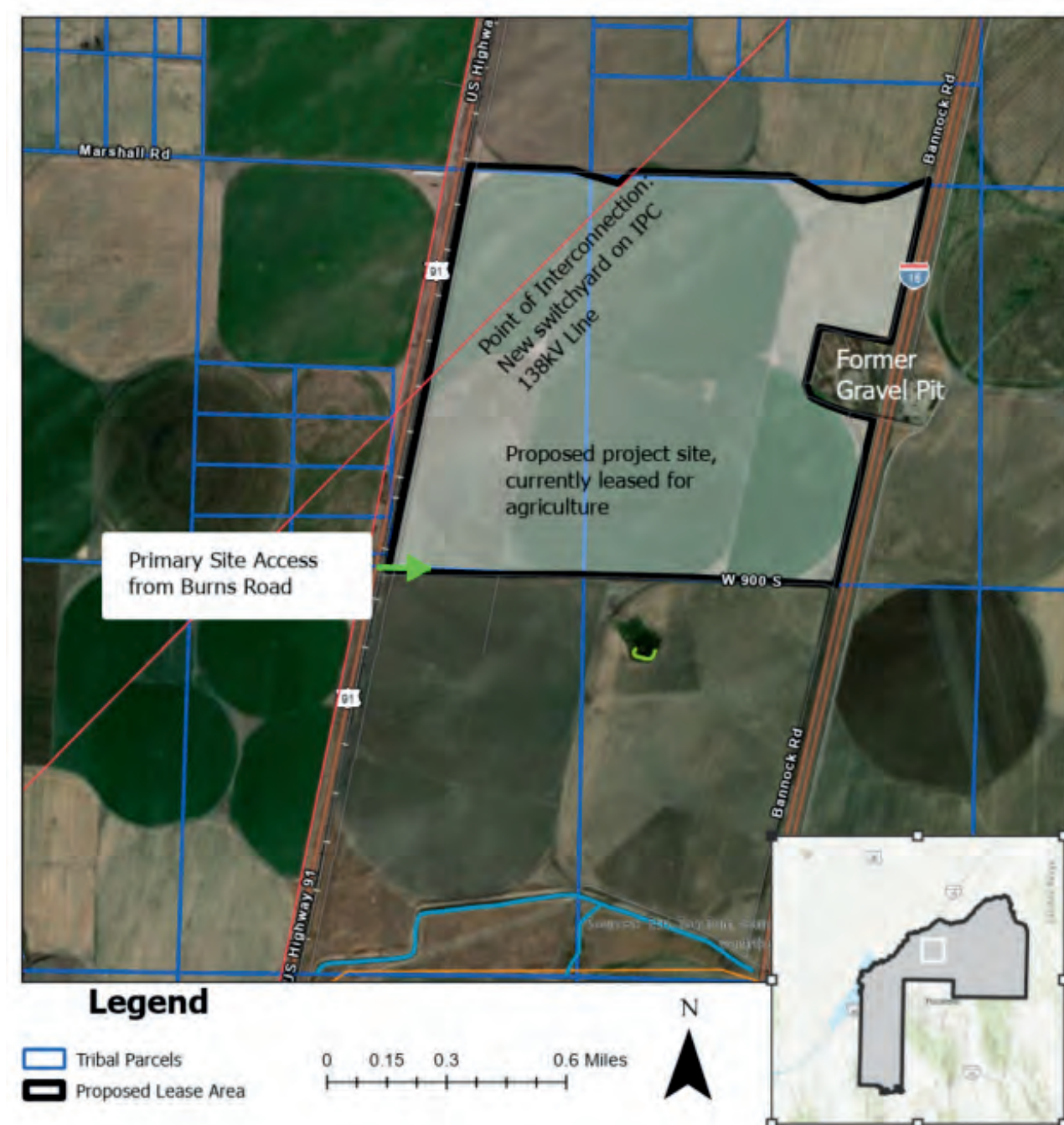


SBT Solar

- Expected Completion Date: 2029
- Project Location: Gibson District in Fort Hall Reservation
- Type of Project: Solar Energy + Energy Storage
- Size of Project: 100 Megawatts

Project Summary

- If approved, the Project would be constructed on 500-700 acres of land, leased from the Shoshone-Bannock Tribes. The Tribes have the option to own equity in the Project and generate long-term revenues from this ownership stake.
- As part of the Tribes' plan to advance energy sovereignty and strengthen the economic base, the Project is expected to support economic development, opportunities for employment in the growing power sector, and align with long-term environmental goals for the land and Tribes. In addition, the Project will allow the land to rest and restore after decades of farming while providing revenue and economic development opportunities for the Tribes.



Economic Benefits

In addition to advancing energy sovereignty and strengthening the economic base, the Project is expected to support economic development, opportunities for employment in the growing power sector, and align with long-term environmental goals for the land and Tribes.

- **Direct Lease Revenue:** Direct lease revenue to Tribes over the 40-year Project lifespan
- **Ownership Opportunity:** Opportunity for the Tribes to have equity ownership in the Project and earn Project revenue
- **Construction Jobs:** During the 18-24 month construction period it is estimated the Project will create 50-80 local jobs
- **Permanent Jobs:** During the 40 year Project operations period, the Project will hire 5-10 full-time, permanent employees for monitoring and maintenance of the facility
- **Workforce Development:** To maximize the number of Shoshone Bannock residents able to take advantage of this opportunity, SBT Solar will make efforts to work with training programs to build capacity for Tribal Members to work on the Project. In addition, the Project will aim to hire relevant native-owned businesses.
- **Regional Economic Development:** The Project creates opportunity for economic development by attracting new businesses to locate near the solar farm to take advantage of the new power provided by this facility

Environmental Benefits

Letting the land rest: The Project is located on previously disturbed land to minimize or avoid potential impacts on the local environment, and biological and cultural resources. The Project will allow farmed land to “rest” for the lease period, during which intensive farming will not be able to take place on the Project area. During the development period, SB Solar will work to restore native plants and ecosystems to the site.

Clean, emission-free operations. During the operations period, the solar farm produces no global warming emissions, and releases no chemicals into the atmosphere while generating clean electricity for the regional grid. This source of clean energy could support regional efforts to support fisheries restoration through the development of new energy resources.

Addressing Energy Affordability - The energy produced by this Project will be sold through the local power grid to utilities, and organizations that seek clean energy like Idaho National Labs, and is not only used on the Reservation. However, the Tribal Department of Energy is considering ways to leverage this Project to increase affordability and reduce energy costs for the community.



The solar farm will be fenced and screened with a planted barrier



Aerial rendering of the site to show location and extent of the project

Special Use Permit Narrative

SBT Solar will consist of rows of single-axis tracking solar panels mounted on metal posts driven into the soil connected by electrical cables to the project substation which, in turn, will connect to the Idaho Power transmission grid through a new 138kV switchyard to be constructed on-site. In addition, there is anticipated to be an energy storage facility consisting of a series of batteries housed in metal containers similar in size to shipping containers mounted on concrete pads and connected by cabling to the project substation. Finally, there will be a small operations and maintenance building to support the project's operations during the 35 to 40-year expected lifespan. 3-5 parking spaces will be located adjacent to the maintenance facility. All of these project components will be fenced inside of the Project Site.

The project activities will take place in 4 phases: pre-construction and planning, which will last 1-3 years, during which farming activities can still take place on the site; construction, which is expected to last 18-24 months; operations, which will last 25-40 years, and decommissioning/restoration, which will take 1-3 years after operations cease.

Interconnection and Planning

Before construction begins, the project will work with the local utility to study the project and determine whether it is feasible, to market the power produced by the project, and collaborate with the Tribes to ensure that all construction plans, permits, and reviews are completed prior to start of construction.

Construction

Construction is expected to last about 18 months, from site preparation to commercial operation. Approximately 50-80 people will be employed during the construction period. The schedule would depend on future commercial arrangements, and the utility interconnection timeline. Temporary construction laydown or on-site assembly facility areas, construction trailers, and parking areas are anticipated to be located within the Project Site. Some temporary facilities will be deployed on-site during construction of the Project. These facilities will include office trailers; laydown yards with assembly areas, fabric buildings, and tents; generators; and bathrooms. Access dirt roadways within and around the Project Site will be graded and compacted.

Operations

During the operations period, the facility is primarily automated, with a small staff of 5-10 people ensuring that the panels, grounds and equipment are maintained in good working order, and it is producing the expected amount of power.

Decommissioning.

The Project is expected to have a useful life of 40 years, subject to extension with component upgrades and system replacements. SBT Solar will decommission and remove the system and its components at the end of the Project's useful life, and restore the Project Site. All decommissioning, system removal, and Project Site restoration activities will adhere to the requirements of appropriate governing authorities, including requirements set forth in the lease and real estate agreements with the Shoshone-Bannock Tribes. The Project will have a decommissioning reserve or bond in place throughout the lifetime of the Project.



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Frequently Asked Questions:

Utility-Scale Solar Development

The following questions and answers aim to inform tribal communities and other project stakeholders about large-scale solar development, and how Navajo Power works with Tribes to develop these projects.

Will the Tribe have to invest money for studies or to make a return on the project?

No, the Tribe will not have to invest any money for the development of a project. Navajo Power takes full financial responsibility for interconnection, permitting, and design costs, as well as any other environmental and social studies needed for the development of a project and works with tribal communities to ensure they receive fair payment during project operation. If the Tribe wishes, Navajo Power does provide the opportunity to invest in projects, but it is not required.

Will there be access to the land for ceremonies and traditional uses after the project is built?

Navajo Power consults extensively with communities impacted by solar projects, and avoids culturally and spiritually-significant areas used for ceremonies. For uses such as harvesting of traditional foods and plants that grow in the area, ecological restoration, and supporting pollinators, Navajo Power can address these uses as part of the site design, and operations plan in consultation with the Tribe.

How will solar panels impact wildlife?

With proper planning, utility-scale solar projects can have minimal impacts on wildlife and surrounding ecosystems. For example, native and pollinator plants can grow around and beneath the panels, providing habitat and food sources for pollinators and native species. Fencing around installations can also be designed to allow smaller animals to enter the site, and electric wiring stored securely to ensure that it does not threaten wildlife. Navajo Power works with Tribal partners to avoid, minimize, and mitigate any negative impacts of ground disturbance activities.

How will solar panels impact agriculture and grazing?

Navajo Power wants to make sure that our projects have the least amount of impact on the environment and local ecosystems. As a result, we focus on siting and developing projects on previously-disturbed land such as former mines, brownfields, and other industrial sites that have already been impacted by development. We also

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Even in cases when solar projects are sited on agricultural or grazing land, it is still possible for these uses to continue in certain cases. Sheep are commonly grazed around solar installations, and do not pose a risk to the panels. While sheep can graze within a solar array, goats, cattle and horses are not allowed to graze inside of solar arrays because they risk damaging the system or injuring themselves. Many plants also thrive near solar panels, as they provide shade and increase soil moisture. The lifespan of solar panels is about 40 years, and after they are removed, the land can return to its previous uses. In fact, panels can shade land and give it time to rest.

What is the risk of fire from solar and battery storage?

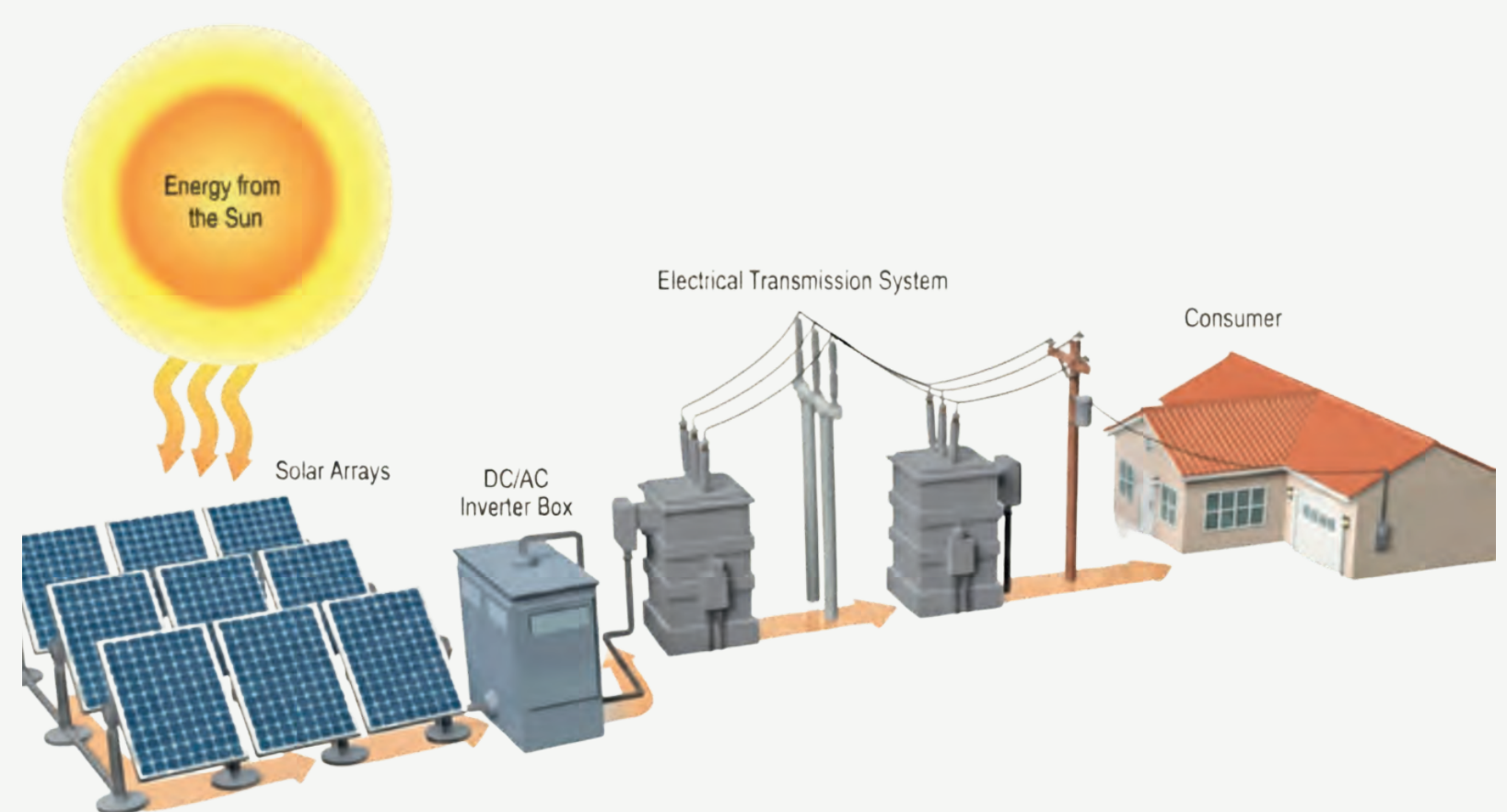
The fire risk of solar panels and battery storage is statistically rare, especially given the care that Navajo Power takes to site projects in an appropriate location. The leading cause of solar-related fires is improper installation, and Navajo Power is committed to high-quality services to protect against these risks. Modern battery storage systems are modular (i.e. separated) systems contained in metal shipping containers, with individual fire suppression and continuous monitoring to detect potential fire risks and prevent fire from spreading.

Can I plug into utility-scale solar projects and get solar for my home?

No, these projects do not directly supply your home with electricity. Navajo Power's utility-scale solar projects generate electricity that is then sold to an electric utility or other company. If your home uses electricity from the grid, it is possible that some of the electrons generated by the solar project would power your home, but it is not possible to directly connect a home to a large solar farm. To address the energy gap for those homes who do not have access to the grid, Navajo Power Home provides smaller residential solutions for consistent electricity. Please visit navajopowerhome.com for more information.

Will I be able to walk within the solar project area?

Once constructed, the solar project area will be closed to the public to ensure safety and security of the system. However, if you would like to graze sheep underneath the panels or gather plants, we can enter into an arrangement that will allow you to do so. This arrangement will involve a legal agreement between you and the project, and may also require you to attend safety trainings, and coordinate with the project operations staff before you enter the site. If you would like to learn more about how you can continue to use the land after the project has begun operations, please let us know.



Less Frequently Asked Questions

Are solar panels bad for the environment when their useful life ends?

Solar panels have an average lifespan of 25-40 years. After this period, federal regulations ensure that the panels, batteries, and transmission equipment are either recycled or disposed of safely, to avoid any harmful effects to people or the environment. Under Navajo Power's contract with a solar installer, they are responsible for this disposal process. Because of the increasing popularity of solar energy, the U.S. Environmental Protection Agency is currently working on developing new regulations to ensure that solar panels and batteries are safely disposed of and/or recycled after the end of their life. As solar technology becomes more widespread and advanced, so has recycling technology. Today, it is possible to recycle the metal, glass, silicon, and plastic parts of solar panels. The solar panel recycling market is growing at a very fast pace in response to growing demand, and is expected to reach over \$1 billion globally by 2030. This growth will likely result in improved technology and access to recycling centers throughout the United States.

Will the ground be covered with concrete to hold the solar panels?

For ground-mounted solar projects like Navajo Power's, the racks are mounted on steel piles spaced about 25 feet apart. The piles are either driven into the ground directly, or have a concrete casing around them to reinforce the structure. There are no large slabs of concrete covering the area and there will be plenty of space in the project area for plants to grow.

Do solar panels produce power when the sun isn't shining?

No, solar panels do not produce power when the sun isn't shining. Solar panels convert sunlight into electricity, and so only generate power during daylight hours. They produce maximum power when the sun is high in the sky and not covered by clouds. However, technologies such as battery storage allow the electricity produced during the day to be stored and utilized when it is dark.

**What happens if there is snow on solar panels?**

A light dusting of snow generally does not affect the panels very much, as it is easily blown off by the wind and/or penetrated by sunlight. Heavy snowfalls that completely cover the panels do block sunlight and therefore significantly reduce the amount of power they can generate. However, this generally does not last for long. Solar panels are installed at an angle to maximize sun exposure, which means snow slides off easily. The black color of the panels also increases light and heat retention, melting the snow much quicker than on surrounding surfaces. Modern, bifacial solar panels are double-sided, and can absorb energy from both sides. When the ground is covered in snow, the white color reflects more light and increases how much energy the panels can generate.

Will plants and grasses still be able to grow underneath the panels?

Yes. Navajo Power's solar panels are tracking, meaning that they rotate to follow the sun throughout the day. Because they move, they do not completely shade the ground below, which allows plants and grasses to grow underneath the panels. Although species that require full sun may struggle underneath the panels, there are many shade-tolerant species of plants and grasses that grow well in this area. Plants will be managed to ensure that they do not grow to a height that will shade the panels.

Isn't solar only economically viable because of big government subsidies?

Government subsidies do reduce the price of solar, but improved efficiency and increased production of panels have also made solar more affordable. In fact, the unsubsidized cost of solar energy is now lower than gas and coal. In 2023, the levelized cost of energy for solar, which excludes subsidies, ranged from \$24/MWh to \$96/MWh, compared to combined-cycle gas (\$39/MWh to \$101/MWh) and coal (\$68/MWh to \$166/MWh) power plants. The government also subsidizes solar for a reason: it reduces carbon emissions and air pollution and incentivizes innovation.

Is solar power more expensive than other energy? Will this increase my energy bill?

Solar power is not more expensive than other energy sources. Because of improved technology and government support, solar power is often cheaper to install than other forms of energy. However, the solar project in your community will likely not have an impact on your electric bill, either positively or negatively. The project does not deliver power to your community; instead, the project owner sells the power to a separate utility or entity to generate revenue and jobs for the Tribe. This money can then be used for local energy efficiency, a microgrid, or rooftop solar projects to reduce consumer energy costs.

Is there radiation, stray voltage, chemical leakage, etc. that come from solar panels? Are they hazardous?

Solar power plants are not generally considered to present a risk of radiation, toxic chemicals or other contamination. While silicon crystal solar modules do contain trace amounts of lead and other heavy metals in the soldered junctions of the cells, they are encased in durable glass that is designed to last for more than 25 years. At the end of the useful lifespan, the plant is decommissioned and the panels will be recycled and the site can be restored to its previous use or a natural state.

How can my community be involved in the workforce development for projects? What sorts of capacity and training opportunities are there?

One of the benefits of utility-scale solar on Tribal land is the opportunity to build capacity and opportunity for members of the community. Navajo Power has economic and workforce development expertise and can connect with local resources and programs to support this.

What is the threshold for a big, utility-scale project? How many acres does that take?

Most ‘utility-scale’ projects are >50 MW, but larger projects, 200MW+ are more efficient to develop, given the high costs of interconnecting to the grid. Solar projects aim to use around 5-7 acres per MW.

What if we don’t have a substation or transmission line?

As part of the feasibility studies, Navajo Power and the local utility or grid operator will explore options to connect the solar facility to the existing transmission network. Sometimes this means building a new substation on site, or running a generator intertie transmission line (Gen-Tie) to the nearest point of interconnection.

What impact will a solar project have on the water table underground?

Almost none. Solar projects use some water for construction, and a negligible amount during their operation for cleaning the panels. With the consent of the Tribe, the project will make use of local water sources. If local water sources are not available or the Tribe doesn’t want to use them for the project, then water will be trucked in at the project’s expense.

Will sunlight and heat be reflected downward or up into the atmosphere?

Solar panels are designed to capture as much solar energy as possible, to maximize the amount that is converted into electricity. Modern solar panels are “two-sided” and capture reflected sunlight off the ground as well.

For more information about information about solar and energy storage, please see the list of sources below:

Growing Plants, Power, and Partnerships Through Agrovoltatics Aug. 18, 2022 | By Harrison Dreves

2024 Tribal Clean Energy Summit 2024 Tribal Clean Energy Summit: Tribes Leading the Way in Clean Energy

Frequently Asked Questions about Low-Impact Solar Development

Innovative Solar Practices Integrated with Rural Economies and Ecosystems

Addressing Regulatory Challenges to Tribal Solar Deployment - NREL Technical Report (2023)

Addressing Regulatory Challenges to Tribal Solar Deployment: Key Findings, NREL Technical Report (2023) Additional Resources

Addressing Regulatory Challenges to Tribal Solar Deployment Summary Slides, NREL Presentation (2023)

Workforce Development Affiliate Programs - Workforce development affiliate programs are additional pathways for students, faculty, and others to work within NREL, to further their knowledge of and careers in renewable energy and energy efficiency.

End of Life Solar Panels - US Environmental Protection Agency guidance on solar panel recycling at the end of life

Large-Scale Solar Siting – Background information and frequently asked questions regarding large-scale solar siting practices.

Solar Impacts on Wildlife and Ecosystems Request for Information (RFI) Summary –

A summary of responses received to an RFI executed by SETO in 2021 on solar energy’s interactions with wildlife and ecosystems.

Avian-Solar Multi-Agency Collaborative Working Group – A collaborative working group of federal and state agencies that was established to promote better understanding of impacts on avian species related to solar energy projects and associated infrastructure.

Avian Solar Working Group – A collaborative group of environmental organizations, academics, solar companies, and solar industry representatives that coordinate on scientific research to better understand how birds interact with solar facilities.

End-of-Life Management for Photovoltaics – Background information and an overview of SETO’s efforts to develop materials and designs that can make PV easier to recycle and less harmful to the environment at the end of life.

InSPIRE – The project, led by the National Renewable Energy Laboratory, conducts field research across the United States to improve the environmental compatibility and mutual benefits of solar development with agriculture and native landscapes.

AgriSolar Clearinghouse – An information-sharing, relationship-building, public communications hub for agrivoltaics

Midwest Tribal Energy Resources Association-

MTERA empowers Midwest Tribes to manage energy resources, fostering clean energy projects on Tribal lands.

NREL Decision Support for Tribes -

National Renewable Energy Laboratory’s guidance for Tribes seeking to understand renewable energy.

Sabin Center for Climate Change Law - Renewable Energy Claims and Facts Publication

<https://www.wri.org/insights/setting-record-straight-about-renewable-energy>